Project title:

Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: **Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province**

Submitted by:

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FINAL PROJECT REPORT
September 2012

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

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Part 1 Expanded Summary

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

Expanded Summary

1.1 Introduction

It is becoming increasingly clear that throughout the world - particularly in Southeast Asia (SEA) - coral reef and marine conservation is about understanding people as much as it is about understanding ecological processes. Integration of socioeconomic monitoring at conservation sites can serve as catalyst or platform to involve local communities in resource management, provide adaptive management strategies to reflect the local needs, and facilitate understanding of the importance of marine and coastal resources. Understanding socioeconomic factors and the communities' relationship to coastal and marine resources is crucial for the success of marine conservation. As such, the Global Socioeconomic Monitoring Initiative for Coastal Management (SocMon Global) has been initiated to pursue this worldwide conservation initiative.

The Socioeconomic Monitoring Southeast Asia (SocMon SEA) has been undertaken in countries within the Southeast Asian (SEA) region, including the Philippines, for nearly a decade. Since 2007, the Palawan State University (PSU) and the Conservation International-Philippines (CIP) have been conducting SocMon-related activities in Palawan Province, Philippines, in collaboration with the local government units (LGUs), national government agencies (NGAs), non-governmental organizations (NGOs), academe, and local communities. Within Palawan's Puerto Princesa City, the SocMon methodology was previously applied at two local marine protected areas (MPAs) in the eastern coast: (1) Puntod Illis Fish Sanctuary in Babuyan village and (2) Sabang Reef Fish Sanctuary in Binduyan village.

Based on the earlier initiative, two villages (Kamuning and Inagawan) in Puerto Princesa City requested PSU and partner institutions to generate appropriate baseline socioeconomic data/information. The respective village heads indicated that this baseline socioeconomic data/information will be used in protecting their coastal resources, particularly in establishing MPAs and/or marine sanctuaries. Meanwhile, the Mayor of the two coastal villages of Cawayan and Masaguisi in the municipality of Bongabong, province of Oriental Mindoro requested the technical assistance of the Mindoro State College of Agriculture and Technology (MinSCAT). Since PSU and MinSCAT are partner academic institutions within the Southern Tagalog Islands

Research and Development Consortium (STIRDC) - and PSU being the new center of SocMon SEA since 2009 - MinSCAT solicited PSU's assistance. The pressing need was recognized to generate socioeconomic data/information in these two villages to serve as bases for their villages' coral reef and coastal conservation program initiatives.

In view of the above, the project titled "Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province" was launched in October 2010. The goal of this project is to propagate the use of socioeconomic monitoring (SocMon) among academics, researchers, policy makers, and coastal managers thereby enhancing coral reef conservation and coastal resources management. This project also aims to highlight the utility and practical applications that can be derived from using SocMon as a tool for adaptive management. The objectives include: (1) train researchers, managers, and key stakeholders in applying the SocMon SEA methodology in generating relevant socio-economic information, (2) undertake SocMon field surveys at four coastal villages in the provinces of Oriental Mindoro and Palawan, Philippines; (3) analyze the collected data and prepare appropriate technical reports, policy briefs, and recommendations for use by relevant stakeholders, including the documentation of the experiences and lessons learned on the use of SocMon; and (4) disseminate the results to policy makers, coastal managers, local communities and other relevant stakeholders to ensure their utilization.

1.2   Methodology

The overall methodology and/or general procedure for training, field data collection and data analysis followed the SocMon methodology (Bunce and Pomeroy 2000, Bunce et al. 2003). The SocMon Process basically follows three major steps. The first part was advance preparation that included defining the objectives of SocMon, establishing the SocMon team and preparing the logistics. The second part was data collection, which was the generation of field data whereas three complementary research methods were employed namely, household interview (HHI), key informant interview (KII), and focused group discussion (FGD). The total number of respondents for the four study sites is as follows: HHI – 515; KII – 29; and FGD – 5. The third part was data

analysis which made use of qualitative and quantitative analysis, while communication consisted of disseminating the results to the relevant stakeholders.

The partners involved in project planning and implementation belonged to different institutional categories. PSU and MinSCAT are publicly-funded academic institutions, classified as state universities and colleges (SUCs) with an existing partnership as members of the STIRDC. The City Government of Puerto Princesa (CGPP) and the Municipality of Bongabong are classified as LGUs. On the other hand, the Palawan Council for Sustainable Development Staff (PCSDS) is a national government agency. Funding support for this research project was provided by the US National Oceanic and Atmospheric Administration (NOAA) as an external donor. The PSU Center for Strategic Policy and Governance, Inc. (PSU-CSPGI), as the 'private and non-profit' arm of PSU, also served as a conduit for fund management.

Two coastal villages (barangays) were selected in each of the provinces of Mindoro and Palawan. The villages of Kamuning and Inagawan in Puerto Princesa City were chosen in Palawan, while the two coastal villages of Cawayan and Masaguisi in the Municipality of Bongabong were selected in Oriental Mindoro. These four villages expressed need for socio-economic information for their local development planning. Details of these villages are contained in the individual site reports.

The project covered a two-year period, which started its implementation in October 2010 and was completed in September 2012. During the "Project Start-up Meeting" held on 2-3 December 2010, the key project partners attended a workshop in Puerto Princesa City. The workshop enabled the participants to consensually select the SocMon indicators to be used for the study. From December 2010 until April 2011, the following were undertaken: formation of the SocMon training team, development of the SocMon training design, and preparation of research instruments for household interviews (HHIs), key informant interviews (KIIs), and focus group discussions (FGDs). The SocMon Methodology Training was held in May 2011 for both provinces while the field work to gather data were undertaken from June to November 2011. Methodologically, the SocMon data gathering was a participatory process involving the local resident communities, selected stakeholders of local (municipal/city) governments. A random sample of household respondents was chosen for the HHIs. Respondents for the KIIs included: village officials, municipality officials, law enforcement personnel, and members of

fisheries and aquatic resources management councils. FGDs were conducted for fisher groups and farmers.

Trainings on SocMon data analysis were held in Oriental Mindoro in August 2011, and in Puerto Princesa City in November 2011. After the initial data analysis and reports were written, community validation workshops were undertaken in September 2012 to solicit the stakeholders' feedback concerning the results of HHIs, FGDs and KIIs. Two 'Stakeholder Roundtable Discussions' were also conducted as part of the project closure in September 2012. These events enabled the project team to: (1) disseminate the initial SocMon results; (2) present the communication plan; (3) present some policy implications/recommendations; and (4) discuss the next steps. The project formally concluded on 28 September 2012.

1.3   Results and Discussion

This part presents key results and highlights findings of the study. The coastal habitats in the four study sites are broadly similar consisting of coral reefs, mangroves, and seagrass beds. All villages are in the process of establishing marine protected areas (MPAs) or fish sanctuaries as a conservation measure. All fisheries are multi-species and multi-gear but dominated by gill net and hook-and-line.

Most households have between 4-6 members. They have relatively high levels of literacy. Across sites, more than 44% have completed high school education. Roman Catholic is the most dominant religion. Coastal residents are highly dependent on fisheries for food, livelihoods, and income. As aggregate, however, they are more dependent on farming rather than fishing for livelihoods. There is low livelihood-diversification as evidenced by the high retention of residents within farming and fishing occupations.

Because of the methodological difficulties of measuring household income, particularly in rural villages whereby income is not officially declared, SocMon does not attempt to measure it. Instead, the variable "material style of life" is used as a substitute. Hence, as a proxy variable, this is used as a rough measure of the economic status of the households. Material style of life was quantified as an aggregate ordinal value derived from scoring the type of the household's residential structure with respect to roof, structural walls, windows, and floor.

Over-all, about two-thirds of the households have very low or low material style of life as reflected in their use of light materials such as bamboo and *nipa* (a type of palm that grows in estuarine areas) in their residential dwellings. It can therefore be inferred that majority of the households are not economically well off, if the basis to be used is the materials of their residential dwellings. It was noted, however, that nearly one third of the households have houses that are predominantly made of tin/galvanized iron roofs, thatch/bamboo walls and windows, and cement floors. This was surprising considering that these villages have high (over 30%) unemployment rates. We have found out that most of these expensive house materials were purchased through the remittances of relatives and/or family members who are overseas foreign workers, particularly in Barangay Masaguisi.

Generally, the respondents have positive attitudes towards non-market and non-use values of coastal resources. They recognized the indirect non-market value of reef for protecting land from storm waves as well as its value as habitats for fisheries; they also recognized the value of mangroves as nursery grounds for fisheries. In terms of existence non-use value, they acknowledged the significance of corals reefs beyond fishing and diving, that fishing should be restricted in certain areas to allow fish and coral to grow, and that seagrass beds have existence value. Majority of villagers recognize the bequest value of coastal resources. Hence, they want future generations to enjoy the mangroves and coral reefs and are in agreement to restrict development in some coastal areas so that future generations will still have natural environments.

Overall, the net perception ratings of resource conditions are positive. Such holds true for mangroves, coral reefs, upland forests, seagrass, beach, spring, river/creeks, and ground water. On a comparative scale, the highest net rating was groundwater in Masaguisi at 97.7%, while the lowest was for upland forest in Inagawan at 22.1%.

The coastal resources in the project sites are under varying forms of threats. Those specific for mangroves include cutting for household and commercial uses, charcoal making and natural phenomenon (typhoons, big waves), conversion into fish pond and clearing for settlements. Threats to coral reefs include cyanide/compressor fishing, dynamite/blast fishing, natural phenomenon (typhoon, waves), illegal fishing activities, coral gathering for

household/commercial use, and clearing/mining/digging. In the case of seagrass beds, the perceived threats are clearing/mining/digging, fishing using dragnets, natural phenomenon (typhoon, waves), gathering for household and commercial uses, illegal fishing activities, and pollution/dumping of garbage.

There are also threats to other resources. For beach, it includes sand quarrying, pollution/dumping of garbage, natural phenomena (such as sea level rise, typhoons, big waves, etc.), soil erosion from the uplands, and residential area expansion. Highly mentioned perceived threats to upland forests include charcoal making, slash and burn farming, forest conversion into residential settlements, and cutting trees for household/commercial uses. Key threats to rivers/creeks include water pollution, dumping of garbage, soil erosion/ upland sedimentation, and natural phenomenon (e.g. typhoons). Meanwhile, threats to ground water include natural phenomenon, deforestation/cutting of trees in watershed, pollution/dumping of garbage, water contamination due to sewage, expansion of residential settlements, tourist- and resort-related development, overexploitation for household use and saltwater intrusion.

It is also noted that there is a tendency among village residents to attribute to natural phenomenon the threat to their resources, whether coastal or non-coastal. In one village, natural phenomenon was among the top three threats cited by residents for each of their resources. They seemed to perceive that natural occurrences such as typhoons and strong waves are a threat to the integrity of their resources. This view may breed passivity and a sense of helplessness among community residents with regard to their responsibility and role in resource management and conservation.

Their level of awareness of resource rules and regulations varies across resource use. They were most aware of coastal resource use particularly those related to fishing, mangroves, and aquaculture. Their level of awareness is the least for recreational and transport related activities. The level of awareness of village-level and municipal-level resource rules and regulations likewise varies.

The current ratings of participation in decision making are generally low for resource uses and/or coastal activities. Majority prefer to enhance their future level of participation across

resources they use or activities engaged in, mainly fishing, mangrove management and pebble gathering. s. However, at present, majority are not members of stakeholder organizations. Common associations in the villages relate to fisheries, agriculture, and women groups.

Typical to most coastal villages in the Philippines, there are a host of problems and issues that needs to be addressed. Such concerns are broadly classified into three categories: (1) bio-physical issues, (2) socio-economic issues, and (3) institutional/governance issues. Bio-physical issues include: depleted/declining fishery resources, degraded fishery habitats, pollution/waste of coastal waters, coastal erosions/ siltation, climate change, sea level rise and salt water intrusion. Socio-economic issues relate to lack of alternative/supplemental livelihood, post harvest losses, and intensified resource use competition and conflict. Institutional/governance issues cover inadequate/inconsistent fisheries policies, limited institutional capabilities, weak institutional partnerships, lack of harmonization of plans, programs or projects, weak/limited coastal law enforcement and unclear property rights.

Despite the existence of several problems, there are also perceived successes in coastal management. These relate to: (1) conservation of coastal habitats, (2) community mobilization and (3) enforcement. Conservation of coastal habitats largely covers mangrove reforestation as well as protection of seagrass beds and coral reefs. Community mobilization efforts include activities such as coastal cleanups, village environmental sanitation, and socio-cultural activities such as feast for the seas (*Piyesta ng Karagatan*). Enforcement successes include initiatives for stricter enforcement of fishery laws and regulations as well as very active organizations such as BFARMC and Bantay Dagat in some villages. Included in regulatory successes are stricter implementation of prohibition on sand quarrying and enforcement of ecological waste management programs.

Several program recommendations are forwarded to address these concerns. These program recommendations are clustered into five categories: (1) indirect regulation, (2) direct regulation, (3) conservation and protection measures, (4) economic measures, and (5) governance/institutional measures. Indirect regulation is exemplified by the banning on the use of specific fishing gears and limiting the number of fishing boats, while direct regulation may take the form of catch quotas and fish size limits. Conservation and protection measures include

ban on catching of threatened species, establishment of fish sanctuaries, habitat restoration, zoning and seasonal closures (on-and off-seasons). Economic measures cover livelihoods promotion (both alternative and supplemental employment, including their sustainability), credit support, fishery subsidies and marketing assistance. Examples of governance/institutional measures are information and education campaign, capacity-building, constituency-building, law enforcement, management planning, policy development, organizational development and private-public sector partnership.

1.4   Policy Directions and Lessons Learned

The above program recommendations imply the need to pursue certain policy directions. An obvious direction is 'Development' whereby sufficient employment must be generated to address the issue of poverty and rural deprivation. The concerns for alternative and supplemental livelihoods have been highlighted in these four villages. As may be needed, fisheries and tourism development may be pursued in appropriate geographical areas. Another policy direction is 'Protection' of the coastal habitats: coral reefs, mangroves, seagrass beds and soft-bottom communities. Either mitigative or preventive measures need to be undertaken to protect the coastal resources and ecosystems against the negative impacts of development endeavors. To the extent possible, land-based sources of pollutants, which in these cases are agricultural effluents, must be minimized.

There must be a policy direction towards 'Sustainability 'for the rational use of the coastal resources for the benefit of both current and future generations. In the case of fisheries, for example, species must be harvested within their sustainable yields. The same principle holds true for the freshwater resources. Institutionally, 'Capacitation' of the local government units is needed. There are many technical and/or substantive requirements to effectively manage the coastal environments. Included here are various forms of training related to livelihoods, habitat restoration and environmental sanitation, among others.

A crucial direction is policy towards 'Integration' or integrated management. There is the need for physical integration that involves an ecosystem approach that considers connectivity and interface among land, sea and people. Operations of various economic sectors must be harmonized. The initiatives of various organizations/institutions involved in coastal management

need to be synchronized to achieve maximum benefits. Efforts of external donors must be channeled to address critical concerns in appropriate geography. Policy direction for effective 'communication' is needed. The local academic institutions must be fully-tapped to generate the necessary data and/or information for effective policy making and on-the-ground actions. A healthy exchange of ideas and information among relevant stakeholders is essential for effective fisheries governance. It also includes the use of scientific knowledge for adaptive management.

In pursuit of diverse societal objectives, the governance of coastal areas will continue to be a delicate balancing act. The situation in these four SocMon villages somehow exemplify that management is complicated as all of these objectives may either be in conflict over the short-term – or difficult to achieve simultaneously. It is hoped that the SocMon methodology will help achieve the balance.

SocMon methodology proved to be a practical assessment tool for coastal management. What is presented in the succeeding discussions are 10 lessons culled from its use in this research project and, therefore, are areas of improvement for future use. First, 'SocMon methodology has enhanced community awareness.' The community members in the four villages actively participated in the project's data gathering activities and validations. Hence, they became more aware of the status of their surrounding coastal areas. They were able to recall programs or projects that were successfully implemented, and those that need to be improved in implementation. The village stakeholders have also become more purposive as to what programs and policies to implement that would effectively solve the coastal management issues and community problems.

Through the SocMon, they became more privy to the details of the coastal conditions of their villages. For instance, the specifics of the rules and regulations in coastal management being enforced by the villages and/or local government units (LGUs) are not generally known to the local populace. The community learned to give more importance on the protection and management of their coastal resources since this would eventually affect the socioeconomic conditions of their villages.

Second, 'SocMon methodology is a practical diagnostic tool.' The SocMon methodology used was able to diagnose in a practical manner the various facets of the four coastal communities. Relevant socio-economic and governance elements were conveniently generated; pertinent biophysical facets were obtained through household interviews and/or community consultations. The methodology was relatively cost-effective, relying on a selected multidisciplinary team of local academics and professional from the LGUs and other partner agencies. The data gathering instruments were found to be suitable to the intended tasks - as basis for recommendations on policies and programs. Therefore, the methodology can be applied to other similar data generation activities in the community or locality.

The third lesson is 'SocMon is a flexible field methodology.' It allows researchers to modify and/or add related variables and to introduce other data gathering methods. For this study, level of participation in resource use decision making was further delineated into a current level (referring to the present) and a desired level (referring to how much they are willing to participate) in order to find out whether people's participation levels can still be increased, and if so desired, to what extent. Data on current and desired participation levels gave researchers the opportunity to statistically compare the two facets of participation, the results of which is useful in community mobilization. Data gathering can also be made more participatory and communal by conducting group interviews through focus group discussions (FGD) with five to ten key informants. The interviewer serves as the facilitator/moderator who asks questions to be answered by any one or all of the key informants. The response of one could be immediately validated by the others and a consensus is usually arrived at as an answer to the question. Richer data are usually drawn from key informants in an FGD compared to individual interviews.

Fourth, 'Bio-physical assessments may complement SocMon methodology.' To complement the socio-economic assessments, some simple biophysical measurements could be undertaken. Some issues related to environmental conservation and CRM are best supported with field or physical evidence, although this is more of a snapshot data rather than time series data. These may include measuring soil loss through simple erosion plots, measuring selected mangrove stands at diameter at breast height, and measuring turbidity using a secchi disk to indicate the status of marine water quality. The status of coral reefs can easily be assessed through a manta tow survey. As the need arises, experimental test fishing can be conducted.

These field assessments are best undertaken by biologists. Hence, it is ideal to have field researchers who are experts in the natural and social science disciplines.

Fifth, 'SocMon is useful for 'academe-local government' collaboration.' SocMon provided a unique avenue for a more cooperative partnership between academic institutions and LGUs. The academe is particularly good in generating and/or analyzing information. Barangay officials gave their full support to the project by providing invaluable information during the key informants and household interviews.

Overall, the project team received more than adequate support from the concerned villages and municipal/city LGUs. The visited local communities were very receptive of the project team. Such enthusiasms were reflected by the active participation of the village officials during data gathering activities as well as provision of meals during community consultations. In addition, the partnership arrangements served as a catalytic forum for developing future collaborative projects between the academe and LGUs. Partnerships forged because of this program enable true collaboration with one another especially on the sharing of resources, tasks and responsibilities to produce useful results in the implementation of CRM programs and establishment of marine protected areas which can be replicated in other sites.

Sixth, SocMon methodology would require creativity involving contextualization and dynamic use of matrices. This was done in, 'material style of life" that was put into context.' Because of the methodological difficulties of measuring household income, particularly in rural villages whereby income is not officially declared, SocMon does not attempt to measure it. Instead, the variable "material style of life" is used as a substitute. Hence, as a proxy variable, this is used as a rough measure of the economic status of the households. To quantify material style of life, an aggregate ordinal value was derived from scoring the type of the household's residential structure with respect to roof, structural walls, windows, and floor.

As a whole, about two-thirds of the households have very low or low material style of life as reflected in their use of light materials such as bamboo and *nipa* in their residential dwellings. It can therefore be inferred that majority of the households are not economically well off if the basis to be used is the materials of their residential dwellings. It was noted, however, that nearly one third of the households have houses that are predominantly made of tin/galvanized iron

roofs, thatch/bamboo walls and windows, and cement floors. This was surprising, considering that these villages have high (over 30%) unemployment rates. We have found out that most of these expensive materials were purchased through the remittances of their relatives and/or family members who are overseas foreign workers, particularly in Barangay Masaguisi.

Furthermore, the need for creativity was underscored in data generation using FGD. Experience with FGD revealed the effective use of output tables to gather and summarize data from a group. Output tables give simplified view of relationships between variables, and allowed the researchers to solicit information in a stepwise, logical, interactive, and iterative manner. With an effective facilitator, the questions naturally flow and become simple to answer for the participants.

Seventh, 'Community perceptions of issues appear to be geographic and livelihood-based.' Perceptions of community members, in general, appear to be based on geographical factors or livelihood considerations – or both. Many full-time farmers living in the interior of the villages seemed to have little idea about coastal marine activities. They are also not privy to marine pollution issues, such as garbage and siltation. Similarly, most full-time coastal fishers have limited inkling about agricultural practices that are related to crops and livestock. This may be the reasons why there were few respondents who identified the commonly-recognized problems.

Corollary with this, more allocation of government resources are desired for enhanced coastal management. The village governments have limited resources to allocate for coral reef conservation and CRM. Hence, more government resources need to be allocated at the municipal/city level, which serves as the main center for coastal management. Some village officials have expressed that they cannot undertake effective coastal law enforcement by themselves. Most often, the least allocation happens at the village level while a few resources are allocated at the provincial level. There is also reliance on externally-funded projects.

Eighth, 'project partnership may transcend geographical boundaries.' Although unusual, the partnership arrangement was generally successful. The Palawan State University (PSU), classified as a state university or college (SUC), spearheaded the project given its experience in

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undertaking SocMon-related activities since 2007. Within the Palawan province, PSU has partnered with three institutions namely: the City Government of Puerto Princesa, an LGU; the Palawan Council for Sustainable Development Staff, a national government agency (NGA); and the PSU Center for Strategic Policy and Governance, Inc., which served as a conduit for fund management as the 'private and non-profit' arm of PSU.

Some 447 km away in the province of Oriental Mindoro were two more partners: the Mindoro State College of Agriculture and Technology, another SUC and the Municipality of Bongabong, an LGU. Collectively, these six institutions undertook their respective responsibilities based on the agreed work plan. They also provided counterpart contributions (in-kind and cash). Meantime, as an external donor, the US National Oceanic and Atmospheric Administration provided an equivalent of US$24,900.00. Through this unusual institutional set-up, this SocMon project came to a successful conclusion.

The 'need to expand partnerships in coastal management' is the ninth lesson learned. There is a need to expand partnerships in coral reef conservation and CRM. Given the complex problems/issues that confront the coastal areas, the cost of program/project interventions cannot be borne solely by the LGUs and/or SUCs. For example, the Bureau of Fisheries and Aquatic Resources and the Department of Environment and Natural Resources can be tapped for more mangrove reforestation activities/programs. As an NGA, the Department of Science and Technology - given its various programs of support on capacity building and technology transfer can prove to be a potent partner in CRM – particularly in product value adding for agriculture and fishery commodities. Linking with 'non-traditional' partners - such as civic organizations and external donors – is also becoming a necessity. MinSCAT has established linkages with the Korean International Agency and the Malampaya Foundation, Inc. that they intend to enhance through this SocMon initiative.

Tenth, 'interventions to address coastal issues need to be streamlined.' Many of the coral reef and CRM issues and concerns that were identified are relatively well known. They have been listed in various government reports, national plans and academic reports over the last few decades. The management interventions and/or measures – in the forms of broad programs and specific projects – that are needed to address these issues are also generally well known.

Mangrove reforestation is used to address mangrove destruction; gear regulation may be employed to reduce overfishing; and the introduction of livelihood projects to address the issue of rural poverty and deprivation.

At the governance side, the LGUs are being capacitated for coral reef conservation and CRM. Relevant policies are likewise being modified and/or new ones are being developed to enhance the CRM efforts. The emerging need is meant for better structuring of these many management measures to ensure that they address the critical/crucial issues and maximize their effectiveness as well. The prioritized programs and projects would provide00 the coastal political leaders and policy makers alike – as well as coastal managers – with more solid basis for making informed decisions on where to allocate their limited administrative and financial resources.

Overall, as a participatory tool, the SocMon methodology was found useful in the characterization of coastal villages. Through the 10 lessons learned from this project, the SocMon methodology may be improved for future use.

Part 2 SocMon Site Report Barangay Inagawan, Puerto Princesa City, Palawan

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

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SocMon Site Report
Barangay Inagawan, Puerto Princesa City
Palawan, Philippines

Center for Strategic Policy and Governance
Palawan State University
Puerto Princesa City

City Agriculture Office
City Goverment of Puerto Princesa
Puerto Princesa City

Palawan Council for Sustainable Development Staff
Puerto Princesa City

September 2012

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List of Acronyms and Abbreviations

BFARMC	Barangay Fisheries and Aquatic Resources Management Council
CBMS	Community-Based Monitoring Survey
CGPP	City Government of Puerto Princesa
CWA	Community Women Association
CWF	Charity Women's Foundation
DILG	Dept. of Interior and Local Government
FGD	focused group discussions
GI	galvanized iron
ha	hectares
HH	household
HHI	household interview
INKAISA	Inagawan Kamuning Irrigators' Association
KCRDI	Kamuning Coastal Residents Development, Incorporated
KI	key informant
KII	key informant interview
km	kilometers
MPA	marine protected area
NGO	non-government organization
PALECO	Palawan Electric Cooperative
PCSDS	Palawan Council for Sustainable Development Staff
RA	Republic Act
RIC	Rural Improvement Club
SCO	Senior Citizen Organization
SEA	Southeast Asia
SK	*Sangguniang Kabataan*
SocMon	Socioeconomic Monitoring

Summary

Introduction

Understanding socioeconomic factors and the communities' relationship to coastal and marine resources is crucial for the success of marine conservation. This is addressed through socioeconomic monitoring, a global initiative for coastal management being undertaken in the Southeast Asian Region through the Socioeconomic Monitoring Southeast Asia (SocMon SEA), including the Philippines, for nearly a decade. This report provides a synopsis of the socio-economic monitoring (SocMon) conducted in Barangay Inagawan, Puerto Princesa City, Palawan Province, Philippines. The goal of this project is to propagate the use of socioeconomic monitoring (SocMon) among academics, researchers, policy makers, and coastal managers thereby enhancing coral reef conservation and coastal resources management.

Methodology

The SocMon methodology followed three major steps. The first part was advance preparation that included defining the objectives of SocMon, establishing the SocMon team and preparing the logistics. The second part was data collection, which was the generation of field data using three complementary research methods namely, household interview (HHI), key informant interview (KII), and focused group discussions (FGD). The number of respondents is as follows: HHI – 115 households; KII – 2; and FGD – 2. Field data were gathered from June 2011 to August 2012 in Barangay Inagawan, Puerto Princesa City. The third part was analysis of both qualitative and quantitative data, while communication consisted of disseminating the results to the relevant stakeholders. The Palawan State University took the lead and the partners involved were the City Government of Puerto Princesa (CGPP) and the Palawan Council for Sustainable Development Staff (PCSDS).

Results and Discussion

Barangay Inagawan is a rural village located 53 kilometers south of Puerto Princesa City proper. It has a total land area of 711 ha, 94% of which is agricultural and mostly

planted with rice. Its shoreline of about .34 km is on its eastern side facing the Sulu Sea. As of 2009, the village has 351 households comprised of 1,454 individuals. The number (54%) of households rely on farming, either as a primary or secondary source of income, was twice as much as those who relied on fishing. Unemployment was high; 38.1% of those who are 16 years old and above were not regularly engaged in any occupational activity. About 60% of the households had very low or low material style of life as reflected in their use of light materials such as bamboo and nipa for their residential dwellings.

Fishing activities included capture fisheries and aquaculture while non-fishing activities are nipa shingles making, farming, and livestock raising. Fishermen used various devices and methods to catch fish such as push net for milkfish fry gathering, beach seine, hook and line, multiple handline, gillnet, crab pot and squid jigger. Most of the catch was sold both within and outside the village.

Community residents had mostly positive attitudes on the indirect non-market and non-use values of their coastal resources, with the highest appreciation expressed for the resources' indirect non-market values particularly for corals and mangroves, followed by bequest values, and the lowest appreciation of their existence non-use values.

The community's ground water, springs, river/creeks, beach, seagrass, coral reefs and mangroves are generally perceived to be in good condition but the terrestrial forests were in neither good nor bad condition. A low of 25.2% (for upland forests) to a high of 61.7% (for groundwater) perceived no threat to their resources while from 12.2% (for beach) to 30.5% (for upland forests) acknowledged that they are not in a position to answer or do not know of any threat. For those who knew of at least one threat, the most often cited threats were cutting of trees for commercial/household uses, including charcoal making for mangroves and terrestrial forests; illegal fishing methods for coral reefs, sand quarrying and pollution/garbage dumping for beach, springs, and rivers/creeks. Natural phenomena such as typhoons were also attributed as a threat to all fresh water sources.

Most residents were aware of rules and regulations on fishing (82.6%) and mangroves (77.4%) that were said to originate from the City Government of Puerto Princesa. However, fewer than 30% were aware of rules on pebble gathering, residential development,

and aquaculture. Though there are resource use stakeholder organizations in the village, only 36.5% of the households are a member of at least one. Hence, most households rated their current levels of participation in decision-making as no participation, except for fishing and mangroves which had higher degrees of participation. There is an expression of a greater desire to participate in decision making particulary in fishing and mangroves. Overall, the residents' desired levels are higher than their currents levels, and these differences are all statistically significant.

Even if about 6 out of 10 said that they don't have or don't know any coastal management problem, those who knew of at least one gave problems related to: (1) the use of illegal fishing methods such as dynamite, cyanide, compressor, fine mesh net; (2) decrease in fish catch/over-exploitation of coastal resources; (3) resource competition/conflict; and (4) sanitation. Though they perceived that they are successful in community mobilization, enforcement of fishery laws and ordinances, and organizing the BFARMC and Bantay Dagat, these are still a continuing challenge to them – community compliance of the fishery rules and regulations, and enforcement of such rules and regulations. The proposed solutions given by the residents can be categorized into three: governance – enforcement, governance – policy, and community mobilization.

For the community as a whole, the top problems perceived by the residents are the inadequate infrastructure (drainage, bridge, feeder road); the need for alternative/supplemental livelihoods; lack of electricity/street lights and poverty. Because of the large group of out-of-school youth, juvenile delinquency was also mentioned. The cited solutions center on employment, access to credit, infrastructure improvement through action by concerned authorities, and access to electricity.

Greater support to village-level governance, particularly on enforcement and policy, needs to be provided. The village council's initiative to declare a certain portion of the coastal waters within the vicinity of the village as a marine protected area (MPA) has to be formalized by delineating its boundaries and by enacting a city ordinance declaring the said area as an MPA. It is hoped that the relevant recommendations described herein will be adopted by the concerned implementers, planners, and policy makers.

2.1   Introduction

Barangay Inagawan is a village in Puerto Princesa City, located 53 km south of the City proper (Figure 1). It has a total land area of 711 ha of which 20 ha is residential, 666 ha is agricultural and 25 ha is woodland. It has a shoreline of approximately .34 km on its eastern side facing the Sulu Sea. It is bounded on the North and the West by Barangay Inagawan Sub-Colony, on the South by Barangay Kamuning, and on the East by the Sulu Sea. It has three *sitios* and seven *puroks*. Three *puroks* - Mangingisda, Masagana, and Mabuhay - are located along the coastal area facing the Sulu Sea.
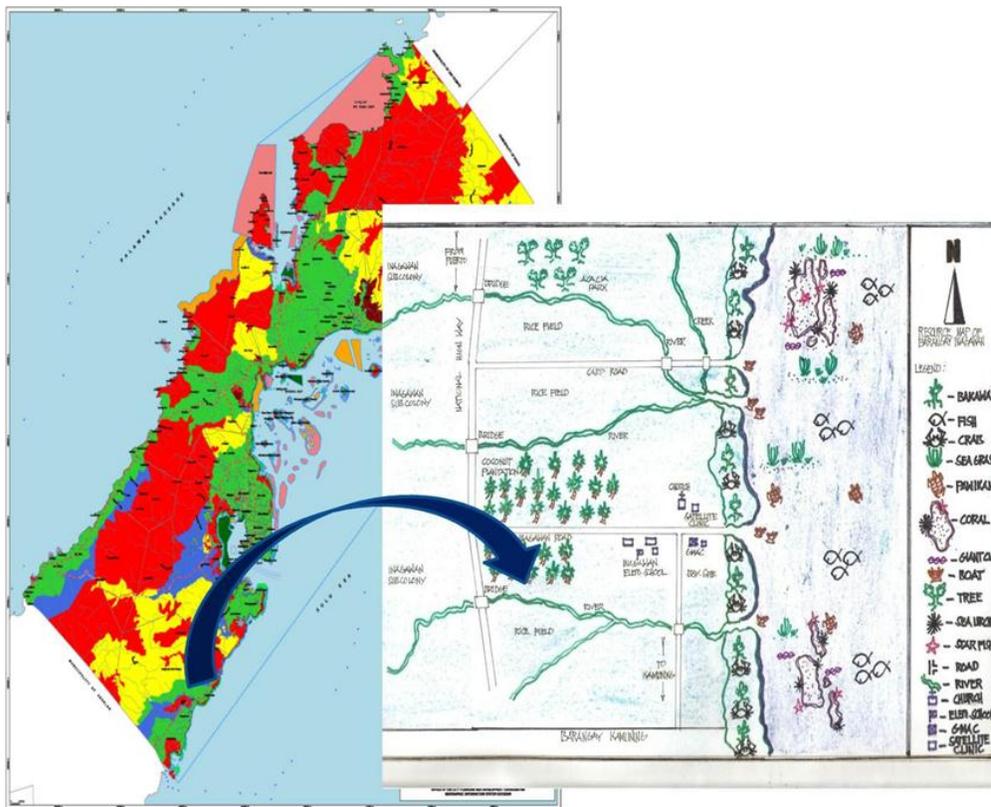
Figure 1. Map showing the location of Barangay Inagawan in Puerto Princesa City, Palawan, Philippines.

Barangay Inagawan has soils that are mostly alluvial in formation and are usually fertile, which are classified as prime agricultural lands suitable for agricultural production. It is also one of the areas in Puerto Princesa City with large tracts of lowland rice fields due to its almost flat terrain Its water resources include Inagawan River with an estimated

catchment area of 15,592 hectares. The Inagawan River provides a good source of irrigation water, making it a major rice producer in Puerto Princesa City.

Based on the Puerto Princesa City Government's Community-Based Monitoring Survey (CBMS) conducted in 2009, the village had a total of 351 households and a population of 1,454 divided into 756 (52.0%) males and 698 (48.0%) females. On the other hand, the average household size is comprised of 4 members while the population density is 2.04 per ha (City Government of Puerto Princesa, 2009).

With regards to religion, 90% of the population is Roman Catholic while the remaining 10% is divided into Protestant, Baptist, and Born Again Christian religious groups The presence of a public elementary and a public high school within the village contributes to a high literacy rate. As such, 568 male and 541 female of the population (10 years old and above) are literate (Dept. of Interior and Local Government (DILG), 2009).

Majority of the population are engaged in farming (60%). Other sources of income are employment in government and private institutions and entrepreneurial activities (25%) and fishing (15%) (DILG, 2009). The following matrix shows the residents' various sources and ranges of monthly income:

Sources of Income	Income (PhP)
Government Employment	9,000.00 – 15,000.00
Business (e,g. sari-sari store)	7,000.00 – 9,000.00
Farming	6,000.00 – 8,000.00
Fishing	5,000.00 – 7,000.00

Source: Inagawan Barangay Profile (DILG, 2009)

At present, the total registered fisher folks are 93, of whom 48 are full time and 45 are part time. These are composed of fishermen, gleaners, and fish vendors. The fish catch of the village is on a downward trend since 2010 due to competition from fishermen coming from nearby municipalities of Aborlan and Narra as alleged by the locals. However, fish production is also affected by natural calamities such as typhoons that usually affect the area during the latter half of the year thereby restricting the fishermen from fishing. Majority of the fishermen utilized hook and line and gill net while others used fish pots, fish corral, and

speargun (Puerto Princesa City Agriculture Office, 2012; Puerto Princesa City Government, 2007).

The village's 22 ha of mangrove area function as buffer along the shore and estuarine areas, aside from serving as breeding and nursery grounds for various marine organisms. Sea grass, on the other hand, is located on the southeastern waters of the village and has 50% expanding vegetation cover. Grazing marks of dugong were found on the sea grass bed indicating their presence in the area. Moreover, the marine waters in front of Barangay Inagawan are inhabited by rare and threatened dolphins such as the bottlenose dolphin (*Tursiops truncatus*) and the long-snouted spinner dolphin (*Stenella longirostris*). The presence of these dolphins in the area led to the development of a dolphin watching project City Government of Puerto Princesa, 2007). Some of the identified successes in the coastal management include mangrove conservation along the riverbank and the maintenance of coastal cleanliness (City Government of Puerto Princesa, 2011).

To help the village in addressing the needs of its constituents, different agencies and associations provide support by establishing projects or extending technical assistance. Some of these associations and agencies are Charity Women's Foundation (CWF), Rural Improvement Club (RIC), Farmers Association, 4H Club, Barangay Fisheries and Aquatic Resources Management Council (BFARMC), and Senior Citizens Association. The agencies that have been providing services to the village are the City Social Welfare and Development, City Agriculture Office, City Tourism Office, City Health Office, City Veterinary Office and Bantay Puerto Program of the City (City Government of Puerto Princesa, Socioeconomic Profile 2007; City Agriculture Office, 2009; DILG, 2009).

Presently, the Office of the City Agriculture provides extension services such as farm inputs in crop production and capacity building training to organizations such as the BFARMC. The agency also issues fishermen's identification cards based on the Registry of Fishers that is mandated under RA 8550 or the Fisheries Code of 1998. Other programs implemented in the village include land preparation services through the Tractor Pool and deployment of equipment to assist in irrigation development. Trainings to improve farm productivity are also done especially in rice production and other plantation crops such as cacao and vegetable production. Moreover, information dissemination about existing fishery

laws and ordinances are also conducted in the community especially to fisher folks. In addition, the City Agriculture Office offers assistance in empowering farm youth and rural women in the area through the organization of 4H club and Rural Improvement Club.

The City Veterinary Office is tasked to provide technical services pertaining to the raising of livestock, poultry, and other domestic animals. On the other hand, the City Health Office has available programs on the development and improvement of community health education as well as to motivate, encourage, and improve community participation in health activities (City Government of Puerto Princesa, 2012). One satellite clinic was established in the village to cater to the health needs of the community as well as the constituents of the nearby village. On the other hand, the Bantay Puerto Program ensures proper utilization of the resources and that all the activities pertaining to the environment are in accordance with the existing laws. Conversely, the City Tourism Office helps in the development of tourism sites and extends assistance to the local community in the management of these sites. In addition, the City Social Welfare and Development Office also have socio-civic programs that can be availed by the residents of the community. These programs include the following: aid to individuals in crises, services for minors, practical skills development, self-employment assistance, disaster relief assistance, stress debriefing, training of village disaster coordinating councils (relief committee), Unlad Kabataan, comprehensive and integrated delivery of social services, issuance of PhilHealth cards, and strengthening/training of the barangay council for the protection of children in Puerto Princesa City (City Government of Puerto Princesa, 2012).

2.2   Methodology

The overall methodology and/or general procedure for training, field data collection and data analysis followed the SocMon methodology (Bunce and Pomeroy 2000, Bunce et al. 2003). SocMon is "a set of guidelines for establishing a socioeconomic monitoring program at a coastal management site in Southeast Asia" in order to gain an understanding of the social, cultural, economic, and political characteristics and conditions of individuals, households, groups, and communities (Bunce and Pomeroy, 2003).   The SocMon process basically follows three major steps. The first part was advance preparation that included

defining the objectives of SocMon, establishing the SocMon team and preparing the logistics. The second part was data collection, which was the generation of field data whereas three complementary research methods were employed namely, household interview (HHI), key informant interview (KII), and focused group discussions (FGD). The third part was analysis of the gathered qualitative and quantitative data, while communication consisted of disseminating the results to the relevant stakeholders.

The SocMon methodology provides a standardized set of 32 indicators and 28 indicators using key informant/secondary source and household interviews, respectively. Household interview indicators are categorized into household demographics (9), coastal and marine activities (5), attitudes and perceptions (13), and the material style of life (1). A mix of both quantitative and qualitative data arises out of undertaking a SocMon community-level survey using all or subsets of these 28 indicator variables. The results are summarized with the end view of translating data into useful information for any or all of the following purposes: (1) identifying threats, problems, solutions, and opportunities; (2) determining the importance, value, and cultural significance of resources and its uses; (3) assessing positive and negative impacts of management measures; (4) assessing how the management body is doing (management effectiveness); (5) building stakeholder participation and appropriate education and awareness programs; (6) verifying and documenting assumptions of socioeconomic conditions in the area, community dynamics and stakeholder perceptions; and (7) establishing baseline household and community profile.

The main purpose of undertaking the SocMon in Inagawan is to establish the necessary socioeconomic baseline information needed for establishing marine sanctuaries and for resource use planning by communities. For the four study sites, all 60 key informant (KI) and household (HH) indicators were chosen and utilized to obtain the necessary information required by the communities for planning and decision–making. These variables were chosen after a consultation with community leaders/site managers and other key stakeholders to ensure the responsiveness of the research variables to the local conditions.

The process/means of data collection involved extracting data from both primary and secondary sources. In addition to a review of available documents such as but not limited to

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village profiles, municipal statistics, and relevant national reports, data gathering instruments were utilized to collect and cross-validate data. Primary data were collected in the field to complement secondary data as well as to fill identified gaps. Primary data collection took place through the development and administration of household questionnaire survey and through individual/group interview of key informants (KIs). The selected key informants (KIs) were individuals who, because of their position, experience and/or knowledge, provided insights into the larger population. The KIs chosen included local leaders, community elders, coastal managers, representatives of non-governmental organizations and policy makers. Individual KIIs were conducted to collect useful baseline data, as well as to validate the primary and secondary data collected through other methods. The FGDs, on the other hand, were group interviews designed to gather/validate both questionnaire and KII data for the baseline. Focused group participants included fishers, tourist operators, community elders, farmers, and NGO representatives present in the community. The socioeconomic household surveys collected data directly from the household head, usually the husband or wife in the family, through face-to-face interviews.

Systematic sampling was employed to randomly select the sample households thereby ensuring representatives of the population, with the sampling interval computed as the quotient of the population size divided by the desired sample size. The list of households was used as the sampling frame for Barangay Inagawan. From the population of 351 households, a systematic random sample of 115 households was drawn. This sample size is 32.8% of the household population, and is comprised of 495 individuals. Two key informant interviews and two focus group discussions were also conducted during the research.

The SocMon household survey was conducted by trained enumerators while the team statistician supervised the development of the database, encoding, and data analysis. Results of the surveys were then presented to the community and other stakeholders for validations. After the validations were completed, the technical reports for each village were finalized. Some of these reports will be translated into layman's language, such as policy briefs. Appropriate reports were also disseminated to the relevant stakeholder groups so that they may use the research results for planning and adaptive management.

2.3   Results and Discussion

2.3.1   Household Demographics

Household demographics relate to size, gender, and educational attainment of household members (Table 1 and Table 2). Out of the 115 households surveyed, 62 (53.9%) had four to six members while about a third had three or less. Though half of the households had at most 4 members, the other half had greater than 4, making the typical household size around 4 to 5 members. There are slightly more males (53%) than females in the community. About 40% of the residents are less than 19 years old while 15% are aged 50 years and above. The median age is 25 which is lower than the mean age of 28.40, confirming that the distribution of ages is positively skewed; that is, there are more younger people and fewer older people in the community. Only 13.1% were born outside the province, with 63.7% having been born in the community. For those beyond the school-age population (aged 16 years and below), 45.9% were last enrolled in or graduated from high school, 22.9% did not go beyond grade six and 17.6% have had some years of college education. Only 10% are college graduates and very few (2.7%) had vocational-technical education.

Table 1. Household demographic characteristics in Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Demographic Characteristic	Frequency	Percentage
Household Size		
1 to 3 members	38	33.0
4 to 6 members	62	53.9
7 to 9 members	13	11.3
10 or more members	2	1.7
Gender		
Male	266	53.4
Female	232	46.6
Age (as of last birthday)		
0 to 9 years	90	18.1
10 to 19 years	115	23.1
20 to 29 years	66	13.3
30 to 39 years	76	15.3
40 to 49 years	73	14.7
50 to 59 years	41	8.2
60 to 69 years	22	4.4
70 years and above	12	2.4
No response	3	0.6
Highest Educational Attainment		
(for household members > 16 years)		
No formal schooling	5	1.6
At most grade 4	17	5.4
At most grade 6/elementary grad	51	16.1
At most 3rd year high school	40	12.6
At most 4th year/high school grad	106	33.4
College undergraduate	56	17.7
College graduate	33	10.4
Vocational/technical graduate	9	2.8
Birthplace		
Barangay locale	317	63.7
Municipal locale	75	15.1
Provincial locale	39	7.8
Regional locale	11	2.2
Other regions in Luzon	23	4.6
Other regions in Visayas	16	3.2
Other regions in Mindanao	5	1.0
No response	12	2.4

Table 2. Summary of quantitative indices for household size and age in Barangay Inagawan, Puerto Princesa City, Philippines (n =155).

Statistical Measure	Household Size	Age (in years)
Total Number	115 households	495 individuals
Median	4	25
Mean	4.3	28.4
Standard Deviation	1.9	19.1
Skewness	0.6	0.5

The community is predominantly Roman Catholic with a very small 5.4% belonging to other religions (Table 3). In terms of ethnicity, about 12% belongs to the Tagbanua tribe, which is an indigenous group in the village, 41% belongs to other ethnic groups within the province, while a third does not identify itself to a distinct ethnic group, suggesting generations of mixed ethnic offspring. This is also reflected in the preponderance of Tagalog as the *lingua franca* or primary language spoken even as it is not an ethnic language in the research site.

Table 3. Household socio-cultural characteristics in Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Socio-Cultural Characteristic	Frequency	Percentage
Religion		
Roman Catholic	471	94.6
Iglesia ni Kristo	6	1.2
Born-again Christian	6	1.2
Baptist	13	2.6
Ethnic Membership		
Ethnic group within the locality	59	11.8
Ethnic group within the province	207	41.6
Ethnic group within the region	1	0.2
Ethnic group within Luzon	32	6.4
Ethnic group within Visayas	34	6.8
Ethnic group within Mindanao	3	0.6
No response/None	162	32.5
Primary Language Spoken		
Tagalog	444	88.8
Cuyunin	44	8.8
Cebuano	7	1.4
No response/missing	3	0.6

2.3.2 Household Occupations and Income Sources

A big group (121 or 38.1%) of those who are 16 years old and above is not regularly engaged in any occupational activity (Table 4). For those who are working, close to half (88 or 44.7%) is engaged in farming as their primary or secondary occupation, making it the largest occupational group. Fishing ranks as the second largest occupational group with a much lower 23.4% engaged in it. The other sizable occupational groups are self-employed/small businessmen (20.8%) and laborer/construction workers (16.2%).

Table 4. Primary and secondary occupations of household members* in Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Occupation Category	Primary		Secondary		Total/Combined	
	No.	%	No.	%	No.	%
Fishing	36	18.3	10	5.1	46	23.4
Farming	69	35.0	19	9.6	88	44.7
Regular government employment	8	4.1			8	4.1
Private professional employment	11	5.6			11	5.6
Laborer/construction worker	19	9.6	13	6.6	32	16.2
Self-employed/small business	27	13.7	14	7.1	41	20.8
Animal raising	7	3.6	8	4.1	15	7.7
Singles making	13	6.6	4	2.0	17	8.6
Tricycle driver	5	2.5			5	2.5
Others	2	1.0	4	2.0	6	3.0
Sub-total	197	100.0	71	36.0		
No occupation/no information	121	38.1				
Total	318	100.0				

*For those aged 16 years and above

Since the main occupation in the community is farming, it is not surprising that 40.9% of the households rely on farming as their primary source of income, followed by fishing (19.1%) and self-employment/small businesses (13.9%) (see Table 5). Almost 70% of the households have a secondary source of income, mostly on self-employment/small business, farming, laborer/construction worker, and shingles making. Overall, 53.9% of the households rely on farming either as a primary or secondary source of income. This group is twice as much as those whose primary or secondary source of household income is fishing (27.0%).

Table 5. Most important income sources of households Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Source of Income	Primary		Secondary		Total/ Combined	
	No.	%	No.	%	No.	%
Pension	1	0.9			1	0.9
Local remittance from relatives	1	0.9			1	0.9
Foreign remittance from relatives	0	0.00			0	0.00
Fishing	22	19.1	9	7.8	31	27.0
Farming	47	40.9	15	13.0	62	53.9
Regular government employment	6	5.2	3	2.6	9	7.8
Private professional employment	3	2.6	1	0.9	4	3.5
Laborer/construction worker	10	8.7	15	13.0	25	21.7
Self-employed/small business	16	13.9	17	14.8	33	28.7
Animal raising	3	2.6	13	11.3	16	13.9
Singles making	5	4.3	7	6.1	12	10.4
None	1	0.9				
Total	115	100.00	80	69.57		

Due to the methodological difficulties of measuring household income, SocMon does not make any attempt to measure it but instead substitutes the variable "material style of life" as a rough measure of the economic status of the households. The measure for material style of life is an aggregate ordinal value derived from scoring the type of the household's residential structure with respect to materials used for roof, structural walls, windows, and floor (Table 6). Observations of the residential dwellings of the sample households show that most are predominantly made of tin/galvanized iron (GI) roofs, thatch/bamboo walls and windows, and cement floors. Overall, about 60% of the households have very low or low material style of life as reflected in their use of light materials such as bamboo and nipa in their residential dwellings. It can therefore be inferred that majority of the households are not economically well off if the basis to be used is the materials that they used for their houses. Yet it is also noted that close to a third (27.8%) owned a land-based motor vehicle, 18.3% possessed a banca and almost half (48.7%) had a television set.

Table 6. Material style of life in Barangay Inagawan, Puerto Princesa City, Philippines (n=115).

Material Style of Life	No.	%
Type of Roof:		
Thatch/nipa	42	37.8
Thatch/bamboo	7	6.3
Tin/GI sheet	62	55.9
Missing	4	0.0
Type of outside structural walls		
Thatch/nipa	11	9.9
Thatch/bamboo	52	46.8
Wood/plywood	12	10.8
Brick/concrete	35	31.5
Tiles	1	0.9
Missing	4	
Windows:		
Open	11	10.0
Thatch/bamboo	44	40.0
Wooden	28	25.5
Steel bars	9	8.2
Glass	18	16.4
Missing	5	
Floor		
Dirt	9	7.8
Bamboo	40	34.8
Cement	55	47.8
Wooden	6	5.2
Missing	5	4.3
Other Household Assets:		
2/3/4-wheel Motor Vehicle	32	27.8
Banca	21	18.3
Computer	5	4.3
Refrigerator	30	26.1
Television set	56	48.7
Aggregate Ratings		
4 - 8: Very low	46	42.2
9 - 12: Low	19	17.4
13 – 16: High	43	39.5
17 – 20: Very High	1	0.9

2.3.3 Coastal and Marine Activities

The coastal marine activities in Barangay Inagawan are comprised of fishing and non-fishing activities (Table 7). Fishing activities are capture fisheries in nature while non-fishing activities identified are nipa shingles making, farming, and animal raising. Fishermen use various devices and methods to catch fish such as push net for milkfish fry gathering, beach seine, hook and line, multiple handline, gillnet, crab pot and squid jigger. Refer to Appendices 1 and 2 for the local names of the fishing gears and marine species caught. Most of the catch sold both within and outside the village while smaller portions are left for household consumption.

Table 7. Household coastal and marine activities in Barangay Inagawan, Puerto Princesa City, Philippines.

Coastal and Marine Goods and Services	Device/ Methods/ Gears Used	Household Uses	Household Market Orientation
A. Fishing			
1. Milkfish fry	Push net	Sold	within and outside the village
2. Anchovy, sardines	Beach seine	Sold consumed	within and outside the village
3. Jack, frigate mackerel, hard tail scad/trevally, spanish mackerel, catfish, shark	Hook and line	Sold consumed	within and outside the village
4. Indian mackerel, garfish, "darag-darag," halfbeak	Multiple handline	Sold Consumed	within and outside the village
5. Squid	Squid jigger	Sold Consumed	within the village
6.Indian mackerel, slipmouth, tuna, fusilier, trigger fish, short-bodied mackerel, halfbeak, roundscad, threadfin bream, rabbit fish, goat fish, "karatungan," sole fish, mullet	Gill net	Sold Consumed	within and outside the village
7. Mud crab	Crab pot	Consumed	
8. Shrimps	Gillnet	Sold Consumed	outside the village

B. Mangrove Swamp Resources Utilization			
1. Nipa leaves	Bolo	Sold; House-hold use	within and outside the village
C. Agriculture			
1. Coconuts	Bolo	Sold; house-hold use	within and outside the village
2. Vegetable (i.e. eggplants, okra, squash, bitter gourd, tomatoes)	knife/ picking with hands	Sold Consumed	within and outside the village
C. Animal Husbandry			
1. Cattle/ox	Fattening	Sold	outside the village
2. Pig	Fattening	Sold	outside the village
3. Chicken	Growing	Sold Consumed	within and outside the village

2.3.4   Attitudes towards Indirect Values of Resources

Generally, people recognize and value the direct economic benefits derived from the resources in their environment. However, SocMon looks at the community's appreciation of their coastal and other resources beyond the direct economic benefits and from an ecosystem perspective. Hence, eight Likert-type item statements were asked pertaining to their attitudes towards non-market and non-use values of coastal resources (Table 8 and Table 9). Strong agreement indicates most positive attitude and is given a score of 5 while the lowest score of 1 is given to a response of strong disagreement. The first three items focus on the indirect non-market values of coastal resources: (1) importance of reefs as protection against storm waves ($\bar{x} = 4.7$); 2) contribution of corals to fishing ($\bar{x} = 4.62$); and 3) protection of mangroves for fishery ($\bar{x} = 4.6$). The frequencies and mean ratings indicate that people's attitudes are generally very positive with respect to the indirect non-market contribution of mangroves and corals to fishery. The lowest ratings were given to items pertaining to existence non-use values such as importance of corals beyond fishing and diving ($\bar{x} = 4.2$), restriction of fishing in certain coral and fish habitats ($\bar{x} = 4.22$), and value of sea grass ($\bar{x} = 4.09$). It can be inferred that people have a positive though lower appreciation of the existence non-use values of resources but a higher appreciation of their

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bequest values. The mean rating scores for items on bequest values of resources are 4.69 (wanting future generations to enjoy the mangroves and coral reefs) and 4.37 (restricting development in some coastal areas so that future generations will have natural environments). The frequencies and means of aggregate ratings for the three types of non-market values show that the residents have generally positive attitudes, with highest appreciation of the resources' indirect non-market values and lowest appreciation of their existence non-use values (Table 10 and Table 11).

Table 8. Attitudes towards non-market and non-use values of coastal resources at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Item Statement	Response Options*					No Response
	SD	D	NAD	A	SA	
Reefs are important for protecting land from storm waves		1 (0.9)	6 (5.2)	19 (16.5)	88 (76.5)	1 (0.9)
In the long run, fishing would deteriorate if we cleared the corals			7 (6.1)	29 (25.2)	78 (67.8)	1 (0.9)
Mangroves are to be protected so that we will have fish to catch		1 (0.9)	7 (6.1)	29 (25.2)	77 (67.0)	1 (0.9)
Corals are only important for fishing and diving (-)	67 (58.3)	24 (20.9)	11 (9.6)	3 (2.6)	9 (7.8)	1 (0.9)
I want future generations to enjoy the mangroves and coral reefs	1 (0.9)	1 (0.9)	3 (2.6)	22 (19.1)	87 (75.7)	1 (0.9)
Fishing should be restricted in certain areas to allow fish and coral to grow	7 (6.1)	3 (2.6)	12 (10.4)	28 (24.3)	64 (55.7)	1 (0.9)
We should restrict development in some coastal areas for future generations to have natural environments	2 (1.7)	2 (1.7)	11 (9.6)	36 (31.3)	63 (54.8)	1 (0.9)
Sea grass beds have no value to people (-)	74 (64.3)	13 (11.3)	6 (5.2)	9 (7.8)	12 (10.4)	1 (0.9)

*Statements are rated on a 5-point scale with the following options: SA – Strongly Agree; A – agree; NAD – neither agree nor disagree; D – Disagree; and SD – Strongly Disagree.

Note: Figures enclosed in parentheses are the corresponding percentages for each response category across an item.

Table 9. Means and standard deviations of rating scores of attitudes towards non-market and non-use values of coastal resources at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Item Statement	Median	Mean	SD
Reefs are important for protecting land from storm waves	5	4.7	0.6
In the long run, fishing would deteriorate if we cleared the corals	5	4.6	0.6
Mangroves are to be protected so that we will have fish to catch	5	4.6	0.6
Corals are only important for fishing and diving (-)	5	4.2	1.2
I want future generations to enjoy the mangroves and coral reefs	5	4.7	0.7
Fishing should be restricted in certain areas to allow fish and coral to grow	5	4.2	1.1
We should restrict development in some coastal areas for future generations to have natural environments	5	4.4	0.9
Seagrass beds have no value to people (-)	5	4.1	1.4

*Statements are rated on a 5-point scale with the following options and corresponding scores: SA – Strongly Agree (5); A – agree (4); NAD – neither agree nor disagree (3); D – Disagree (2); and SD – Strongly Disagree (1). Scoring is reversed for negatively-stated items.
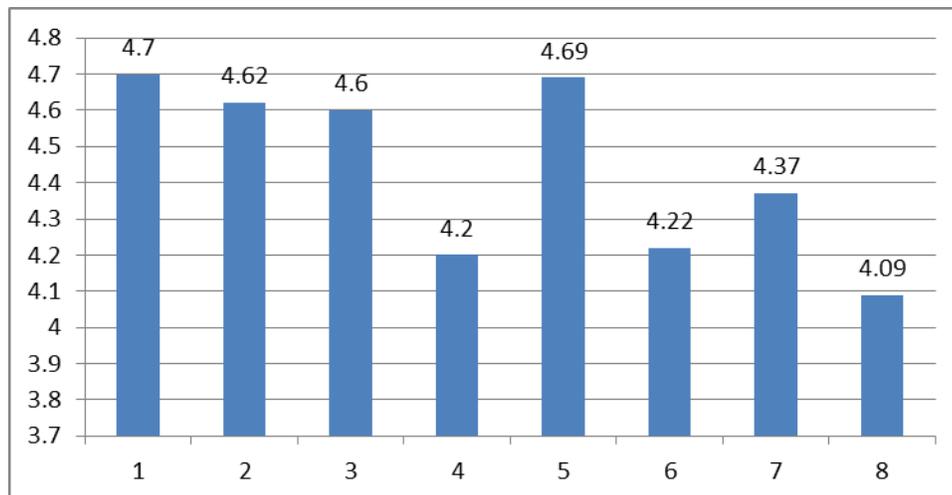
Figure 2. Mean ratings for items on attitudes towards non-market and non-use values (n=115).
Note: The numbers on the horizontal axis refer to the following item statements:
        1 - The reefs are important for protecting land from storm waves.
        2 - In the long run, fishing would deteriorate if we cleared the corals.
        3 - Unless mangroves are protected, we will not so that we will have fish to catch.
        4 - Coral reefs are only important if you fish or dive (reversed scoring).
        5 - I want future generations to enjoy the mangroves and coral reefs
        6 - Fishing should be restricted in certain areas even if no one ever fishes in those
            Areas just to allow the fish and coral to grow
        7 - We should restrict development in some coastal areas so that future generations
            will be able to have natural environments.
        8 - Seagrass beds have no value to people (reversed scoring).

Table 10. Aggregate rating scores on attitudes towards non-market and non-use values of coastal resources at Barangay Inagawan, Puerto Princesa City, Philippines, (n = 115)

Classification of attitude statements	Freq	%
Indirect non-market value		
1.00 – 1.50 : Very negative	0	0.0
1.51 – 2.50 : Negative	0	0.0
2.51 – 3.50 : Neither positive nor negative	0	0.0
3.51 – 4.50 : Positive	32	23.7
4.51 – 5.00 : Very positive	82	71.3
No response	1	0.9
Existence non-use value		
1.00 – 1.50 : Very negative	0	0.0
1.51 – 2.50 : Negative	10	8.7
2.51 – 3.50 : Neither positive nor negative	10	8.7
3.51 – 4.50 : Positive	44	38.2
4.51 – 5.00 : Very positive	50	43.5
No response	1	0.9
bequest non-use value		
1.00 – 1.50 : Very negative	0	0.0
1.51 – 2.50 : Negative	2	1.7
2.51 – 3.50 : Neither positive nor negative	9	7.9
3.51 – 4.50 : Positive	45	39.1
4.51 – 5.00 : Very positive	58	50.4
No response	1	0.9
Mean rating for attitudes towards non-market and non-use values of coastal resources		
1.00 – 1.50 : Very negative	0	0.0
1.51 – 2.50 : Negative	0	0.0
2.51 – 3.50 : Neither positive nor negative	5	4.3
3.51 – 4.50 : Positive	60	52.1
4.51 – 5.00 : Very positive	49	42.6
No response	1	0.9

Table 11. Means and standard deviations of aggregate rating scores on attitudes towards non-market and non-use values of coastal resources at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Value Classification	Median	Mean	Std Dev
Indirect non-market value	5.0	4.6	0.5
Existence non-use value	4.3	4.2	0.8
Bequest value	5.0	4.5	0.6
Over-all attitude towards non-market and non-use values of resources	4.5	4.4	0.5

2.3.5 Perceived Resource Conditions

On a scale of 1 to 5 with 1 as "very bad" and 5 as "very good", community residents who felt that they had enough knowledge about their resources mostly gave ratings of 4 and 5 indicating that such were in good to very good conditions (Table 12). There were a number of residents who did not rate a specific resource and instead answered "don't know" or "not applicable"; these were usually non-users of the specific resource or individuals whose residences were geographically far from the specific resource's location. Hence, they considered themselves without enough knowledge about the condition of the resource mentioned.

For those who responded, 21.8% perceived their terrestrial forest to be in very bad to neither good nor bad condition thus resulting to the lowest mean rating of 3.22 which fell into the "neither good nor bad" category. Residents generally perceive their fresh water resources (ground water and springs) to be in very good condition as indicated by the highest mean ratings of 4.7 and 4.6, respectively. The computed net ratings in the last column of Table 12 provides the percentage of individuals who perceive the said resource condition to be good/very good rather than bad/very bad. Hence, the large positive net ratings reflected in Table 12 attest that more residents perceive their resources to be good compared to those who found them bad. The lowest net rating is for upland forest, there is only 22.1% more residents who perceived their upland forest to be good than those who found them bad. This is also echoed by the mean rating of perceived upland forest condition which is lowest at 3.2 (Table 13). Residents' perceptions of upland forest condition is also most varied (SD = 1.3) compared to the other resources. With the exception of upland forests, all other resources had mean ratings of at least 4.0. Among coastal resources, the highest mean ratings were computed for beach (x = 4.42) compared to that of mangroves ($\bar{x}$ = 3.9), seagrass ($\bar{x}$ = 4.30), and coral reefs ($\bar{x}$ = 4.11).

Table 12. Perceptions of resource conditions at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Resource	Perceived Resource Condition*					Don't know	Not Apply	Net Rating**
	VB	B	NGB	G	VG			
Mangroves	3 (2.6)	4 (3.5)	12 (10.4)	33 (28.7)	28 (24.3)	21 (18.3)	14 (12.2)	67.5%
Coral reefs		4 (3.5)	18 (15.7)	25 (21.7)	35 (30.4)	26 (22.6)	7 (6.1)	68.2%
Upland forests	7 (6.1)	10 (8.7)	8 (7.0)	22 (19.1)	7 (6.1)	11 (9.6)	50 (43.5)	22.1%
Seagrass	1 (0.9)		12 (10.4)	31 (27.0)	40 (34.8)	19 (16.5)	12 (10.4)	83.3%
Beach	1 (0.9)	3 (2.6)	6 (5.2)	35 (30.4)	59 (51.3)	5 (4.3)	6 (5.2)	86.5%
Spring	1 (0.9)			18 (15.7)	34 (29.6)	10 (8.7)	52 (45.2)	96.1%
River/ Creeks	1 (0.9)	1 (0.9)	6 (5.2)	32 (27.8)	38 (33.0)	5 (4.3)	32 (27.8)	87.0 %
Ground water	2 (1.7)			20 (17.4)	70 (60.9)	1 (0.9)	22 (19.1)	95.8%

*Each community resource is rated on a 5-point scale with the following options and
 corresponding scores: VG – Very good (5);G – good (4); NGB - neither good nor bad (3);
 B – bad (2); and VB – very bad (1).
 **Net Rating =   % freq [(VG + G)] – % freq [(VB + B)]

Table 13. Means and standard deviations of ratings on perceived resource conditions at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Resource	Valid Responses	Median	Mean	Std Dev
Mangroves	80	4	4.0	1.0
Coral reefs	82	4	4.1	0.9
Upland forests	54	4	3.2	1.3
Seagrass	84	4	4.3	0.8
Beach	104	5	4.4	0.8
Spring	53	5	4.6	0.7
River/creeks	78	4	4.4	0.8
Ground water	92	5	4.7	0.7

*Each community resource is rated on a 5-point scale with the following
  options and corresponding scores: VG – Very good (5);G – good (4); NGB
  – neither good nor bad (3); B – bad (2); and VB – very bad (1).
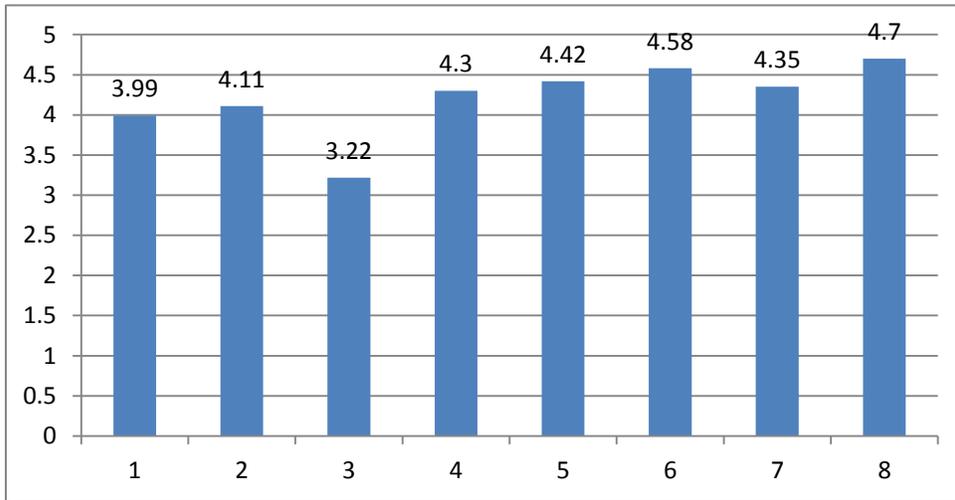
Legend: 1- Mangroves; 2- Coral reefs; 3 - Upland forests; 4 - Seagrass; 5 - Beach;
6 - Spring; 7 - River/creeks; 8 - Ground water

Figure 3. Mean ratings of perceived resource conditions at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

2.3.6 Perceived Threats to Resources

Since community residents are usually the direct users of the resources, they are presumed to be knowledgeable not only on the conditions of their resources but also on their associated threats. Hence, an open ended-question soliciting the threats to each of the community resource, as perceived by them, was asked. Similar to the question on perception of resource conditions, there were respondents who either answered "don't know" or "not applicable", which again indicated a lack of knowledge about the specific resource (Table 14). These were mostly non-users or residents who live far from the resource. It is also noticeable that a sizeable number of residents answered "none" when they were asked of the threats to the natural resources in their community, ranging from 25.2% (for upland forests) to 61.7% (for groundwater). The preponderance of this response could be interpreted in two ways: (1) the resource may be well protected such that its threats have been eliminated, or (2) residents may believe in the infiniteness of the resource and that there can never be any threat to its existence.

No options were given to the respondents when each was asked of what he/she perceived to be a threat to a given resource, in order to solicit and determine the range of perceived threats, whether valid or not. This was also done to avoid getting a response set,

the tendency of a respondent to agree that something is a threat because it was mentioned by the enumerator. The enumeration of all perceived threats cited by the community residents for each resource is provided in Table 14 to Table 21. These tables provide a comprehensive listing of at most three perceived threats for each resource with its classification as primary, secondary, or tertiary. If any threat is cited as any 2 or 3 of the three levels of threats, the frequencies as a primary, secondary, or tertiary threat are combined with the highest frequencies ranked, to get, at most, five top threats.

Palawan was declared as a mangrove swamp and forest reserve in 1981. Yet a number of community residents still consider cutting mangrove trees for household or commercial use as a major threat, along with clearing and charcoal making (Table 14). One possible explanation is that though these activities are illegal, they may have been undertaken in the community on a sporadic or small-scale basis. Therefore, they still pose a threat to the mangrove resources. Apparently, mangroves are used by residents in their household principally as housing material and as fuel, either as firewood or charcoal.

Table 14. Perceived threats to mangroves Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	34 (29.6)	97 (84.3)	98 (85.2)		
Cutting for household use	29 (25.2)	1 (0.9)	2 (1.7)	32 (27.8)	1
Cutting for commercial use	10 (8.7)	4 (3.5)		14 (12.2)	2
Clearing	12 (10.4)	1 (0.9)		13 (11.3)	3
Charcoal making	7 (6.1)	5 (4.3)	1 (0.9)	13 (11.3)	4
Conversion into fish pond	1 (0.9)		1 (0.9)	2 (1.8)	5
Natural phenomenon (typhoons, big waves)	1 (0.9)			1 (0.9)	6
Disease/infestation of mangroves		1 (0.9)		1 (0.9)	6
Not applicable	6 (5.2)	4 (3.5)	4 (3.5)		
Don't know	15 (13.0)	1 (0.9)	7 (6.1)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

The most often cited threat to coral reefs by the residents was the use of destructive fishing methods such as cyanide/compressors and dynamites (Table 15). Another threat cited, illegal fishing, may also be referring to these practices. These responses indicate the residents' heightened awareness of the detrimental side effects of such fishing methods on coral reef conditions. To them, coral reef destruction is related to fisheries rather than the actual harvesting of corals (for household/use and for mining) which is cited as a primary threat by only 7 (6.1%) respondents.

Table 15. Perceived threats to coral reefs at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	40 (34.8)	101 (87.8)	105 (91.3)		
Cyanide/compressor fishing	24 (20.9)	5 (4.3)		29 (25.2)	1
Illegal fishing	8 (7.0)	4 (3.5)	2 (1.7)	14 (12.2)	2
Dynamite/blast fishing	7 (6.1)	3 (2.6)	1 (0.9)	11 (9.6)	3
Coral gathering for HH/commercial use	4 (3.5)			4 (3.5)	4
Clearing/mining/digging	3 (2.6)			3 (2.6)	5
Coral bleaching			3 (2.6)	3 (2.6)	6
Natural phenomenon (typhoon, waves)			2 (1.7)	2 (1.7)	7
Others: over-fishing	1 (0.9)			1 (0.9)	8
Others: trawl fishing			1 (0.9)	1 (0.9)	9
Not applicable	3 (2.6)	1 (0.9)	1 (0.9)		
Don't know	25 (21.7)	` (0.9)			

Note: Figures enclosed in parentheses are the corresponding percentages for each category

The Strategic Environment Plan for Palawan Law (RA 7611) enacted in 1992 declared a log ban for the whole province of Palawan, including Puerto Princesa City.

Though the local and national government agencies work together to implement this provision of the law, it appears that at the community level, residents still perceive that upland forests are threatened the most by the demand for wood, either for household or commercial use, which fuels the cutting of trees and/or illegal logging (Table 16). Similar to mangroves, the household need for charcoal was also seen as a threat to upland forests.

Table 16. Perceived threats to upland forests Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	29 (25.2)	90 (78.3)	101 (87.8)		
Charcoal making	10 (8.7)	9 (7.8)	3 (2.6)	22 (19.1)	1
Cutting trees for household use	16 (13.9)	2 (1.7)		18 (15.6)	2
Illegal logging	10 (8.7)	2 (1.7)	1 (0.9)	13 (11.3)	3
Cutting trees for commercial use	6 (5.2)		2 (1.7)	8 (6.9)	4
Conversion into residential settlements	5 (4.3)	2 (1.7)		7 (6.0)	5
Slash and burn farming (swidden agriculture)	2 (1.7)	3 (2.6)	1 (0.9)	6 (5.2)	6
Natural phenomenon (typhoons)			1 (0.9)	1 (0.9)	8
Others: quarrying	2 (1.7)			2 (1.7)	7
Not applicable	31 (27.0)	5 (4.3	5 (4.3)		
Don't know	4 (3.5)	1 (0.9)	1 (0.9)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

It has been noted earlier that community residents have the least appreciation for the indirect and non-use values of seagrass (refer to Table 8 and Table 9) in comparison with other coastal resources. Hence, it is not surprising that 48.7% thought that there were no threats to seagrass and another 29.6% did not know any possible threat to seagrass (Table 17). They may not have been paying any attention to this resource, thinking that sea grasses do not have economic value or a key role in the coastal ecosystem. Perceived threats by the

few (20 or 17.4%) who responded to this question are clearing/mining/digging, gathering for household use, and fishing using dragnets/gleaning.

Table 17. Perceived threats to seagrass Barangays Inagawan, Puerto Princesa City, Philippines (n = 115).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	56 (48.7)	100 (87.0)	101 (87.8)		
Clearing/mining/digging	7 (6.1)	1 (0.9)		8 (7.0)	1
Gathering for household use	3 (2.6)	4 (3.5)	1 (0.9)	8 (7.0)	2
Illegal fishing activities	2 (1.7)	2 (1.7)	2 (1.7)	6 (5.1)	3
Fishing using dragnets/gleaning	3 (2.6)	1 (0.9)	1 (0.9)	5 (4.4)	4
Pollution/dumping of garbage	3 (2.6)			3 (2.6)	5
Dynamite/blast fishing	2 (1.7)		1 (0.9)	3 (2.6)	6
Natural phenomenon (typhoon, waves)		1 (0.9)	2 (1.7)	3 (2.6)	7
Disease			1 (0.9)	1 (0.9)	8
Not applicable	5 (4.3)	1 (0.9)	1 (0.9)		
Don't know	34 (29.6)	5 (4.3)	4 (3.5)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Similar to the views on seagrass, 43.5% of the residents did not perceive any present threat to their beach (Table 18). This could mean two things: the beach may have been well protected that its threats have been eliminated, or the residents may believe that the beach is infallible and cannot be subjected to any threat. Yet the answers given by the 20 (17.4%) who did respond suggest the possibility that there might have been sand quarrying for commercial/household use, past or present. Since the beach is near residential settlements, another threat cited is pollution/garbage dumping, indicating that waste management is still an issue in the community.

Table 18. Perceived Threats to Beach at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	50 (43.5)	100 (87.0)	104 (90.4)		
Sand quarrying for commercial use	13 (11.3)		1 (0.9)	14 (12.2)	1
Pollution/dumping of garbage	11 (9.6)	1 (0.9)		12 (10.5)	2
Natural phenomenon (typhoons, big waves)	11 (9.6)			11 (9.6)	3
Sand quarrying for household use	7 (6.1)	1 (0.9)		8 (7.0)	4
Pebble/stone gathering for commercial use	3 (2.6)	2 (1.7)		5 (4.3)	5
Pebble/stone gathering for household use	1 (0.9)	3 (2.6)		4 (3.5)	6
Soil erosion from the uplands	1 (0.9)	1 (0.9)	1 (0.9)	3 (2.7)	9
Residential area expansion	2 (1.7)	3 (2.6)		5 (4.3)	7
Beach erosion/sea level rise	1 (0.9)		4 (3.5)	5 (4.4)	8
Tourist-related & resort development		1 (0.9)	1 (0.9)	2 (1.8)	
Not applicable	4 (3.5)	1 (0.9)	1 (0.9)		
Don't know	10 (8.7)	2 (1.7)	2 (1.7)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Majority (58.3%) of the respondents did not cite any perceived threat to their spring but those who did had varied answers, with water contamination having the most frequency (8 or 7.0%), which raises the possibility of some pollution and sanitation issues in the nearby areas of the spring (Table 19). Similar to springs, the residents' top perceived threats to rivers/creeks is pollution/dumping of garbage, which is again a sanitation issue (Table 20). The second ranking threat is natural phenomena, referring to heavy rains brought by typhoons and to seasonal changes when there is reduced flow of water during the summer season. Other cited threats are river bed resource extraction, sand and pebble quarrying, both for commercial and household uses, and soil erosion from the uplands.

Table 19. Perceived threats to springs Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	67 (58.3)	96 (83.5)	102 (88.7)		
Sand quarrying for commercial use	1 (0.9)	4 (3.5)		5 (4.4)	2
Pollution/dumping of garbage	2 (1.7)			2 (1.7)	5
Water contamination	8 (7.0)		1 (0.9)	9 (7.9)	1
Sedimentation	1 (0.9)		3 (2.6)	4 (3.5)	3
Deforestation/cutting of trees in watershed	1 (0.9)	1 (0.9)		2 (1.8)	5
Salt intrusion		1 (0.9)		1 (0.9)	6
Soil erosion from the uplands		1 (0.9)	2 (1.7)	3 (2.6)	4
Not applicable	28 (24.3)	2 (1.7)	2 (1.7)		
Don't know	7 (6.1)	4 (3.5)	4 (3.5)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Table 20. Perceived threats to rivers/creeks Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Perceived Threat	1st	2nd	3rd	Combined	Rank
None	55 (47.8)	98 (85.2)	104 (90.4)		
Pollution/dumping of garbage	10 (8.7)	2 (1.7)		12 (10.4)	1
Natural phenomenon (typhoons, big waves)	8 (7.0)	1 (0.9)	1 (0.9)	10 (8.8)	2
Sand quarrying for commercial use	5 (4.3)	4 (3.5)		9 (7.8)	3.5
Soil erosion from the uplands	5 (4.3)	1 (0.9)	3 (2.6)	9 (7.8)	3.5
Sand quarrying for household use	3 (2.6)	1 (0.9)		4 (3.5)	5.5
Pebble/stone gathering for commercial use	3 (2.6)	1 (0.9)		4 (3.5)	5.5
Pebble/stone gathering for household use	1 (0.9)	1 (0.9)		2 (1.8)	6
Sedimentation	1 (0.9)			1 (0.9)	8.5
Tourist- & resort-related development			2 (1.7)	2 (1.7)	7
Others: deforestation	1 (0.9)			1 (0.9)	8.5
Not applicable	13 (11.3)	1 (0.9)	1 (0.9)		
Don't know	10 (8.7)	4 (3.5)	4 (3.5)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Another related resource to springs and river/creeks is groundwater. Only 20% of the residents cited a threat to their ground water with the most often cited threat being natural phenomenon, which might be referring to seasonal changes wherein there is less ground water to tap during the summer/dry season compared to the rainy season. A few (4 or 3.5%) showed a deeper understanding, citing deforestation/cutting of trees in the watershed as a primary threat. The respondents knew that their watershed has to be kept intact to protect their aquifer.

Table 21. Perceived Threats to Ground Water Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	71 (61.7)	103 (89.6)	104 (90.4)		
Natural phenomenon (typhoons)	13 (11.3)	1 (0.9)	1 (0.9)	15 (13.1)	1
Deforestation/cutting of trees in watershed	4 (3.5)	1 (0.9)		5 (4.4)	2
Pollution/dumping of garbage	3 (2.6)	1 (0.9)	1 (0.9)	5 (4.4)	3
Tourist- & resort-related development	1 (0.9)			1 (0.9)	4
Water contamination due to sewage	2 (1.7)			2 (1.7)	5
Over-exploitation for household use		1 (0.9)	1 (0.9)	2 (1.8)	6
Not applicable	7 (6.1)	1 (0.9)	1 (0.9)		
Don't know	14 (12.2)	5 (4.3)	5 (4.3)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

Table 22 and Table 23 below provide a summary of this section by listing in ranked order the most often cited threats for each resource. Some threats were common to two or more resources, affirming that collectively, resources are interconnected and two or more resources may be facing the same threat/s. All threats for both mangroves and upland forests relate to cutting of trees for timber (household/commercial use) and charcoal making. Coral reefs are endangered by the use of destructive fishing methods such as cyanide, dynamites, and compressor. Clearing seagrass compromises its regeneration but it can also be damaged by illegal fishing activities and dragnets/gleaning. Sand quarrying is also a common threat to beaches, springs and rivers/creeks while sanitation issues, such as water contamination and dumping of garbage, are concerns for springs and rivers/creeks.

Table 22. Top perceived threats to coastal resources at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Mangroves	Coral Reefs	Seagrass	Beach
None - 29.6%	None - 34.8%	None - 48.7%	None - 43.5%
Don't know /Not applicable – 18.2%	Don't know / Not applicable – 24.3%	Don't know / Not applicable – 33.9%	Don't know / Not applicable – 12.2%
Cutting for household use	Cyanide/compressor fishing	Clearing/mining/ digging	Sand quarrying for commercial/household use
Cutting for commercial use	Illegal fishing	Gathering for household use	Pollution/dumping of garbage
Clearing	Dynamite/ blast fishing	Dynamite/illegal fishing activities	Natural phenomenon (typhoons, big waves)
Charcoal making		Fishing using dragnets/gleaning	

Table 23. Top perceived threats to non-coastal resources at Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Upland Forests	Springs	Rivers/Creeks	Ground Water
None - 25.2%	None - 58.3%	None - 47.8%	None - 61.7%
Don't know - 30.5%	Don't know - 30.4%	Don't know / Not applicable - 20.0%	Don't know / Not applicable - 18.3
Charcoal making	Water contamination	Pollution/dumping of garbage	Natural phenomenon (typhoons)
Cutting trees for household /commercial use	Sand quarrying	Natural phenomenon (typhoons, big waves)	Deforestation/cutting of trees in watershed
Illegal logging	Sedimentation	Sand quarrying for commercial use	Pollution/dumping of garbage
Cutting trees for commercial use		Soil erosion from the uplands	Tourist- & resort-related development

2.3.7 Awareness of Rules and Regulations on Resource Use

Residents are aware of rules and regulations on fishing (82.6%), mangroves (77.4%), pebble gathering (27.8%), and residential development (21.7%) (Table 24). Very few respondents expressed awareness of rules and regulations on other forms of resource use/activity such as water sports and tourist transportation, suggesting that these are not concerns that impinge on their daily economic or social lives as evidenced by the large frequencies of "don't know" and "not applicable" responses. It appears that the fishing and

mangrove rules that the residents are aware of originated primarily from the City Government of Puerto Princesa and to a lesser extent, the Barangay Council of Inagawan as attributed by the residents themselves. There were very few who said that the resource rules and regulations they were aware of were enacted at the provincial or national levels.

Table 24. Awareness of resource rules and regulations in Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Resource Used/ Activity	Awareness of Rules & Regulations				Origin of Regulation			
	None	Yes	Don't Know	Not Apply	Brgy	Mun/ City	Prov	Natl
Fishing	6 (5.2)	95 (82.6)	11 (9.6)	3 (2.6)	31 (27.0)	50 (43.5)	2 (1.7)	12 (10.4)
Mangroves	6 (5.2)	89 (77.4)	9 (7.8)	11 (9.6)	25 (21.7)	51 (44.3)	2 (1.7)	10 (8.7)
Aquaculture	17 (14.8)	21 (18.3)	22 (19.1)	55 (47.8)	10 (8.7)	10 (8.7)	1 (0.9)	
Resort/pension/hotel development	17 (14.8)	11 (9.6)	21 (18.3)	66 (57.4)	5 (4.3)	5 (4.3)	1 (0.9)	1 (0.9)
Residential development	19 (16.5)	25 (21.7)	33 (28.7)	37 (32.2)	11 (9.6)	13 (11.3)	1 (0.9)	
Watersports	23 (20.0)	7 (6.1)	19 (16.5)	65 (56.5)	2 (1.7)	3 (2.6)	1 (0.9)	2 (1.7)
Recreational climb/trek/camp	21 (18.3)	8 (7.0)	23 (20.0)	62 (53.9)	4 (3.5)	3 (2.6)		2 (1.7)
Pebble gathering	22 (19.1)	32 (27.8)	32 (27.8)	32 (27.8)	15 (13.0)	13 (11.3)	3 (2.6)	1 (0.9)
Tourist transportation	22 (19.1)	10 (8.7)	25 (21.7)	57 (49.6)	6 (5.2)	4 (3.5)		1 (0.9)
Marine transportation	26 (22.8)	17 (14.8)	25 (21.7)	45 (39.1)	13 (11.3)	4 (3.5)	1 (0.9)	1 (0.9)

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

This finding is further supported by the results in the focus group discussion (FGD) wherein the community identified some rules and regulations that pertain to the use of marine and coastal resources. These rules are mostly city regulations on illegal fishing, building constructions and sand quarrying. The FGD participants were unaware of any rules and regulations on other resource use or activities.

2.3.8   Participation in Decision Making

Because coastal management is usually a community effort entailing high engagement among residents, they were asked to rate their current and desired levels of participation in decision making on each resource activity. A 5-point scale was used with "no participation" scored as 1 and "full participation" scored as 5. The earlier observed trend that people are only concerned with resources that they use or those that affect their daily lives is again confirmed as shown in the more than 50% frequencies of "not applicable" in all items. Exceptions are those items related to fishing, mangroves, residential development, and pebble gathering. It can thus be noted that residents were consistent in their responses along this area.

The current levels of participation in decision making for these four resources/activities are quite low as can be seen in the bulk of "no participation" response though there were a few who indicated active to full participation (Table 25). The highest mean rating is only 1.6 for fishing and 1.2 for mangroves, which is indicative of very minimal participation with only very few rating themselves on the higher levels (Table 26). These results may be cultural to Filipinos since decision-making is traditionally left to the leaders. They are often regarded to be vested with the responsibility and authority by virtue of their positions, indicating that community members may not have been empowered enough for them to take it upon themselves to actively participate in decision making.

Table 25. Current and desired levels of participation in decision making in Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Activity		Rating Scores*					Not apply
		1	2	3	4	5	
Fishing	Current	67 (58.3)	6 (5.2)	11 (9.6)	5 (4.3)	9 (7.8)	13 (11.3)
	Desired	43 (37.4)	5 (4.3)	14 (12.2)	19 (16.5)	17 (14.8)	13 (11.3)
Mangroves	Current	66 (57.4)	4 (3.5)	7 (6.1)	5 (4.3)	4 (3.5)	24 (20.9)
	Desired	46 (40.0)	5 (4.3)	9 (7.8)	14 (12.2)	12 (10.4)	25 (21.7)
Aquaculture	Current	40 (34.8)	2 (1.7)	3 (2.6)	1 (0.9)	2 (1.7)	63 (54.8)
	Desired	24 (20.9)	5 (4.3)	3 (2.6)	8 (7.0)	8 (7.0)	63 (54.8)
Resort/pension/ hotel development	Current	40 (34.8)	2 (1.7)	3 (2.6)	1 (0.9)		65 (56.5)
	Desired	25 (21.7)	4 (3.5)	4 (3.5)	7 (6.1)	6 (5.2)	65 (56.5)
Residential development	Current	45 (39.1)	4 (3.5)	5 (4.3)	1 (0.9)	1 (0.9)	55 (47.8)
	Desired	27 (23.5)	3 (2.6)	7 (6.1)	10 (8.7)	9 (7.8)	55 (47.8)
Watersports	Current	36 (31.1)	1 (0.9)	4 (3.5)		1 (0.9)	69 (60.0)
	Desired	22 (19.1)	1 (0.9)	6 (5.2)	7 (6.1)	6 (5.2)	69 (60.0)
Recreational climb/trek/camp	Current	38 (33.0)	1 (0.9)	4 (3.5)			68 (59.1)
	Desired	22 (19.1)	3 (2.6)	5 (4.3)	6 (5.2)	6 (5.2)	68 (59.1)
Pebble gathering	Current	57 (49.6)	4 (3..5)	3 (2.6)	3 (2.6)	2 (1.7)	41 (35.7)
	Desired	42 (36.5)	3 (2.6)	6 (5.2)	9 (7.8)	9 (7.8)	42 (36.5)
Tourist transportation	Current	39 (33.9)	3 (2.6)	1 (0.9)	2 (1.7)		66 (57.4)
	Desired	26 (22.6)	3 (2.6)	4 (3.5)	6 (5.2)	6 (5.2)	66 (57.4)
Marine transportation	Current	40 (34.8)	3 (2.6)	3 (2.6)	4 (3.5)	2 (1.7)	59 (51.3)
	Desired	26 (22.6)	3 (2.6)	6 (5.2)	8 (7.0)	9 (7.8)	59 (51.3)

Note: Rating is on a scale of 1 – 5, with 1- no participation, and 5 - full participation

Table 26. Means and standard deviations of ratings of participation in decision making Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Resource Used/ Activity	Current Level of Participation		Desired Level of Participation	
	Mean	Std Dev	Mean	Std Dev
Fishing	1.6	1.4	2.3	1.7
Mangroves	1.2	1.2	1.8	1.7
Aquaculture	0.6	1.0	1.0	1.6
Resort/pension/hotel development	0.5	0.8	0.9	1.5
Residential development	0.7	0.9	1.2	1.7
Watersports	0.6	0.8	0.9	1.6
Recreational climb/trek/camp	0.5	0.7	0.9	1.5
Pebble gathering	0.9	1.0	1.3	1.6
Tourist transportation	0.5	0.8	0.9	1.5
Marine transportation	0.7	1.1	1.1	1.7

Yet the residents' responses as to their desired levels of participation also reflect a beginning shift from a passive to a more active involvement in decision making. It is remarkable that there are more ratings of 4/5 and fewer ratings of 1/2, suggesting a greater desire to participate among residents (Table 25 and Table 26). This is also mirrored in the higher mean ratings for desired level, particularly for fishing and mangrove management. A one-to-one correspondence of residents' current and desired levels of participation also shows that their desired levels are always higher than their current levels, and these differences between current and desired levels of participation are all statistically significant (Table 27). It is further noted that the paired correlations between residents' current and desired levels are all positive and highly significant, indicating that those who have low current levels of participation tend to also have low desired levels and vice versa. Even though there is a window of opportunity for village leaders to tap and seek greater involvement from community members who have generally expressed a greater desire to be more active in present and future decision making endeavors, greater effort needs to be exerted in order to encourage and make those who did not participate previously become actively involved in decision making.

Table 27. Comparisons of current and desired levels of participation in decision making Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Resource Use/ Activity	Paired Correlation	Paired Differences		t-value	Df	Sig. (2-tailed)
		Mean	SD			
Fishing	.647**	.712	1.34	5.58	110	.000**
Mangroves	.613**	.536	1.33	4.22	109	.000**
Aquaculture	.677**	.432	1.18	3.86	110	.000**
Resort/pension/hotel development	.646**	.414	1.12	3.91	110	.000**
Residential development	.599**	.559	1.35	4.35	110	.000**
Watersports	.678**	.405	1.13	3.78	110	.000**
Recreational climb/trek/camp	.673**	.409	1.14	3.78	109	.000**
Pebble gathering	.680**	.464	1.18	4.13	109	.000**
Tourist transportation	.666**	.378	1.11	3.58	109	.000**
Marine transportation	.725**	.414	1.14	3.83	110	.000**

* *significant at the .01 level

2.3.9 Membership in Resource Use Stakeholder Organizations

One avenue for involvement in resource use management and decision making is membership in stakeholder organizations. However, 63.5% of the households are not affiliated with such an organization, validating the earlier finding of current low levels of participation in decision making (Table 28). On the other hand, the remaining 36.5% is involved in stakeholder organizations such as BFARMC, Inagawan Kamuning Irrigators' Association (INKAISA), women associations, and irrigation-related groups (Table 29).

Table 28. Household membership in resource use stakeholder organizations Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

No. of HH members Involved	Freq	%
None	73	63.5
1	29	25.2
2	6	5.2
3	3	2.6
No response	4	3.5

Table 29. Types of resource use stakeholder organizations and membership in Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Resource use stakeholder organization	No.	%
None	73	63.5
BFARMC	15	13.1
Women's associations	7	6.2
Inagawan Kamuning Irrigators' Association	5	4.3
Agriculture-related	6	5.4
Others	9	8.1

2.3.10 Perceptions on Coastal Management Problems and Solutions

About 6 out of 10 household informants were not able to give any coastal management problem, either because they are not knowledgeable enough or do not perceive any problem related to the resource. The coastal management problems most often cited by the rest who gave at least one answer (a maximum of two problems were solicited) were those related to the use of illegal fishing methods such as cyanide, dynamite, compressor, fine mesh net (*bayakos*); overexploitation of coastal resources; competition or conflict in resources, and sanitation. Specific problems under each of these categories are enumerated in Table 30.

These specific concerns were also corroborated by the FGD results with participants saying that there are existing coastal management problems in the community. They enumerated problems related to illegal fishing such as the use of prohibited gear types by some fishermen. It can thus be inferred that though there are collaborative efforts from the different government agencies to stop destructive fishing methods through regulation and enforcement, such efforts are still inadequate and so the prohibited practices continue.

Improper waste management was also mentioned because of the non-observance of RA 9003 (Solid Waste Management Act of 2003) by some community members. Another concern brought up was resource use conflict, which was identified because of the restrictions given by private land owners to the public to access the coastal areas adjacent to their lands. In addition to this, several FGD participants also cited resource use competition, alleging that fishers from the neighboring municipality of Aborlan use the fishing grounds of

their community. Finally, lack of logistical and budgetary support to coastal resource management monitoring was mentioned as a management problem.

Table 30. Perceived coastal management problems Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Coastal Management Problems	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Livelihood	2	1.7	1	0.9	3	2.6
Mangrove cutting	2	1.7	1	0.9	3	2.6
Natural calamities	2	1.7			2	1.7
Over-exploitation of coastal resource for HH/commercial use/decrease in fish catch	12	10.4			12	10.4
Sanitation (Pollution and garbage dumping; waste management)	5	4.3	1	0.9	6	5.2
Illegal fishing methods: dynamite, cyanide, compressor, fine mesh net/beach seine)	19	16.5	3	2.6	22	19.1
Resource competition/conflict (fish corral, intrusion of transient fishers, beach encroachment	4	3.5	3	2.6	7	6.1
Governance (boats without permit, logistical problems of Bantay Dagat)	1	0.9	2	1.7	2	1.7
Food security issue (fish sold outside the barangay)	1	0.9			1	0.9
Sub-total	48	41.7			48	41.7
None	51	44.3	78	67.8	51	44.3
Don't know	6	5.2	5	4.3	4	4.2
Not concerned/no answer	10	8.7	21	18.3	10	18.3

Whenever a coastal management problem is raised by the respondent, a follow-up question is asked to elicit the respondent's perceived corresponding solution/s with at most, two solutions solicited. Though majority (62 or 53.9%) failed to provide solutions, 53 respondents (46.1%) were able to suggest 72 specific and straight forward solutions to either of the two major problems cited (Table 31). Those that were related/similar were lumped together and categorized according to commonalities of concerns. When grouped according to governance concerns, 31 respondents (58.5%) suggested solutions focused on enforcement of rules and regulations such as apprehension/prosecution of illegal fishers while 22 (41.5%) cited solutions related to policy formulation on resource utilization regulation. The third category of solutions given, such as coastal clean-ups and waste segregation, requires community mobilization. For reference purposes, a summary of the top perceived coastal management problems and solutions are provided in Table 32.

Table 31. Perceived coastal management solutions (n = 115) Barangay Inagawan, Puerto Princesa City, Philippines, (n = 115).

Coastal Management Solutions	Problem 1	Problem 2	Combined
Governance-Enforcement (apprehend illegal fishers, conduct intensive patrols, enforce fishery laws, prohibit sand quarrying, prohibit over-exploitation of coastal resource, prohibit use of fine meshed nets/bayakus, enforce fishery laws & ordinances, Prosecute illegal fishers, Prohibit claims of land near the shore)	27 (23.5)	4 (3.5)	31 (27.0)
Governance-Policy (Designate zones for fish corrals, Designate docking area for boats, Legislate laws & ordinances to protect coastal resource, Limit fishing practices to hook & line method, Regulate fishing activities, Regulate prices of fish sold in the village, Prohibit transient fishers, Relocate fish corrals, Mobile registration of boats to the village)	17 (14.5)	5 (4.3)	22 (19.1)
Governance-Logistical Support (Provide assistance to BFARMC officers, provide patrol boats, communication equipment)	1 (0.9)	3 (2.6)	4 (3.5)
Governance-Educational Awareness (educate people about the use of illegal fishing methods, educate people on disaster preparedness)	3 (2.6)		3 (2.6)
Governance -Negotiation (Talk to offender to remove fences on the beach, Talk to offender to stop using illegal fishing methods, mangrove cutting, etc)	2 (1.7)		2 (1.7)
Governance-Personnel (add more patrollers)	1 (0.9)		1 (0.9)
Community Mobilization (coastal cleanups, practice proper waste segregation, report violators of laws)	8 (15.1)	1 (0.9)	9 (7.8)
Sub-total	48 (41.7)		
None	51 (44.3)		
Missing/no answer	10 (8.7)		
Don't know	6 (5.2)		

Note: Figures in parentheses are the corresponding percentages.

Table 32. Top perceived coastal management problems and solutions Barangay Inagawan, Puerto Princesa City, Philippines, (n = 115).

Coastal Management Problems	Coastal Management Solutions
None – 44.3% Don't know/not concerned/no answer – 13.9% With answer – 41.7%	None – 44.3% Don't know/not concerned/no answer – 13.9% With answer – 41.7%
1. Illegal fishing methods: dynamite, cyanide, compressor, fine mesh net/bayakus) 2. Over-exploitation of coastal resource for HH/commercial use/decrease in fish catch 3. Resource competition/conflict (fish corrals , intrusion of transient fishers, beach encroachment 4. Sanitation (Pollution and garbage dumping; waste management)	1. Governance-Enforcement (apprehend illegal fishers, conduct intensive patrols, enforce fishery laws, prohibit sand quarrying, prohibit over-exploitation of coastal resource, prohibit use of fine meshed nets/bayakus, enforce fishery laws & ordinances, Prosecute illegal fishers, Prohibit claims of land near the shore) 2. Governance-Policy (Designate zones for fish corrals , Designate docking area for boats, Legislate laws & ordinances to protect coastal resource, Limit fishing practices to hook & line method, Regulate fishing activities, Regulate prices of fish by the village, Prohibit transient fishers, Relocate baklads, Mobile registration of boats to the village) 3. Community Mobilization (coastal cleanups, practice proper waste segregation, report violators of laws)

2.3.11   Perceptions of Successes and Challenges in Coastal Management

Though only about half of the residents were able to enumerate one or two initiatives in the community that they considered successful with respect to coastal management, they generally agreed that community mobilization is a success area. This is manifested by active community participation in coastal clean-ups and other coastal-related activities such as the *Piyesta ng Karagatan* (Table 33). With respect to governance, enforcement of fishery rules/regulations and the presence of active fisheries-related organizations such as BFARMC and Bantay Dagat are considered as successes by 34.1% and 33.4% of respondents, respectively.

During the FGD session with resource users, the identified challenges of the community in coastal management were on resource conservation and on the implementation of ordinances on costal resource conservation and management. There was also general agreement that the coastal clean-up drive of the community was successful in addressing the issue.

Table 33. Perceived successes in coastal management Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Coastal Management Success	Success 1		Success 2		Combined	
	No.	%	No.	%	No.	%
Governance-Enforcement (Strict enforcement of fishery laws & ordinances)	8	7.0	6	5.2	14	12.2
Governance-Policy (Issuance of village ordinances to maintain clean beaches, Designation of zones for baklads)	2	1.7	1	0.9	3	2.6
Governance-Administration (Active organizations such as BFARMC and Bantay Dagat)	13	11.3	5	4.3	18	15.7
Governance-Logistical (Nets are distributed)			1	0.9	1	0.9
Community Mobilization (Active community participation in coastal cleanups and other coastal resource-related activities such as Piyesta ng Karagatan, community strictly follows the fishery laws & ordinances)	27	23.5	7	6.1	34	29.6
Sub-total	54	47.0	20	17.4		
None	33	28.7	55	47.8		
Don't know	26	22.6	26	22.6		
Missing/no answer	6	5.2	14	12.2		

It is apparent that most residents found it difficult to pinpoint a challenge to coastal resource management in their community as 45.2.0% said "none", 8.7% did not respond and 23.5% answered "don't know" (Table 34). Each respondent was asked to enumerate at most two successes. However, all the 22.6% who responded only cited one challenge. Their responses are parallel to the coastal resource management problems they enumerated earlier. Governance is still the challenge, both from the perspectives of strict enforcement of the law and the compliance of users to the resource rules and regulations. The multi-dimensionality of coastal resource management is highlighted in the residents' responses with some of them seeing the challenge as an enforcement issue while others recognizing that the difficulty is in the compliance by the resource users of what is being enforced. The most frequently cited

successes and challenges in coastal management as perceived by respondents are summarized in Table 35.

Table 34. Perceived challenges in coastal resources management Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Challenges in Coastal Management	Challenge 1	
	No.	%
Natural calamities: typhoon, strong waves	2	1.7
Beautification and cleanliness of beach (sustained cleanliness/coastal clean-up, maintenance of beach,	2	1.7
Governance-administration (dissatisfaction with performance of village officials	2	1.7
Governance-enforcement (apprehension of illegal fishers, continuous monitoring, consistent enforcement of regulations,	6	5.2
Governance – community compliance (use of illegal fishing methods, token regard of rules and regulations	8	7.0
Conservation of resources (establishing fish sanctuary, mangrove reforestation, destruction of fish habitat)	3	2.6
Governance – logistics (not enough patrollers, insufficient funds of village)	2	1.7
Lack of alternative livelihood like seaweeds	1	0.9
Sub-total	26	22.6
None	52	45.2
Don't know	27	23.5
Missing/not concerned	10	8.7

Table 35. Top perceived successes and challenges in coastal management Barangay Inagawan, Puerto Princesa City, Philippines (n = 115).

Coastal Management Successes	Coastal Management Challenges
None – 28.7 % Don't know – 22.6 % Missing/no answer – 5.2 % With answer – 47.0 %	None – 45.2 % Don't know – 23.5 % No answer/missing – 8.7 % With answer – 22.6 %
1. Community Mobilization (Active community participation in coastal cleanups & other coastal resource-related activities such as Piyesta ng Karagatan, community strictly follows the fishery laws & ordinances) 2. Governance-Enforcement (Strict enforcement of fishery laws & ordinances) 3. Governance-Administration (Active organizations such as BFARMC and Bantay Dagat)	1. Governance – community compliance (use of illegal fishing methods, token regard of rules and regulations 2. Governance-enforcement (apprehension of illegal fishers, continuous monitoring, consistent enforcement of regulations,

2.3.12   Perceptions of Community Management Problems and Solutions

Compared to coastal management problems/solutions, more residents are able to enumerate at least one community management problem and the corresponding suggested solution. This indicates a greater sense of community awareness among residents. Since the village's feeder roads are dirt roads and there are no access roads within the *sitios* of the village, it is not surprising that infrastructure (such as bridge, feeder roads, drainage and related facilities) is a major concern for most of community members (38.1%) (Table 36). Other top community problems as indicated by the high frequencies are lack of livelihood/occupational opportunities, lack of electricity and street lights, poverty, and juvenile delinquency. This fifth ranking problem of juvenile delinquency arises out of the presence of a number of out-of-school youths in the village.

Table 36. Perceived community problems Barangay Inagawan, Puerto Princesa City, Philippines (n= 115).

Community Problem	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Alternative/supplemental livelihood projects and lack of occupation opportunities	21	25.0			21	25.0
Natural calamities: typhoons, floods	3	3.6			3	3.6
Inter-personal conflicts among family/community members	2	2.4	1	1.2	3	3.6
No Infrastructure: Drainage, bridge, feeder road	25	29.8	7	8.3	32	38.1
Lack of Electricity/street lights	9	10.7	6	7.1	15	17.9
Poverty/financial difficulties	10	11.9	3	3.6	13	15.5
Garbage/waste disposal management	2	2.4		2.4	2	2.4
Juvenile delinquency: Lack of activities for out-of-school youth; vice/drunkenness/discipline among youth, out-of-school youth	6	7.1	4	4.8	10	11.9
Access to credit/loans: Lack of funds for fishing	2	2.4			2	2.4
Lacks financial assistance/support from government	4	4.8	1	1.2	5	5.9
Deforestation/cutting of trees	2	2.4	1	1.2	3	3.6
Agriculture : plant/coconut pests ; waste from copra, foul smell from piggery	5	5.9			5	5.9
Others: food security; docking area for boats; lack of people's participation; increase in informal settlers; drunkenness	4	4.8	1	1.2	5	5.9
Sub-total	84	100.0				
Don't know/Missing	7	6.1				
None	24	20.9				

Table 37. Perceived community problems in Barangay Inagawan, Puerto Princesa City, Philippines (n=115)

Coastal Management Problems	Solution 1		Solution 2		Combined	
	No.	%	No.	%	No.	%
Provision of electricity: Add more street lights, request action from Palawan Electric Cooperative (PALECO) support to households to tap power	10	8.7			10	8.7
Action needs to be taken by concerned authorities and village council	6	5.2	7	6.1	13	11.3
Improve infrastructure: roads, canals/drainage improvement, village to provide gravel and sand, employ *bayanihan*, provide filling materials for low lying areas	13	11.3	4	3.5	17	14.8
Access to credit: Provide start-up capital, establish credit cooperative in village; low-interest loans from government	16	13.9	3	2.6	19	16.5
Curfew	3	2.6	1	0.9	4	3.5
Employment: Additional livelihood/job opportunities; conduct livelihood trainings	17	14.8	7	6.1	24	20.9
Livelihood support: government to provide fishing gears, pesticides	5	4.3			5	4.3
Youth program: Sports, skills training	2	1.7			2	1.7
Cleanliness and proper waste segregation, use of septic tank for piggery, waste management seminar	5	4.3			5	4.3
Strict law enforcement, prohibition of cutting of trees	3	2.6	1	0.9	4	3.5
Others: seaweed culture, move houses away from the shore	2	1.7			2	1.7
Sub-total	81	70.4				
Missing/don't now	7	6.1				
None	27	23.5				

Consequently, many of the suggested solutions to community problems fall into four broad categories, namely: (1) provide alternative/supplemental livelihood opportunities, (2) provide access to credit, (3) develop infrastructure, and (4) improve access to electricity (Table 37). Majority of the respondents listed alternative/supplemental livelihood opportunities as the topmost solution to their community problems. It seems that the lack of start-up capital or financial difficulty in general prevents residents from engaging in other livelihood endeavors; hence, access to credit ranked high among the respondent. Suggested solutions gathered include*: provide start-up capital, establish credit cooperative in the village, and low-interest loans from government. For problems related to infrastructure, the residents proposed that canal/road/drainage improvement be undertaken, with the village council taking the lead in addressing these concerns. Possible modalities could be either by

direct action of providing the materials or by coordinating with concerned government agencies so that the corresponding action on these problems may be made. PALECO, the local electricity distributor, has already set up power lines in the village that will enable households to subscribe and tap electricity for their daily use. The community wanted to have street lights while some households are still without electricity apparently because of the relatively high costs associated with getting connected to power lines. Hence, these are concerns for which assistance is sought. The top perceived community problems and solutions are ranked and listed in Table 38.

These community problems were also echoed by the key informants during the FGD and KIIs. Many of these problems were related to economic, socio-cultural, and infrastructure concerns. Economic problems included the lack of livelihood opportunities and access to credit facilities. According to FGD session participants, these economic problems can be resolved through provision of livelihood programs to most out-of-work individuals in the community. Meanwhile, socio-civic related concerns such as vices, stray animals, and declining fish catch were seen to call for village ordinances.

Table 38. Top perceived community problems and solutions Barangay Inagawan, Puerto Princesa City, Philippines, (n = 115)

Community Problems	Community Solutions
Missing/don't know/no answer – 6.1% None – 23.5% With answer – 70.4%	Missing/don't know/no answer – 6.1% None – 23.5% With answer – 70.4%
1. No Infrastructure: Drainage, bridge, feeder road 2. Alternative/supplemental livelihood projects and lack of occupation opportunities 3. Lack of Electricity/street lights 4. Poverty/financial difficulties 5. Juvenile delinquency: Lack of activities for out-of-school youth; vice/drunkenness/discipline among youth, out-of-school youth	1. Employment: Additional livelihood/job opportunities; conduct livelihood trainings 2. Access to credit: Provide start-up capital, establish credit cooperative in the village; low-interest loans from government 3. Improve infrastructure: roads, canals/drainage improvement, village to provide gravel and sand, employ *bayanihan*, provide filling materials for low lying areas 4. Action needs to be taken by concerned authorities and village council 5. Provision of electricity: Add more street lights, request action from PALECO; support to households to tap power

2.3.13   Governance

The community recognized the existence of the management body that governs the monitoring and surveillance of the coastal activities and fishing activities in the community. The BFARMC, fishermen associations and Bantay Dagat are the legitimate management bodies identified with formal tenure arrangement and relevant rules and regulations. However, fishermen associations were mentioned as lacking in management plans. The BFARMC was said to have 180 members while the membership of the other organizations were not known. All these management bodies were said to have no regular fund allocations.

With regard to stakeholder participation, five stakeholder groups were identified by the community, namely: the Bantay Dagat, Fisher Association, Farmer Association, Businessman Association, and Indigenous People's group. According to key informants, these groups participate in making decisions concerning coastal and marine activities management. The Kamuning Coastal Residents Development, Incorporated (KCRDI), *Sangguniang Kabataan* (SK), Senior Citizen Organization (SCO), and Community Women Association (CWA) were identified as formal community organizations. The BFARMC, SK, SCO, Tribal Group, and CWA were mentioned as organizations influencing decisions in both coastal management and community issues.

Table 39. Barangay Inagawan's Community organizations and functions.

Community Organization	Main Function
Bantay Dagat	Catch illegal activities perpetrators
Kamuning Coastal Residents Development, Incorporated (KCRDI).	Protect/ conserve mangroves
Barangay Fishery and Aquatic Resources Management Council (BFARMC)	Management of coastal areas
Sangguniang Kabataan (SK)	Conduct and join Village Activities
Senior Citizen Association (SCA)	Conduct and join Village Activities
Tribal Group	Conduct and join Village Activities
Community Women's Association (CWA)	Conduct and join Village Activities

2.4 Recommendations

From these findings and conclusions, the following recommendations are hereby offered:

1. Verify the bio-physical status of the resources in the village to validate the residents' perceptions regarding the conditions of their coastal and non-coastal resources.

2. Monitor the resource areas to determine if the threats cited are still continuing up to the present and if so, take the necessary actions to mitigate and/or eliminate the threat.

3. Undertake wider dissemination of environmental rules and regulations not only to the resource users but to the community at large so that resource protection and conservation would be a "community affair." This is because at present, awareness of resource rules and regulations is mostly limited to the actual resource users.

4. Organize and/or strengthen agriculture-related stakeholder organizations so that more farmers may get involved in communal decision making. Though there is already an active BFARMC, Barangay Inagawan is a combined farming/fishing community with more households relying on farming rather than fishing as their occupation.

5. Give greater attention to the governance dimension, specifically on enforcement of rules in coastal management. Designate environmental police personnel who can immediately respond and apprehend violators. Assign them to critical areas where they can provide quick response to reports of violations. Though the BFARMC and Bantay Dagat members are deputized to apprehend offenders, they hesitate to do so because of the attendant risks to their lives. Hence, it is best for them and other community residents to form a network of informants linked with the concerned law enforcement agencies.

6. Develop policy options that may be considered to include: designation of fish corral (*baklad*) zones; docking area for boats; limitation of fishing to hook and line methods; mobile registration of boats in the community; and prohibition of transient fishers from other municipalities. There is an emerging consensus among residents that the focus of governance with respect to policy formulation should be more on regulating fishery activities.

7. Mobilize more community residents for coastal clean-ups, waste segregation programs, and monitoring/reporting of violators of resource rules and regulations.

The more residents are involved in community work, the greater would be the sense of community responsibility and involvement.

8. Support the village council's initiative to establish a marine protected area (MPA) within the Barangay Inagawan coastal area by enacting an appropriate city-level ordinance and by providing logistical support in delineating the MPA boundaries.

9. Explore alternative/supplemental livelihood opportunities that would allow village residents to become entrepreneurs and/or self-employed. The assistance should not only be limited to training and capital support but must also include marketing support. Fishers are already experiencing decreasing fish catch, thus, limiting fishing and resource use activities may further result to reduced income for them, in the short term.

10. Establish more basic infrastructure facilities that could, in turn, spur economic development. Such infrastructure may include feeder roads and canals/drainage improvement. The residents are willing to help by providing the manpower (locally called *bayanihan*), provided that the concerned government agencies, including the Barangay Council, would supply the construction materials.

11. Rationalize the issue of power. Electricity is already available to the village; hence, there is a clamor for more street lights. Some households seem unable to pay for the attendant expenses in order to connect to the Palawan Electric Cooperative (PALECO), the electricity provider in the area. The Barangay may therefore serve as a conduit to help the households negotiate with PALECO so that some compromise may be arranged for them to be able to tap electricity and pay the initial costs, like doing so on an instalment basis.

12. Undertake the same baseline in the future. Since the data presented herein were collected in order to establish baseline conditions at Barangay Inagawan, it is also recommended that a similar undertaking be conducted three or five years from now in order to monitor changes and trends.

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2.6   Appendices

Appendix 1. Commonly used fishing gears, Barangay Inagawan, Puerto Princesa City,

Palawan, Philippines

English Name	Local Name
Beach seine	Bayakos
Crab pot	Bobo
Gill net	Lambat
Hook and line	Kawil
Multiple handline	Kawil
Push net (bangus fry gathering)	Sud-sud
Squid jigger	Ganti-ganti

Appendix 2. Common names and equivalent local names of commonly caught marine species, Barangay Inagawan, Puerto Princesa City, Palawan, Philippines

Common Name	Local Name
FINFISHES	
Anchovy	Dilis
Catfish	Hito
Frigate mackerel	Tulingan
Fusilier	Dalagang bukid
Garfish	Balo
Goatfish	Salmonetis
Halfbeak	Baritos
Hardtail scad/Trevally	Lapis
Indian mackerel	Alumahan
Jack	Talakitok
Milkfish	Bangus
Mullet	Banak
Rabbitfish	Samaral
Roundscad	Galunggong
Sardine	Tamban
Shark	Pating
Short-bodied mackerel	Hasa-hasa
Slipmouth	Sapsap
Sole fish	Palad
Spanish mackerel	Tanigue
Squid	Pusit
Threadfin bream	Bisugo
Trigger fish	Pakol
Tuna	Tambakol
"Unknown"	Darag-darag
"Unknown"	Karatungan
CRUSTACEAN	
Crab	Alimango
Shrimp	Hipon

This document may be cited as:

Part 3 SocMon Site Report Barangay Kamuning, Puerto Princesa City, Palawan

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

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SocMon Site Report
Barangay Kamuning, Puerto Princesa City
Palawan, Philippines

Center for Strategic Policy and Governance
Palawan State University
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City Agriculture Office
City Goverment of Puerto Princesa
Puerto Princesa City

Palawan Council for Sustainable Development Staff
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September 2012

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List of Acronyms and Abbreviations

BFARMC	Barangay Fisheries and Aquatic Resources Management Council
CBMS	Community-Based Monitoring Survey
CGPP	City Government of Puerto Princesa
CLUP	Comprehensive Land Use Plan
CWA	Community Women Association
CWF	Charity Women's Foundation
FGD	focused group discussions
GI	galvanized iron
ha	hectares
HH	household
HHI	household interview
IP	Indigenous People
KCDAI	Kamuning Coastal Development Association, Inc
KI	key informant
KII	key informant interview
km	kilometers
MPA	marine protected area
NGO	non-government organization
PALECO	Palawan Electric Cooperative
PCSDS	Palawan Council for Sustainable Development Staff
RA	Republic Act
SCO	Senior Citizen Organization
SEA	Southeast Asia
SK	*Sangguniang Kabataan*
SocMon	Socioeconomic Monitoring

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

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Summary

Introduction

Understanding socioeconomic factors and the communities' relationship to coastal and marine resources is crucial for the success of marine conservation. As such, the Global Socioeconomic Monitoring Initiative for Coastal Management (SocMon Global) has been initiated to pursue this worldwide conservation initiative. The Socioeconomic Monitoring Southeast Asia (SocMon SEA) is being undertaken in countries within the Southeast Asian region, including the Philippines, for nearly a decade. This report provides a synopsis of the socio-economic monitoring (SocMon) project that was undertaken in Barangay Kamuning, a coastal community located some 56 km from Puerto Princesa City, Palawan Province, Philippines. The goal of this project is to propagate the use of socioeconomic monitoring (SocMon) among academics, researchers, policy makers, and coastal managers thereby enhancing coral reef conservation and coastal resources management.

Methodology

The SocMon methodology followed three major steps. The first part was advance preparation that included defining the objectives of SocMon, establishing the SocMon team and preparing the logistics. The second part was data collection, which was the generation of field data using three complementary research methods namely, household interview (HHI), key informant interview (KII), and focused group discussions (FGD). The number of respondents is as follows: HHI – 94 households; KII – 9; and FGD – 1. Field data were gathered from June 2011 to August 2012 in Barangay Kamuning, Puerto Princesa City. The third part was analysis of both qualitative and quantitative data, while communication consisted of disseminating the results to the relevant stakeholders. The Palawan State University took the lead and the partners involved were the City Government of Puerto Princesa (CGPP) and the Palawan Council for Sustainable Development Staff (PCSDS).

Results and Discussion

Results of the study showed that the typical household size in the village was approximately five members, with slightly more females than males, and a lot more younger people. The village has a mixture of Tagbanua (an ethnic group indigenous people group), ethnic

groups of Palawan and migrants from other parts of the country who are mostly Visayan in origin. Tagalog was spoken by the majority of the residents. The community was predominantly Roman Catholic. About half finished at most elementary level while a fourth had gone beyond high school. Only 10% finished a college or vocational-technical course. There existed high unemployment in the villages with majority of the households having very low or low material style of life.

Typical of most rural villages located near coastal areas but endowed with a sizable agriculture area, Barangay Kamuning is primarily a farming and secondarily a fishing community. The community use of its coastal marine resources include marine resource extraction such as capture fisheries, aquaculture, gravel collection and honey gathering. Non-extractive activities include tourism-related activities such as accommodation and recreation in the form of beach picnics, and support to education related undertakings such as venue for trainings and workshops.

The village was able to supply the demand for fishery products for food beyond the locality. However, the mismatch between the perceived value of the traded marine products and the actual market value indicated that the fishers were not getting a fair price. Residents perceived that key resource bases both on land and sea were in varying stages of degradation due to the community's and transient fishermen's unmitigated exploitation of such resources for both household and livelihood uses.

Still, the community members generally perceived that their ground water, springs, river/creeks, beach, seagrass, coral reefs and mangroves were in good condition. They perceived their terrestrial forests were in neither good nor bad condition. For those who knew of at least one threat to these resources, the most often cited threats were cutting of trees for commercial/household uses, including charcoal making for mangroves and swidden farming and illegal logging for terrestrial forests; illegal fishing methods for coral reefs; pollution/garbage dumping and natural phenomena for beach and rivers/creeks. Sand quarrying was also attributed as a threat to all freshwater sources. It is noted, however, that a sizeable number of residents answered   "none" when they were asked of the threats to the natural resources in their community, ranging from 9.6% (for mangroves) to 58.3% (for springs), or answered "don't know" or "not applicable", indicating lack of knowledge about the specific resource.

Furthermore, less threats were identified for beach and seagrass. In the case of the seagrass, this reflects the generally worldwide poor appreciation of this important resource.

Majority of the residents were also aware of rules and regulations on fishing and mangrove management. Less than fifty percent of the residents were aware of rules pertaining to aquaculture, resort/pension/hotel development and pebble gathering. Residents have very limited awareness of the rules on the rest of the resource uses/activities. The rules and regulations they are usually aware of originated from concerned agencies of the City Government of Puerto Princesa. The presence of resource use stakeholder organizations in the village such as the Barangay Fisheries and Aquatic Resources Management Council (BFARMC), women's associations, Kamuning Coastal Development Association, Inc (KCDAI), and agriculture-related groups is associated with a 57.4 participation rate among household members in community-groups. Yet most households rated their current levels of participation in decision making as no participation, with the highest mean rating found for mangrove management and fishing at 3.1 and 3.2, respectively in a scale of 1-5. A number of residents expressed a greater desire to participate in decision making as evidenced by the higher mean ratings of 3.4 for desired levels on both fishing and mangroves. Over-all, the residents' desired levels are higher than their currents levels, and these differences are all statistically significant.

Although about 6 out of 10 said that they don't have or don't know any coastal management problem, those who knew of at least one mentioned problems related to the use of illegal fishing methods - such as dynamite, cyanide, compressor and fine mesh nets and use of other illegal fishing gears, sanitation, and governance on enforcement. The proposed solutions given by the residents can be categorized into three: governance on enforcement, governance on educational awareness and social services and livelihoods assistance. Though they perceived that they are successful in mangrove reforestation, community mobilization, enforcement of fishery laws and ordinances, interventions in terms of logistical support and enforcement, as well as sustaining activities on conservation and protection of resources continue to be challenges to them.

From a more general perspective, the top community problems as perceived by the residents are the following: inadequate infrastructure (bad road conditions, and farm to market roads, cemetery, lack of water supply for domestic and agricultural use); and need for

alternative/supplemental livelihoods. The cited solutions focus on infrastructure development, livelihoods assistances, and community mobilization.

In summary, the community of Barangay Kamuning is socially and economically challenged with the residents perceiving their natural resources to be in good condition but under threat from the activities of the community and transient users. They have a weak understanding of these threats, poor knowledge of rules and regulations, feeble support institutions and little participation by the locals, and the need for the provision of the needed infrastructure. There is the necessity to address social and economic challenges of the community by strengthening community understanding of their natural resources at the ecosystem level, enhancement of existing livelihood and the provision of supplemental income sources. These must be coupled with backing from the government and non-government organizations through enhancing institutional support by way of training and linking with existing initiatives, and the provision of appropriate infrastructure, research and technical assistance.

3.1. Introduction

Barangay Kamuning is located 56 km from Puerto Princesa City's main commercial hub (Figure 1). It is bounded on the north by Barangay Inagawan, south by the Municipality of Aborlan, east by Sulu Sea and West by Barangay Inagawan-Sub Colony. It has three *sitios* and seven *puroks*.

The barangay has a total land area of 1,700 ha comprising of 12 ha residential area, 853 ha of agricultural area, and 1,010 ha of forest area. Major coastal habitats found in the area include mangrove forests (474.6 ha), seagrass beds (142.1) ha, and coral reefs (11.9 ha). The topography of the area includes limited and relatively flat lands with 0-8% slope.
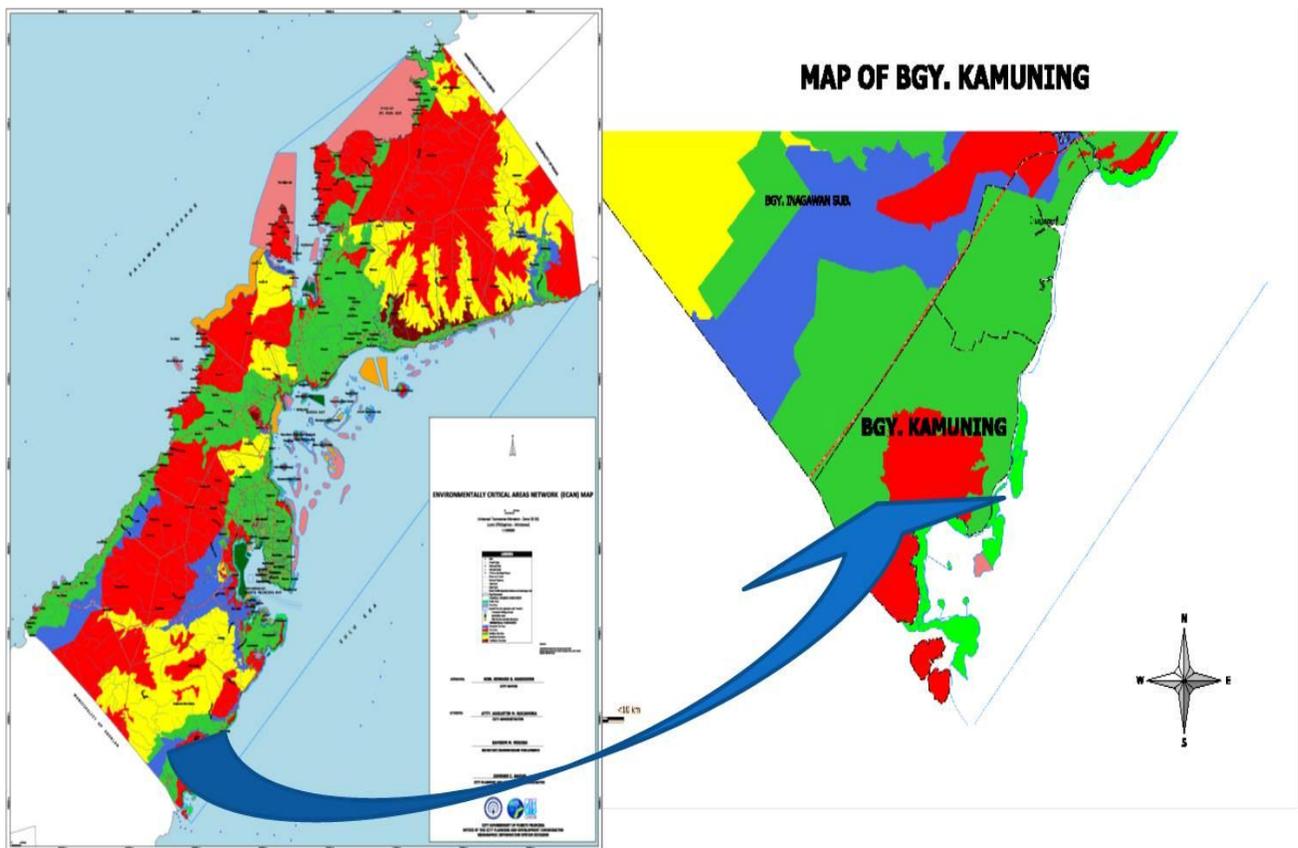
Figure 1. Map showing the location of Barangay Kamuning in Puerto Princesa City, Palawan, Philippines.

According to the Community-based Monitoring Survey (CBMS) of Puerto Princesa City in 2009, the village had a population of 480 households with a total of 1,799 members, 892 (49%) of whom are males and 907 (51%) are females. Most households have from 3 to 4 members.

During the same year, the educational background of residents who are beyond school age included the following: 290 (16.1%) with elementary or primary schooling, 150 (8.3%) residents with secondary or high school education, 30 (1.7%) residents with tertiary education, and 10 (0.6%) residents with post-graduate studies. There were also 20 (1.1%) residents who have finished vocational or technical courses. Tagalog, Waray, Ilonggo, Cuyunon, Ilocano, Bicolano, and Cebuano are the common languages and dialects spoken by the people in the village.

With regard to primary livelihoods and income sources, household members from the village are engaged in the following major activities: 1,349 (75%) in agriculture, 359 (20%) in fisheries and 89 (5%) in employment and entrepreneurial activities. The monthly income of residents ranges from PhP3,000.00 to PhP15,000.00 depending on the source, as presented in the matrix below:

Source of Income	Income Range (PhP)
Government Employment	9,000.00 - 15,000.00
Entrepreneur	7,000.00 - 9,000.00
Farming	6,000.00 - 8,000.00
Fishing	5,000.00 - 7,000.00
Labor	3,000.00 - 5,500.00

Source: Socioeconomic Economic Profile, 2009.

At present, the village has a total of 98 residents engaged in fishing, a significant reduction of 72.7% from 2009. Seventy nine of the present fishers are part-time fishers and 19 are full-time fishers. There are 52 fishing boats classified as motorized (15 units) and non-motorized (37 units). The community intends to establish an estimated area of 75.7 ha of coastal marine waters as a marine sanctuary.

Housing is classified according to the use of materials such as concrete, wood and galvanized iron sheet for permanent structures. Those made up of wood, with roofings of galvanized iron sheet is classified as semi-permanent residential structures. Meanwhile, those made of thatch bamboo (*sawali)* or *nipa*, are classified as temporary residential structures. In the case of the village, majority of the households (303 or 63.1%) have semi-permanent dwelling structures, while 98 households (20.4%) are living in permanent structures and 79 are households (16.5%) in temporary structures.

Households in Barangay Kamuning access their water supply from deep wells and open or dug well, from which water is harnessed for domestic and residential uses. Majority of the households (345 households) use electricity for lighting, while approximately 120 households use kerosene as source of power and light.

3.2. Methodology

The overall methodology and/or general procedure for training, field data collection and data analysis followed the SocMon methodology (Bunce and Pomeroy 2000, Bunce et al. 2003). The SocMon Process basically follows three major steps. SocMon is "a set of guidelines for establishing a socioeconomic monitoring program at a coastal management site in Southeast Asia" in order to gain an understanding of the social, cultural, economic, and political characteristics and conditions of individuals, households, groups, and communities (Bunce and Pomeroy, 2003). The SocMon process basically follows three major steps. The first part was advance preparation that included defining the objectives of SocMon, establishing the SocMon team and preparing the logistics. The second part was data collection, which was the generation of field data whereas three complementary research methods were employed namely, household interview (HHI), key informant interview (KII), and focused group discussions (FGD). The third part was analysis of the gathered qualitative and quantitative data, while communication consisted of disseminating the results to the relevant stakeholders.

The SocMon methodology provides a standardized set of 32 indicators and 28 indicators using key informant/secondary source and household interviews, respectively. Household interview indicators are categorized into household demographics (9), coastal and marine activities (5), attitudes and perceptions (13), and the material style of life (1). A mix of both

quantitative and qualitative data arises out of undertaking a SocMon community-level survey using all or subsets of these 28 indicator variables. The results are summarized with the end view of translating data into useful information for any or all of the following purposes: (1) identifying threats, problems, solutions, and opportunities; (2) determining the importance, value, and cultural significance of resources and its uses; (3) assessing positive and negative impacts of management measures; (4) assessing how the management body is doing (management effectiveness); (5) building stakeholder participation and appropriate education and awareness programs; (6) verifying and documenting assumptions of socioeconomic conditions in the area, community dynamics and stakeholder perceptions; and (7) establishing baseline household and community profile.

The main purpose of undertaking the SocMon in Inagawan is to establish the necessary socioeconomic baseline information needed for establishing marine sanctuaries and for resource use planning by communities. For the four study sites, all 60 key informant (KI) and household (HH) indicators were chosen and utilized to obtain the necessary information required by the communities for planning and decision–making. These variables were chosen after a consultation with community leaders/site managers and other key stakeholders to ensure the responsiveness of the research variables to the local conditions.

The process/means of data collection involved extracting data from both primary and secondary sources. In addition to a review of available documents such as but not limited to village profiles, municipal statistics, and relevant national reports, data gathering instruments were utilized to collect and cross-validate data. Primary data were collected in the field to complement secondary data as well as to fill identified gaps. Primary data collection took place through the development and administration of household questionnaire survey and through individual/group interview of key informants (KIs). The selected key informants (KIs) were individuals who, because of their position, experience and/or knowledge, provided insights into the larger population. The KIs chosen included local leaders, community elders, coastal managers, representatives of non-governmental organizations and policy makers. Individual KIIs were conducted to collect useful baseline data, as well as to validate the primary and secondary data collected through other methods. The FGDs, on the other hand, were group interviews designed to gather/validate both questionnaire and KII data for the baseline. Focused

group participants included fishers, tourist operators, community elders, farmers, and NGO representatives present in the community. The socioeconomic household surveys collected data directly from the household head, usually the husband or wife in the family, through face-to-face interviews.

Systematic sampling was employed to randomly select the sample households and to ensure equal representation of the population with the sampling interval computed based on the population size and desired sample size. The list of households in each community, as provided by the village council's secretary, was used as the sampling frame for Barangay Kamuning. From the population of 480 households, 94 households were selected using the systematic random sampling. This sample size is 19.6% of the total population, and is composed of 386 individuals. Nine key informants and one focus group discussion were conducted during the research.

The SocMon household survey was conducted by trained enumerators while the team statistician supervised the development of the database, encoding, and data analysis. Results of the surveys were then presented to the community and other stakeholders for validations. After the validations were completed, the technical reports for each village were finalized. Some of these reports will be translated into layman's language, such as policy briefs. Appropriate reports were also disseminated to the relevant stakeholder groups so that they may use the research results for planning and adaptive management.

3.3.   Summary of Results

3.3.1.   Household Demographics

Household demographics relate to size, sex, educational attainment and household size (Table 1 and Table 2). Out of the 94 households surveyed, 45 (47.9%) had four to six members while 41 (43.6%) had one to three members, and 8 (8.5%) had seven to nine members. Though half of the households had at most 4 members while the other half had less than 4, the typical household size has around 5 members. There are slightly more females (52.8%) than males in the community. About 44% of the residents are less than 20 years old, while 19.4% belong to the age range 50 years old and above. The median age is 23 which is lower than the mean age of 28.5,

confirming that the distribution of ages is positively skewed; that is, there are more younger people and fewer older people in the community. The majority (48.7%) of the community members were born within the village, 30% in other villages in Puerto Princesa City or the province of Palawan, while 20% come from other parts of the country, notably the Visayan regions. This shows that the village has a mixture of natives (indigenous populations or IPs, principally the *Tagbanua* tribe) and migrants from nearby and far-flung areas. For those beyond the school-age population (aged 16 years and below), about half finished at most elementary level while a fourth had gone beyond high school. There were only 10% who finished a college or vocational-technical course.

Table 1. Household demographic characteristics, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Socio-Demographic Characteristic	Frequency	Percentage
Household Size		
1 to 3 members	41	43.6
4 to 6 members	45	47.9
7 to 9 members	8	8.5
Gender		
Male	182	47.2
Female	204	52.8
Age (as of last birthday)		
0 to 9 years	83	21.5
10 to 19 years	86	22.3
20 to 29 years	53	13.7
30 to 39 years	48	12.4
40 to 49 years	41	10.6
50 to 59 years	38	9.8
60 to 69 years	24	6.2
70 years and above	13	3.4
Highest Educational Attainment		
(for household members > 16 years)		
No formal schooling	2	0.8
At most grade 4	17	7.0
At most grade 6/elementary grad	50	20.6
At most 3rd year high school	46	18.9
At most 4th year/high school grad	66	27.2
College undergraduate	38	15.6
College graduate	14	5.8
Vocational/technical graduate	10	4.1
Birthplace		
Village locale	188	48.7
Municipal locale but in other villages	73	18.9
Provincial locale but in other municipalities	45	11.7
Regional locale but in other province	1	0.3
Other regions in Luzon	10	2.6
Other regions in Visayas	62	16.1
Other regions in Mindanao	1	0.3
No Response	5	1.3

Table 2. Summary quantitative indices for household size and age, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

	Household Size	Age
Total Number	94 households	386 individuals
Median	5	23
Mean	4.9	28.5
Standard Deviation	1.8	20.5
Skewness	0.1	0.6

Selected sociocultural characteristics of the community like religion, language and ethnicity is reflected in Table 3. The community is predominantly Roman Catholic with a very small percentage (6%) belonging to other religions. A third (33.2%) of the residents is identified with the Tagbanuas, which is an IP group in the locality who were the original settlers in the area. Almost a third (29.5%) come from ethnic groups within the province and the rest (37.3%) are from other ethnic groups in the country, mostly Visayan in origin. This again confirms that the village has become a melting pot of residents of different ethnicities. What emerged as the most commonly spoken (*lingua franca*) is Tagalog, which is spoken by 82.1% of residents. It can thus be inferred that even the Tagbanua has become acculturated and is already speaking the Tagalog language. Some residents, having originated from the Visayan region of the country, speak Visayan-related dialects like Cebuano and Ilonggo as their primary language.

Table 3. Sociocultural Characteristics of Household Members, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Sociocultural Characteristic	Frequency	Percentage
Religion		
Roman Catholic	363	94.0
Islam	1	0.3
Seventh Day Adventist	9	2.3
Born-again Christian	8	2.1
Baptist	5	1.3
Primary Language Spoken		
Tagalog	317	82.1
Cebuano	29	7.5
Ilonggo	15	3.9
Ilocano	21	5.4
Bisaya	4	1.0
Ethnic Membership		
Ethnic group within the locality	128	33.2
Ethnic group within the province	114	29.5
Ethnic group within the region	13	3.4
Ethnic group within the Luzon	31	8.0
Ethnic group within the Visayas	96	24.9
Ethnic group within the Mindanao	4	1.0

About a third (80 or 31.9%) of those who are 16 years old and above are not engaged in any regular occupational activity (Table 4). For those who are regularly working, half (49.7%) have farming as a primary occupation and a tenth (10.8%) as a secondary occupation. Thus, 60.4% of those working are into farming as primary or secondary occupation. In contrast, 18.6% and 11.4% are into fishing as primary and secondary occupations, respectively. There are only small percentages of the residents who are engaged in other occupations. This confirms that Barangay Kamuning is essentially a community of farmers and fishers. Furthermore, there exists high un-employment in the village.

Table 4. Primary and secondary occupations of household members*, Barangay Kamuning, Puerto Princesa City, Philippines.

Occupation Category	Primary		Secondary		Total/Combined	
	No.	%	No.	%	No.	%
Fishing	31	18.6	19	11.4	50	29.9
Farming	83	49.7	18	10.8	101	60.4
Regular government employment	11	6.5	2	1.2	13	7.8
Private professional employment	5	3.0			5	3.0
Labourer/construction worker	5	3.0	11	6.6	16	9.6
Self-employed/small business owner	13	7.8	9	5.4	22	13.2
Animal/livestock raising	11	6.6	5	3.0	16	9.6
Tricycle/jeepney driver			1	0.6	1	0.6
Nipa shingle (pawid) making	4	2.4	1	0.6	5	3.0
Peddler /ambulant vendor	1	0.6	1	0.6	2	1.2
Gleaning	1	0.6			1	0.6
Barangay Tanod	2	1.2			2	1.2
Subtotal	167	66.5	72	43.1		
None/ no information	84	33.5				
Total	251	100.0				

*For household members with ages of at least 16 years old

With the main occupation in the community as farming, it is therefore not surprising that the same percentage (60.6%) of the households rely on farming as their primary or secondary source of income (Table 5). Fishing is a primary source of income for 22.3% and a secondary source for another 18.1% of the households for a combined percentage of 40.4%. It is thus noted that most households rely primarily on both farming and fishing as income sources for their livelihood.

Table 5. Most important income sources of households, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Source of Income	Primary		Secondary		Total/Combined	
	No.	%	No.	%	No.	%
Pension	1	1.1	1	1.1	2	2.1
Local remittance from relatives			2	2.1	2	2.1
Fishing	21	22.3	17	18.1	38	40.4
Farming	44	46.8	13	13.8	57	60.6
Regular government employment	2	2.1	1	1.1	3	3.2
Private professional employment	2	2.1			2	2.1
Labourer/construction worker	4	4.3	10	10.6	14	14.9
Self-employed/small business owner	3	3.2	7	7.4	10	10.6
Animal raising	3	3.2	3	3.2	6	6.4
Nipa shingles (pawid) making	1	1.1	2	2.1	3	3.2
Gleaning	2	2.1			2	2.1
Barangay Tanod			1	1.1	1	1.1
Peddler/ambulant vendor			1	1.1	1	1.1
Tricycle/ Jeepney driver			1	1.1	1	1.1
None/ no information	11	11.7	35	37.2		
Total	94	100	94	100		

Due to the complexities in measuring household income, SocMon does not make any attempt to measure it but instead substitutes the variable "material style of life" as an indicator of the economic status of the households. Observations of the residential dwellings of the sample households show that most are predominantly made of thatch bamboo/nipa roofs and tin/ galvanized iron (GI) sheets, thatch bamboo walls and windows, and bamboo/concrete floors (Table 6). Over-all, about 80% of the households have either very low or low material style of life as indicated by their residential dwellings being made of light materials such as bamboo and nipa. It can therefore be inferred that majority of the households are not economically well off based on the materials that they used for their residential dwellings.

Table 6. Material style of life, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Material Style of Life	No.	%
Type of Roof:		
Thatch/nipa	47	50
Thatch/bamboo	2	2.1
Tin/GI sheet	45	47.9
Type of outside structural walls		
Thatch/nipa	6	6.4
Thatch/bamboo	69	73.4
Wood/plywood	2	2.1
Brick/concrete	17	18.1
Windows:		
Open	10	11.0
Thatch/bamboo	51	56.0
Wooden	18	19.8
Steel bars	7	7.7
Glass	5	5.5
Floor		
Dirt	9	9.6
Bamboo	45	47.9
Cement	36	38.3
Wooden	4	4.3
Other Household Assets:		
2/3/4-wheel Motor Vehicle		
Banca	40	41.7
Computer	3	3.1
Refrigerator	16	16.7
Television set	37	38.5
Aggregate Ratings		
4 - 8: Very low	41	45.0
9 - 12: Low	31	34.1
13 – 16: High	19	20.8

3.3.2. Coastal and Marine Activities

The community of Barangay Kamuning utilizes its coastal marine resources for its economic and daily subsistence and activities. These include marine resource extraction such as catch fisheries, aquaculture, gravel collection and honey gathering. Non-extractive activities include tourism-related activities. These include accommodation and recreation in the form of beach picnics, and support to education-related undertakings such as venue for trainings and workshops, and settlement which are located in the beach area.

Table 7. Coastal and Marine Activities, Types of Use, and the Identified Goods and Services, Barangay Kamuning, Puerto Princesa City, Palawan, Philippines, 2011

Methods Used	Goods and Service
Catch Fisheries	
Gill net	Frigate mackerel, Mackerel, Rabbit fish, Emperor fish, Sole fish, "Darag", Grouper, Jack
Gill net, modified with scaring device	Rabbit fish, Trevally, Threadfin bream
Hook and line	Mackerel, Trevally, Frigate mackerel, "Budo," Threadfin bream, Mackerel
Hook and line, bottom set-surface set longline	Garfish, Trevally, Snapper, Grouper, "Siga," "Darag," Jack
Squid jigger	Squid
Fish corral	Mackerel, Trevally, Rabbit fish, Parrotfish, Mullet, Grouper, Sardine
Reef gleaning	Jumping shells, seaweed, Arc shell, Sea urchin, "Kaladuga,", Spider shell, Mud crab, Marsh clam, Sea snail (small), Sea snail (big), Mangrove worm
Aquaculture	
Aquaculture	Milkfish, Prawn, Mud crab
Tourism	
Beach Resorts	Beach
Others	
Household	Beach
Gravel collection	beach gravel
Honey collection	Honey

Capture fisheries is characterized by the use of common fishing gears that include two types of gill nets, two variants of hook and line, squid jigger, fish corral, and reef gleaning (Table 7). Please refer to Appendix 1 for the equivalent local names of the fishing gears.

3.3.3.   Types and Value of Goods and Services

The main marine fishery products derived from capture fisheries and aquaculture include 19 finfishes, 7 shellfishes, 2 crustaceans, 1 echinoderm, 1 mangrove worm, and 1 seaweed (Table 7). Refer to Appendix 2 for the equivalent local names of the marine species. In addition, the community members exploit honey from the mangrove forest, and collect gravel from their

beach. Furthermore, tourism activities and educational support in terms of venue, and settlement are afforded by the beach.

The perceived values of the community for these resources are shown on Table 9. The community rated fishery and aquaculture products of medium-high importance value except in the cases of mackerel caught using hook and line, rabbit fish, mullet, parrot fish and sardines caught using fish corral. Jumping shells (Little bear conch), seagrapes, arc shell, sea urchin, "kaladuga," and spider shell gathered through reef gleaning were given importance value of low-medium. Honey is also highly valued. The beach, on the other hand, is perceived to be less valuable.

Rated as highly valuable catch fishery are finfishes caught using the two variants of gill nets, hook and line (bottom set-surface set long line), and fish corral specific to groupers and rabbit fishes. The generally medium-high value accorded to fishery resources indicates the high importance of fisheries to the community.

Specific to catch fisheries, the price of fishery products range from Php30-150 per kilo with most of the goods falling in the price range of Php40-80 per kilo. The harvest from hook and line and squid jigger posted the highest price of PhP80-200 per kilo with a mean of Php100. Meanwhile, parrot fish and sardines gathered using fish corral commanded the lowest price in the market at PhP30-40 per kilo.

It is interesting to note the perceived importance value accorded by the community with regard to its fishery products (Table 8 and Table 9). From the purely economics point of view, the price of goods and services is theoretically expected to be reflective of the societal value, as represented by perceived value, but this is apparently not true in this case. A comparison of the perceived value and actual market value was made using the market price and volume of catch per unit effort, and using a scale of 1-10, with 10 being the lowest and 1 being the highest (Low: 8-11, Medium: 4-7: High:1-3). The analysis revealed that there exists a mismatch between the perceived value of a specific fish and the value that they actually realized from the market in 7 of the 12 cases (Table 10). Analysis of the perceived values and the reported harvest would lead one to infer that the accorded importance value of the village for the fishery harvest is defined by some other factors other than the price. These include the volume of catch and its interplay with price as indicated by the revenue.

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Table 8. Perceived values and market value of goods and services, Barangay Kamuning, Puerto Princesa city, Palawan, Philippines, 2011.

Methods Used	Goods and Products	Rating	Price, PhP			Volume, Kg		
			Low	High	Mean	Low	High	Mean
Catch Fisheries								
Gill net	Frigate mackerel, Mackerel, Rabbit fish, Emperor fish, Sole fish, "Darag", Grouper, Jack	High	40	60	50	5	10	7.5
Gill net, modified with scaring device	Rabbit fish, Trevally, Threadfin bream	High	40	60	50	5	6	11
Hook and line	Mackerel, Trevally, Frigate tuna	Medium	45	60	52.5	5	6	5.5
	"Budo," Threadfin bream	Medium	80	120	100	5	6	5.5
	Mackerel	Low	40	60	76.25	2	3	2.5
Hook and line, bottom set-surface set longline	Garfish, Jack, Snapper	High	60	80	70	15	25	20
	Grouper, Silverspot squirrelfish/ Red Bigeye/ redeye/ longfinned bullseye,"darag," Jack	High	60	120	35	15	25	20
Squid jigger	Squid	Medium	80	120	100	5	6	5.5
Fish corral	Mackerel, Trevally, Rabbit fish, Parrot fish, Mullet	Medium	40	60	50	20	30	25
	Rabbit fish, Mullet	Low	40	60	50	20	30	25
	Grouper, Rabbit fish	High	45	150	97.5	15	25	20
	Parrot fish, Sardines	Low	30	40	35	25	30	27.5
Reef gleaning	Jumping shells (Little bear conch), seagrapes, arc shell, sea urchin, "kaladuga," Spider shell	Low-medium						
	Mud crab, marsh clam, Seasnail (small), Seasnail (big)	Medium						
	Mangrove worm	High						
Aquaculture								
Aquaculture	Milkfish, Prawn, Mud crab	Medium-High	80	200	140			
Tourism								
Beach Resorts		Low						
Others								
Household		Low						
Gravel collection		Low						

Methods Used	Goods and Products	Rating	Price, PhP			Volume, Kg		
			Low	High	Mean	Low	High	Mean
Honey collection		High						

Table 9. Comparison of Perceived Values of Goods and Services, and Mean Volume, Mean Price and Revenue per unit Effort, Barangay Kamuning, Puerto Princesa City, Palawan, Philippines,2011

Type of Fishery Use	Goods and Services	Per-ceived Value	Mean Vol (Kg)	Mean Price (PhP)	Revenue per unit effort (PhP)	Rank	Rating
Gill net	Frigate mackerel, Mackerel, Rabbit fish, Emperor fish, Sole fish, "Darag", Grouper, Jack	High	7.5	50	375	10	Low
Gill net, modified with scaring device	Rabbit fish, Trevally, Threadfin bream	High	11	50	550	8	Medium
Hook and line	Mackerel, Trevally, Frigate tuna	Medium	5.5	52.5	288.75	11	Low
	"Budo," Threadfin bream	Medium	5.5	100	550	8	Medium
	Mackerel	Low	2.5	76.25	190.625	11	Low
Hook and line, bottom set-surface set longline	Garfish, Jack, Snapper	High	20	70	1400	2	High
	Grouper, Silverspot squirrelfish/ Red Bigeye/ redeye/ longfinned bullseye,"darag," Jack	High	20	35	700	6	Medium
Squid jigger	Squid	Medium	5.5	100	550	8	Medium
Fish corral	Mackerel, Trevally, Rabbit fish, Parrot fish, Mullet	Medium	25	50	1250	3.5	High
	Rabbit fish, Mullet	Low	25	50	1250	3.5	High
	Grouper, Rabbit fish	High	20	97.5	1950	1	High
	Parrot fish, Sardines	Low	27.5	35	962.5	5	Medium

Rating Legend: Low:8-11; Medium: 4-7; High: 1-3

3.3.4.　　　Consumption and Market Orientation

Approximately 80-90% of the fishery products are sold either within the village or outside of the village, with only 10% allotted for household consumption. In the case of gillnet and fish corral, around 10% is used to barter for other goods or given away to laborers, respectively. Exceptions are in the case of mud crab, marsh clam, seasnail (small), seasnail (big)

gathered through reef gleaning which are utilized solely for household consumption, and honey and mangrove worm which are destined for the Manila market. The multi-level disposition and market orientation of fishery products points to the importance of fishery products not only for the local food security and economy, but as well as to outside villages and even to the national economy. The market for tourism and training venue are both from within and outside of the village.

Table 10. Market orientation of goods and services, Barangay Kamuning, Puerto Princesa City, Palawan, Philippines, 2011.

Coastal and Marine Activities/		Household Use%			Market
Types of Use/Goods And Services		Own	Given Away	Sold	
Catch Fisheries					
Gill net	Frigate mackerel, Mackerel, Rabbit fish, Emperor fish, Sole fish, "Darag", Grouper, Jack	10	10	80	Within the village
Gill net, modified with scaring device	Rabbit fish, Trevally, Threadfin bream	10		90	Both
Hook and line	Mackerel, Trevally, Frigate mackerel	10		90	Within the village
	"Budo," Threadfin bream	10		90	Within the village
	Mackerel	10		90	Within the village
Hook and line, bottom set-surface set	Garfish, Jack, Snapper	10		90	Outside the village
	Grouper, Silverspot squirrelfish/ Red Bigeye/ redeye/ longfinned bullseye,"Darag," Jack	10		90	Outside the village
Squid jigger	Squid	10		90	Within the village
Fish Corral	Mackerel, Trevally, Rabbit fish, Parrot fish, Mullet	10	10	80	Within the village
	Grouper, Rabbit fish	10	10	80	Within the village
	Parrot fish, Sardines	10	10	80	Within the village
Reef gleaning	Jumping shells (Little bear conch), seagrapes, arc shell, sea urchin, "kaladuga," Spider shell	20		80	Outside the village
	Mud crab, Marsh clam, Seasnail (small), Seasnail (big)	100			
	Mangrove worm			100	Manila

Coastal and Marine Activities/		Household Use%			Market
Types of Use/Goods And Services		Own	Given Away	Sold	
Aquaculture					
Aquaculture	Milkfish, Prawn, Mud crab	10	10	80	Outside the village
Tourism					
Beach resorts	Beach				Both
Others					
Household	Beach	100			
Gravel collection	Beach	100			
Honey collection	Honey			100	Manila

3.3.5 Use Patterns

The discussed goods and services are provided by key coastal marine ecosystems that include the coral reefs, seagrass beds, mangrove forests, the beach and the near-shore open waters of the village. Meanwhile areas for tourism and settlement are located in the more landward side of the coastal zone along the beach and back beach, respectively.

Table 11. Use Pattern of coastal marine activities, Barangay Kamuning, Puerto Princesa City, Palawan, Philippines.

Coastal and Marine Activities/Types of Use /Goods and Services		Use Pattern						
		Reef	Sea grass	Mangr oves	Beach	River	Coast	Open
Catch Fisheries								
Gill net	Frigate mackerel, Mackerel, Rabbit fish	X	X					
	Emperor fish, Sole fish	X	X					
	"Darag," Jack	X (puntog is)						X
Gill net, modified with scaring device	Rabbit fish, Trevally, Threadfin bream	X	X				X	
Hook and line	Mackerel, Trevally, Frigate mackerel						X	
	"Budo," Threadfin bream						X	
	Mackerel						X (FAD)	
Hook and line, bottom set-surface set longline	Garfish, Jack, Snapper	X						
	Grouper, Silverspot squirrelfish/ Red Bigeye/ redeye/ longfinned bullseye	X (sanctuary)						

Coastal and Marine Activities/Types of Use /Goods and Services		Use Pattern						
		Reef	Sea grass	Mangr oves	Beach	River	Coast	Open
	"Darag," Jack, Grouper	X (Puntog Is)						X
Squid jigger	Squid						X	
Fish coral	Mackerel, Trevally, Rabbit fish	X	X				X	
	Parrot fish, Mullet	X					X	
	Grouper	X					X	
	Rabbit fish, Mullet	X	X					
	Parrot fish, Sardines	X	X				X	
Reef gleaning	Jumping shells (Little bear conch), seagrapes, arc shell, sea urchin, "kaladuga," Spider shell	X					X	
	Mud crab, Marsh clam, Seasnail (small), Seasnail (big)			X				
	Mangrove worm			X				
Aquaculture								
Aquaculture	Milkfish, Prawn, Mud crab			X				
Tourism								
Beach resorts	Beach				X			
Others								
Household	Beach				X		X	
Gravel collection	Beach				X			
Honey collection	Honey			X				

3.3.6   Levels and Types of Impacts of Coastal Marine Activities

The community identified a limited number of activities with specific impacts (Table 12). These include high levels of impacts by the driving away of spawners and reef destruction due to gill net fishing (modified with scaring device), overfishing and coral breakage due to fish corral operation, over collection and damage to key coastal ecosystems from reef gleaning, and nutrient and pesticide loading from aquaculture. Medium level of impact was identified from anchor damage attributed to gill net fishing. Perceived to have low impacts include water pollution and garbage generation from residential areas, and erosion as a result of gravel collection. The remaining activities were rated from low to high with no specific impacts identified.

Table 12. Level and Type of Impact of Coastal Marine Activities on Resources Barangay Kamuning, Puerto Princesa City, Palawan, Philippines, 2011

Coastal and Marine Activities/ Types of Use/Goods and Services		Use Pattern/Level Of Impact							Type Of Impact
		Reef	Seagrass	Mangroves	Beach	River	Coast	Open	
Catch Fisheries									
Gill net	Frigate mackerel, Mackerel, Rabbit fish	M	M				M		Anchor Damage to reef
	Emperor fish, Sole fish	L	L						
	"Darag," Jack	M						M	
Gill net, modified with scaring device	Rabbit fish, Trevally, Threadfin bream	H	H				H		Destruction of reef; driving away of spawners
Hook and line	Mackerel, Trevally, Frigate mackerel						L		
	"Budo," Squid, Threadfin bream						L		
	Mackerel (FAD)						L		
Hook and line, bottom set-surface set longline	Garfish, Jack, Snapper	M					M		
	Grouper, Silverspot squirrelfish/ Red Bigeye/ redeye/ longfinned bullseye	H							
	"Darag," Jack, Grouper	M						M	
Squid jigger	Squid						L		
Fish corral	Mackerel, Trevally, Rabbit fish	H	H				H		Over-fishing; Coral Breakage
	Parrot fish, Mullet	H					H		
	Grouper	H					H		
	Rabbit fish, Mullet	H	H						
	Parrot fish, Sardines	H	H				H		
Reef gleaning	Jumping shells (Little bear conch), seagrapes, arc shell, sea urchin, "kaladuga," Spider shell	H					H		Over collection; damage to corals, seagrass, mangrove
	Mud crab, Marsh clam, Seasnail (small), Seasnail (big)			H					

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Coastal and Marine Activities/ Types of Use/Goods and Services		Use Pattern/Level Of Impact							Type Of Impact
		Reef	Seagrass	Mangroves	Beach	River	Coast	Open	
	Mangrove worm			H					
Aquaculture									
Aquaculture	Milkfish, Prawn, Mud crab			H					Nutrient/ pesticide Loading
Tourism									
Beach resorts	Beach				L				
Others									
Household	Beach				L		L		Water pol lution, Garbage
Gravel Collection	Beach				L				Erosion
Honey collection	Honey			H					

3.3.7 Level of Use by Outsiders

Outsiders, or those coming from outside the village, are perceived to have low to high levels of use of the village's coastal marine resources. Identified to be of high level of use are transient fishermen operating the two variants of the gill nets and those who are engaged in reef gleaning. Those perceived to have medium levels of resource use are fishermen using the two types of hook and line, squid jigger and reef gleaning.

Table 13. Level of Use of Coastal Marine Resources by Outsiders Barangay Kamuning, Puerto Princesa City, Palawan, Philippines, 2011

Coastal and Marine Activities/ Types of Use/Goods and Services		Level Of Resource Use By Outsiders						
		Reef	Seagrass	Mangroves	Beach	River	Coast	Open
Catch Fisheries								
Gill net	Frigate mackerel, Mackerel, Rabbit fish	H	H				H	
	Emperor fish, Sole fish	H	H				H	
	"Darag," Jack	H						H
Gill net, modified with scaring device	Rabbit fish, Trevally, Threadfin bream	H	H				H	

Coastal and Marine Activities/ Types of Use/Goods and Services		Level Of Resource Use By Outsiders						
		Reef	Seagrass	Mangroves	Beach	River	Coast	Open
Hook and line	Mackerel, Trevally, Frigate mackerel						M	
	"Budo," Threadfin bream						M	
	Mackerel						M	
Hook and line, bottom set-surface set longline	Garfish, Jack, Snapper	M					M	
	Grouper, Silverspot squirrelfish/ Red Bigeye/ redeye/ longfinned bullseye	M						
	"Darag," Jack, Grouper	M						M
Squid jigger	Squid						M	
Fish corral	Mackerel, Trevally, Rabbit fish	L	L				L	
	Parrot fish, Mullet	L					L	
	Grouper	L					L	
	Rabbit fish, Mullet	L	L			L	L	
	Parrot fish, Sardines	L	L			L	L	
Reef gleaning	Jumping shells (Little bear conch), seagrapes, arc shell, sea urchin, "kaladuga," Spider shell Mud crab, Marsh clam, Seasnail (small), Seasnail (big)	H		M			H	
	Mangrove worm			H				
Aquaculture								
Aquaculture	Milkfish, Prawn, Mud crab			L				
Tourism								
Beach Resorts	Beach				L			
Others								
Household	Beach				L		L	
Gravel collection	Beach				L			
Honey collection	Honey			L				

3.3.5. Attitudes towards Non-Market and Non-Use Values of Resources

Generally, people recognize and value the direct economic benefits derived from the resources in their environment. However, SocMon looks at the community's appreciation of their coastal and other resources beyond the direct economic benefits and from an ecosystem perspective. To measure people's perception and understanding of the value of resources, queries pertaining to the non-market and non-use values are included in the survey. Non-market value of the coastal resources is a measure of how people perceive the enjoyed value of coastal resources beyond its market value, while non-use value of the resources pertains to the value of the natural resources accorded by the society based on moral grounds such as the right of future generations to enjoy these resources (bequest value) and the inherent right of these resources to exist in perpetuity (existence value).

Eight Likert-type item statements were asked pertaining to attitudes towards non-market and non-use values of coastal resources (Table 14). Strong agreement indicates most positive attitude and is given a score of 5 while the lowest score of 1 is given to a response of strong disagreement. Aside from frequencies, arithmetic mean ratings were also derived for each item statement and to aggregated statements (Table 15). The first three items focus on the indirect non-market values of coastal resources: importance of reefs for protecting land from storm waves (4.67); contribution of corals to fishing (4.53); and protection of mangroves for fishery (4.74). These mean ratings indicate that people's attitudes are generally very positive with respect to the indirect non-market contribution of mangroves and corals to the fisheries. They must have been aware that mangroves and corals perform important roles as fishery habitats and as barrier against strong waves.

Table 14. Attitudes towards non-market and non-use values of coastal resources, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94)

Item Statement	Response Options*					No Response
	SD	D	NAD	A	SA	
Reefs are important for protecting land from storm waves			2 (2.9)	26 (27.7)	64 (68.1)	2 (2.1)
In the long run, fishing would deteriorate if we cleared the corals		1 (1.1)	7 (7.4)	26 (27.7)	58 (61.7)	2 (2.1)
Mangroves are to be protected so that we will have fish to catch			1 (1.1)	22 (23.4)	69 (73.4)	2 (2.1)
Corals are only important for fishing and diving (-)	38 (40.4)	25 (26.6)	8 (8.5)	10 (10.6)	10 (10.6)	3 (3.2)
I want future generations to enjoy the mangroves and coral reefs			2 (2.1)	24 (25.5)	66 (70.2)	2 (2.1)
Fishing should be restricted in certain areas to allow fish and coral to grow		1 (1.1)	12 (12.8)	25 (26.6)	54 (57.4)	2 (2.1)
We should restrict development in some coastal areas for future generations to have natural environments	2 (2.1)	7 (7.4)	9 (7.6)	24 (25.5)	50 (53.2)	2 (2.1)
Seagrass beds have no value to people (-)	55 (58.5)	27 (28.7)	4 (4.3)	2 (2.1)	4 (4.3)	2 (2.1)

*Statements are rated on a 5-point scale with the following options: SA – Strongly Agree; A – agree; NAD – neither agree nor disagree; D – Disagree; and SD – Strongly Disagree.
Note: Figures enclosed in parentheses are the corresponding percentages for each category across an item.

Table 15. Means and standard deviations of rating scores of attitudes towards non-market and non-use values of coastal resources, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94)

Item Statement	Median	Mean	SD
Reefs are important for protecting land from storm waves	5	4.67	.52
In the long run, fishing would deteriorate if we cleared the corals	5	4.53	.69
Mangroves are to be protected so that we will have fish to catch	5	4.74	.47
Corals are only important for fishing and diving (-)	4	3.78	1.38
I want future generations to enjoy the mangroves and coral reefs	5	4.70	.51
Fishing should be restricted in certain areas to allow fish and coral to grow	5	4.43	.76
We should restrict development in some coastal areas for future generations to have natural environments	5	4.23	1.05
Seagrass beds have no value to people (-)	5	4.38	.99

*Statements are rated on a 5-point scale with the following options and corresponding scores: SA – Strongly Agree (5); A – agree (4); NAD – neither agree nor disagree (3); D – Disagree (2); and SD – ` Strongly Disagree (1). Scoring is reversed for negatively-stated items.
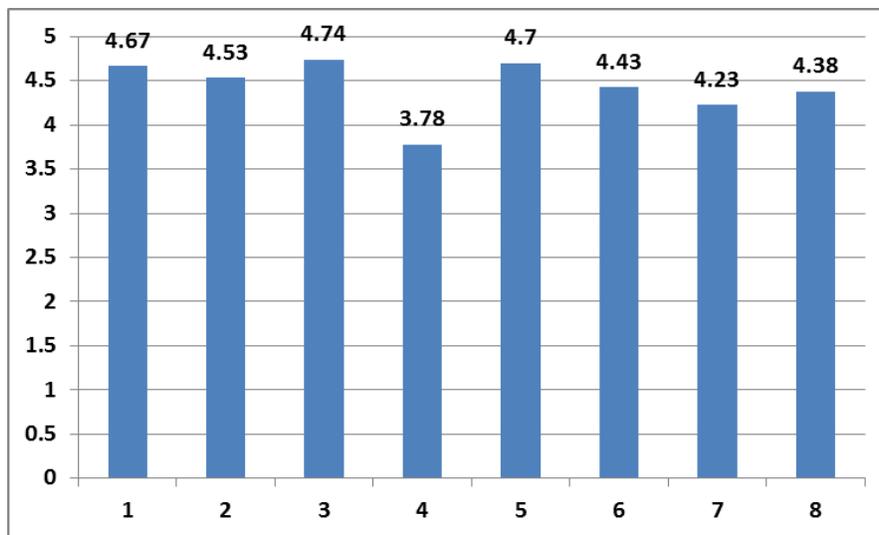
Figure 2. Mean ratings for items on attitudes towards non-market and non-use values (n=94).
  Note: The numbers on the horizontal axis refer to the following item statements:
    1 - The reefs are important for protecting land from storm waves.
    2 - In the long run, fishing would deteriorate if we cleared the corals.
    3 - Unless mangroves are protected, we will not so that we will have fish to catch.
    4 - Coral reefs are only important if you fish or dive (reversed scoring).
    5 - I want future generations to enjoy the mangroves and coral reefs
    6 - Fishing should be restricted in certain areas even if no one ever fishes in those
        Areas just to allow the fish and coral to grow
    7 - We should restrict development in some coastal areas so that future generations
        will be able to have natural environments.
    8 - Seagrass beds have no value to people (reversed scoring).

Though still positive, the lowest ratings were given to items pertaining to existence non-use values such as importance of corals beyond fishing and diving (3.78), restriction of development in certain areas to preserve natural environments for future generations (4.23) and value of seagrass bed to people (4.38). On the other hand, the mean rating scores for items on bequest values of resources are 4.7 (I want future generations to enjoy the mangroves and coral reefs) and 4.23 (We should restrict development in some coastal areas so that future generations will be able to have natural environments). The summary and means of ratings for the three types of non-market values (Table 16 and Table 17) show that the residents have generally positive attitudes, with highest appreciation of the resources' indirect non-market values and lowest appreciation on existence non-use values. Furthermore, the standard deviation showed more consistent responses for indirect non-use value followed by bequest value and existence non-use value.

Table 16. Aggregate rating scores on attitudes towards non-market and non-use values of coastal resources, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Classification of attitude statements	Freq	%
Indirect non-market value		
1.00 – 1.50 : Very negative	0	0
1.51 – 2.50 : Negative	0	0
2.51 – 3.50 : Neither positive nor negative	3	3.2
3.51 – 4.50 : Positive	24	25.5
4.51 – 5.00 : Very positive	65	69.1
No response	2	2.1
Existence non-use value		
1.00 – 1.50 : Very negative	0	0
1.51 – 2.50 : Negative	4	4.3
2.51 – 3.50 : Neither positive nor negative	10	10.6
3.51 – 4.50 : Positive	36	38.3
4.51 – 5.00 : Very positive	39	41.5
No response	3	3.2
Bequest non-use value		
1.00 – 1.50 : Very negative	0	0
1.51 – 2.50 : Negative1	1	1.1
2.51 – 3.50 : Neither positive nor negative	13	13.8
3.51 – 4.50 : Positive	32	34.0
4.51 – 5.00 : Very positive	46	48.9
No response	2	2.1
Mean rating for attitudes towards non-market and non-use values of coastal resources		
1.00 – 1.50 : Very negative	0	0
1.51 – 2.50 : Negative	0	0
2.51 – 3.50 : Neither positive nor negative	6	6.4
3.51 – 4.50 : Positive	36	38.3
4.51 – 5.00 : Very positive	46	48.9
No response	3	3.2

Table 17. Means and standard deviations of aggregate rating scores on attitudes towards non-market and non-use values of coastal resources, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Value Classification	Median	Mean	Std Dev
Indirect non-market value	5.0	4.6	.48
Existence non-use value	4.3	4.2	.79
Bequest value	4.8	4.5	.66
Over-all attitude towards non-market and non-use values of resources	4.6	4.4	.55

3.3.6. Perception of Resource Conditions

On a scale of 1 to 5 with 1 as "very bad" and 5 as "very good", community residents perceived the conditions of their resources to be in good condition, except for upland forests. (Table 18). For upland forests, close to 50% answered "not applicable" which indicates that many may not be familiar with such resources. There were also a number of residents who answered "don't know" or "not applicable" when asked of their perception of resource conditions; these were usually non-users of the specific resources or individuals whose residences were geographically far from the location of the resource. Hence, they may have considered themselves without enough knowledge about the condition of the resource being referred to.

Table 18. Perceptions of resource conditions, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Resource	Perceived Resource Condition*					Don't know	Not Apply	Net Rating**
	VB	B	NGB	G	VG			
Mangroves	0	2 (2.1)	6 (6.4)	42 (44.7)	39 (41.5)	5 (5.3)		88.8
Coral reefs	2 (2.1)	7 (7.4)	13 (13.8)	39 (41.5)	24 (25.5)	9 (9.6)		63.5
Upland forests	0	7 (7.4)	15 (16.0)	16 (17.0)	5 (5.3)	5 (5.3)	46 (48.9)	32.6
Seagrass	0	2 (2.1)	14 (14.5)	45 (47.9)	25 (26.6)	7 (7.4)	1 (1.5)	76.3
Beach	0	3 (3.)	10 (10.6)	51 (54.3)	27 (28.7)	2 (2.1)	1 (1.1)	82.4
River/ Creeks	0	7 (7.4)	14 (14.9)	40 (42.6)	14 (14.9)	4 (4.4)	15 (16.0)	62.67
Ground water	0	5 (5.3)	6 (6.4)	44 (46.8)	25 (26.6)	2 (2.1)	12 (12.8)	80

*Each community resource is rated on a 5-point scale with the following options and corresponding scores:
VG – Very good (5);G – good (4); NGB - neither good nor bad (3); B – bad (2); and VB – very bad (1).
**Net Rating = % [freq (VG + G)] – % [freq (VB + B)]
Note: Figures enclosed in parentheses are the corresponding percentages for each category

The computed net ratings in the last column of Table 18 provides the percentage of individuals who perceived the resource condition to be good/very good rather than bad/very bad. Hence, the large positive net ratings reflected in this table attest that a greater percentage of

residents perceived their resources to be good compared to a few who found them bad. All other resources had mean ratings of at least 4.0 with mangroves being highest at 4.33 compared to that of coral reefs (3.9), seagrass (4.08), and beach (4.12). Groundwater resources, on the other hand, had a mean rating of 4.11.

The lowest net rating is for upland forest; whereby there is only 22.3% more residents who perceived their upland forest to be in good condition than those who said that they were in bad condition. This is also echoed by the mean rating of perceived upland forest condition which is lowest at 3.44 (Table 19). Residents' perception on the conditions of their upland forest is also most varied (SD = 1.38) compared to the other resources. Most also perceived their rivers/creeks being in good or neither good nor bad conditions, with the mean rating at 3.81.

Table 19. Means and standard deviations of ratings on perceived resource conditions, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Resource	Valid Responses	Median	Mean	Std Dev
Mangroves	89	4	4.33	.70
Coral reefs	85	4	3.89	.99
Upland forests	43	3	3.44	.91
Seagrass	86	4	4.08	.74
Beach	91	4	4.12	.73
River/creeks	75	4	3.81	.85
Ground water	80	4	4.11	.80

*Each community resource is rated on a 5-point scale with the following options and corresponding scores: VG – Very good (5);G – good (4); NGB – neither good nor bad (3); B – bad (2); and VB – very bad (1)
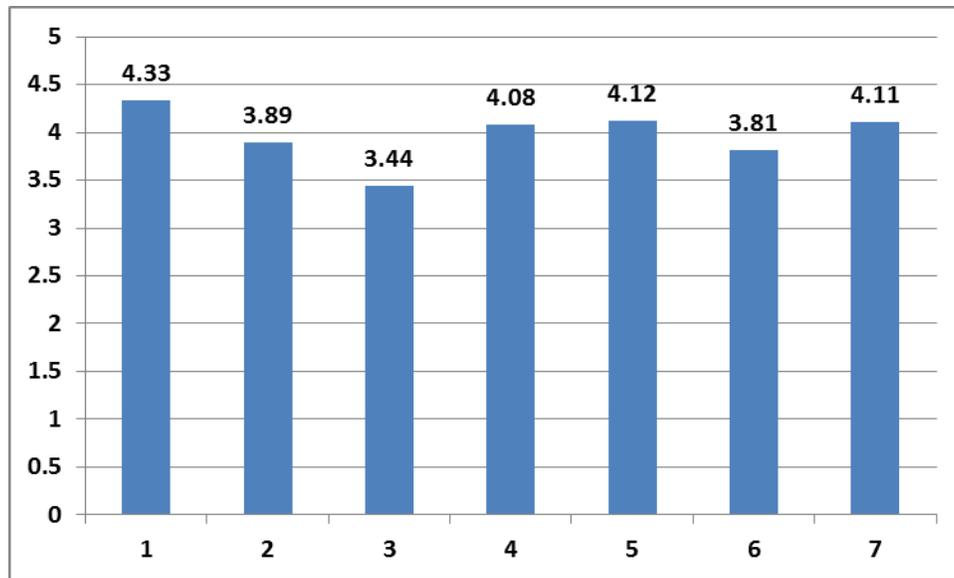
Legend: 1- Mangroves; 2- Coral reefs; 3 - Upland forests; 4 - Seagrass; 5 - Beach;
6 - Spring; 7 - River/creeks; 8 - Ground water

Figure 3. Mean ratings of perceived resource conditions at Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

3.3.7.   Perceived Threats

Since community residents are usually the direct users of the resources, they are presumed to be knowledgeable not only on the conditions of their resources but also their threats. Hence, an open-ended question soliciting the threats on each of the community resource, as perceived by them, was asked. Similar to the question on perceptions, there were respondents who either answered "don't know" or "not applicable", indicating again a lack of knowledge about the specific resource. These are mostly non-users or residents who live far from the resource.

It is also noticeable that a sizeable number of residents answered "none" when they were asked of the threats to the natural resources in their community, ranging from 9.6% (for mangroves) to 58.3% (for springs) (Table 20 to Table 25). The preponderance of this response could be interpreted in three ways - first, the resource may be well protected such that its threats have been eliminated, second threats are non-existent, or, residents may believe in the infiniteness of the resource and that there could never be any threat to its existence.

The enumeration of all perceived threats cited by the community residents for each resource are provided in Table 20 to Table 25. These tables provide a comprehensive listing of at most three perceived threats for each resource, classified as primary, secondary, or tertiary. If any threat is cited as any 2 or 3 of the three levels of threats, the frequencies as a primary, secondary, or tertiary threat are combined with the highest frequencies ranked to get at most five top threats.

Despite the declaration of Palawan as a Mangrove Swamp and Forest Reserve in 1981, a number of community residents still consider harvesting of mangrove trees for household or commercial use and charcoal making as major threats to mangrove forests (Table 20). A probable explanation for this is that although these activities are prohibited, they may have been undertaken in the community on a continuing basis although sporadic and small in scale in scope.

Table 20. Perceived threats to mangroves, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94)

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	9 (9.6)	29 (30.9)	84 (89.4)		
Cutting for household use	39 (41.5)	15 (16.0)	2 (2.1)	56 (59.6)	1
Cutting for commercial use	30 (31.9)	1 (1.1)	1 (1.1)	32 (34.0)	2
Clearing	3 (3.2)	1 (1.1)		4 (4.3)	5
Charcoal making	2 (2.1)	17 (18.1)	3 (3.2)	22 (23.4)	3
Conversion into fish pond	1 (1.1)		1 (1.1)	2 (2.1)	7
Natural phenomenon (typhoons, big waves)	1 (1.1)	1 (1.1)		2 (2.1)	8
Disease/infestation of mangroves	1 (1.1)	4 (4.3)		5 (5.3)	4
Pollution/Dumping of garbage		3 (3.2)		3 (3.2)	6
Others		1 (1.1)		1 (1.1)	
Don't know	8 (8.5)	22 (23.4)	3 (3.2)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

With regard to coral reefs, residents cited the use of destructive fishing methods such as cyanide/compressors and dynamites as two of the top three major threats to the resource. Another threat cited, illegal fishing (ranked 2nd major threat), may also be interpreted as referring to these practices (Table 21). These responses indicate the residents' heightened awareness of the detrimental side effects of such fishing methods on coral reef conditions. To them, coral reef destruction is related to fisheries rather than to natural phenomena such as typhoons, and climate change –related concerns like coral bleaching, which were only cited as a primary threat by 6 (6.4%) of respondents.

Table 21. Perceived threats to coral reefs, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94)

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	15 (16.0)	29 (38.3)	85 (90.4)		
Cyanide/compressor fishing	34 (36.2)	9 (9.6)		43 (45.7)	1
Illegal fishing	14 (14.9)	8 (8.6)	2 (2.1)	24 (25.5)	2
Dynamite/blast fishing	7 (7.4)	7 (7.4)	1 (1.1)	15 (16.0)	3
Coral gathering for HH/commercial use		2 (2.1)		2 (2.1)	7
Coral bleaching	3 (3.2)		1 (1.1)	4 (4.3)	5.5
Natural phenomenon (typhoon, waves)	3 (3.2)	1 (1.1)		4 (4.3)	4
Pollution/Dumping of garbage	3 (3.2)	1 (1.1)		4 (4.3)	5.5
Tourism related activities		1 (1.1)		1 (1.1)	8
Others	1 (1.1)	4 (4.3)	2 (2.1)	7 (7.4)	
Don't know	14 (14.9)	29 (30.9)	4 (4.3)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Slash-and-burn farming (*kaingin*) is the most cited upland forest threat by residents in the area (Table 22). There is a commercial logging ban in the whole province of Palawan, including

Puerto Princesa City, as provided by the Strategic Environment Plan for Palawan Law (RA 7611) that was enacted in 1992. Even as local and national government agencies work together to implement this provision of the law, it seems that at the community level, residents still practice *kaingin* farming which necessitates cutting of trees, usually secondary growth forests. The second and third most cited threats are cutting of trees for household use and illegal logging, which are usually fuelled by a strong demand for and high price of lumber/wood in Puerto Princesa City.

Table 22. Perceived threats to upland forests, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94)

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	11 (11.7)	66 (70.2)	85 (90.4)		
Charcoal making	1 (1.1)	5 (5.3)		6 (6.4)	4
Cutting trees for household use	11 (1.7)	3 (3.2)	2 (2.1)	16 (17.0)	2
Illegal logging	4 (4.3)	3 (3.2)	2 (1.1)	9 (0.6)	3
Cutting trees for commercial use	2 (2.1)	1 (1.1)		3 (3.2)	7
Conversion into residential settlements	3 (3.2)			3 (3.2)	6
Kaingin/slash & burn farming	16 (17.0)	6 (6.4)	1 (1.1)	23 (24.5)	1
Natural phenomenon (typhoons)	1 (1.1)	3 (3.2)		4 (2.3)	5
Not applicable	36 (38.3)	3 (3.2)		39 (41.5)	
Don't know	9 (9.6)	4 (4.3)	3 (3.2)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Though there were 32 (34.0%) "none" and 19 (20.2%) "don't know" responses to seagrass threats. The very few who answered cited fishing using dragnets/gleaning (combined % of 17.0), and to a lesser extent - illegal fishing activities, natural phenomenon, and pollution/dumping of garbage (Table 23) as threats to seagrass.

Table 23. Perceived threats to seagrass, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	32 (34.0)	76 (80.9)	88 (93.6)		
Clearing/mining/digging	1 (1.1)			1 (1.1)	7.5
Gathering for household use		1 (1.1)		1 (1.1)	10
Illegal fishing activities	8 (8.5)	3 (3.2)		11 (11.7)	2
Fishing using dragnets	10 (10.6)	6 (6.4)		16 (17.0)	1
Pollution/dumping of garbage	6 (6.4)	1 (1.1)	1 (1.1)	8 (8.5)	3
Dynamite/blast fishing	4 (4.3)			4 (4.3)	6
Natural phenomenon (typhoon, waves)	7 (7.4)			7 (7.4)	4
Disease	1 (1.1)			1 (1.1)	7.5
Gathering of shells & other Inhabitants of seagrass	2 (2.1)	1 (6.4)	4 (4.3)	7 (7.4)	5
Not applicable	4 (4.3)			4 (4.3)	
Don't know	19 (20.2)	6 (6.4)	1 (1.1)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Similar to the views on seagrass, 37.2% of the residents did not perceive any present threat to their beach (Table 24). This could mean three ways: the beach may have been well protected that its threats have been eliminated, there really the absence of threats, or residents may believe that the beach is well protected and could not be subjected to threats. Yet the answers given by the 17 or 18.1% who did respond is pollution/garbage dumping. This may be due to the fact that the beach is near residential settlements in the research site. There were also a few responses suggesting that sand quarrying and pebble gathering for household/ commercial use are taking place in some parts of the village.

Table 24. Perceived threats to beach, Barangay Kamuning, Puerto Princesa City, Philippines (n=94)

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	35 (37.2)	73 (77.7)	87 (92.6)		
Sand quarrying for commercial use	3 (3.2)			3 (3.2)	7
Pollution/dumping of garbage	17 (18.1)	6 (6.4)	1 (1.1)	24 (25.5)	1
Natural phenomenon (typhoons, big waves)	8 (8.5)	2 (2.1)	1 (1.1)	11 (11.2)	2
Sand quarrying for household use	6 (6.4)	2 (2.1)	1 (1.1)	8 (8.5)	3
Pebble/stone gathering for household use	2 (2.1)	1 (1.1)		3 (3.2)	8
Soil erosion from the uplands	3 (3.2)	3 (3.2)		6 (6.4)	5
Residential area expansion	2 (2.1)			2 (2.3)	9
Beach erosion/sea level rise	5 (5.3)	1 (1.1)		6 (6.4)	4
Tourist-related & resort development	1 (1.1)	3 (2.1)		4 (4.3)	6
Not applicable	3 (3.2)			3 (3.2)	
Others	3 (3.2)	1 (1.1)		4 (4.3)	
Don't know	6 (6.4)	3 (3.2)	4 (4.3)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

It is noted that 34% of the respondents did not cite any perceived threat to their river/creeks (Table 25). Other respondents, however, cited various threats to the resource, with pollution/garbage dumping having the greatest frequency (13 or 13.8%). This was followed by natural phenomena, such as typhoons and soil erosion from the uplands. The top two threats cited for rivers/creeks were the same threats cited for ground water though the order was reversed; natural phenomenon (13.8%) was the most cited threat instead of pollution/garbage dumping (11.7%), as reflected in Table 26.

Table 25. Perceived threats to rivers/creeks, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94)

Perceived Threat (Top Ten)	1st	2nd	3rd	Com-bined	Rank
None	32 (34.0)	74 (78.7)	89 (94.7)		
Pollution/dumping of garbage	13 (13.8)	30 (32.0)		43 (45.7)	1
Natural phenomenon (typhoons, big waves)	9 (9.6)	2 (2.1)	1 (1.1)	12 (12.8)	2
Sand quarrying for commercial use	4 (4.3)			4 (4.3)	4
Soil erosion from the uplands	4 (4.3)	4 (4.3)		8 (8.5)	3
Sand quarrying for household use	1 (1.1)	2 (2.1)	1 (1.1)	4 (4.3)	5
Pebble/stone gathering for household use	1 (1.1)			1 (1.1)	8.5
Sedimentation	2 (2.1)	1 (1.1)		3 (3.2)	6
Tourist- & resort-related development	1 (1.1)			1 (1.1)	8.5
deforestation	2 (2.1)			2 (2.1)	7
Not applicable	11 (11.7)	5 (5.3)		16 (17.0)	
Don't know	14 (14.9)	3 (3.2)	3 (3.2)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Table 26. Perceived threats to ground water, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	53 (56.4)	81 (86.2)	91 (96.8)		
Natural phenomenon (typhoons)	10 (10.6)	3 (3.2)		13 (13.8)	1
Pollution/dumping of garbage1	9 (9.6)	2 (2.1)		11 (11.7)	2
Water contamination due to sewage	2 (2.1)	1 (1.1)		3 (3.2)	3
Over-exploitation for household use	1 (1.1)			1 (1.1)	5
Salt intrusion	1 (1.1)			1 (1.1)	5
Establishment/Expansion of Human Settlements	1 (1.1)			1 (1.1)	5
Others	4 (4.3)			4 (4.3)	
Not applicable	7 (7.4)	3 (3.2)		3 (3.2)	
Don't know	6 (6.4)	4 (4.3)	3 (3.2)	7 (7.4)	

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Table 27 and Table 28 below provide a summary of the perceived resource threats by listing in ranked order the most often cited threats for each resource. Some threats are common to two or more resources, affirming that collectively, resources are interconnected and two or more resources may be facing the same threat/s. A common threat to both mangroves and upland forests relate to cutting of trees for timber (household/commercial use). Coral reefs are endangered by the use of destructive fishing methods such as cyanide, dynamites, and compressor, which can also be categorized as the same as illegal fishing activities, that threaten seagrass. In addition to this, residents also cited that fishing using dragnets/gleaning and pollution/dumping of garbage also threaten seagrass resources. Aside from sand quarrying that is a threat to both spring and beach, water contamination and sedimentation are also identified by respondents to damage springs. Sanitation issues, on the other hand - such as garbage dumping

and along with natural phenomenon - can also affect the good condition of the beach, rivers/creeks, and groundwater.

Table 27. Top perceived threats to coastal resources, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Mangroves	Coral Reefs	Seagrass	Beach
None – 9.6%	None - 16.0%	None –34.0%	None – 37.2%
Don't know/ not applicable – 8.5%	Don't know/ not applicable – 14.9%	Don't know/ not applicable – 24.5%	Don't know/ not applicable – 9.6%
Cutting for household use	Cyanide/compressor fishing	Fishing using dragnets/gleaning	Pollution/dumping of garbage
Cutting for commercial use	Illegal fishing	Illegal fishing activities	Natural phenomenon (typhoons, big waves)
Charcoal making	Dynamite/blast fishing	Pollution/dumping of garbage	Sand quarrying for commercial/household use
			Beach erosion/sea level rise

Table 28. Top perceived threats to non-coastal resources, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Upland Forests	Springs	Rivers/Creeks	Ground Water
None – 11.7%	None – 58.3%	None – 34.0%	None – 56.4%
Don't know/ not applicable – 47.9%	Don't know – 30.4%	Don't know/ not applicable – 26.6%	Don't know/ not applicable – 13.8%
Kaingin/slash & burn farming	Water contamination	Pollution/dumping of garbage	Natural phenomenon (typhoons)
Cutting trees for household use	Sand quarrying	Natural phenomenon (typhoons, big waves)	Pollution/dumping of garbage
Illegal logging	Sedimentation	Soil erosion from the uplands	

3.3.8.   Awareness of Rules and Regulations

Most residents are aware of the rules and regulations on fishing (86.2%) and mangroves (86.4%) (Table 29). Many are less aware of rules and regulations on other resources and or development endeavors of these resources include aquaculture development (35.1%), Resort/pension/hotel development (37.2), residential development (27.7%), pebble gathering (38.3%), and residential development (27.7%), and marine transportation (22.3%).Very few expressed awareness of rules and regulations on other forms of resource use/activity like water sports, recreational climbing/trekking, and tourist transportation. Such responses suggest that these are absent in the area or if present are concerns that do not impinge on their daily economic or social lives as evidenced by the large frequencies on "not applicable" and "don't know".

Table 29. Awareness of resource rules and regulations, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94)

Resource Used/ Activity	Awareness of Rules & Regulations				Origin of Regulation			
	None	Yes	Don't Know	Not Apply	Brgy	Mun/ City	Prov	Natl
Fishing	4 (4.3)	81 (86.2)	9 (9.6)	-	17 (21.0)	51 (63.0)	1 (1.2)	12 (14.8)
Mangroves	6 (6.4)	81 (86.2)	7 (7.4)	-	22 (27.2)	45 (55.6)	2 (2.5)	12 (14.8)
Aquaculture	22 (23.4)	33 (35.1)	35 (37.2)	-	9 (27.3)	21 (63.6)	3 (9.1)	
Resort/pension/hotel development	19 (20.2)	35 (37.2)	36 (38.3)	4 (4.3)	8 (22.9)	20 (57.1)	2 (5.7)	5 (24.3)
Residential development	22 (23.4)	26 (27.7)	44 (46.8)	2 (2.1)	7 (26.1)	17 (65.4)	1 (3.8)	1 (3.8)
Watersports	15 (16.0)	3 (3.2)	54 (57.4)	21 (22.3)	1 (33.3)	2 (66.7)		
Recreational climb/trek/camp	17 (18.1)	5 (5.3)	54 (57.4)	18 (19.1)	3 (60.0)	2 (40.0)		
Pebble gathering	18 (19.1)	36 (38.3)	33 (35.1)	7 (7.4)	15 (41.7)	20 (55.6)	1 (2.8)	
Tourist transportation	18 (19.1)	6 (6.4)	52 (55.3)	18 (19.1)	5 (83.3)	1 (16.7)		
Marine transportation	17 (18.1)	21 (22.3)	41 (43.6)	15 (16.0)	11 (52.4)	10 (47.6)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

It appears that more of the known resource rules and regulations come primarily from the City government of Puerto Princesa and secondarily from the Barangay Council of Kamuning as attributed by the residents themselves. There were very few who said that the resource rules and regulations they are aware of were enacted at the provincial or national levels.

3.3.9. Participation in Decision Making

Because coastal management is usually a community effort entailing high engagement among residents, they were asked to rate their current and desired levels of participation in decision making on each resource activity. A 5-point scale was used with "no participation" scored as 1 and "full participation" scored as 5. The earlier observed trend that people are concerned only with resources that they use or resource development that impinge on their daily lives is again confirmed as shown in the more than 50% frequencies of "not applicable" in all items except those concerns for fishing, mangroves, aquaculture, resort/pension house development, residential development, and pebble gathering (Table 30). This is especially true considering the coastal community focus of this study.

Table 30. Current and desired levels of participation in decision making, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Activity		Rating Scores*					Not applicable
		1	2	3	4	5	
Fishing	Current	30 (31.9)	5 (5.3)	10 (10.6)	10 (10.6)	30 (31.9)	9 (9.6)
	Desired	17 (18.1)	4 (4.3)	19 (20.2)	17 (18.1)	27 (27)	10 (10.6)
Mangroves	Current	28 (29.8)	7 (7.4)	8 (8.5)	9 (9.6)	34 (36.9)	8 (8.5)
	Desired	15 (16)	7 (7.4)	17 (18.1)	14 (14.9)	26 (27.7)	15 (16)
Aquaculture	Current	32 (34)	5 (5.3)	3 (3.2)	2 (2.1)	13 (13.8)	39 (4.5)
	Desired	33 (35.1)	4 (4.3)	11 (11.7)	8 (8.5)	12 (12.8)	26 (27.7)
Resort/pension/ hotel	Current	40 (42.6)	2 (2.1)	6 (6.4)	2 (2.1)	6 (6.4)	38 (40.4)

Activity		Rating Scores*					Not applicable
		1	2	3	4	5	
development	Desired	36 (38.3)	6 (6.4)	5 (5.3)	4 (4.3)	7 (7.4)	36 (38.3)
Residential development	Current	35 (37.2)	3 (3.2)	7 (7.4)	4 (4.3)	2 (2.1)	43 (45.7)
	Desired	31 (33)	4 (4.3)	10 (10.6)	5 (5.3)	7 (7.4)	37 (39.4)
Watersports	Current	21 (22.3)	1 (1.1)	-	-	2 (2.1)	69 (73.4)
	Desired	36 (38.3)	2 (2.1)	1 (1.1)	2 (2.1)	4 (4.3)	49 (52.1)
Recreational climb/trek/ Camp	Current	19 (20.2)	-	2 (2.9)	-	1 (1.1)	72 (76.6)
	Desired	34 (36.2)	2 (2.1)	3 (3.2)	2 (2.1)	3 (3.2)	50 (53.2)
Pebble gathering	Current	35 (37.2)	1 (1.1)	9 (9.6)	5 (5.3)	9 (.6)	35 (37.2)
	Desired	23 (24.5)	3 (3.2)	13 (13.8)	7 (7.4)	12 (12.8)	36 (38.3)
Tourist transportation	Current	22 (23.4)	-	-	-	2 (2.1)	70 (74.5)
	Desired	32 (34)	2 (2.1)	1 (1.1)	6 (6.4)	6 (6.4)	47 (50)
Marine transportation	Current	23 (24.5)	2 (2.1)	6 (6.4)	3 (3.2)	7 (7.4)	53 (56.4)
	Desired	30 (31.9)	1 (1.1)	2 (2.1)	4 (4.3)	10 (10.6)	47 (50)

Note: Rating is on a scale of 1 – 5, with 1- no participation, and 5 – full participation

The current levels of participation in decision making for four out of six resources/ activities are quite low though, with the bulk of frequencies at "no participation." These relate to aquaculture, resort/pension house development, residential development, and pebble gathering. The highest mean rating is 3.2 for mangroves, followed by 3.1 for fishing (Table 31). This is indicative that though respondents participate in decision-making, only a few rated themselves to be participating above the "neutral" to "very high" levels in decision making for the said activities. These results may be cultural to Filipinos, where decision making is traditionally left to the discretion of leaders, who are viewed to have the authority and responsibility vested upon them because of their positions of power.

Table 31. Means and standard deviations of ratings of participation in decision making, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94)

Resource Used/ Activity	Current Level of Participation			Desired Level of Participation		
	N	Mean	Std Dev	N	Mean	Std Dev
Fishing	85	3.1	1.7	84	3.4	1.5
Mangroves	86	3.2	1.8	79	3.4	1.5
Aquaculture	55	2.3	1.7	68	2.4	1.6
Resort/pension/hotel development	56	1.8	1.4	58	2.0	1.5
Residential development	51	1.7	1.2	57	2.2	1.5
Watersports	24	1.4	1.1	45	1.2	1.3
Recreational climb/trek/camp	22	1.4	1.0	44	1.6	1.2
Pebble gathering	59	2.2	1.6	58	2.7	1.6
Tourist transportation	24	1.3	1.1	47	2.0	1.6
Marine transportation	41	2.2	1.6	47	2.2	1.7
Others	11	1.9	1.4	31	1.4	1.0

It can be observed though, that the residents' responses as to their desired levels of participation can be an indication of a starting shift from a passive to a more active involvement in decision–making. In comparison with the current and desired levels of participation in decision making, there were fewer responses of 1/2 and more of 3/4/5 in the desired level of participation than that of current participation levels. These values indicate a greater desire to participate among residents. As reflected in the higher mean ratings for desired levels which are significantly different from their current levels of participation (Table 31), there appears to be a one-to-one correspondence of residents' current and desired levels of participation. The study shows that their desired levels of participation are higher than their current levels in almost all resources, and these differences are statistically significant (Table 32). Hence, there is still an opportunity for village leaders to tap and seek greater participation from their constituents since community members generally have a greater desire to be more active in the present and future community undertakings and endeavors.

Interestingly, however, across all areas of decision making comparing the responses to the rating of 5 (strong participation) between current and desired participation there is a downward trend in rating in the areas of fishing, mangroves, aquaculture, and resort/pension/hotel development.

Table 32. Comparisons of current and desired levels of participation in decision making, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94)

Resource Use/ Activity	Paired Corr	Paired Differences		t-value	df	Sig. (2-tailed)
		Mean	SD			
Fishing	.565	-.35	1.5	-2.0	77	.044*
Aquaculture	.430	-.62	1.7	-2.4	44	.021*
Residential development	.241	-.82	1.7	-2.9	37	.006**
Watersports	.372	-1.3	1.7	-2.9	17	.008**
Recreational climb/trek/camp	.546	-.78	1.4	-2.4	17	.026*
Pebble gathering	.644	-.63	1.3	-3.3	48	.002**
Tourist transportation	.392	-1.5	1.8	-3.8	19	.001**

 * significant at the .05 level
 **significant at the .01 level

3.3.10.   Membership in Resource Use Stakeholder Organization

One avenue for involvement in resource use management is membership in stakeholder organizations. In the case of Barangay Kamuning, nearly three-fifths of respondent- households have affiliations with such an organization, reflecting a relatively high level of involvement (Table 33). These households have 1-3 members affiliated in resource use organizations. The frequently mentioned stakeholder organizations involved in by these households are BFARMC, women, and agriculture-related groups, Seaweed Farmers Association, Kamuning Coastal Development Association, Inc., among others (Table 34). It is important to note the low level of affiliations for fishery related organizations among the households and the comparatively higher membership to agriculture related organizations.

Table 33. Household membership in resource use stakeholder organizations, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

No. of HH members Involved	Freq	%
None	40	42.6
1	37	39.4
2	15	16.0
3	3	2.1

Table 34. Membership in resource use stakeholder organizations, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Resource use stakeholder organization	No.	%
None	40	42.6
BFARMC	4	4.3
Women's associations (CSWD, CWA)	15	15.9
Kamuning Coastal Development Association, Inc (KCDAI)	4	4.3
Kamuning Seaweed Farmer Association	2	2.1
Barangay Kamuning Action Group	2	2.1
Agriculture –related (Coconut Farmers, Farmers Group)	21	22.3
Others	6	6.9

3.3.11.   Perceived Coastal Management Problems and Solutions

About 6 out of every 10 household informants provided answers on perceived coastal management problems. The often cited coastal management problem by those who gave at least one answer (a maximum of two problems were solicited) were those related to illegal fishing methods, sanitation, and governance on enforcement-related concerns. Specific problems under each of these categories are enumerated in Table 35. It can thus be inferred that there are concerted efforts from different government agencies to stop destructive fishing methods through regulation and enforcement. Nonetheless, such efforts are inadequate and prohibited practices are still continuing.

Table 35. Perceived coastal management problems, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Coastal Management Problems	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Livelihood related to coastal resource utilization	4	4.26	1	1.06	5	5.3
Mangrove cutting	4	4.26	1	1.06	5	5.3
Natural calamities	4	4.26			4	4.3
Over-exploitation of coastal resource for HH/commercial use/ Decrease in fish catch or available coastal resources	3	3.19	4	4.26	7	7.4
Sanitation (ie., pollution and garbage dumping, waste management)	8	8.51	6	6.38	14	14.9
Illegal fishing methods (ie., use of cyanide in fishing, use of compressor units, use of fine mesh nets, use of other illegal fishing gears)	14	14.89	4	4.26	18	19.2
Illegal logging	1	1.06			1	1.1
Inadequate water supply	1	1.06	1	1.06	2	2.1
Resource competition/ use conflicts (ie., Prohibition on fish corrals establishment, Land tenure and tenurial agreements)	4	4.26	4	4.26	8	8.5
Governance – Enforcement (ie., registration and permits for fishing livelihood, No regular monitoring, Inadequate trainings on coastal management)	8	8.51	4	4.26	12	12.8
Food Security (ie., fish catch is sold outside of the village)	1	1.06			1	1.1
Other	4	4.26	2	2.13	6	6.4
Subtotal	56	59.57				
No response/missing	11	11.70				
Don't know	21	22.34				
None	6	6.38				
Total	94	100.00				

Whenever a problem is raised, a follow up question was asked to solicit what the respondent perceives to be the corresponding solution/s wherein at most two solutions may be given. Though about 80 (79.9%) failed to forward solutions, the 19 (20.2%) who were able to offer specific suggested solutions to either of the two problems cited (Table 36). Those that were related were lumped together and categorized according to commonalities of concerns. When grouped according to governance concerns, most of the suggested solutions focused on enforcement (ie., of rules and laws on fishery, waste management, and the protection and conservation of coastal and natural resources). This was succeeded by suggested solutions focused on enhancing educational awareness by conducting orientations and pertaining to policy on fisheries. The other category of often cited coastal management problem solution pertained to social services delivery and livelihoods assistance. A comparison of the top most coastal management problems and solutions perceived by the residents is provided in Table 37.

Table 36. Perceived solutions to coastal management problems, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Coastal Management Problems Solutions	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Community Mobilization (ie., conduct coastal clean-ups, report coastal management related incidents to the village government)	3	3.2			3	3.2
Social services and livelihoods assistance (ie., Provide financial assistance for farm inputs, Financial assistance for livestock project, Financial assistance for livelihood projects)	4	4.3			4	4.3
Governance- Policy (ie., Establish MPA, regulate volume and not sell all fish catch to the city proper)	2	2.1			2	2.1
Governance- Logistical Support (ie., Seek government support for infrastructure projects like roads)	1	1.1			1	1.1
Governance- Educational Awareness (ie., Conduct policy dissemination and orientation on fishery laws)	3	3.2	1.0	1.1	4	4.3
Governance- Enforcement- (ie., Consistently implement and strictly monitor of coastal management activities, Consistent and strict implementation of fishery laws, Implement RA 9003 and impose penalty, Protect	3	3.2	5.0	5.3	8	8.5

Coastal Management Problems Solutions	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
mangrove forests)						
Others- Conduct research to control siltation	3	3.2			3	3.2
Subtotal	19	20.2	6.0			
No response	74	78.7	74.0			
None	1	1.1	14.0			
Total	94	100.0	94.0			

Table 37. Top perceived coastal management problems and solutions, Kamuning, Puerto Princesa City, Philippines, (n = 94)

Coastal Management Problems	Coastal Management Problems Solutions
None- 6.4% Don't Know/Not concerned/ No answer-34.0 With answer- 59.6%	None- 1.1% Don't Know/Not concerned/ No answer-78.8 % With answer- 20.2%
Illegal fishing methods (ie., use of cyanide in fishing, use of compressor units, use of fine mesh nets, use of other illegal fishing gears) Sanitation (ie., pollution and garbage dumping, waste management) Governance-Enforcement (ie., registration and permits for fishing livelihood, No regular monitoring, Inadequate trainings on coastal management)	Governance- Enforcement- (ie., Consistently implement and strictly monitor of coastal management activities, Consistent and strict implementation of fishery laws, Implement RA 9003 and impose penalty, Protect mangrove forests Governance- Educational Awareness (ie., Conduct policy dissemination and orientation on fishery laws) Social services and livelihoods assistance (ie., Provide financial assistance for farm inputs, Financial assistance for livestock project, Financial assistance for livelihood projects

3.3.12.   Successes and Challenges in Coastal Management

Though only about half was able to enumerate one or two things in the community that they considered as successful with respect to coastal management, there is a general agreement among those who did respond that mangrove reforestation is a success in coastal management in the village (Table 38). This is complemented by the active community participation in many village activities like coastal cleanups and cleanliness drives, as well as other environmental protection events like *Pista ng Karagatan*. Another hailed success area by those who replied is

governance on enforcement of certain fishery laws, prohibition of resource-destructive and resource-depletive activities.

Table 38. Perceived successes in coastal management, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Coastal Management Success	Success1		Success 2		Combined	
	No.	%	No.	%	No.	%
Community Mobilization (ie., Participation of community in Coastal Clean-up drives, village cleanliness or Oplan Linis, participation in Pista ng Karagatan)	14	14.9	9	9.6	23	24.5
Governance- Administration (ie., Active Bantay Dagat, Organized BFARMC	2	2.1	2	2.1	4	4.3
Governance- Policy (ie., Proposed marine sanctuary, Controlling the setup of big fish corrals or designate zone for fish corrals)	1	1.1	1	1.1	2	2.1
Mangrove reforestation	22	23.4	7	7.4	29	30.8
Governance- Enforcement (ie., Implementing regulations re illegal fishing, Regulations on transient fishers, Strict implementation of prohibition on sand quarrying, Fishery/ fishing registration permit, enforcement of Ecowaste management)	4	4.3	6	6.4	10	10.6
Subtotal	43	45.7	25	26.6		
None	6	6.4				
Don't know	28	29.8				
No response	17	18.1				
Total	94	100.0				

It seems that most residents find it difficult to pinpoint challenges to coastal resource management in their community as 7.4% said "none" and 60.7% provided no response or answered "don't know", while only 31.9% mentioned a challenge (Table 39). The multifaceted dimensions of coastal resource management are highlighted in the responses of residents. The challenges cited are almost similar to the coastal management problems, but are focused on governance pertaining to enforcement and logistical matters, in addition to the challenge of

conserving and protecting the coastal resources. Table 40 summarizes the perceptions of the residents as to the village's successes and challenges in coastal management.

Table 39. Perceived challenges in coastal management, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Challenges in Coastal Management	Challenge 1		Challenge 2		Combined	
	No.	%	No.	%	No.	%
Community mobilization (Sustaining the interest and participation of local community members to community projects)	4.0	4.3	1.0	1.1	5.0	5.3
Beautification and cleanliness of the beach and its surroundings (Sustaining Coastal Cleanup drives)	5.0	5.3			5.0	5.3
Conservation and protection of resources (Continuing and sustaining mangrove reforestation, Establishment of MPA, sustaining coastal resource management activities)	5.0	5.3	2.0	2.1	7.0	7.4
Governance: Enforcement (Controlling illegal fishing incidents, Implementation of fishery laws, regulations on transient fishers)	10.0	10.6	2.0	2.1	12.0	12.8
Governance: Policy (Proposed designation of a zone or ground for fish corrals)	1.0	1.1			1.0	1.1
Governance: Logistics (Lack of patrolling equipment for coastal monitoring and management, Sustaining community development programs, Enhancing coastal monitoring activities)	5.0	5.3	5.0	5.3	10.0	10.6
Alternative livelihoods solutions			1.0	1.1	1.0	1.1
Subtotal	30.0	31.9				
No response	17.0	18.1				
None	7.0	7.4				
Don't know	40.0	42.6				
Total	94.0	100.0				

Table 40. Top perceived coastal management successes and challenges, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Coastal Management Successes	Coastal Management Challenges
None- 6.4% Don't Know/Not concerned/ No answer- 47.9% With answer-45.7%	None- 7.4% Don't Know/Not concerned/ No answer- 60.7% With answer- 31.9%
1. Mangrove reforestation 2. Community Mobilization (ie., Participation of community in Coastal Cleanup drives, village cleanliness or Oplan Linis, participation in Pista ng Karagatan) 3. Governance- Enforcement (ie., Implementing regulations re: illegal fishing, Regulations on transient fishers, Strict implementation of prohibition on sand quarrying, Fishery/ fishing registration permit, enforcement of Ecowaste management)	1. Governance Enforcement (ie., Controlling illegal fishing incidents, Implementation of fishery laws, regulations on transient fishers) 2. Governance- Logistics (ie., Lack of patrolling equipment for coastal monitoring and management, Sustaining community development programs, Enhancing coastal monitoring activities) 3. Conservation and protection of resources (ie., Continuing and sustaining mangrove reforestation, Establishment of MPA, sustaining coastal resource management activities,)

3.3.13. Perceived Community Problems and Solutions to Community Problems

In comparison to eliciting the perceived coastal management problems and challenges, there seems to be more residents who are able to cite community problems, and provide suggested solutions indicating a greater sense of community awareness. The village's feeder roads are dirt/gravel roads, with no access roads within its inner *sitios*. There is also water shortage for agricultural and household uses. It is not surprising, therefore, that bulk of the responses pinpointed to infrastructure (Table 41). Other top problems pertained to electrification and the lack of livelihood alternatives/opportunities. Specific community problems cited by respondents are listed in Table 42.

Table 41. Perceived community problems, Barangay Kamuning, Puerto Princesa City, Philippines, (n = 94).

Community Problem	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Poverty	4.0	4.3	1.0	1.1	5.0	5.3
Improve Infrastructure: Bad road conditions, and farm to market roads, Cemetery, Lack of supply of water for domestic and agricultural use	14.0	14.9	12.0	12.8	26.0	27.7
Provision of electricity and power: provide street lights	5.0	5.3	3.0	3.2	8.0	8.5
Flooding (Natural phenomenon)	1.0	1.1			1.0	1.1
Agriculture development : Pests that destroy rice plant and coconut, Low prices of produce	4.0	4.3	1.0	1.1	5.0	5.3
Lack of alternative livelihoods	4.0	4.3	4.0	4.3	8.0	8.5
Declining number of community people participating in community activities	4.0	4.3			4.0	4.3
Cleanliness and proper waste segregation, Poor sanitation / lack of comfort rooms	1.0	1.1			1.0	1.1
Limited access to credit facilities or sources			1.0	1.1	1.0	1.1
Social services (ie., Need to substantiate healthcare system, activities for youth because many young people are out of school)	2.0		2.0	2.1	4.0	4.3
Others: Noise of rice mills, Drunkards	4.0		2.0	2.1	6.0	6.4
Subtotal	43.0	45.7	26.0	27.7		
No response	32.0	34.0	40.0	42.6		
Don't know	17.0	18.1	23.0	24.5		
None	2.0	2.1	5.0	5.3		
Total	94.0	100.0	94.0	100.0		

As solutions to the identified community problems, respondents enumerated 16 specific suggestions corresponding to problems that are classified into seven broad categories. These categories are: (1) infrastructure development, (2) enhancement of the delivery of social services, (3) fund allocation and management, (4) livelihood assistance (5) community mobilization, (6) social control, and (7) governance on policy (Table 42). Among these categories, the top three broad solutions are: (1) infrastructure development, which, according to residents, includes the

repair and concreting of village roads, construction of drainage systems, cemetery, and electrification; (2) livelihoods assistance for farmers in terms of irrigation, trainings, and assistance in seeking buyers for products; and, (3) community mobilization that focuses on strengthening community participation in village coastal resource management activities, as well as in decision–making participation. The latter corroborates with the previous findings that residents desire a higher level of participation in decision making especially if these concerns are related to the management of coastal resources. Generally, there is a congruence between the residents' perceived community problems and solutions (Table 43).

Table 42. Perceived solutions to community problems, Barangay Kamuning, Puerto Princesa City, Philippines (n = 94).

Community Problems Solutions	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Infrastructure development: Concreting and repair of roads, drainage system construction, allot funds for village cemetery, resolution for electricity and power including street lights	26.0	27.7	3.0	3.2	29.0	30.8
Enhancement of social services: Increase dissemination of health programs an family planning, intensify barangay health programs	3.0	3.2	2.0	2.1	5.0	5.3
Fund allocation and management : More financial assistance from the government to support community projects, Allocate sufficient funds for community projects	2.0	2.1	1.0	1.1	3.0	5.3
Social control: Implement curfew hours	1.0	1.1			1.0	1.1
Livelihoods assistance: Provide assistance for agriculture and irrigation, Regular market and buyers for produce and catch, Provide livelihood trainings	8.0	8.5	5.0	5.3	13.0	13.8
Governance Policy: Establish a fish sanctuary	2.0	2.1			2.0	2.1
Community mobilization: Strengthen community participation in community activities including coastal management projects decision making in cooperation with village officials, Encourage community members to participate in village activities	6.0	5.4			6.0	6.4
Subtotal	48.0	51.1	11.0	11.7		
None	5.0	5.3	9.0	9.6		
Don't know	23.0	24.5	25.0	26.6		
No response	18.0	19.1	49.0	52.1		
TOTAL	94.0	100.0	94.0	100.0		

Table 43. Top perceived community problems and solutions, Barangay Kamuning, Puerto Princesa City, Philippines.

Community Problems	Community Problems Solutions
None-2.1% Don't Know/Not concerned/ No answer-52.1% With answer- 45.7%	None- 5.3% Don't Know/Not concerned/ No answer- 43.6% With answer- 51.1%
1. Infrastructure: Bad road conditions, and farm to market roads, Cemetery, Lack of supply of water for domestic and agricultural use 2. Provision of electricity and power: provide street lights 3. Lack of alternative livelihoods	1. Infrastructure development: Concreting and repair of roads, drainage system construction, allot funds for village cemetery, resolution for electricity and power including street lights 2. Livelihoods assistance: Provide assistance for agriculture and irrigation, Regular market and buyers for produce and catch, Provide livelihood trainings 3. Community mobilization: Strengthen community participation in community activities including coastal management projects decision making in cooperation with village officials, Encourage community members to participate in village activities

3.3.14.   Governance

The community also recognizes the existence of the management body that governs the monitoring and surveillance of the coastal activities and fishing activities in the community. BFARMC, Fisherfolk Associations and Bantay Dagat are the management bodies that were identified by the respondents. These bodies are associated by the residents to be legitimate groups with formal institutional arrangement as well as relevant rules and regulations. However, fisherfolk associations were said to have no management plan. The key informants interviewed do not know of any coastal management plan formulated by these organizations.

In terms of number of personnel and staff, only BFARMC was pointed to have personnel who work to monitor coastal activities. Though it was mentioned that more than 150 officers and members were involved in BFARMC, only 4.3% of the households actually count themselves as members of the BFARMC (Table 34). The rest of the other groups' memberships were unknown. These management bodies were said to have no regular fund allocations.

Regarding stakeholder participation, five stakeholder groups were also identified by the community. These are Bantay Dagat, Fisher and Farmer Associations, Businessman Association and the Indigenous People's group. According to informants, these groups participate in the decision making concerning coastal and marine activities management. The KCDAI, Sangguniang Kabataan (SK), Senior Citizen Organization (SCO), and the Community Women Association (CWA) were mentioned to belong to the formal community organizations. On the other hand, BFARMC, SK, SCO, Tribal Group and CWA were cited to influence both coastal management and community issues.

3.4. Recommendations

From these findings, the following specific recommendations are enumerated:

1. Verify the bio-physical status of the resources in the village to validate the residents' perceptions with regard to the conditions of their coastal and non-coastal resources.

2. Develop a community-based monitoring and enforcement initiative that is linked with the existing city-wide Bantay Puerto to determine if the threats cited are still continuing up to the present and in order to take the necessary actions to mitigate and/or eliminate the threats.

3. Explore value adding, alternative and/or supplemental village-based livelihood projects that would allow community residents to become entrepreneurs and/or self-employed.. The assistance should not only be limited to training and capital support but must also include marketing support such as the formation of marketing cooperatives to gain market power and realize fair market price for the local produce including fishery products. Fishers are already experiencing decreasing fish catch; therefore, it is important to explore and tap economic opportunities beyond fisheries.

4. Train and promote household financial accounting to foster prudent use of their income.

5. Undertake wider dissemination of information on environment and natural resources with emphasis on its ecological values and relationships including the lesser appreciated resources such as the seagrass, beach, and river/estuarine ecosystems, and environmental rules and regulations not only to the resource users but to the community at large to foster wider participation of community members in resource management and development. This is because awareness of resource rules and regulations are mostly limited to the actual resource users.

6. Strengthen local organizations in terms of encouraging wider and active participation of members in resource management and sustainable financing. Organize and/or strengthen agriculture-related stakeholder organizations so that more farmers may get involved in communal decision making. While there is already a BFARMC, Barangay Kamuning is a combined farming-fishing community.

7. Link community enforcement initiatives to city-wide Bantay Dagat and Gubat taking lessons from the province-wide enforcement system being implemented by the PCSD. Though the BFARMC and Bantay Dagat members are deputized to apprehend offenders, they hesitate to do so because of the attendant risks to their lives.

8. Develop policy and management options on coastal/marine resource use that may include: designation of fish corral (baklad) zones; limitations on the use of specific fishing methods; close and open system; and mobile registration of boats in the village. There is an emerging consensus among residents that the focus of governance with respect to policy formulation is more on regulation rather than restriction. These should be supported by studies from support institutions especially the local research and academic institutions.

9. Develop and implement community-based systems to support national, provincial, city, and village policies and projects to include Solid Waste Projects (i.e. coastal clean-ups, waste segregation programs, etc.) Fishery and Forestry Code, Strategic Environmental Plan for Palawan Act, CLUP and Environmental Code of the City.

10. Establish more basic infrastructure facilities that could in turn spur economic development. Such infrastructure may include feeder roads to the inner *sitios* of the village.

11. Rationalize the issue of power. Electricity is already available to the village; hence, there is a clamor for more street lights. Furthermore, some households seem unable to pay for the attendant expenses in order to connect to Palawan Electric Cooperative (PALECO), the electricity provider in the area. The village may therefore serve as a conduit to help the households negotiate with PALECO so that some compromise may be arranged for them to be able to tap electricity and pay the initial costs, like doing so on an instalment basis.

12. The same baseline be undertaken in the future. Because the data presented herein were collected in order to establish baseline conditions at Barangay Kamuning, it is also recommended that a similar undertaking be conducted three or five years hence in order to monitor changes and trends, if any.

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3.6 Appendices

Appendix 1. Commonly used fishing gears, Barangay Kamuning, Puerto Princesa City, Palawan, Philippines

English Name	Local Name
Gill net	Panti
Gillnet, modified with scaring device	Panti
Hook and line, bottom set	Kitang
Hook and line, common	Kawil
Squid jigger	Ganti-ganti
Fish corral	Baklad
Reef flat gleaning	Panginginas

Appendix 2. Common names and equivalent local names of commonly caught marine species, Barangay Kamuning, Puerto Princesa City, Palawan, Philippines

Common Name	Local Name
FINFISHES	
Emperor fish	Anupeng
Frigate mackerel	Tulingan
Garfish	Balo
Grouper	Lapu-lapu
Jack	Talakitok
Mackerel	Burao
Milkfish	Bangus
Mullet	Banak
Parrotfish/	Busalog
Rabbitfish	Danggit, samaral
Sardine	Tamban
Snapper	Maya-maya
Silverspot squirrelfish/ Red Bigeye/ redeye/ longfinned bullseye	Siga
Sole fish	Tampal-puke
Squid	Pusit
Threadfin bream	Bisugo
Trevally	Salay-salay, Kalapato
"Unkown"	Budo
"Unknown"	Darag
SHELLFISHES	
Arc clam	Bakalan
Jumping shells (Little bear conch)	Sikad-sikad
Marsh clam	Kibao
Seasnail (small)	Suso
Seasnail (big)	Balelit
Spider shell	Saang
"Unknown"	Kaladuga
CRUSTACEAN	
Mudcrab	Alimango
Prawn	Sugpo
ECHINODERM	
Sea Urchin	Tirik
WORM	
Mangrove worm	Tamilok
SEAWEED	
Seagrapes	Lato

This document may be cited as:

Part 4 SocMon Site Report Barangay Cawayan, Bongabong, Oriental Mindoro

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province

SocMon Site Report Barangay Cawayan, Bongabong Oriental Mindoro, Philippines

Center for Strategic Policy and Governance
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Mindoro State College of Agriculture and Technology (MinSCAT)
Bongabong, Oriental Mindoro

September 2012

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List of Acronyms and Abbreviations

BFARMC	Barangay Fisheries and Aquatic Resources Management Council
CBMS	Community-Based Monitoring Survey
FGD	focused group discussions
GI	galvanized iron
ha	hectares
HH	household
HHI	household interview
KI	key informant
KII	key informant interview
km	kilometres
MIMAROPA	Mindoro-Marinduque-Romblon-Palawan
NGO	non-government organization
ORMECO	Oriental Mindoro Electric Company
SEA	Southeast Asia
SocMon	Socioeconomic Monitoring
UV	ultra violet

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

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Summary

Introduction

      Understanding socioeconomic factors and the communities' relationship to coastal and marine resources is crucial for the success of marine conservation. This is addressed through socioeconomic monitoring (SocMon), a global coastal management initiative being undertaken in the South East Asia (SEA) region, that includes the Philippines, through the Socioeconomic Monitoring Southeast Asia (SocMon SEA). This report provides a synopsis of the SocMon initiated in Barangay Cawayan, Bongabong, Oriental Mindoro Province, Philippines. The goal of this project is to propagate the use of socioeconomic monitoring (SocMon) among academics, researchers, policy makers, and coastal managers thereby enhancing coral reef conservation and coastal resources management.

Methodology

      The SocMon methodology followed three major steps. The first part was advance preparation that included defining the objectives of SocMon, establishing the SocMon team and preparing the logistics. The second part was data collection, which was the generation of field data using three complementary research methods, namely: household interview (HHI), key informant interview (KII), and focused group discussions (FGD). The numbers of respondents are as follows: HHI – 167 households; KII – 9; and FGD – 1. Field data were gathered from June 2011 to August 2012 in Barangay Cawayan, Bongabong. The third part was analysis of both qualitative and quantitative data, while communication consisted of disseminating the results to the relevant stakeholders. The Palawan State University took the lead and the partners involved were the Mindoro State Agricultural College (MinSCAT) – Bongabong Campus, and the Municipal Government of Bongabong, Oriental Mindoro.

Results and Discussion

      Barangay Cawayan is located approximately four kilometers (km) south of the town proper of Bongabong, Oriental Mindoro. It is bounded by Tablas Strait on the east. It has a total land area of 651.5 hectares (ha), 86.3% of which is used for planting coconut, rice and

banana. There are 32 ha of swampland where 4.5 ha of mangroves are found. In 2011, the village had a total population of 617 households and 3,204 individuals.

Half of the population aged 16 years and above were into farming as their primary or secondary occupation. Other occupational groups are self-employment, small business, laborer/construction worker, and fishing. Only 39.2% had at least a primary occupation, suggesting high unemployment. About 60 % of households rely on farming as their most important source of income in contrast to the 18.6% who rely on fishing for their income sources. Approximately 48% of the households have very low or low material style of life and their residences are usually made of light materials such as bamboo and nipa shingles.

Almost all residents have generally very positive attitude with respect to the indirect non-market contribution of mangroves and corals to fisheries. Though slightly lower, the attitude towards bequest values of resources is also very positive while the least favorable attitude is on the existence non-use values of resources.

The community members generally perceived that all their resources are in good condition with ground water having the highest mean rating of 4.3 and upland forests with the lowest mean rating of 3.6. The most often cited threats by those who knew of at least one were illegal cutting of mangroves and forest trees for charcoal and other household/commercial uses; natural phenomenon and illegal fishing methods for coral reefs and sea grass; soil erosion from the uplands and garbage dumping for beach and rivers/creeks. Inadequate water supply was also cited as a threat to ground water. It was noted that most community residents of Barangay Cawayan consider natural phenomenon as one of the threats to their resources, both coastal and non-coastal.

Most residents were aware of rules and regulations on fishing, mangroves management, aquaculture and pebble gathering. Most of the fishing rules and regulations the residents are aware of originated from the barangay council while that for the other resource uses/activities came from the municipal level. The residents further perceived that the rules in fishing, conservation of mangroves and aquaculture are generally implemented.

Among household members aged at least 16 years old, 70% had no membership in a resource use stakeholder organization. Barangay Cawayan is a farming/fishing village, yet there is no organized farming or fishing group. The residents' current level of participation in

decision making is focused on activities related to fishing, mangroves, pebble gathering, and aquaculture. The highest current participation levels can be described as moderately active in the following socio-economic endeavors: fishing, mangroves, and pebble gathering. More respondents expressed a greater desire to participate in these three resource uses/activities and such differences between current and desired levels of participation are statistically significant.

Most of the perceived coastal management problems were over-exploitation of coastal resources, decrease in fish catch, mangrove cutting and natural calamities. Aside from mangrove planting/reforestation which was the top solution cited, other perceived solutions pertain to enforcement of rules and regulations, proper waste disposal/management by the community, and the conduct of orientation/seminar on proper utilization of coastal resources. Majority of residents considered mangrove planting/conservation as one of their successes in coastal management. Governance, particularly strict implementation of fishing laws/ordinances, ranked highest among the challenges cited by the residents.

Poverty appears to be pervasive since this is one of the perceived community problem enumerated by more than half of the households. This is reinforced by the second ranking community problem which is unemployment. Most of the residents connect their poor economic conditions to unemployment, and hence, the need for livelihood opportunities arises as the perceived solution.

Greater support to village-level governance, particularly on enforcement and policy, needs to be provided. Residents need to be more organized and pro-active in community resource management. It is hoped that the relevant recommendations described herein will be adopted by the concerned implementers, planners, and policy makers.

1.1. Introduction

Barangay Cawayan is located at the southern part of Bongabong, Oriental Mindoro, approximately 4 km from the town proper and 6 km from the province's national highway. It is bounded by Tablas Strait on the East, Barangay Labonan on the West, Barangay Mina de Oro on the North and Barangay Camantigue on the South (Figure 1). It is composed of 7 *sitios*, namely: Poblacion, Tono, Bagong Sikat, Narra, Nyugan, Maagap, and Maligaya. Its topography is plain land near the coast where Bongabong River and Cawayan River run through.
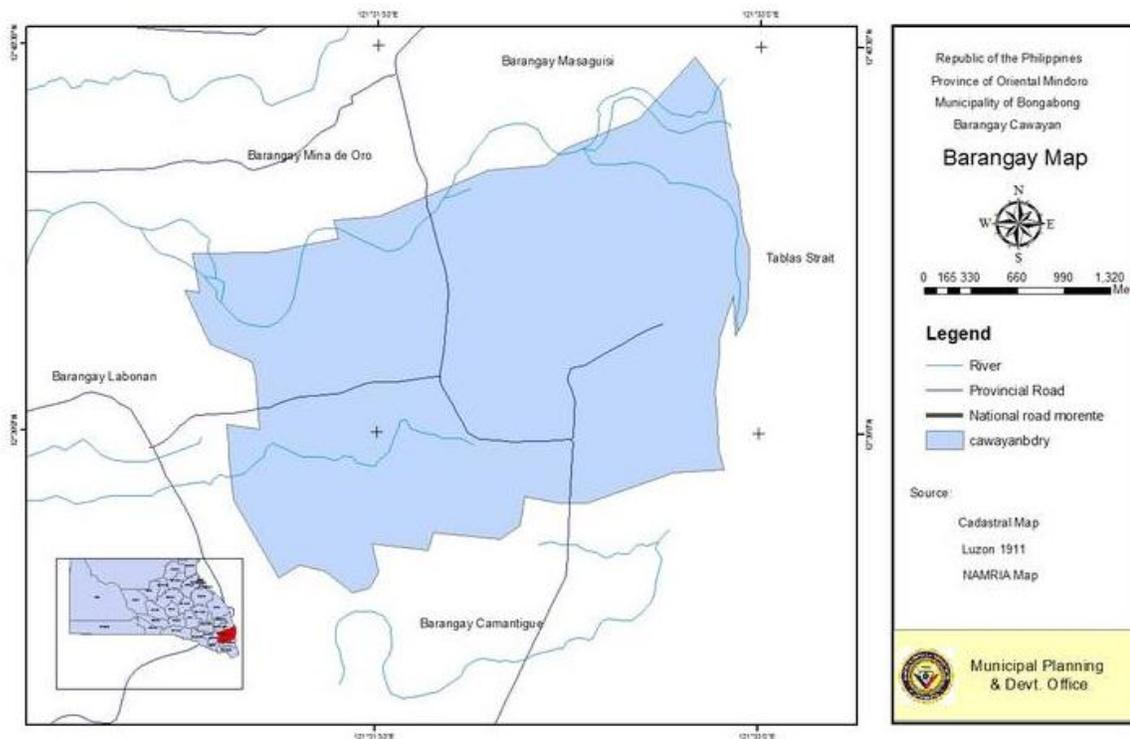
Figure 1. Map of Barangay Cawayan, Bongabong, Oriental Mindoro

Barangay Cawayan has a total land area of 651.5 hectares (ha), the biggest portion (562 ha or 86.3%) of which is used for the plantation of coconut, rice and banana. The rest are divided into the following land uses: residential areas (9.5 ha), village hall site (1 ha), commercial site (9 ha), school site (4 ha), playground (2 ha), reserved land for cemetery (1.5 ha), and idle land (30 ha). Among the common products of Cawayan are coconut (762

tons/yr), rice (73.6 tons/yr) and banana (29 tons /yr). There are 5 rice mills with a milling capacity of 300 cavans of rice per day. Animal raising is usually focused in poultry and piggery. The number of farmers is not known but farming is the most common occupation of the head of the family.

There are 32 ha of swamp in the village where 4.5 ha of mangroves are found. Most of the mangrove plants are still seedlings (62.7%) while the rest are mature (24.8%) and saplings (12.8%). The barangay has 22 ha of fishponds and 25 bancas for catching fish.

As reported in the Barangay Socioeconomic Profile & Development Plan prepared by the Municipal Poverty Reduction Team, the Municipal Planning and Development Plan and the Community–Based Monitoring System (CBMS) Network Coordinating System in 2011, Cawayan has a total population of 617 households and 3,204 individuals. Out of this total, 1,711 (50.94%) are male and 1,1493 (49.06%) are female. Majority of the households' income per month is PhP4,001 and above with an average expenses of PhP3,024 /month. Residential dwellings are combined bamboo and *nipa* (44.2%), combined wood and GI roof (28.5%) and concrete (26.3%). Residents get water for drinking, household and agricultural uses from 298 free-flowing water supply system. For house lighting, 374 households are tapped to electricity distributed by the Oriental Mindoro Electric Company (ORMECO). Firewood is the primary fuel used by 467 households for cooking, while 27 households use liquefied petroleum gas.

Bisaya and Tagalog are the two dialects commonly spoken by community residents. As to religious beliefs, 55.6 % of the people are Roman Catholics while the others belong to Protestants, Pentecostal and Seventh Day Adventist groups. The government has provisions for free public basic education - a day care center, a kindergarten school, elementary school, and secondary school – yet some 20.6% of school-age children do not attend school.

4.2   Methodology

The overall methodology and/or general procedure for training, field data collection and data analysis followed the SocMon methodology (Bunce and Pomeroy 2000, Bunce et al. 2003). The SocMon Process basically follows three major steps. SocMon is "a set of guidelines for establishing a socioeconomic monitoring program at a coastal management site in Southeast Asia" in order to gain an understanding of the social, cultural, economic, and political characteristics and conditions of individuals, households, groups, and communities (Bunce and Pomeroy, 2003).   The first part was advance preparation that included defining the objectives of SocMon, establishing the SocMon team and preparing the logistics. The second part was data collection, which was the generation of field data whereas three complementary research methods were employed namely, household interview (HHI), key informant interview (KII), and focused group discussions (FGD). The third part was analysis of the gathered qualitative and quantitative data, while communication consisted of disseminating the results to the relevant stakeholders.

The SocMon methodology provides a standardized set of 32 indicators and 28 indicators using key informant/secondary source and household interviews, respectively. Household interview indicators are categorized into household demographics (9), coastal and marine activities (5), attitudes and perceptions (13), and the material style of life (1). A mix of both quantitative and qualitative data arises out of undertaking a SocMon community-level survey using all or subsets of these 28 indicator variables.   The results are summarized with the end view of translating data into useful information for any or all of the following purposes: (1) identifying threats, problems, solutions, and opportunities; (2) determining the importance, value, and cultural significance of resources and its uses; (3) assessing positive and negative impacts of management measures; 4) assessing how the management body is doing (management effectiveness); (5) building stakeholder participation and appropriate education and awareness programs; (6) verifying and documenting assumptions of socioeconomic conditions in the area, community dynamics and stakeholder perceptions; and (7) establishing baseline household and community profile.

The main purpose of undertaking the SocMon in Inagawan is to establish the necessary socioeconomic baseline information needed for establishing marine sanctuaries

and for resource use planning by communities. For the four study sites, all 60 key informant (KI) and household (HH) indicators were chosen and utilized to obtain the necessary information required by the communities for planning and decision–making. These variables were chosen after a consultation with community leaders/site managers and other key stakeholders to ensure the responsiveness of the research variables to the local conditions.

The process/means of data collection involved extracting data from both primary and secondary sources. In addition to a review of available documents such as but not limited to village profiles, municipal statistics, and relevant national reports, data gathering instruments were utilized to collect and cross-validate data. Primary data were collected in the field to complement secondary data as well as to fill identified gaps. Primary data collection took place through the development and administration of household questionnaire survey and through individual/group interview of key informants (KIs). The selected key informants (KIs) were individuals who, because of their position, experience and/or knowledge, provided insights into the larger population. The KIs chosen included local leaders, community elders, coastal managers, representatives of non-governmental organizations and policy makers. Individual KIIs were conducted to collect useful baseline data, as well as to validate the primary and secondary data collected through other methods. The FGDs, on the other hand, were group interviews designed to gather/validate both questionnaire and KII data for the baseline. Focused group participants included fishers, tourist operators, community elders, farmers, and NGO representatives present in the community. The socioeconomic household surveys collected data directly from the household head, usually the husband or wife in the family, through face-to-face interviews.

Systematic sampling was employed to randomly select the sample households and to ensure representatives of the population with the sampling interval computed based on the population size and desired sample size. The list of households in each community as provided by the village council's secretary was used as the sampling frame for Barangay Cawayan. From the population of 617 households, a systematic random sample of 167 households was drawn.   This sample size is 27.1% of the household population, and is comprised of 613 individuals. Nine key informants were identified and one focus group discussion was conducted during the research.

The SocMon household survey was conducted b by trained enumerators while the team statistician supervised the development of the database, encoding, and data analysis. Results of the surveys were then presented to the community and other stakeholders for validations. After the validations were completed, the technical reports for each village were finalized. Some of these reports will be translated into layman's language, such as policy briefs. Appropriate reports were also disseminated to the relevant stakeholder groups so that they may use the research results for planning and adaptive management.

4.3 Summary of Results

4.3.1 Household Demographics

Household demographics pertain to the household characteristics pertaining to size, gender, age, highest educational attainment, and birthplace (Table 1 and Table 2). It also describes the socio–cultural characteristics of the household members like their religious affiliations, ethnic membership, and languages being spoken (Table 3).

Table 1 reveals that 84 (50.3%) of the households had 4 to 6 members while 47 (28.1%) had 1 to 3 members. With the median size at 5 and the mean at 4.95, the typical household has 5 members. In terms of gender, there are more males (52.1%) than females in the community. About half (51.2%) of the residents are young, with ages less than 19 years. Only 13.2% were aged 50 years and above. The median age of 19 years is lower than the mean age of 24.98 years, indicating that the distribution of ages is positively skewed; that is, there are more youths and fewer older people in the community.

As to birthplace, majority (69.6%) of the residents were born in Barangay Cawayan where they are presently residing. About a third (30.4%) was born outside the locality, indicating in-migration from other areas. The bulk (46.6%) of the residents reached high school level; those who finished at most elementary level comprised 37.9%. The remaining 15.5% are college undergraduates (7.42%), college graduates (5.1%), and vocational technical graduates (2.3%).

Table 1. Household demographic characteristics, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines, (n = 167).

Socio-Demographic Characteristic	Frequency	Percentage
Household Size		
1 to 3 members	47	28.1
4 to 6 members	84	50.3
7 to 9 members	32	19.2
10 or more members	4	2.4
Gender		
Male	432	52.1
Female	397	47.9
Age (as of last birthday)		
0 to 9 years	201	24.2
10 to 19 years	223	26.9
20 to 29 years	95	11.5
30 to 39 years	113	13.6
40 to 49 years	88	10.6
50 to 59 years	58	7.0
60 to 69 years	31	3.7
70 years and above	20	2.5
Highest Educational Attainment		
(for household members > 16 years)		
No formal schooling	10	2.1
At most grade 4	41	8.7
At most grade 6/elementary grad	128	27.1
At most 3rd year high school	83	17.6
4th year/high school grad	136	28.8
College undergraduate	35	7.4
College graduate	24	5.1
With Vocational/technical education	4	0.8
Vocational/technical graduate	11	2.3
With master's units/degree	0	0.0
No information/missing	0	0.0
Total	472	100.0
Birthplace		
Village locale	577	69.6
Municipal locale but in other villages	67	8.1
Provincial locale but in other	55	6.6
municipality/city	64	7.7
Regional locale but in other province	51	6.2
Other regions in Luzon	14	1.7
Other regions in Visayas	1	.1

Table 2. Summary quantitative indices for household size and age, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines, (n = 167)

	Household Size	Age
Total Number	167 households	829 individuals
Median	5	19.00
Mean	4.95	24.98 years
Standard Deviation	2.140	19.252
Skewness	0.597	0.782

Roman Catholic is still the dominant religion; however, it is only embraced by 39.1% (Table 3). Other religious groups proliferate, particularly the Born again Christian and protestant groups, comprising of 24.4% and 14.2% respectively, are members of. The rest are affiliated with at least five other religious sects. Though majority were born in the village, residents do not trace their generational roots to Barangay Cawayan since about 7 out of every 10 individuals belong to ethnic groups found in the Southern Tagalog (MIMAROPA) region and only 5.7% belong to an ethnic group within the locality. Hence, Tagalog, the *lingua franca* in the region, is the predominant language used. Nonetheless, about 1 out of 4 speaks Bisaya, which is the medium of communication among Filipinos from the Visayan Islands of the Philippine archipelago.

Table 3. Socio-cultural characteristics of household members, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n = 167).

Socio-Demographic Characteristic	Frequency	Percentage
Religion		
Roman Catholic	324	39.1
Iglesia ni Kristo	18	2.2
Born-again Christian	202	24.4
Protestant	118	14.2
Seventh Day Adventist	31	3.7
Aglipay/Philippine Independent Church	36	4.3
Church of God	68	8.2
Ang Dating Daan	21	2.5
Ethnic Membership		
Ethnic group within the locality	47	5.7
Ethnic group within the province	0	0.0
Ethnic group within the region	615	74.2
Ethnic group within Luzon	164	19.8
Ethnic group within Visayas	3	0.4
Primary Language Spoken		
Tagalog	612	73.8
Cebuano	6	0.7
Ilonggo	5	0.6
Ilocano	10	1.2
Bisaya	196	23.6

4.3.2. Household Members' Occupations and Income Sources

Majority of the population aged 16 years and above cited farming (54.2%) as their primary or secondary occupation (Table 4). The next big occupational groups in the community are self-employment/small business (31.1%) and laborer/construction worker (30.5%). Fishing ranked fourth with 24 (13.6%) engaged in it as a primary occupation and another 15 (8.5%) as secondary occupation. This distribution of occupational groups confirms that Barangay Cawayan is more of a farming community rather than a fishing community. It is further observed that only 177 or 39.2% had at least a primary occupation while the rest had none or missing information. This value suggests that a high 60.8% of the working age members may not have a regular primary occupation and are therefore unemployed.

Table 4. Primary and secondary occupations of household members*, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n = 167).

Occupational Category	Primary		Secondary		Total/Combined	
	No.	%	No.	%	No.	%
Fishing	24	13.6	15	8.5	39	22.1
Farming	80	45.2	16	9.0	96	54.2
Regular government employment	2	1.1	2	1.1	4	2.2
Private professional employment	3	1.7	1	0.6	4	2.2
Labourer/construction worker	25	14.1	29	16.4	54	30.5
Self-employed/small business	29	16.4	26	14.7	55	31.1
Animal/livestock raising	3	1.7	6	3.4	9	5.1
Tricycle/jeepney driver	7	4.0	4	2.2	11	6.2
Dressmaking	4	2.2	8	4.5	12	6.8
Sub-total	177	100.0	107	60.5	177	
None	33	7.3	96	21.2		
Missing/No information	242	53.5	249	55.1		
Total	452	100.00	452	100.00		

*For household members with ages of at least 16 years

Similar to occupational distribution, a greater percentage of households (59.3% as primary, 9.6% as secondary) rely on farming as their most important source of income (Table 5). This is in contrast to the 18.6% of households that rely on fishing for their income sources. The second and third important income sources of households are self-employment/small business and laborer/construction work that are depended on by 23.4% and 20.4%, respectively.

Table 5.Most important income sources of households, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Source of Income	Primary		Secondary		Total/Combined	
	No.	%	No.	%	No.	%
Pension			1	0.6	1	0.6
Fishing	19	11.4	12	7.2	31	18.6
Farming	99	59.3	16	9.6	105	62.9
Livestock/animal raising	2	1.2	4	2.4	6	3.6
Regular government employment			1	0.6	1	0.6
Private professional employment	2	1.2	1	0.6	3	1.8
Labourer/construction worker	14	8.4	20	12.0	34	20.4
Self-employed/small business	19	11.4	20	12.0	39	23.4
None	12	7.2	92	55.1		
Total	167	100.0	167	100.0		

Because of the methodological difficulties in measuring household income, SocMon does not make any attempt to measure it. Instead, it substitutes the variable "material style of life" as a rough measure of the economic status of the households. The measure for material style of life is an aggregate ordinal value derived from scoring the type of the household's residential structure with respect to roof, structural walls, windows, and floor. Observations of the residential dwellings of the sample households show that most are predominantly made of tin/galvanized iron (GI) roofs, concrete walls, thatch/bamboo windows, and cement floors. Overall, about 47.9% of the households have very low to low material style of life as reflected in their use of light materials such as bamboo and *nipa* in their residential dwellings (Table 6). Yet, half of the households (51.5%) have a high material style of life if the basis is their use of more permanent and sturdy materials for their residential dwellings. It is quite surprising that the village has high unemployment, yet its residents are able to construct houses whose materials are relatively expensive.

Table 6. Material style of life, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n = 167).

Material Style of Life	No.	%
Type of Roof:		
Thatch/*nipa*	54	32.3
Thatch/bamboo	7	4.2
Wood/plywood	4	2.4
Tin/GI sheet	102	61.1
Type of outside structural walls		
Thatch/bamboo	23	13.8
Wood/plywood	13	7.8
Brick/concrete	44	26.3
Tiles	86	51.5
Missing	1	0.6
Windows:		
Open	8	4.8
Thatch/bamboo	66	39.5
Wooden	74	44.3
Steel bars	187	10.82
Glass	1	0.6
Floor		
Dirt	49	29.3
Bamboo	13	7.8
Cement	101	60.5
Wooden	3	1.8
Tiles	1	0.6
Other Household Assets:		
2/3/4-wheel Motor Vehicle	24	14.4
Computer	1	0.6
Television set	47	28.1
Aggregate Ratings		
4 - 8: Very low	60	35.9
9 - 12: Low	20	12.0
13 – 16: High	86	51.5
17 – 20: Very High	1	0.6

4.3.3.   Coastal and Marine Activities

The coastal and marine activities in the community are comprised of fishing and non-fishing activities (Table 7). Community residents who are engaged in fishing usually catch *tilapia*, milkfish, *tulingan*, and crabs. Catch of finfishes and crabs are usually intended for household consumption, and only a minimal portion is sold. There were several aquaculture

projects observed in the community. These mostly consist of the culture of *tilapia* and milkfish in fishponds. The products of fishponds are mostly intended for sale, and are sold within the barangay.

Though the residents conduct coastal cleanups and mangrove planting, charcoal-making for household or commercial uses utilizing mangroves is also undertaken by some of the residents. Non-fishing activities, on the other hand, consist of farming and livestock raising.

Table 7. Household coastal and marine activities, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Coastal and Marine Activities	Coastal and Marine Goods and Services	Types of Household Uses	Household Market Orientation
Fishing	*Sardines; Manamsi;*	Purse seine	For consumption
	Lumahan		For sale
	Tilapia; Milkfish; *Tulingan*	*Salap; kawil*	For consumption
			For sale
	Crab	*Lambat/Panti*	For consumption
			For sale
Fishpond	*Tilapia*; Milkfish	*Salap/kawil*	For sale
			For consumption
Charcoal making	Mangroves	Planting; harvesting	Household use
			For sale
Farming	*Palay*	Planting; harvesting	For consumption
			For sale
	Coconuts	Planting; harvesting	For consumption
			For sale
	Bananas	Planting; harvesting	For consumption;
			For sale
Livestock raising	Cattle/Ox	Fattening	For Consumption
			For sale
	Piggery	Fattening	For Consumption
			For sale
	Poultry	Fattening	For Consumption
			For sale

Some coastal and marine activities are perceived by the community members to cause some adverse impacts on the coastal resources. Key informants identified overfishing, anchor damage, decline in fish catch, and pollution as negative impacts or effects of such activities. They also attributed the reduction in volume of the local fisher's catch to illegal fishing activities such as the use of prohibited fishing gears and catching of undersized fish. The presence of commercial fishing vessels in the area may have also contributed to such decline. Pollution, on the other hand, was attributed to nutrient loading in operating fishponds. They also mentioned that as a consequence, calamities may happen because of the cutting of mangroves and destruction of corals.

4.3.4. Attitudes towards Indirect Values of Resources

The people are naturally aware of the significant economic benefits and market values that could be derived from the resources that are available in their environment. On the other hand, SocMon looks at the community's appreciation of their coastal and other resources beyond the direct economic benefits that are usually measured in monetary terms. To determine the people's perception and understanding of the value of resources, investigations pertaining to the non-market and non-use values are included in the survey. Indirect non–market value of the coastal resource is a measure of how people perceive its indirect economic benefits such as biological support functions. Non-use values are not associated with any use and include option value (the value of knowing that the resource is available should one decide to use it at some future time), bequest value (the value of knowing that the resource will be available to future generations), and existence value (the value of knowing that the resource exists in a certain condition) (Bunce & Pomeroy, 2003).

For this reason, eight Likert-type item statements were asked pertaining to attitudes towards non-market and non-use values of coastal resources (Table 8 and Table 9). Strong agreement indicates most positive attitude and is given a score of 5. Meanwhile, the lowest score of 1 is given to a response of strong disagreement. Scoring is reversed for the negatively stated items. The net rating is the difference between the percentage of respondents who agree and disagree to the statement, indicating how much more have

positive than negative attitude if the net rating is positive. Results suggest that residents have generally positive attitudes since most of them either agree or strongly agree to the positively stated items, with mean ratings on the higher end, ranging from 4.6 to 4.8 (Table 8 and Table 9). Except for the two negatively-stated items, the net ratings are all positive and high reflecting that at least 80% more have positive than negative attitudes. The most varied and lowest ratings were on the two negatively stated items: corals are only important for fishing and diving (3.0) and seagrass beds have no value to people (3.4).

Table 8. Attitudes towards non-market and non-use values of coastal resources, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Item Statement	Response Options*					Net Rating**
	SD	D	NAD	A	SA	
Reefs are important for protecting land from storm waves	1 (0.6)	2 (1.2)	1 (0.6)	23 (13.8)	134 (80.2)	92.2%
In the long run, fishing would deteriorate if we cleared the corals	1 (0.6)	1 (0.6)	3 (1.8)	26 (15.6)	130 (77.8)	92.2%
Mangroves are to be protected so that we will have fish to catch	1 (0.6)	1 (0.6)	3 (1.8)	23 (13.8)	133 (79.6)	93.2%
Corals are only important for fishing and diving (-)	39 (23.4)	23 (13.8)	11 (6.6)	76 (45.5)	12 (7.2)	15.5%
I want future generations to enjoy the mangroves and coral reefs	4 (2.4)	1 (0.6)	3 (1.2)	18 (10.9)	135 (80.8)	88.7%
Fishing should be restricted in certain areas to allow fish and coral to grow	1 (0.6)	4 (2.4)	1 (0.6)	25 (15.0)	130 (77.8)	89.8%
We should restrict development in some coastal areas for future generations to have natural environments	3 (1.8)	6 (3.6)	3 (1.8)	24 (14.4)	125 (74.9)	83.9%
Seagrass beds have no value to people (-)	19 (11.4)	92 (55.1)	8 (4.8)	22 (13.2)	20 (12.0)	41.3%

*Statements are rated on a 5-point scale with the following options: SA – Strongly Agree; A – agree; NAD – neither agree nor disagree; D – Disagree; and SD – Strongly Disagree.
**Net Rating = % [frequency (SA + A)] – % [frequency (SD + D)]
Note: Figures enclosed in parentheses are the corresponding percentages for each category

Table 9. Means and standard deviations of rating scores of attitudes towards non-market and non-use values of coastal resources, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167)

Item Statement	Valid cases	Median	Mean	SD
Reefs are important for protecting land from storm waves	161	5	4.8	.58
In the long run, fishing would deteriorate if we cleared the corals	161	5	4.8	.58
Mangroves are to be protected so that we will have fish to catch	161	5	4.8	.57
Corals are only important for fishing and diving (-)	161	4	3.0	1.38
I want future generations to enjoy the mangroves and coral reefs	161	5	4.7	.76
Fishing should be restricted in certain areas to allow fish and coral to grow	161	5	4.7	.66
We should restrict development in some coastal areas for future generations to have natural environments	161	5	4.6	.85
Seagrass beds have no value to people (-)	161	4	3.4	1.23

*Statements are rated on a 5-point scale with the following options and corresponding scores: SA – Strongly Agree (5); A – agree (4); NAD – neither agree nor disagree (3); D – Disagree (2); and SD – Strongly Disagree (1). Scoring is reversed for negatively-stated items.
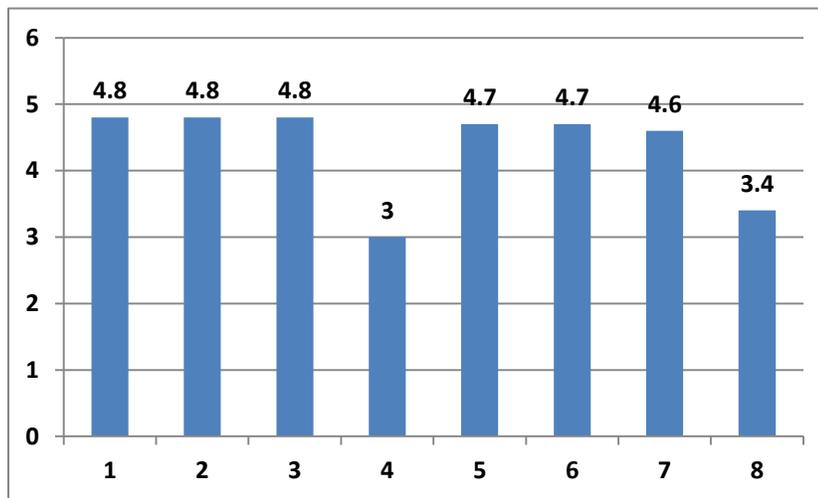
Figure 2. Mean ratings for items on attitudes towards non-market and non-use values (n=167).
  Note: The numbers on the horizontal axis refer to the following item statements:
  1 - The reefs are important for protecting land from storm waves.
  2 - In the long run, fishing would deteriorate if we cleared the corals.
  3 - Unless mangroves are protected, we will not so that we will have fish to catch.
  4 - Coral reefs are only important if you fish or dive (reversed scoring).
  5 - I want future generations to enjoy the mangroves and coral reefs
  6 - Fishing should be restricted in certain areas even if no one ever fishes in those
   Areas just to allow the fish and coral to grow
  7 - We should restrict development in some coastal areas so that future generations
   will be able to have natural environments.
  8 - Seagrass beds have no value to people (reversed scoring).

When aggregated, the frequencies and mean ratings indicate that the people's attitudes are generally very positive with respect to the indirect non-market contribution of mangroves and corals to fishery (Table 10 and Table 11). Though slightly lower in mean rating, the attitude towards bequest values of resources is also very positive. However, residents were most consistent in their attitude on the existence non-use values of resources, which had also the lowest mean aggregate rating of 3.1 that fell into the "neither positive nor negative" category.

Table 10. Aggregate rating scores on attitudes towards non-market and non-use values of coastal resources, Barangay Cawayan Bongabong, Oriental Mindoro, Philippines (n=167).

Classification of attitude statements	Freq	%
Indirect non-market value		
1.00 – 1.50 : Very negative	1	0.6
1.51 – 2.50 : Negative	0	0.0
2.51 – 3.50 : Neither positive nor negative	3	1.8
3.51 – 4.50 : Positive	23	13.8
4.51 – 5.00 : Very positive	134	80.2
No response	6	3.6
Existence non-use value		
1.00 – 1.50 : Very negative		0.0
1.51 – 2.50 : Negative	20	12.0
2.51 – 3.50 : Neither positive nor negative	122	73.1
3.51 – 4.50 : Positive	19	11.4
4.51 – 5.00 : Very positive	0	0.0
No response	6	3.6
bequest non-use value		
1.00 – 1.50 : Very negative	2	1.2
1.51 – 2.50 : Negative	1	0.6
2.51 – 3.50 : Neither positive nor negative	9	5.4
3.51 – 4.50 : Positive	34	20.4
4.51 – 5.00 : Very positive	115	68.9
No response	6	3.6
Mean rating for attitudes towards non-market and non-use values of coastal resources		
1.00 – 1.50 : Very negative	0	0.0
1.51 – 2.50 : Negative	1	0.6
2.51 – 3.50 : Neither positive nor negative	12	7.2
3.51 – 4.50 : Positive	73	43.7
4.51 – 5.00 : Very positive	75	44.9
No response	6	3.6

Table 11. Means and standard deviations of aggregate rating scores on attitudes towards non-market and non-use values 0f coastal resources, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Value Classification	Valid cases	Median	Mean	Std Dev	Skew-ness
Indirect non-market value (Items 1, 2, 3)	161	5.0	4.8	.51	-3.88
Existence non-use value (Items 4, 6, 8)	161	3.3	3.1	.41	-.874
Bequest value (Items 5, 7)	161	5.0	4.7	.68	-3.07
Over-all attitude towards non-market and non-use values of resources (Items 1-8)	161	4.5	4.4	.49	-1.32

4.3.5.   Perceptions of Resource Conditions

On a scale of 1 to 5 with 1 as "very bad" and 5 as "very good", community residents who felt that they had enough knowledge about their resources mostly gave ratings of 4 and 5 (Table 12). Such rating indicated that their resources were perceived to be in good to very good condition. There were a number of residents who did not rate a specific resource and instead answered "don't know" or "not applicable"; these were usually non-users of the specific resources or individuals whose residences were geographically far from the resource. Hence, they may have considered themselves without enough knowledge about the condition of the resource being referred to.

A big number of those who responded said that their resources were in good or very good condition; very few gave ratings of neither very poor to neither good nor poor. Hence, the net ratings which are the differences (in percent) between those who rated the resource to be in very good/good condition and those who rated it as very poor/poor condition are all positive and high. The highest net positive rating is for ground water (93.4%) and the lowest is for upland forests (52.7%). This means that there are 93.4% more residents who perceived their ground water good rather than bad. Similarly, there are 52.7% more residents who perceived their upland forests to be in good rather than in bad condition. Other resources with high net ratings are mangroves (73.1%) and beach (73.1%). These results are also echoed in the respective mean perception ratings for each resource (Table 13). Residents generally perceived their ground water to be in good condition as indicated by the highest mean rating

of 4.33 while that of upland forest is the lowest at 3.64. Residents' perceptions of resource conditions were most varied for sea grass and least varied for ground water.

Table 12. Perceptions of resource conditions. Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Resource	Perceived Resource Condition*					Don't know/ Missing	Net Rating**
	VB	B	NGB	G	VG		
Mangroves	4 (2.4)	4 (2.4)	21 (12.6)	100 (59.9)	30 (18.0)	8 (4.8)	73.1%
Coral reefs	1 (0.6)	1 (0.6)	16 (9.6)	93 (55.7)	27 (16.2)	29 (12.4)	70.7%
Upland forests	6 (3.6)	12 (7.2)	19 (11.4)	97 (58.1)	9 (5.4)	24 (14.4)	52.7%
Sea grass	9 (5.4)	6 (3.6)	10 (6.0)	100 (59.9)	17 (10.2)	25 (15.0)	61.1%
Beach	1 (0.6)	4 (2.4)	20 (12.0)	103 (61.7)	24 (14.4)	15 (9.0)	73.1%
River/ Creeks	1 (0.6)	7 (4.2)	21 (12.6)	94 (56.3)	32 (19.2)	12 (7.2)	70.7%
Ground water		1 (0.6)	1 (0.6)	103 (61.7)	55 (32.9)	6 (3.6)	93.4%

*Each community resource is rated on a 5-point scale with the following options
 And corresponding scores: VG – Very good (5); G – good (4); NGB - neither good nor bad (3); – Bad (2); and VB – very bad (1).
**Net Rating = % [frequency (VG + G)] – %[frequency (VB + B)]
Note: Figures enclosed in parentheses are the corresponding percentages for each category

Table 13. Means and standard deviations of ratings on perceived resource conditions, Barangay Cawayan, Oriental Mindoro, Philippines (n=167)

Resource	Valid Responses	Median	Mean	Std Dev
Mangroves	159	4	3.93	.80
Coral reefs	138	4	4.04	.64
Upland forests	143	4	3.64	.88
Seagrass	142	4	3.77	.94
Beach	152	4	3.95	.67
River/creeks	155	4	3.96	.76
Ground water	161	4	4.33	.52

*Each community resource is rated on a 5-point scale with the following options and corresponding scores: VG – Very good (5); G – good (4); NGB – neither good nor bad (3); B – bad (2); and VB – very bad (1).
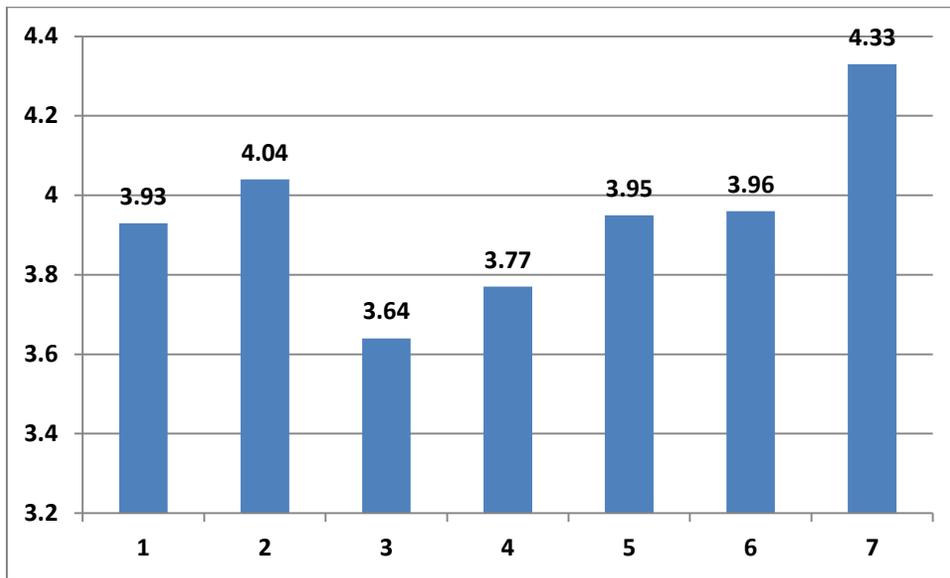
Legend: 1- Mangroves; 2- Coral reefs; 3 - Upland forests; 4 - Seagrass; 5 - Beach;
        6 - River/creeks; 7 - Ground water

Figure 3. Mean ratings of perceived resource conditions at Barangay Cawayan, Bongabong, Oriental Mindoro (n=167)

4.3.6.   Perceived Threats to Resources

Information on perceived threats is useful for identifying threats to the coastal resources. Community members, particularly those who directly use the resources, are often the most knowledgeable about threats to their resources. If community members do not consider that there are threats to their resources, it will be difficult to actively engage them in resource management.

The top threats to mangrove as perceived by community residents are illegal logging; charcoal making, natural phenomenon, and cutting for household and commercial use (Table 14). When mangroves are cut for whatever intended use but without appropriate permit, it is considered illegal. It is surprising to note that the residents consider typhoons/big waves as a threat to mangroves in spite of their role as protective barrier to the shoreline against strong waves. During the community validation, stakeholders maintained that charcoal making is no longer done in the village but acknowledged that it was an activity in the past. Household respondents may have attributed the loss of their mangrove

areas to this past activity; hence, they still consider it as a threat. There is always a demand for charcoal even at the community level since it is usually a cheaper fuel for household cooking.

Table 14. Perceived threats to mangroves, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
Cutting for household use	15 (9.0)	16 (9.6)	2 (1.2)	33 (19.8)	4
Cutting for commercial use	15 (9.0)	2 (1.2)	3 (1.8)	23 (13.8)	5
Clearing	8 (4.8)	3 (1.8)		11 (6.6)	6
Charcoal making	24 (14.4)	18 (10.8)	9 (5.4)	51 (30.5)	2
Conversion into fish pond		2 (1.2)		2 (1.2)	8
Natural phenomenon (typhoons, big waves)	27 (16.2)	6 (3.6)	8 (4.8)	41 (24.6)	3
Disease/infestation of mangroves		1 (0.6)	1 (0.6)	2 (1.2)	9
Pollution/dumping of garbage	1 (0.6)			1 (0.6)	10.5
Establishment/expansion of nearby human settlements	1 (0.6)			1 (0.6)	10.5
Illegal logging	53 (31.7)			53 (31.7)	1
Sea level rise	8 (4.8)			8 (4.8)	7
Don't know	15 (9.0)	121 (72.5)	144 (86.2)		
Not applicable	1 (0.6)				

Note: Figures enclosed in parentheses are the corresponding percentages for each category

The primary threat to coral reef cited by 74 (44.3%) of the residents is natural phenomenon, indicating a perception that they cannot do much to mitigate such a threat (Table 15). However, typhoons and strong waves may not really pose a significant threat to

corals. Exception is if the phenomenon being mentioned is the rise of sea water temperatures which is associated with global warming thereby causing coral bleaching.

Table 15. Perceived threats to coral reefs, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n = 167).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
Cyanide/compressor fishing	3 (1.8)	3 (1.8)	3 (1.8)	9 (5.4)	5
Illegal fishing activities	8 (4.8)	4 (2.4)	3 (1.8)	15 (9.0)	2
Dynamite/blast fishing	7 (4.2)	4 (2.4)	2 (1.2)	13 (7.8)	3
Coral gathering for HH/commercial use	3 (1.8)	2 (1.2)	1 (0.6)	6 (3.6)	6
Clearing/mining/digging	10 (6.0)		1 (0.6)	11 (6.6)	4
Coral bleaching	1 (0.6)			1 (0.6)	9
Natural phenomenon (typhoon, waves)	74 (44.3)	7 (4.2)	3 (1.8)	84 (50.3)	1
Tourism-related: recreational diving		3 (1.8)		3 (1.8)	8
Pollution/garbage dumping	3 (1.8)	1 (0.6)	2 (1.2)	6 (3.6)	7
Don't know	33 (19.8)	143 (85.6)	151 (90.4)		
None	2 (1.2)				
Not applicable (resource is not available in barangay)	23 (13.8)				

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Clearing/mining activities are perceived to be the primary threat to upland forests. Interestingly, charcoal making which is perceived as a primary threat to mangroves, is also often cited as a threat to upland forests. Charcoal comes from burning felled trees, whether they are in the coastal areas or in the upland areas. Others in the top five threats to upland forests are *kaingin*/slash and burn farming, illegal logging and natural phenomenon (typhoon) (Table 16). As people move into areas near the forests, they have to cut trees for household use and clear land to plant staple crops and raise livestock.

Table 16. Perceived threats to upland forests, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n = 167).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
Charcoal making	22 (13.2)	14 (8.4)	1 (0.6)	37 (22.2)	2
Cutting trees for household use	6 (3.6)	3 (1.8)	2 (1.2)	11 (6.6)	6
Illegal logging	12 (7.2)	6 (3.6)	7 (4.2)	25 (15.0)	4
Cutting trees for commercial use	5 (3.0)	1 (0.6)	2 (1.2)	8 (4.8)	7
Conversion into residential settlements	1 (0.6)		1 (0.6)	2 (1.2)	8.5
Conversion into farm lands			1 (0.6)	1 (0.6)	10.5
Kaingin/slash and burn farming	18 (10.8)	4 (2.4)	8 (4.8)	30 (18.0)	3
Natural phenomenon (typhoons)	5 (3.0)	6 (3.6)	3 (1.8)	13 (7.8)	5
Clearing /mining	53 (31.7)			53 (31.7)	1
Conversion into farmlands	1 (0.6)		1 (0.6)	2 (1.2)	8.5
Landslides/soil erosion			1 (0.6)	1 (0.6)	10.5
Don't know	35 (21.0)	133 (79.6)	142 (85.0)		
None	1 (0.6)				
Not applicable (resource not available)	16 (9.6)				

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Community residents perceived that the utmost threat to sea grass is primarily natural phenomenon and not any human activity (Table 17). There is a growing evidence that seagrass beds are experiencing decline globally due to natural disturbances such as storms and floods. Threats from climate change include rising sea levels, changing tidal regimes, ultra violet (UV) radiation damage, sediment hypoxia and anoxia, increases in sea temperatures and increased storm and flooding events. Thus, seagrass meadows, the ecosystems that they support and the ecosystem services that they provide are threatened by a

multitude of environmental factors that are currently changing or will change in the future. The rest of the list as perceived threats to seagrass were cited by less than 10% and are not as much as natural phenomenon. These include illegal fishing activities, fishing using dragnets/gleaning, pollution/dumping of garbage.

Table 17. Perceived threats to seagrass, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
Gathering for household use	1 (0.6)			1 (0.6)	8
Gathering for commercial use	3 (1.8)	1 (0.6)		4 (2.4)	5
Illegal fishing activities	7 (4.2)	7 (4.2)	1 (0.6)	15 (9.0)	2
Fishing using dragnets/gleaning	6 (3.6)	4 (2.4)	1 (0.6)	11 (6.6)	3
Pollution/dumping of garbage	3 (1.8)		4 (2.4)	7 (4.2)	4
Dynamite/blast fishing	2 (1.2)	1 (0.6)		3 (1.8)	6
Tourist-related, i.e. recreational diving			1 (0.6)	1 (0.6)	9
Gathering of shells and other seagrass inhabitants			3 (1.8)	3 (1.8)	7
Natural phenomenon (typhoon, waves)	89 (53.3)	1 (0.6)	2 (1.2)	92 (55.1)	1
don't know	46 (27.5)	152 (91.0)	154 (92.2)		
Not applicable	8 (4.8)				
None	2 (1.2)	1 (0.6)	1 (0.6)	4 (2.4)	

Note: Figures enclosed in parentheses are the corresponding percentages for each category

The community at large perceived soil erosion from the uplands as the main threat of the beach, having been cited as a primary threat by 32.9% (Table 18). This again shows that the community is aware that what happens to their uplands have an impact on the other parts of the ecosystem. Other most cited threats to beach are natural phenomenon (32.3%),

pollution/dumping of garbage (13.8%), beach erosion/ sea level rise (7.2%), and cutting of aroma tree (6.6%).

Table 18. Perceived threats to beach, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
Sand quarrying for household use	2 (1.2)	1 (0.6)		3 (1.8)	7.5
Pollution/dumping of garbage	15 (9.0)	1 (0.2)	7 (4.2)	23 (13.8)	3
Natural phenomenon (typhoons, big waves)	44 (26.3)	8 (4.8)	2 (1.2)	54 (32.3)	2
Soil erosion from the uplands	54 (32.3)	1 (0.6)		55 (32.9)	1
Residential area expansion	2 (1.2)	2 (1.2)	2 (1.2)	6 (3.6)	6
Beach erosion/sea level rise	5 (3.0)	3 (1.8)	4 (2.4)	12 (7.2)	4
Development of resorts and tourist-related facilities	3 (1.8)			3 (1.8)	7.5
Cutting of aroma tree	4 (2.4)	6 (3.6)	1 (0.6)	11 (6.6)	5
None	1 (0.6)			1 (0.6)	
Don't know	37 (22.2)	145 (86.8)	151 (90.4)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Aside from being a threat to the beach, soil erosion is again perceived as a threat to rivers/creeks as cited by a third of the residents (Table 19). Erosion occurs as the result of the land being disturbed. One of the disturbances that cause erosion in and around the river systems is land clearing. This is the negative impact of removing vegetation along the riverbanks. As a consequence, the soil is no longer held together by the roots thereby exposing it to the eroding effects of wind, rain and flood waters. Another disturbance is flood damage since the strong water flow can move exposed areas of soil with a lot more force and take out big chunks of land along the riverbank and from the river bed. And lastly, animal damage such as when livestock animals (cattle and goat) disturb the soil while munching on grasses. The eroded soil that goes into the beach is carried through the waters

in rivers/creeks; hence, soil erosion is a threat to both rivers/creeks and beach. Another fraction (28.1%) of the residents perceived that pollution/dumping of garbage is another threat to rivers/creeks. Other top ranking threats include natural phenomenon (15.6%), poisoning (6.0%), and establishment/expansion of nearby human settlements (3.0%).

Table 19. Perceived threats to rivers/creeks, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Perceived Threat	1st	2nd	3rd	Combined	Rank
Pollution/dumping of garbage	42 (25.1)		5 (3.0)	47 (28.1)	2
Natural phenomenon (typhoons, big waves)	13 (7.8)	10 (6.0)	3 (1.8)	26 (15.6)	3
Sand quarrying for commercial use		1 (0.6)		1 (0.6)	7.5
Soil erosion	55 (32.9)	1 (0.6)		56 (33.5)	1
Pebble/stone gathering for household use	1 (0.6)			1 (0.6)	7.5
Establishment/expansion of nearby human settlements	1 (0.6)	1 (0.6)	3 (1.8)	5 (3.0)	5
Poisoning	5 (3.0)		1 (0.6)	6 (6.0)	4
Used for bathing animals		1 (0.6)		1 (0.6)	7.5
Battery-powered electrocution device used to stun and catch fish	1 (0.6)		1 (0.6)	2 (1.2)	6
Don't know	41 (24.6)	151 (90.4)	153 (91.6)		
Not applicable	8 (4.8)				

Note: Figures enclosed in parentheses are the corresponding percentages for each category

As cited by most residents who knew of at least one threat, inadequate water supply, natural phenomenon, deforestation/cutting of trees, damage to pipes, and over-exploitation for household use were mostly enumerated as the top perceived threats to ground water (Table 20). To the residents of Barangay Cawayan, ground water is important for both household use and irrigation in rice farms. They may have experienced decreased supply of

ground water during periods of dry season and may have associated this with the natural phenomenon of changing seasons of the year. Including deforestation/cutting of trees as a threat to ground water indicates their greater awareness of the connection between forest cover and groundwater supply.

Table 20. Perceived threats to ground water. Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
Natural phenomenon (typhoons)	23 (13.8)	2 (1.2)		25 (15.0)	2
Deforestation/cutting of trees	15 (9.0)			15 (9.0)	3
Pollution/dumping of garbage1	3 (1.8)			3 (1.8)	8.5
Water contamination due to sewage	2 (1.2)	1 (0.6)	2 (1.2)	5 (3.0)	6.5
Over-exploitation for household use	3 (1.8)	3 (1.8)	1 (0.6)	7 (4.2)	5
Salt intrusion		1 (0.6)		1 (0.6)	9.5
Establishment/expansion of human settlements	4 (2.4)	1 (0.6)		5 (3.0)	6.5
Damaging of pipes	2 (1.2)	4 (.4)	3 (1.8)	9 (5.4)	4
Blockage pipes	3 (1.8)			3 (1.8)	8.5
Not following the rules /regulations		1 (0.6)		1 (0.6)	9.5
Inadequate water supply	53 (31.7)			53 (31.7)	1
None	7 (4.2)	1 (0.6)		8 (4.8)	
Don't know	52 (31.1)	153 (91.6)	161 (96.4)		
None	7 (4.2)				

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

It can be generally noted that most community residents of Barangay Cawayan consider natural phenomenon as one of the threats to their coastal and non-coastal resources (Tables 21 and 22). If community members consider nature to be primarily impacting and threatening their resources, it would be difficult to engage them in resource management. Though they cited other threats that are induced by humans and can therefore be readily addressed by management intervention in order to protect the resource, attributing the cause of the deterioration or destruction of a resource to the forces of nature reflects a passive rather than proactive view of the relationship users to the resources in their environment. Consequently, the conservation of resources may tend to be viewed as outside one's control as a resource user and caretaker. This perspective, if adopted by the community as a whole, may lead to the residents' lack of conscious and active efforts to take responsibility and direct action for protecting their resources.

Table 21. Top perceived threats to coastal resources, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Mangroves	Coral Reefs	Seagrass	Beach
None – 0.0%	None – 1.8%	None – 1.2%	None – 0.6%
DK/NA – 9.6%	DK/NA – 33.6%	DK/NA – 32.3%	DK/NA – 22.2%
Illegal logging	Natural phenomenon	Natural phenomenon	Soil erosion from the uplands
Charcoal making	Illegal fishing	Illegal fishing	Natural phenomenon
Natural phenomenon	Dynamite/blast fishing	fishing using dragnets/ gleaning	Pollution due to garbage dumping
Cutting for household use	Clearing/mining/digging	Pollution due to dumping of garbage	Beach erosion/sea level rise
Cutting for commercial use	Cyanide/compressor fishing		Cutting of aroma tree

Note: DK/NA – do not know/not applicable

Table 22. Top perceived threats to non-coastal resources, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167)

Upland Forests	Rivers And Creeks	Ground Water
None – 1.2%	None – 0.0%	None – 4.2%
DK/NA -30.6%	DK/NA – 33.4%	DK/NA – 35.3%
Charcoal making	Soil erosion	Inadequate water supply
Kaingin/slash and farming	Pollution/dumping of garbage	Natural phenomenon
Illegal logging	Natural phenomenon	Dumping of garbage
Natural phenomenon		
Cutting trees for household use		

Note: DK/NA – do not know/not applicable

4.3.7. Awareness of Resource Rules and Regulations

Residents are most aware of rules and regulations on fishing (76%), mangroves (75%), aquaculture (66.5%), water sports (45.5%), pebble gathering (65.9%), and resort development (45.5%) (Table 23). It is noted that about half of residents gave "not applicable" answers with respect to resort/pension/hotel development (54.5%), residential development (52.5%) and water sports (54.5%). These responses suggest that these resource uses/activities do not impinge on their daily economic or social lives. Except for fishing, most of the resource use/activity rules and regulations that the residents are aware of originated from the municipal government.

Table 23. Awareness of resource rules and regulations, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Resource Used/ Activity	Awareness of Rules and Regulations				Origin of Regulation			
	None	Yes	Don't Know/No answer	Not Apply	Barangay	Mun/ City	Prov/ Natl	None/ Missing
Fishing	32 (19.2)	127 (76.0)	8 (4.8)		113 (67.7)	6 (3.6)	8 (4.8)	40 (24.0)
Mangroves	30 (18.0)	126 (75.)	11 (6.6)		42 (25.1)	82 (49.1)	2 (1.2)	41 (24.6)
Aquaculture	42 (25.1)	111 (66.5)	14 (8.4)		25 (15.0)	81 (48.5)	5 (3.0)	56 (33.5)
Resort/pension/hotel development		76 (45.5)		91 (54.5)		76 (45.5)		91 (54.5)
Residential development		4 (2.4)	76 (45.5)	87 (52.1)	4 (2.4)			163 (97.6)
Watersports		76 (45.5)		91 (54.5)		76 (45.5)		91 (54.5)
Pebble gathering	43 (25.7)	110 (65.9)	14 (8.4)		32 (19.2)	77 (46.1)	1 (0.6)	57 (34.1)

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

Based on the FGD with key informants, the rules and regulations in fisheries which the residents are aware of are the prohibition of using dynamites, cyanide and other poisonous substances in fishing. They are also aware of the intrusion of commercial fishing gears in their municipal waters. Similar to the household interview findings, key informants were also unaware of the rules and regulations in aquaculture, resort and hotel development since these activities do not exist in Cawayan.

It appears that more of the known resource rules and regulations come primarily from the village council and secondarily from the Municipality of Bongabong as attributed by the residents themselves. There were very few who said that the resource rules and regulations they are aware of were enacted at the provincial or national levels.

The FGD participants further revealed that the residents of Cawayan perceived that the rules in fishing and conservation of mangroves are highly implemented. They also perceived that community residents have high compliance with the coastal resource

management rules and regulations in fishing and the conservation of mangroves. In contrast, there is only moderate compliance with aquaculture rules and regulations.

4.3.8. Participation in Decision Making

The residents' current level of participation in decision making is focused on activities related to fishing, mangroves, pebble gathering, and aquaculture (Table 24). This can simply be explained by the residents' involvement in these activities because of their livelihood. The other resource uses/activities are non-existent in the community as indicated by the big number of "not applicable" response.

Table 24. Current and desired levels of participation in decision making. Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Activity		Rating Scores*				
		1	2	3	4	5
Fishing	Current	47 (28.1)	4 (2.4)	6 (3.6)	7 (4.2)	103 (61.7)
	Desired			45 (26.1)	1 (0.6)	121 (72.5)
Mangroves	Current	55 (32.9)		5 (3.0)	6 (3.6)	101 (60.5)
	Desired	1 (0.6)		44 (26.3)	3 (1.8)	119 (71.3)
Aquaculture	Current	134 (80.2)	3 (1.8)	5 (3.0)	6 (3.6)	19 (11.4)
	Desired	76 (45.5)		45 (26.9)	4 (2.4)	42 (25.1)
Residential development	Current	78 (46.7)	3 (1.8)		2 (1.2)	1 (0.6)
	Desired	76 (45.5)	1 (0.6)		2 (1.2)	1 (0.6)
Pebble gathering	Current	57 (34.1)	3 (1.8)	5 (3.0)	5 (3.0)	97 (58.1)
	Desired	2 (1.2)	1 (0.6)	43 (25.7)	2 (1.2)	119 (71.3)

Note: Rating is on a scale of 1 – 5, with 1- no participation, and 5 – full participation

On a scale of 1 to 5 where 1 is no participation and 5 is full participation, current participation levels are at both extremes – no participation and full participation (Table 24). The highest current participation levels were in fishing ($\bar{x}$ = 3.69), and mangroves ($\bar{x}$ = 3.59), and pebble gathering ($\bar{x}$ = 3.49). (Table 25). On the other hand, the residents expressed none to very little participation in aquaculture ($\bar{x}$ = 1.64) and residential development ($\bar{x}$ = 1.15)

Table 25. Means and standard deviations of ratings of participation in decision making, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Resource Used/ Activity	Current Level of Participation			Desired Level of Participation		
	N	Mean	Std Dev	N	Mean	Std Dev
Fishing	167	3.69	1.79	167	4.46	0.89
Mangroves	167	3.59	1.86	167	4.43	0.92
Aquaculture	167	1.64	1.37	167	2.62	1.65
Residential development	84	1.15	0.65	80	1.10	0.47
Pebble gathering	167	3.49	1.88	167	4.41	0.97

Majority of the residents expressed a desire for full participation in three resource uses/activities, namely: fishing, mangroves, and pebble gathering. More of their responses for desired levels of participation were in the 4 to 5 ratings (Table 24). Hence, the mean rating scores for desired levels of participation in these three areas are all uniformly high at 4.41 to 4.46 (Table 25). In contrast, most residents still desired no participation in aquaculture and residential development. The residents do not and may not want to participate in decision making in aquaculture and residential development because. Many consider that such activities are not related to their livelihood or are deemed to be outside their locus of control/responsibility.

The paired differences between individuals' respective current and desired levels of participation in decision making are all statistically significant at the .01 level (Table 26). The only exception is for residential development. These means imply that generally, a resident's desired level is higher than his/her current level of participation in fishing, mangroves, aquaculture, and pebble gathering. Community and local leaders may thus be

able to tap residents and encourage them to be more participative in decision making, since there is an innate desire for them become more engaged.

Table 26. Comparisons of current and desired levels of participation in decision making Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Resource Use/ Activity	Paired Corr	Paired Differences		t-value	Df	Sig. (2-tailed)
		Mean	SD			
Fishing	.710**	.766	1.32	7.52	166	.000**
Mangroves	.816**	.844	1.23	8.89	166	.000**
Aquaculture	.639**	.976	1.31	9.64	166	.000**
Resort/pension/hotel development	.848*	-.038	0.25	1.35	79	.181
Pebble gathering	.734*	.916	1.34	8.85	166	.000**

  * significant at the .05 level
  * *significant at the .01 level

4.3.9. Membership in Resource Use Stakeholder Organization

Of the 452 household members who are at least 16 years old, 78.3% are not affiliated with any resource use organization (Table 27). Some 18.8% are beneficiaries of 4P's, a welfare and subsistence program under the national government's Department of Social Welfare and Development (DSWD). As envisioned, the 4P's program provides cash assistance and other forms of subsidy to the "poorest of the poor" in the country. Hence, it is not technically, a resource use stakeholder organization. The Card Bank, on the other hand, is a private micro-finance business enterprise. Judging by the lack of other responses, it appears that there are no existing resource use stakeholder organizations in the community.

Table 27. Household membership in resource use stakeholder organizations*, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=452).

No. of HH members Involved	Freq	%
4P's	85	18.8
Card Bank	13	2.9
None/No information	354	78.3
Total	452	100.0

*For household members > 16 years

4.3.10. Perceptions of Coastal Resource Management Problems and Solutions

When asked to provide two top coastal management problems of the community, residents of Barangay Cawayan gave varied answers as listed in Table 28. However, 38.3% of them cited exploitation of coastal resources for household/commercial use as a primary problem. Another top problem mentioned by 14.4% of the respondents is decrease in fish catch/available coastal resource which is also related to exploitation of coastal resources. To a lesser degree but still on the top five highest frequencies are the following: mangrove cutting, natural calamities, and illegal fishing/use of cyanide. It is noted that though there are clear indications that the coastline of the village has been heavily experiencing erosion within the past years, only very few residents considered this a coastal management problem. Many appears to accept this as a natural phenomenon and the construction of a dike is its perceived solution.

Table 28. Perceived coastal management problems, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Coastal Management Problems	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Livelihood related to coastal resource utilization	1	0.6			1	0.6
Mangrove cutting	12	7.2	1	0.6	13	7.8
Natural calamities	8	4.8	4	2.4	12	7.2
Sea level rise/sand erosion	2	1.2	4	2.4	6	3.6
Entry of other fishers from outside areas	4	2.4	5	3.0	9	5,4
Decrease in fish catch/available coastal resources	23	13.8	1	0.6	24	14.4
exploitation of coastal resource for HH/commercial use	64	38.3			64	38.3
Sanitation (Pollution and garbage dumping; waste management)	1	0.6	1	0.6	2	1.2
Illegal fishing/use of cyanide in fishing	9	5.4	2	1.2	11	6.6
Ignorance of laws related to coastal management	1	0.6	1	0.6	2	1.2
Not organized management (Bantay Dagat/BFARMC/ village officials	1	0.6	1	0.6	2	1.2
Others (Stealing, illegal logging)	4	2.4	1	0.6	5	3.6
Sub-total	130	77.8				
No response	0	0.0	76	45.5		
Don't know	37	22.2	70	41.9		

About 5 out of every 10 residents perceived that mangrove planting/reforestation is a solution to their primary coastal management problems (Table 29). Another 19.8% suggested solutions that fall under governance – enforcement such as strict implementation of fishing laws or barangay ordinance and prevention of intrusive commercial fishing vessels within their municipal waters. Other suggested solutions were the practice of proper waste management and the conduct of orientation/seminar on the proper utilization of coastal resources. A summary of the top coastal management problems and solutions perceived by the community is provided in Table 30.

Table 29. Perceived solutions to coastal management problems, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Coastal Management Problems	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Governance – enforcement (Strict implementation of fishing laws/village ordinance, Prevent intrusion of commercial fishing vessel)	21	12.6	12	7.2	33	19.8
Community mobilization: Proper waste disposal/management	14	8.4	1	0.6	15	9.0
Governance-education (Conduct orientation/ seminar related to proper utilization of coastal resources)	3	1.8	7	4.2	10	6.0
Livelihood project	5	3.0	3	1.8	8	4.8
Mangrove planting/conservation	77	46.1	2	1.2	79	47.3
Infrastructure: Dike construction	5	3.0	2	1.2	7	4.2
Others	1	0.6			1	0.6
Financial assistance			2	1.2	2	1.2
Sub-total	126	75.4	29	37.1	126	75.4
Don't know	41	24.6	62	42.5		
None			76	46.1		

Table 30. Top perceived coastal management problems and solutions, Barangay Cawayan, Puerto Princesa City, Philippines (n=167)

None – 0% Don't know/not concerned – 22.2% With answer – 71.8%	None – 0% Don't know/not concerned – 24.6% With answer –75.4%
1. Exploitation of coastal resource for HH/commercial use 2. Decrease in fish catch/available coastal resources 3. Mangrove cutting 4. Natural calamities	1. Mangrove planting/conservation 2. Governance – enforcement (Strict implementation of fishing laws/barangay ordinance, Prevent intrusion of commercial fishing vessel) 3. Community mobilization: Proper waste disposal/management 4. Governance-education (Conduct orientation/seminar related to proper utilization of coastal resources)

4.3.11. Perceptions of Coastal Management Successes and Challenges

Only 68.9% enumerated one or two successes in the community in relation to coastal management. Nonetheless, there is an overwhelming response that mangrove planting/conservation is a success as mentioned by 104 (62.3%) residents (Table 31). To a much lesser extent, coastal cleanliness and the existence of a protected fish sanctuary were also mentioned as successes by a number of respondents.

Table 31. Perceived successes in coastal management, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Coastal Management Success	Success1		Success 2		Combined	
	No.	%	No.	%	No.	%
Mangrove planting/conservation	102	61.1	2	1.2	104	62.3
Community mobilization (Coastal cleanliness)	1	0.6	11	6.6	12	7.2
Governance-enforcement (Protected fish sanctuary)	5	3.0	6	3.6	11	6.6
Governance-policy (formulating and implementing barangay ordinance)	5	3.0			5	3.0
Peace and order	2	1.2	2	1.2	4	2.4
Sub-total	115	68.9				
Don't know/no response	52	31.1	70	41.9		
None	0	0.0	76	45.5		
Total	167	100.0				

It seems that close to half of the residents do not find any challenges to coastal management in their community while another third are not aware of any (Table 32). Of the 22.2% who did mention a challenge, most cited the need for stricter implementation of fishery laws and ordinances, maintenance of coastal cleanliness, and continuation of mangrove re-planting. These responses are parallel to the coastal resource management problems they earlier enumerated. Maintenance of coastal cleanliness is still the challenge, both from the perspectives of strict enforcement of the law and compliance by users of resource rules and regulations. The multi-dimensionality of coastal resource management is highlighted in the residents' responses; some view the challenge as an enforcement issue while others recognize that the difficulty is in the compliance by the resource users of what is being enforced (Table 33).

Table 32. Perceived challenges in coastal resources management, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Challenges in Coastal Management	Challenge 1		Challenge 2		Combined	
	No.	%	No.	%	No.	%
Infrastructure: Continuation of seawall construction	1	0.6			1	0.6
Governance-policy (formulation of municipality /barangay ordinance)	9	5.4			9	5.4
Governance-enforcement (Strict implementation of fishing laws/ordinances)	8	4.8	9	5.4	17	10.2
Community mobilization (Maintenance of coastal cleanliness)	11	6.6	1	0.6	12	7.2
Continuation of mangrove planting/conservation	7	4.2	10	6.0	17	10.2
Water system/irrigation	1	0.6			1	0.6
Permanent source of income (livelihood program)			1	0.6	1	0.6
Sub-total	37	22.2				
Don't know/no answer	54	32.3	70	41.9		
None	76	45.5	76	45.5		

Table 33. Top perceived successes and challenges in coastal management, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

None –0% Don't know /no answer– 31.1% With answer – 68.9%	None –45.5% Don't know /no answer– 32.3% With answer –22.2%
1. Mangrove planting/conservation 2. Community mobilization (Coastal cleanliness) 3. Governance-enforcement (Protected fish sanctuary)	1. Governance-enforcement (Strict implementation of fishing laws/ordinances) 2. Continuation of mangrove planting/conservation 3. Community mobilization (Maintenance of coastal cleanliness)

4.3.12. Perceptions of Community Problems and Solutions

About 6 out of every 10 residents perceived that poverty is their utmost problem in the community (Table 34). Even though there were a large number of residents without regular occupations, unemployment was cited by only 19.2%. Water system *(patubig)* ranked third, though it was not clear whether the problem is household access to potable water or the irrigation of farm lands.

Table 34. Perceived community problems, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Coastal Management Problems	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Poor nutrition	2	1.2	1	0.6	3	1.8
Poverty	92	55.1	5	3.0	97	58.1
Lack of electricity	4	2.4	6	3.6	10	6.0
Unemployment	17	10.2	15	9.0	32	19.2
Drugs and vices	4	2.4			4	2.4
Stealing/robbery	3	1.8	1	0.6	4	2.4
Water system *(patubig)*	9	5.4	5	3.0	14	8.4
Road	1	0.6	2	1.2	3	1.8
Others	4	2.4	2	1.2	6	3.6
Sub-total	136	81.4				
Don't know	31	18.6				
None			76			

To address the problem of poverty, 84.3% of the residents believe that the solution is the provision of livelihood programs (Tables 35 and 36). It is evident that most of the residents connect their poor economic conditions to their lack of productivity as manifested by their unemployment and hence, the need for livelihood opportunities. As water system ranks third among their problems, it is not surprising that the installation of pipes and a water system also ranked second as a perceived solution. Though only a minority are affected, some households do not have access to electricity yet. Thus, they consider its installation to their residences as a solution to their community problem.

Table 35. Perceived solutions to community problems, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167).

Coastal Management Problems	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Livelihood programs	112	67.1	20	12.0	122	87.1
Financial assistance	1	0.6	2	1.2	3	1.8
Installation of electricity	5	3.0	5	3.0	10	6.0
Active involvement of village officials/*tanods*	5	3.0	1	0.6	6	3.6
Intensified health services	2	1.2	1	0.6	3	1.8
Road construction	1	0.6	2	1.2	3	1.8
Construction of water system	8	4.8	5	3.0	13	7.8
Sub-total	134	80.2	36	21.6		
Don't know/no answer	33	19.8	55	32.9		
None	0	0.0	76	45.5		

Table 36. Top perceived community problems and solutions, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=167)

None –0% don't know /no answer–18.6% With answer – 81.4%	None –0% don't know /no answer– 19.8% With answer –80.2%
1. Poverty 2. Unemployment 3. Water system (*patubig*)	1. Livelihood programs 2. Construction of water system 3. Installation of electricity

4.3.13. Governance

The community declared that there are management bodies that oversee fishing activities and coastal management in Barangay Cawayan. However, these bodies are said to have no management plan even though there is an enabling legislation for this management body to function. According to village leaders, there is a BFARMC (Barangay Fishery and Aquatic Resource Management Council). Nonetheless, it is currently inactive because of an unresolved issue as to who should be heading it. Community residents also consider fishers from other barangays of their municipality who use their fishing ground as intruders even if there is no such regulation that prevents fishers from one village fishing in the coastal waters of another village within the same municipality.

4.4. Recommendations

From these findings, the following are recommended:

1. Verify the bio-physical status of the resources in the community to validate the residents' perceptions with regard to the conditions of their coastal and non-coastal resources.

2. Monitor the resource areas to determine if the threats cited are still continuing up to the present so that necessary actions to mitigate and/or eliminate the threat can be taken.

3. Revitalize the BFARMC and Bantay Dagat as community-based organizations spearheading the protection of the coastal resources within the community. The leadership issue of the BFARMC also needs to be resolved so that the organization can move forward and perform its mandated tasks.

4. Undertake wider dissemination of environmental rules and regulations not only to the resource users but to the community at large to make resource protection and conservation a "community affair". This is because awareness of resource rules and regulations are mostly limited to the actual resource users.

5. Organize and/or strengthen agriculture-related stakeholder organizations so that more farmers can get involved in communal decision making. Barangay Cawayan is a

combined farming/fishing community with more households relying on farming rather than fishing as their occupation.

6. Designate environmental police personnel in critical areas who can immediately respond and confront violators. Give greater attention to the governance dimension, more specifically on enforcement of rules in coastal management. Although the BFARMC and Bantay Dagat members are deputized to apprehend offenders, they hesitate to do so because of the attendant risks to their lives.

7. Harmonize policies being implemented by concerned government agencies. Although 15 km from the shoreline is the limit for municipal waters, commercial fishing vessels are allowed to operate beyond 10 km from the shoreline.

8. Consider policy options that would ease the pressure on exploitation of coastal resources and fishery by using some of these measures: limitation of fishing to hook and line methods, designation of no-take zones, and prohibition of commercial fishers within municipal waters. Residents are already aware that there is over-extraction as evidenced by decreased fish catches. This declining trend shall continue unless interventions are introduced to allow the fishery to recover.

9. Explore alternative/supplemental livelihood opportunities that would allow community residents to become entrepreneurs and/or self-employed. The assistance should not only be limited to training and capital support but must also include organizational and marketing support. Fishers are already experiencing decreasing fish catch. Limiting fishing and resource use activities may further result to reduced income for them, in the short term. Hence, more viable alternative and/or supplemental livelihoods to fishing need to be introduced.

10. Mobilize more community residents for coastal clean-ups, waste segregation programs, and monitoring/reporting of violators of resource rules and regulations. The more residents are involved in community work, the greater would be their sense of community responsibility and involvement.

11. Conduct and/or intensify information and education campaigns among all residents on the proper utilization and conservation of coastal resources. Emphasis may be given to an ecosystem approach and focus on the role of community members both as

a user and steward of such resources. There is a need to empower the residents and change their perception that natural phenomena are threats to almost all their resources.

12. Conduct more technical studies on the main factors that are associated with sea level rise/sand erosion in the village's coastal areas. In this way, the most efficient mitigation and/or adaptive measures can be adopted by the community. Barangay Cawayan would be a very good case study for climate change–related research.

13. Use the SocMon research results to update community and municipal/city level development plans and to serve as basis for policy formulation and evaluation.

14. Undertake the same baseline in the future. Because the data presented herein were collected in order to establish baseline conditions at Barangay Cawayan, it is also recommended that a similar undertaking be conducted three or five years from now in order to track changes and trends that may occur.

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This document may be cited as:

PSU-MinSCAT (Palawan State University-Mindoro State College of Agriculture and Techonology). 2012. SocMon Site Report in Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines. 52 p. Center for Strategic Policy and Governance/Palawan State University, Puerto Princesa City.

Part 5 SocMon Site Report Barangay Masaguisi, Bongabong, Oriental Mindoro

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province

SocMon Site Report
Barangay Masaguisi, Bongabong
Oriental Mindoro, Philippines

Center for Strategic Policy and Governance
Palawan State University
Puerto Princesa City

Mindoro State College of Agriculture and Technology (MinSCAT)
Bongabong, Oriental Mindoro

September 2012

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List of Acronyms and Abbreviations

BFARMC	Barangay Fisheries and Aquatic Resources Management Council
BHW	Barangay Health Workers
FGD	focused group discussions
ha	hectares
HH	household
HHI	household interview
KALAHI-CIDSS	Kapit Bisig Laban sa Kahirapan Comprehensive and Integrated Delivery of Social Services
KI	key informant
LPG	liquified petroleum gas
MinsCAT	Mindoro State College of Agriculture and Trade
NGO	non-government organization
km	kilometers
KII	key informant interview
SocMon	Socioeconomic Monitoring
SEA	Southeast Asia

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

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Summary

Introduction

Understanding socioeconomic factors and the communities' relationship to coastal and marine resources is crucial for the success of marine conservation. This is addressed through socioeconomic monitoring, a global initiative for coastal management being undertaken in the Southeast Asian Region through the Socioeconomic Monitoring Southeast Asia (SocMon SEA). This report provides a synopsis of the socio-economic monitoring (SocMon) conducted in Barangay Masaguisi, Municipality of Bongabong, Oriental Mindoro Province, Philippines. The goal of this project is to propagate the use of socioeconomic monitoring (SocMon) among academics, researchers, policy makers, and coastal managers thereby enhancing coral reef conservation and coastal resources management.

Methodology

The SocMon methodology followed three major steps. The first part was advance preparation that included defining the objectives of SocMon, establishing the SocMon team and preparing the logistics. The second part was data collection, which was the generation of field data using three complementary research methods namely, household interview (HHI), key informant interview (KII), and focused group discussions (FGD). The number of respondents is as follows: HHI − 139 households; KII − 9; and FGD − 1. Field data were gathered from June 2011 to August 2012 in Barangay Masaguisi, Bongabong. The third part was analysis of both qualitative and quantitative data, while communication consisted of disseminating the results to the relevant stakeholders. The Palawan State University took the lead and the partners involved were the Mindoro State College of Agriculture and Trade (MinsCAT) – Bongabong Campus and the Municipal Government of Bongabong.

Results and Discussion

Barangay Masaguisi is 16 kilometers (km) south of the town proper of Bongabong, province of Oriental Mindoro, lying east of Tablas Strait. The village has a total land area of 434 hectares (ha) of which 70% is mostly agricultural land. As of 2010, the village

population stood at 2,459 residents in 451 households. Though Barangay Masaguisi may have been traditionally regarded as a coastal village, there are now more residents whose primary occupation is farming rather than fishing. Overall, 43% of the working age residents were engaged in farming either as a primary or secondary occupation in contrast to the 25.4% who were into fishing. There is high unemployment rate; 47.8% of residents aged at least 16 years old do not have a regular occupation. About 52.6% of the households had very low or low material style of life as reflected in their use of light materials such as bamboo and *nipa* for their residential dwellings.

Aside from valuing their natural resources because of the direct economic and market benefits derived therein, almost all residents recognize the indirect use and bequest values of their resources more than their existence non-use values. They have highest appreciation of the indirect non-market contribution of coral reefs and mangroves to the fisheries.

The community members generally perceived that all their resources are in good condition, foremost of which is their ground water. Residents were most knowledgeable of the threats to their mangroves and least knowledgeable of threats to their ground water. The most often cited threats by those who knew of at least one threats were: charcoal making and cutting for commercial/household use for mangroves; illegal fishing methods for coral reefs; fishing using dragnets/gleaning for sea grass; natural phenomenon and garbage dumping for both beach and rivers/creeks; conversion into residential settlements and charcoal making for terrestrial forests; and natural phenomenon and water contamination due to sewage for ground water. They are most aware of rules and regulations on fishing, mangroves management, and aquaculture. Awareness of rules and regulations for the other resource uses/activities - such as pebble gathering and residential development - are much lower.

Among household members aged at least 16 years old, a high 91.6% had no membership in any resource use stakeholder organization. The residents' current level of involvement in resource use decision-making is mostly at the "no participation" level. The residents' current level of participation is low, but they expressed a greater desire to participate in all resource uses/activities. Those who utilize the resource or are affected by the resource activity desired to participate more than the others, suggesting that participation

in decision making can be easily generated among users/beneficiaries of a particular resource,

Almost half of the residents do not know any coastal management problem in their community. The other half gave at least one primary problem, with sanitation concerns, lack of organized operation of Bantay Dagat/BFARMC, sea level rise/sand erosion, decrease in fish catch, and the exploitation of coastal resource for household and commercial use as the most cited coastal management problem. A large percentage (70.5%) of residents said that there are no coastal management challenges in their community. For those who knew of at least one challenge, the dike/seawall construction in the barangay is most cited, followed by the continuing coastal cleanliness program.

Since unemployment is pervasive in the community, it was cited as a pressing problem by 45.3% of the residents. The second most commonly cited community problem is poverty which is also related to unemployment. Hence, livelihood programs are their perceived solution to the community problem.

Alternative and/or supplemental livelihoods to fishing and farming need to be explored in order for residents to become micro-entrepreneurs and self-employed. The assistance need to be comprehensive to include not only training and capital investments, but also organizational and marketing support. Sanitation concerns need to be addressed more consistently through a systematic waste management program. Fishery rules and regulations need to be constantly enforced by concerned agencies, particularly apprehending violators by those who are trained and granted police powers. Finally, the initiative of the village council to declare their reef area a fish sanctuary need to be supported by the Municipal Government of Bongabong by fast-tracking the enactment of a municipal ordinance declaring the reef area a fish sanctuary and by providing logistical support to ensure that the integrity of the zone shall be established and maintained.

5.1.   Introduction

   Barangay Masaguisi is located in the southern part of the Municipality of Bongabong, province of Oriental Mindoro. The barangay has a total land area of 434 hectares (ha) of which 70% is mostly agricultural land. It is located 16 kilometers (km) away from the town proper of Bongabong and is bounded on the east by Tablas Strait, on the north by Barangay Anilao, on the west by Barangay Orconuma and on the south by Barangay Mina de Oro. There are six *sitios* within the jurisdiction of Barangay Masaguisi. Its topography ranges from flatlands to steep slopes.
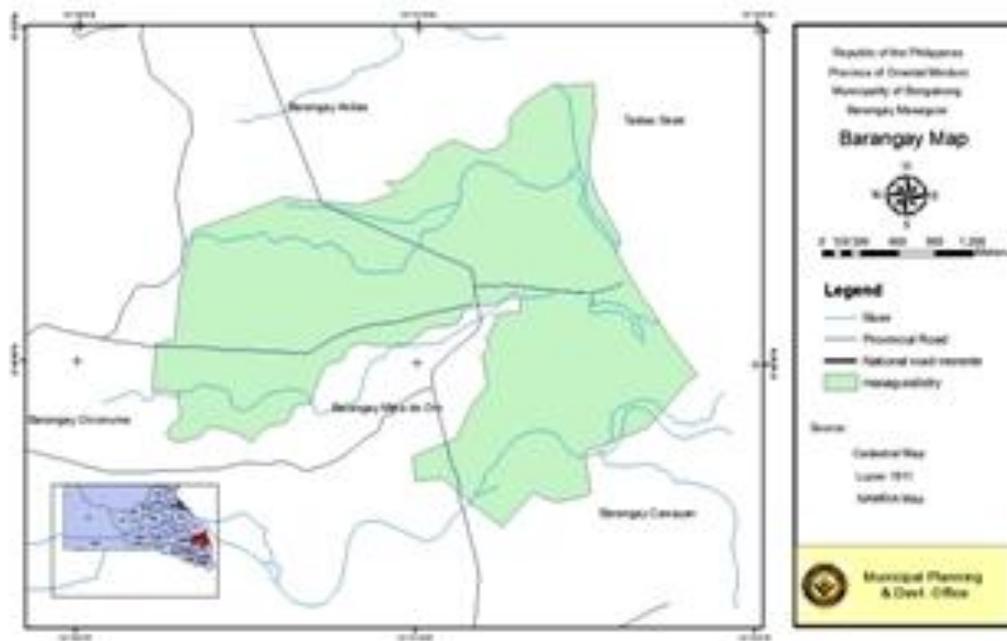
Figure 1. Location Map of Barangay Masaguisi, Bongabong, Oriental Mindoro
          Philippines.

   Based from the records of the *Sangguniang Barangay* (Village Council) of Masaguisi in 2010, the village has 2,459 residents composed of 1,109 males and 1,350 females. The total number of households in the village is 451. The residents are fairly homogenous in terms of ethnicity, religion, and occupation. The people are also heavily dependent on coastal resources for survival and livelihood.

Being a coastal village, Masaguisi has rich fishing grounds; hence, fishing is considered a major industry. In fact, the name of the village is derived from the fish species called as snapper locally known as "saguisi" which was said to be abundant in its coastal waters. Masaguisi thus means having plenty of saguisi. Previous reports estimate the number of fishermen at 200 with some farmers also working as fishers to augment their income. Some of the fishers use crude fishing gears. Part of the fishermen's daily catch is marketed within the village but good or high value catch are sold to the neighboring towns. Aside from the fishing grounds, there is approximately 25 ha for fishponds. These fishponds are operated by the private sector and have contributed to the economic development of the village.

Masaguisi is rich in natural resources. Sand and gravel abound in the area, especially along rivers and stream banks. Coastal habitats support the coastal resource base. Cognizant of Masaguisi reef's relatively good coral cover and fish abundance, the village council of Masaguisi has initiated activities to delineate and protect it as a fish sanctuary for the past two years, even though the municipal government of Bongabong has not yet passed an ordinance declaring the area as such. This shows that the village leadership within the vicinity of the reef is organized and can be relied upon to manage the sanctuary. Estimated percentage of hard coral cover for this site is 45.5% predominantly of mix non-acroporid foliose (24.9%), submissive (11.2%), encrusting (4.3%), massive (3.7%), mushroom (0.8%) and branching (0.6%) corals while Acropora corals are totally absent. Non–Acropora corals are composed of the following genera: *Porites*, *Diploastrea*, *Favites*, *Favia*, *Fungia*, *Goniopora*, *Galaxea* and *Pavona*. Though there are dead corals, they represent only 15.6% of the total cover – of which 9.9% are without algae and 5.9% are with algae. Other fauna such as sponges and crinoids with algal cover were relatively low at 9.26% and 0.80% respectively (Municipality of Bongabong, 2005).

Barangay Masaguisi has potential to become a tourist destination since it has scenic tourist spots being developed by some private individuals. There are beach houses to cater tourists and vacationers, who can enjoy swimming and snorkelling along its shores. The Kalinga Sea Wall is also frequently visited by local tourists. Tourism as an industry is gradually becoming one of the income earners for the locality. Further development of

beaches will provide more local employment among the residents. The full development of the said tourist spots will boost the economy and make the village more popular.

5.2   Methodology

Realizing the inter-relationship between a community's socio-economic context and its uses of coastal resources, the SocMon methodology was adopted. It is "a set of guidelines for establishing a socioeconomic monitoring program at a coastal management site in Southeast Asia" in order to gain an understanding of the social, cultural, economic, and political characteristics and conditions of individuals, households, groups, and communities (Bunce and Pomeroy, 2003).

The SocMon methodology provides a standardized set of 32 indicators and 28 indicators using key informant/secondary source and household interviews, respectively. Household interview indicators are categorized into household demographics (9), coastal and marine activities (5), attitudes and perceptions (13), and the material style of life (1). A mass of both quantitative and qualitative data arises out of undertaking a SocMon community-level survey using all or subsets of these 28 indicator variables. The results are summarized with the end view of translating data into useful information for any or all of the following purposes: (1) identifying threats, problems, solutions, and opportunities; (2) determining the importance, value, and cultural significance of resources as well as its uses; (3) assessing positive and negative impacts of management measures; (4) assessing management effectiveness; (5) building stakeholder participation along with appropriate education and awareness programs; (6) verifying and documenting assumptions of socioeconomic conditions in the area, community dynamics and stakeholder perceptions; and (7) establishing baseline household and community profile.

The main purpose of undertaking the SocMon in these four field sites in the Philippines (two villages each in Puerto Princesa City, Palawan Province and in Bongabong, Oriental Mindoro Province) is to establish the necessary socioeconomic baseline information needed for establishing marine sanctuaries and for resource use planning by communities. For the four study sites, all 60 key informant (KI) and household (HH) indicators were chosen and utilized to obtain the necessary information required by the communities for

planning and decision–making. These variables were chosen after consultation with community leaders/site managers and other key stakeholders to ensure the responsiveness of the research variables to the local conditions.

The process/means of data collection involved extracting data from both primary and secondary sources. In addition to a review of available documents such as but not limited to village profiles, municipal statistics, and relevant national reports, data gathering instruments were utilized to collect and cross-validate data. Primary data were collected in the field to complement secondary data as well as to fill identified gaps. Primary data collection took place through the development and administration of a household questionnaire survey and through individual/group interview of key informants (KIs). The selected key informants (KIs) were individuals who, because of their position, experience and/or knowledge, provided insights into the larger population. The KIs chosen included local leaders, community elders, coastal managers, representatives of non-governmental organizations and policy makers. Individual key informant interviews (KIIs) were conducted to collect useful baseline data, as well as to validate the primary and secondary data collected through other methods. The focus group discussions (FGDs), on the other hand, were group interviews designed to gather/validate both questionnaire and KII data for the baseline. Focused group participants included fishers, tourist operators, community elders, farmers, and representatives of NGOs present in the community. The socioeconomic household surveys collected data directly from the household head, usually the husband or wife in the family, through face-to-face interviews.

Systematic sampling was employed to randomly select the sample households and to ensure representatives of the population with the sampling interval computed based on the population size and desired sample size. The list of households in each community as provided by the village council's secretary was used as the sampling frame for Barangay Masaguisi. From the population of 451 households, a systematic random sample of 139 households was drawn. This sample size is 30.8 % of the household population, and is comprised of 613 individuals. Nine key informant interviews and one focused group discussion was conducted during the research.

The SocMon household survey was conducted by trained enumerators while the team statistician supervised the development of the database, encoding, and data analysis. Results of the surveys were then presented to the community and other stakeholders for validations. After the validations were completed, the technical reports for each village were finalized. Some of these reports will be translated into layman's language, such as policy briefs. Appropriate reports were also disseminated to the relevant stakeholder groups so that they may use the research results for planning and adaptive management.

5.3   Summary of Results

5.3.1   Household Demographics

Household demographics pertain to the residents' demographic characteristics that include household size, gender, age, highest educational attainment, and birthplace (Table 1 and Table 2). It also includes the socio–cultural characteristics of the household members like their religious beliefs, ethnic membership, and languages spoken (Table 3).

Table 1 indicates that an almost equal number of households have 4 to 6 members (58 or 41.7%) and 1 to 3 members (56 or 40.3%). Though half of the households have less than 5 members and the other half has more than 4, the mean household size is 4.4, showing that there are a few households with a large number of members. There were slightly more males (51.7%) than females (48.3%) in the community. Almost half (46.5%) of the residents were less than 19 years old while 17.3% were aged 50 years and above. The median age is 21 which is lower than the mean age of 26.91 years, confirming that the distribution of ages is positively skewed; that is, there are more younger people and fewer older people in the community. Only 28% were born outside the province, with 71.9% having been born in the village.

Table 1. Household demographic characteristics, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n= 139).

Socio-Demographic Characteristic	Frequency	Percentage
Household Size		
1 to 3 members	56	40.3
4 to 6 members	58	41.7
7 to 9 members	21	15.1
10 or more members	4	2.9
Sex		
Male	317	51.7
Female	296	48.3
Age (as of last birthday)		
0 to 9 years	125	20.4
10 to 19 years	160	26.1
20 to 29 years	89	14.5
30 to 39 years	74	12.1
40 to 49 years	65	10.6
50 to 59 years	56	9.1
60 to 69 years	32	5.2
70 years and above	12	2.0
Highest Educational Attainment		
(for household members > 16 years)		
No formal schooling		
At most grade 4	9	2.6
At most grade 6/elementary grad	34	9.7
At most 3rd year high school	70	20.0
4th year/high school grad	55	15.7
College undergraduate	88	25.1
College graduate	39	11.1
With Vocational/technical education	37	10.6
Vocational/technical graduate	6	0.3
With master's units/degree	1	2.3
No information/missing	8	1.1
	3	0.9
Birthplace		
Barangay locale	461	75.2
Municipal locale but in other barangays	33	9.4
Provincial locale but in other municipality	30	8.6
Regional locale but in other province	36	10.3
Other regions in Luzon	32	9.1
Other regions in Visayas	8	2.3
Other regions in Mindanao	4	1.1
No response	9	2.6

Table 2. Summary quantitative indices for household size and age, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139)

Quantitative Index	Household Size	Age
Total Number	139 households	613 individuals
Median	4	21
Mean	4.4	26.9 years
Standard Deviation	2.2	19.4
Skewness	0.86	0.63

In terms of educational attainment, 32.3% of the residents had not gone beyond the elementary level while 40.8% reached up to high school level. The other 26.9% went beyond high school education as college undergraduates (11.1%) and college graduates (10.6%), among others. Hence, majority may be literate but only about 25% would have employment skills gained from their educational exposures beyond basic education.

As summarized in Table 3, the community is predominantly Roman Catholic (70.0%). The only other sizable group is that of Born Again Christians (24.8%). Though it was observed that 3 out of every 4 residents were already born in the village, they were mostly migrants since their parents are not natives to the village, with 68.9% who identified themselves to ethnic groups outside of the province of Oriental Mindoro, mainly Region IV-B (the region comprising the provinces of Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan) and the Visayas area. Tagalog is the primary language spoken in the community.

Table 3. Socio-cultural characteristics of household members, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Socio-Demographic Characteristic	Frequency	Percentage
Religion		
Roman Catholic	429	70.0
Iglesia ni Kristo	8	1.3
Born-again Christian	152	24.8
Protestant	19	3.1
Seventh Day Adventist	2	0.3
Others	1	0.2
No response	2	0.3
Ethnic Membership		
Ethnic group within the locality	186	30.3
Ethnic group within the province	5	0.8
Ethnic group within the region	223	36.4
Ethnic group within Luzon	129	9.8
Ethnic group within Visayas	60	21.0
Ethnic group within Mindanao	2	0.3
No response/None	8	1.3
Primary Language Spoken		
Tagalog	580	94.6
Ilonggo	7	1.1
Bisaya	24	3.9
No response/missing	2	0.3

5.3.2 Household Members' Occupations and Income Sources

Although Barangay Masaguisi may have been traditionally regarded as a coastal village with fishing as a main livelihood, data from the household survey show that there are now more residents whose primary occupation is farming (35.8%) rather than fishing (20.7%) (Table 4). Overall, 43% of the working age residents were engaged in farming either as a primary or secondary occupation in contrast to the overall 25.4% for fishing. The other major occupations engaged in by residents were laborer/construction work (23.3%) and self-employed/small businessmen (17.60%) for their primary and/or secondary occupations. These are the top four occupation categories in the village. However, there is a high unemployment with 370 (47.8%) residents aged at least 16 years old who did not have a regular occupation.

Table 4. Primary and secondary occupations of household members*, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139)

Occupation Category	Primary		Secondary		Total/Combined	
	No.	%	No.	%	No.	%
Fishing	40	20.7	9	4.7	49	25.4
Farming	69	35.8	14	7.3	83	43.0
Regular government employment	12	6.2			12	6.3
Private professional employment	3	1.6			3	1.6
Labourer/construction worker	30	15.5	15	7.8	45	23,3
Self-employed/small business	24	12.4	10	5.2	34	17.6
Animal/livestock raising	8	4.1	11	5.7	19	9.8
Tricycle/jeepney driver	2	1.0	3	1.6	5	2.6
Dressmaking	4	2.1	13	6.7	17	8.8
Others	1	0,5			1	0.5
Sub-total	193	100.0	75	38.9	193	100.0
None	177	47.8	295	79.7		
Total	370	100.00	370	100.00		

*For household members with ages of at least 16 years

With the main occupation in the community as farming, it is therefore not surprising that 46.0% of the households rely on farming as their primary source of income, followed by fishing (17.3%), self-employment/small business (10.1%) and laborer/construction worker (10.1%) (Table 5). If the secondary source of household income is further considered, a total of 54.0% of the households have farming as either their primary or secondary source of income in contrast to the 23.0% that rely on fishing. Again, almost half of the households rely on self-employment/small business or labourer/construction work as either primary or secondary income source.

Table 5. Most important income sources of households, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139)

Source of Income	Primary		Secondary		Total/Combined	
	No.	%	No.	%	No.	%
Pension	5	3.6	2	1.4	7	5.0
Local remittance from relatives	5	3.6			5	3.6
Foreign remittance from relatives	1	0.7	4	2.9	5	3.6
Fishing	24	17.3	8	5.8	32	23.0
Farming	64	46.0	11	7.9	75	54.0
Livestock/animal raising	6	4.3	8	5.8	14	10.1
Regular government employment	4	2.9			4	2.9
Private professional employment	1	0.7			1	0.7
Labourer/construction worker	14	10.1	17	12.2	31	22.3
Self-employed/small business	14	10.1	20	14.4	34	24.5
None	1	0.7	69	49.6		
Total	139	100.0	139	100.0		

Even though the actual household income was not measured in this research due to its methodological as well as measurement complexities, a proxy variable used was "material style of life" as an indicator of the economic status of the households. Observations of the residential dwellings of the sample households show that these are predominantly made of tin/galvanized iron (GI) sheet roofs (62.6%), brick/concrete walls (55.4%), thatch/bamboo windows (33.8%), and cement floors (57.6%) (Table 6). Overall, about 45.9% and 29.6% of the households have high and very low material style of life as indicated by their residential dwellings, respectively. It can thus be surmised that about 53% of the households have low economic status and the rest (47.14%) may belong to the middle class and are more economically stable if the basis is their residential dwellings.

Table 6. Material style of life, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Material Style of Life	No.	%
Type of Roof:		
Thatch/nipa	41	29.5
Thatch/bamboo	5	3.6
Wood/plywood	1	0.7
Tin/GI sheet	87	62.6
Tiled	2	1.4
Type of outside structural walls		
Thatch/nipa	31	22.3
Thatch/bamboo	21	15.1
Wood/plywood	7	5.0
Brick/concrete	77	55.4
Tiles	1	0.7
Missing	2	1.4
Windows:		
Open	12	8.6
Thatch/bamboo	47	33.8
Wooden	32	23.0
Steel bars	27	19.4
Glass	20	14.4
Missing	1	0.7
Floor		
Dirt	38	27.3
Bamboo	11	7.9
Cement	80	57.6
Wooden	7	5.0
tiles	1	0.7
Missing	1	0.7
Other Household Assets:		
2/3/4-wheel Motor Vehicle	25	18.0
Banca	1	7
Computer	2	1.4
Television set	2	1.4
Aggregate Ratings		
4 - 8: Very low	40	29.6
9 - 12: Low	31	23.0
13 – 16: High	62	45.9
17 – 20: Very High	2	1.5

5.3.3 Coastal and Marine Activities

The coastal and marine resources of Barangay Masaguisi were primarily utilized for fishing and aquaculture. The marine products harvested are said to range from being of low to high value. The community sees the marine and coastal resources as a source of livelihood and food for the household with their fish catch used for household consumption, for sale, and for payment of debts. Some fishers pay their debts and wages in kind or by using a portion of their catch as payment. According to key informants, fishers who sell part or all of their fish catch have the village itself as their primary market since the local community is a sizeable market for the marine products of local fishers. However, a part of other sea products (including those produced from aquaculture) were also sold outside the village. In general, the main market of the fish catch is still the local village.

The key informants interviewed stated that fish and other sea products can be found in the reefs and along the coasts of the village and that fishers normally utilize these areas to catch their target species. Majority of the interviewees said that the fishes they catch were found in the coral reefs with the actual fishing areas described to be just a few kilometers away from the shoreline.

On the level of impact of these activities, they perceived that fishing and aquaculture caused high level of impact on the reefs but low level of impact on other coastal resources. Unregulated fishing activities will cause overfishing, damages to the reefs, and decline in fish catch of the community. The community already senses that their marine resources are threatened by overfishing due to illegal fishing activities, presence of commercial fishing vessels, and natural calamities that affect the marine resources.

Residents alleged that fishers from other villages/municipalities utilized the coastal resources more than they did. They reported that fishers in the adjacent communities and other outsiders were normally found fishing in coastal waters within the immediate vicinity of Barangay Masaguisi, and that they were usually the ones who used illegal fishing methods.

5.3.4 Attitudes towards Non-Market and Non-Use Values of Resources

It is natural for people to value the resources in their environment that are of economic significance and/or which is directly useful to them. On the other hand, SocMon looks at the community's appreciation of their coastal and other resources beyond the direct economic benefits and from an ecosystem perspective. To determine the people's perception and understanding of the value of resources, investigating the residents' perception of the non-market and non-use values of their resources were included in the survey.

For this reason, eight Likert-type item statements were asked pertaining to attitudes towards non-market and non-use values of coastal resources (Table 7 and Table 8). Strong agreement indicates most positive attitude and is given a score of 5 while the lowest score of 1 is given to a response of strong disagreement. Scoring was reversed for the negatively stated statements. Items 2 and 3 which focus on the protection of mangroves for fishery ($\bar{x}$ = 4.79) and the contribution of coral reefs for fishing ($\bar{x}$ = 4.78) had the highest mean rating scores. This was followed by item 5 which is about the restriction of fishing in certain coral and fish habitats and item 6 which focuses on the preservation of coral reefs and mangroves for future generation, both with mean ratings of 4.73. Item 7 on restriction of development in coastal areas had a mean of 4.61. The frequencies and mean ratings indicate that people's attitudes are generally very positive with respect to the indirect non-market contribution of mangroves and corals to fishery. Meanwhile, the lowest ratings were given to items pertaining to existence non-use values such as importance of corals beyond fishing and diving ($\bar{x}$ =2.88), value of seagrass ($\bar{x}$ = 3.38) and to indirect non-market value of coral reefs in protecting land from storm waves ($\bar{x}$ = 3.65)

Table 7. Attitudes towards non-market and non-use values of resources, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Item Statement	Response Options*					No Response
	SD	D	NAD	A	SA	
Reefs are important for protecting land from storm waves	5 (3.6)	10 (7.2)	6 (4.3)	90 (64.7)	2 (1.4)	26 (18.7)
In the long run, fishing would deteriorate if we cleared the corals	1 (0.7)		3 (3.2)	19 (13.7)	109 (78.4)	7 (5.0)
Mangroves are to be protected so that we will have fish to catch	1 (0.7)	1 (0.7)	3 (3.2)	15 (10.8)	112 (80.6)	7 (5.0)
Corals are only important for fishing and diving (-)	12 (8.6)	54 (38.8)	11 (7.9)	16 (11.5)	39 (28.1)	7 (5.0)
I want future generations to enjoy the mangroves and coral reefs	4 (2.9)	1 (0.7)	3 (2.2)	10 (7.2)	114 (82.0)	7 (5.0)
Fishing should be restricted in certain areas to allow fish and coral to grow	1 (0.7)	4 (2.9)	1 (0.7)	17 (12.2)	109 (78.4)	7 (5.0)
We should restrict development in some coastal areas for future generations to have natural environments	3 (3.2)	6 (4.3)	3 (3.2)	16 (11.5)	104 (74.8)	7 (5.0)
Seagrass beds have no value to people (-)	19 (13.7)	69 (49.6)	8 (5.8)	15 (10.8)	21 (15.1)	7 (5.0)

*Statements are rated on a 5-point scale with the following options: SA – Strongly Agree; A – agree; NAD – neither agree nor disagree; D – Disagree; and SD – Strongly Disagree.
Note: Figures enclosed in parentheses are the corresponding percentages for each category across an item.

Table 8. Means and standard deviations of rating scores of attitudes towards non-market and non-use values of coastal resources, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Item Statement	Valid cases	Median	Mean	SD
Reefs are important for protecting land from storm waves	113	4	3.6	.84
In the long run, fishing would deteriorate if we cleared the corals	132	5	4.7	.56
Mangroves are to be protected so that we will have fish to catch	132	5	4.8	.59
Corals are only important for fishing and diving (-)	132	3.5	2.9	1.44
I want future generations to enjoy the mangroves and coral reefs	132	5	4.7	.81
Fishing should be restricted in certain areas to allow fish and coral to grow	132	5	4.7	.70
We should restrict development in some coastal areas for future generations to have natural environments	132	5	4.6	.91
Seagrass beds have no value to people (-)	132	4	3.4	1.31

*Statements are rated on a 5-point scale with the following options and corresponding scores: SA – Strongly Agree (5); A – agree (4); NAD – neither agree nor disagree (3); D – Disagree (2); and SD – Strongly Disagree (1). Scoring is reversed for negatively-stated items.
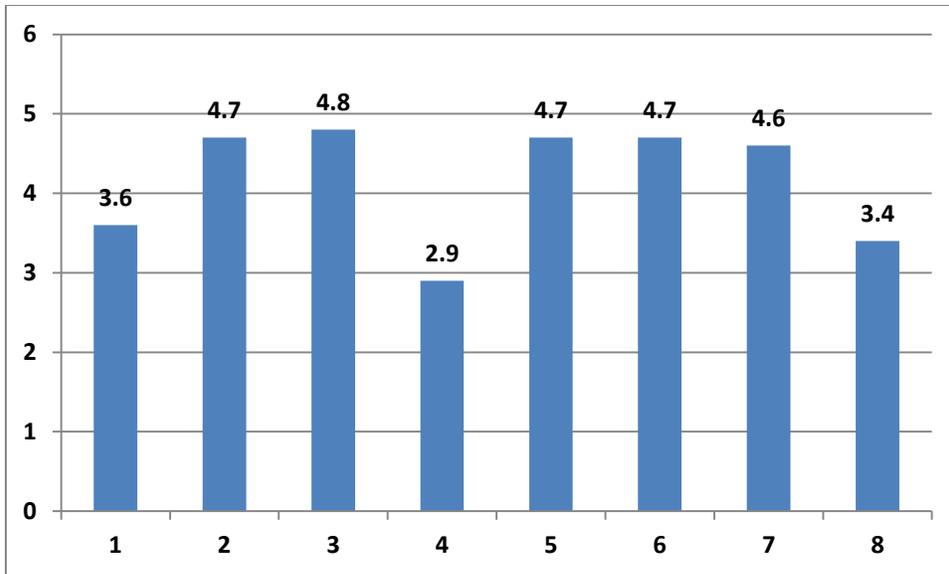
Figure 2. Mean ratings for items on attitudes towards non-market and non-use values (n=139).

Note: The numbers on the horizontal axis refer to the following item statements:

      1 - The reefs are important for protecting land from storm waves.

      2 - In the long run, fishing would deteriorate if we cleared the corals.

      3 - Unless mangroves are protected, we will not so that we will have fish to catch.

      4 - Coral reefs are only important if you fish or dive (reversed scoring).

      5 - I want future generations to enjoy the mangroves and coral reefs

      6 - Fishing should be restricted in certain areas even if no one ever fishes in those

         Areas just to allow the fish and coral to grow

      7 - We should restrict development in some coastal areas so that future generations

         will be able to have natural environments.

      8 - Seagrass beds have no value to people (reversed scoring).

The overall attitude ratings towards non-market and non-use of resources as summarized in the aggregate frequencies and mean ratings for the three categories show that the residents had generally positive attitudes on the non-market and non-use values of their coastal resources (Table 9 and Table 10), with highest appreciation on their bequest value ($\bar{x}$ = 4.7), followed by indirect non-market value ($\bar{x}$ = 4.4), and lowest appreciation of existence non-use value ($\bar{x}$ = 3.7).

Table 9. Aggregate rating scores on attitudes towards non-market and non-use values of coastal resources, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Classification of attitude statements	Freq	%
Indirect non-market value		
1.00 – 1.50 : Very negative	-	-
1.51 – 2.50 : Negative	2	1.4
2.51 – 3.50 : Neither positive nor negative	3	2.2
3.51 – 4.50 : Positive	36	25.9
4.51 – 5.00 : Very positive	66	51.8
No response/Missing	32	23.0
Existence non-use value		
1.00 – 1.50 : Very negative	-	-
1.51 – 2.50 : Negative	16	11.5
2.51 – 3.50 : Neither positive nor negative	36	25.9
3.51 – 4.50 : Positive	73	52.5
4.51 – 5.00 : Very positive 1	7	5.0
No response	7	5.0
Bequest non-use value		
1.00 – 1.50 : Very negative	2	1.4
1.51 – 2.50 : Negative	1	0.7
2.51 – 3.50 : Neither positive nor negative	9	6.5
3.51 – 4.50 : Positive	25	18.0
4.51 – 5.00 : Very positive	95	68.4
No response	7	5.0
Mean rating for attitudes towards non-market and non-use values of coastal resources		
1.00 – 1.50 : Very negative	-	-
1.51 – 2.50 : Negative	1	0.7
2.51 – 3.50 : Neither positive nor negative	8	5.8
3.51 – 4.50 : Positive	69	49.6
4.51 – 5.00 : Very positive	29	20.9
No response	32	23.0

Table 10. Means and standard deviations of aggregate rating scores on attitudes towards non market and non-use values 0f coastal resources, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Value Classification	Valid cases	Median	Mean	Std Dev
Indirect non-market value (Items 1, 2, 3)	107	4.7	4.4	0.5
Existence non-use value (Items 4, 6, 8)	132	3.7	3.7	0.8
Bequest value (Items 5, 7)	132	5.0	4.7	0.7
Over-all attitude towards non-market and non-use values of resources (Items 1-8)	107	4.2	4.2	0.5

5.3.5 Perceptions of Resource Conditions

On a scale of 1 to 5 with 1 as "very bad" and 5 as "very good", community residents who felt that they had enough knowledge about their resources mostly gave ratings of 4 and 5 (Table 11). These ratings indicate that such resources were perceived to be in good to very good condition. There were a number of residents who did not rate a specific resource and instead answered "don't know" or "not applicable"; these were usually non-users of the specific resources or individuals whose residences were geographically far from the resource. Hence, they may have considered themselves without enough knowledge about the condition of the resource mentioned.

Table 11. Perceptions of resource conditions, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Resource	Perceived Resource Condition*					Don't know	Net Rating**
	VB	B	NGB	G	VG		
Mangroves	4	4	21	72	30	8	71.7%
	(2.9)	(2.9)	(15.1)	(51.8)	(21.6)	(5.8)	
Coral reefs	1	1	16	65	27	29	81.8%
	(0.7)	(0.7)	(11.5)	(46.8)	(19.4)	(20.9)	
Upland forests	6	12	20	68	9	24	51.3%
	(4.3)	(8.6)	(14.4)	(48.9)	(6.5)	(17.3)	
Seagrass	9	6	10	72	17	25	64.9%
	(6.5)	(4.3)	(7.2)	(51.8)	(12.2)	(18.0)	
Beach	1	4	20	75	24	15	75.8%
	(0.7)	(2.9)	(14.4)	(54.0)	(17.3)	(10.8)	
Spring	Not applicable						
River/	1	7	21	66	32	12	70.8%
Creeks	(0.7)	(5.0)	(15.1)	(47.5)	(23.0)	(8.6)	
Ground water		1	1	75	55	7	97.72%
		(0.7)	(0.7)	(54.0)	(39.6)	(5.0)	

*Each community resource is rated on a 5-point scale with the following options and
 corresponding scores: VG – Very good (5);G – good (4); NGB - neither good nor bad (3);
 B – bad (2); and VB – very bad (1).
**Net Rating = % freq [(VG + G)] – % freq [(VB + B)]
Note: Figures enclosed in parentheses are the corresponding percentages for each category

For those who responded, not more than 15% rated their resource conditions as bad and very bad with the least such frequencies for coral reefs, beach, rivers/creeks, and mangroves. The computed net ratings in the last column of Table 11 provides the difference, in percentage, between those who perceived the resource condition to be good/very good

and those who perceived it to be bad/very bad. Hence, the large positive net ratings reflected in Table 11 indicate that so much more residents perceive their resources to be good compared to those who found them bad. The highest net rating is for ground water (97.7%) followed by coral reefs with 81.8%, while the upland forest received the lowest net rating. More than half of the residents (51.3%) perceived their upland forest to be good than those who found them bad. This is also echoed by the mean rating of perceived upland forest condition which is lowest at 3.54 which fell into the "neither good nor bad" category (Table 12). Residents generally perceived their ground water to be in very good condition as indicated by the highest mean rating of 4.4. Residents' perceptions were also most varied on the condition of their sea grass and least varied on ground water conditions.

Table 12. Means and standard deviations of ratings on perceived resource conditions, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Resource	Valid Responses	Median	Mean	Std Dev
Mangroves	131	4	3.92	.886
Coral reefs	111	4	4.05	.715
Upland forests	115	4	3.54	.967
Seagrass	114	4	3.72	1.043
Beach	124	4	3.94	.747
Spring	Not applicable			
River/creeks	127	4	3.95	.844
Ground water	133	4	4.40	.550

   *Each community resource is rated on a 5-point scale with the following
    options and corresponding scores: VG – Very good (5);G – good (4); NGB
  – neither good nor bad (3); B – bad (2); and VB – very bad (1).
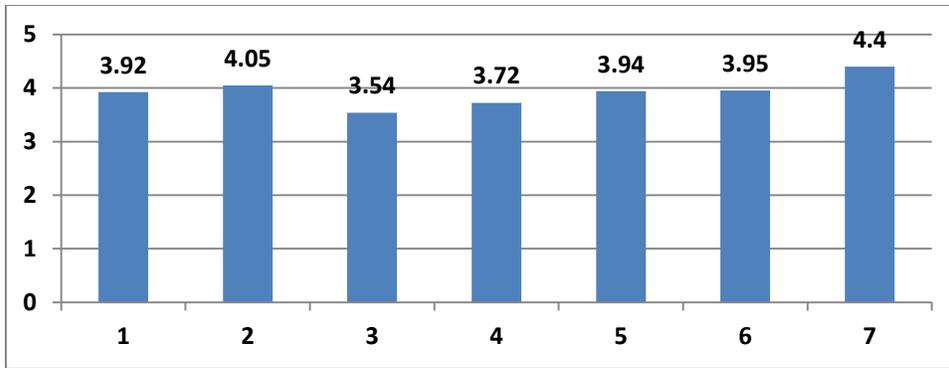
Legend: 1- Mangroves; 2- Coral reefs; 3 - Upland forests; 4 - Seagrass; 5 - Beach;
        6 - River/creeks; 7 - Ground water
Figure 3. Mean ratings of perceived resource conditions at Barangay Masaguisi, Bongabong,
Oriental Mindoro (n=139)

5.3.6 Perceived Threats to Resources

The top threats to mangroves as perceived by community residents were charcoal making, cutting both for household and commercial uses, and conversion into fishpond (Table 13). Some 13.7% did not know of any threat. The residents seemed to view charcoal making as the main reason for the destruction of mangroves in their area. This may be because wood charcoal is the cheapest source of household fuel that is readily available for their consumption or easily sold for cash income. Mangrove forests provide good quality fuel wood and charcoal for cooking which are commonly used in most rural households because of its cheaper cost compared to liquified petroleum gas (LPG) and kerosene. Many people, especially those living in rural areas, find these other fuel sources as too expensive. Community leaders also stated that the conversion of mangrove areas into fishponds for aquaculture has led into a significant decrease of their mangrove trees. Unfortunately, loss of mangrove forests makes the coastal area more vulnerable to erosion from storms and destroys essential nursery areas of many commercially important fisheries and coral reef species.

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Table 13. Perceived threats to mangroves, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
Cutting for household use	6 (4.3)	27 (19.4)	5 (3.6)	38 (27.3)	3
Cutting for commercial use	10 (7.1)	10 (7.1)	23 (16.5)	43 (30.9)	2
Clearing	5 (3.5)	4 (2.9)	1 (0.7)	10 (7.1)	4
Charcoal making	90 (64.7)	16 (11.5)		106 (76.2)	1
Conversion into fish pond	2 (1.4)	6 (4.3)	5 (3.6)	13 (9.3)	5
Natural phenomenon (typhoons, big waves)	5 (3.6)			5 (3.6)	6
Disease/infestation of mangroves	1 (0.7)	1 (0.7)		2 (1.4)	7.5
Pollution/dumping of garbage	1 (0.7)	1 (0.7)		2 (1.4)	7.5
Don't know	19 (13..7)	74 (53.2)	105 (75.5)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

As summarized in Table 14, the most often mentioned threat to coral reefs by the residents is the use of destructive fishing methods like dynamite or blast fishing and cyanide/compressor fishing. Residents also cited coral gathering for household/commercial use (21.6%), clearing/mining/digging (8.7%) and illegal fishing activities (6.4%) as threats to their coral reefs. Some community members also saw natural phenomenon, pollution/garbage dumping, and recreational diving as threats. On the other hand, almost half (48.9%) of the residents do not know of any threat to coral reefs.

Table 14. Perceived threats to coral reefs, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	4 (2.9)				
Cyanide/compressor fishing	12 (8.6)	16 (11.5)	2 (1.4)	30 (21.6)	2
Illegal fishing activities	6 (4.3)	2 (1.4)	1 (0.7)	9 (6.4)	5
Dynamite/blast fishing	23 (16.5)	6 (4.3)		29 (20.8)	1
Coral gathering for HH/commercial use	8 (5.8)	7 (5.0)	15 (10.8)	30 (21.6)	3
Clearing/mining/digging	6 (4.3)	3 (2.2)	3 (2.2)	12 (8.7)	4
Natural phenomenon (typhoon, waves)	6 (4.3)	1 (0.7)	2 (1.4)	9 (6.4)	6
Tourism-related: recreational diving	1 (0.7)	3 (2.2)		4 (2.9)	8
Pollution/garbage dumping	5 (3.6(	1 (0.7)	1 (0.7)	7 (5.0)	7
Don't know	68 (48.9)	100 (71.0)	115 (82.7)	283 (203.5)	

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

Most of the cited threats to coral reefs pertain to destructive fishing methods that have long been declared illegal through national fisheries legislations. These replies indicate a heightened awareness among residents of the harmful effect of dynamite/blast and cyanide/compressor fishing practices on coral reefs. They do realize that the impact of destructive fishing activities extends beyond catching the target species and ultimately causes damage to coral reefs.

As indicated in Table 15, residents still perceived that terrestrial forests are most threatened by converting them into residential settlements (41.0%), charcoal making (21.6%), cutting trees for household use (20.9%), and cutting trees for commercial use (20.7%). Residents may have noticed a trend of expanding human settlements in terrestrial forests of the village which are on relatively flat lowlands and near farming areas thereby making it attractive for residential settlement.

Table 15. Perceived threats to upland forests, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
Charcoal making	5 (3.6)	24 (17.3)	1 (0.7)	30 (21.6)	2
Cutting trees for household use	6 (4.3)	3 92.2)	20 (14.4)	29 (20.9)	3
Illegal logging	2 (1.4)			2 (1.4)	5
Cutting trees for commercial use	12 (18.6)	1 (0.7)	2 (1.4)	15 (20.7)	4
Conversion into residential settlements	50 (36.0)	7 (5.0)		57 (41.0)	1
Kaingin/slash and burn farming	1 (0.7)			1 (0.7)	6
Natural phenomenon (typhoons)		1 (0.7)		1 (0.7)	7
Don't know	63 (45.3)	103 (74.1)	116 (83.5)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

Even as 45.3% said that they do not know the threat/s to seagrass beds, most of those who answered considered fishing using dragnets/gleaning (17.3%) as a primary threat to sea grass (Table 16). Other threats cited were gathering for commercial (13.7%) and household use (11.5%), and clearing/mining/digging (10.8%). This means that residents are aware that the use of dragnets/gleaning in fishing endangers the life of the sea grass as these tend to destroy the sea grass beds.

Table 16. Perceived threats to seagrass, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None	3 (2.2)			3 (2.2)	
Clearing/mining/digging	1 (0.7)		14 (10.1)	15 (10.8)	4
Gathering for household use	14 (10.1)	2 (1.4)		16 (11.5)	3
Gathering for commercial use	3 (2.2)	15 (10.8)	1 (0.7)	19 (13.7)	2
Illegal fishing activities	4 (2.9)	1 (0.7)	2 (1.4)	7 (5.0)	6
Fishing using dragnets/gleaning	17 (12.2)	4 (2.9)	3 (2.20)	24 (17.3)	1
Pollution/dumping of garbage	4 (2.9)	1 (0.7)		5 (3.6)	7
Dynamite/blast fishing	3 (2.2)	1 (0.7)	1 ().7)	5 (1.4)	8
Tourist-related recreation	2 (1.4)	1 (0.7)		3 (2.1)	9
Natural phenomenon (typhoon, waves)	6 (4.3)	(0.7)	1 (0.7)	8 (5.7)	5
Don't know	82 (59.0)	113 (81.3)	117 (84.2)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

Most of those who were aware of at least one threat to their beaches said that natural phenomena such as typhoons and strong waves, as well as pollution/dumping of garbage, are threats (Table 17). Other threats enumerated by residents were residential area expansion, beach erosion/sea level rise, and sand quarrying for household use. Very few considered soil erosion from the uplands, pebble/stone gathering for commercial use, and development of resorts and tourist-related facilities as threats to beaches. Generally, residents seemed to consider nature as a threat to contend with, alongside human actions such as garbage dumping or marine pollution.

Table 17. Perceived threats to beach, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
None		1 (0.7)			
Sand quarrying for household use	4 (2.9)	6 (4.3)	4 (2.9)	14 (10.1)	5
Pollution/dumping of garbage	19 (13.7)	12 (8.6)	1 (0.7)	32 (23.0)	2
Natural phenomenon (typhoons, big waves)	21 (15.1)	8 (5.8)	3 (2.2)	32 (23.1)	1
Pebble/stone gathering for commercial use	3 (2.2)	2 (1.4)	1 (0.7)	6 (4.3)	7
Soil erosion from the uplands	5 (3.6)	2 (1.4)	3 (2.2)	10 (7.2)	6
Residential area expansion	13 (9.4)	9 (6.5)		22 (15.9)	3
Beach erosion/sea level rise	15 (10.8)	2 (1.4)		17 (12.2)	4
Development of resorts and tourist-related facilities	1 (0.7)	1 (0.7)	4 (2.9)	6 (4.3)	8
Don't know	57 (41.0)	96 (69.1)	112 (80.6)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

More than half of the respondents (55%) identified pollution/garbage dumping as the top threats to rivers/creeks (41.9%). Other threats mentioned were natural phenomenon (18%), sedimentation (13.7%), soil erosion (9.4%), and sand quarrying for household use (6.4%) (Table 18). Perhaps, many residents considered garbage dumping as the primary threat to their rivers/creeks because it can cause major flooding due to the congestion of waterways or possible contamination of the water being used by the residents.

Table 18. Perceived threats to rivers/creeks, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Perceived Threat	1st	2nd	3rd	Combined	Rank
Pollution/dumping of garbage	49 (35.4)	6 (4.3)	3 (2.2)	58 (41.9)	1
Natural phenomenon (typhoons, big waves)	7 (5.0)	10 (7.2)	8 (5.8)	25 (18.0)	2
Sand quarrying for commercial use	1 (0.7)			1 (0.7)	8
Soil erosion	3 (2.2)	2 (1.4)	8 (5.8)	13 (9.4)	4
Sand quarrying for household use	7 (5.0)		2 (1.4)	9 (6.4)	5
Pebble/stone gathering for household use		1 (0.7)	1 (0.7)	2 (1.4)	7
Sedimentation	7 (5.0)	9 (6.5)	3 (2.2)	19 (13.7)	3
Establishment/expansion of nearby human settlements	2 (1.4)			2 (1.4)	6
Don't know	63 (45.3)	111 (79.9)	114 (82.6)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

Table 19 enumerates the residents' perceived threats to ground water threats, among which are natural phenomena such as typhoon (13.7%), salt intrusion (12.7%), water contamination due to sewage (10.1%), establishment/expansion of human settlements (8.6%), and overexploitation for household use (5.7%).

Table 19. Perceived threats to ground water, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Perceived Threat	Primary	Second	Tertiary	Combined	Rank
Natural phenomenon (typhoons)	10 (7.2)	3 (2.2)	6 (4.3)	19 (13.7)	1
Deforestation/cutting of trees	2 (1.4)			2 (1.4)	7
Pollution/dumping of garbage1	4 (2.9)	1 (0.7)	1 (0.7)	6 (4.3)	6
Tourist- and resort-related development	1 (0.7)	1 (0.7)		2 (1.4)	8
Water contamination due to sewage	4 (2.9)	2 (1.4)	8 (5.8)	14 (10.1)	2
Over-exploitation for household use	7 (5.0)		1 (0.7)	8 (5.7)	5
Salt intrusion	2 (1.4)	6 (4.3)	1 (0.7)	9 (12.7)	4
Establishment/expansion of human settlements	2 (1.4)	8 (5.8)	2 (1.4)	12 (8.6)	3
Don't know	107 (77.0)	117 (84.2)	120 (86.3)		

Note: Figures enclosed in parentheses are the corresponding percentages for each category

As a whole, residents were aware that their resources are facing certain threats, whether induced by man or caused by natural events, as evidenced by the almost zero response for none (Table 20 and Table 21). With the exception of mangroves, however, a big number of community members (from 41% for mangroves to 77% for ground water) do not know and are not able to cite at least one of these threats when they were asked to give one. Those who are able to cite at least one threat gave responses that reflect an understanding of the inter-connectedness of human actions to the condition of the resource. Yet there is also a tendency to attribute the threat (and as a consequence, the negative condition of a resource) to natural phenomenon especially for beach, rivers and creeks, and ground water. This perception may foster passivity among residents and prevent them from taking greater responsibility and initiating action to protect their natural resources, since they believe that the threat is natural phenomena. Therefore, they cannot do anything to prevent such events from happening. This may be true in certain instances - but not in general terms - since threats usually arise out of human activities rather than as a consequence of natural events.

Table 20. Top perceived threats to coastal resources, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Mangroves	Coral Reefs	Seagrass	Beach
None – 0.0%	None – 2.9%	None – 2.2%	None – 0.8%
DK/NA – 13.7%	DK/NA – 48.9%	DK/NA – 59.0%	DK/NA – 41.0%
Charcoal making	Dynamite/blast fishing	Fishing using dragnets/ gleaning	Natural phenomenon
Cutting for commercial use	Cyanide/compressor fishing	Gathering for commercial use	Pollution due to garbage dumping
Cutting for household use	Coral gathering for household/commercial use	Gathering for household use	Residential area expansion
Clearing	Clearing/mining/digging	Clearing/mining/ Digging	Beach erosion/sea level rise
Conversion into fish pond			Sand quarrying for household use

Note: DK=don't know; NA=not applicable

Table 21. Top perceived threats to non-coastal resources, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139)

Upland Forests	Rivers And Creeks	Ground Water
None – 0.0%	None= 0.0%	None – 0.0%
DK/NA - 45.3%	DK/NA – 45.3%	DK/NA – 77.0%
Conversion into residential settlements	Pollution/dumping of garbage	Natural phenomenon
Charcoal making	Natural phenomenon	Water contamination due to sewage
Cutting trees for household use	Sedimentation	Expansion of residential settlements
Cutting trees for commercial use	Soil erosion	Over-exploitation for household use
	Sand quarrying for household use	Salt intrusion

Note: DK=don't know; NA=not applicable

5.3.7 Awareness of Resource Rules and Regulations

About half of the residents are aware of rules and regulations on fishing (58.3%) and on mangroves (54%) (Table 22). Aside from these, the only other resource uses that people are most aware of are aquaculture (27.3%) and pebble gathering (15.1%). Very few

expressed awareness of rules and regulations on other forms of resource uses/activities such as water sports, resort development and tourist/marine transportation. Such response suggests that these are not concerns that impinge on their daily economic or social lives as evidenced by the large frequencies on "not applicable".

Table 22. Awareness of resource rules and regulations, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Resource Used/ Activity	Awareness of Rules and Regulations				Origin of Regulation			
	None	Yes	Don't Know/No answer	Not Apply	Brgy	Mun/ City	Prov	Natl
Fishing	29 (20.9)	81 (58.3)	11 (7.9)	18 (12.9)	40 (28.8)	23 (16.5)		19 (13.7)
Mangroves	32 (23.0)	75 (54.0)	8 (5.8)	24 (17.3)	33 (23.7)	27 (19.4)		16 (11.5)
Aquaculture	50 (36.0)	38 (27.3)	13 (9.4)	38 (27.3)	10 (7.2)	20 (14.4)		6 (4.30
Resort/pension/hotel development	53 (38.1)	7 (5.0)	18 (12.9)	61 (43.9)	1 (.7)	6 (4.3)	1 (0.70	
Residential development	51 (36.7)	11 (7.9)	19 (13.7)	58 (41.7)	6 (4.3)	5 (3.6)		
Pebble gathering	49 (35.3)	21 (15.1)	25 (18.0)	44 (31.7)	13 (9.4)			
Tourist transportation	51 (36.7)	5 (3.6)	33 (23.7)	50 (36.0)	2 (1.4)			
Marine transportation	53 (38.1)	2 (1.4)	15 (10.8)	69 (49.6)	2 (1.4			

Note: Figures enclosed in parentheses are the corresponding percentages for each category.

It appears that more of the known resource rules and regulations come primarily from the local village council of Barangay Masaguisi and secondarily from the Municipality of Bongabong as attributed by the residents themselves. There were very few who said that the resource rules and regulations they were aware of came from the provincial or national levels.

5.3.8 Participation in Decision Making

Not more than 15% of the residents were actively participating in decision–making related to the use of their coastal resources (Table 23). At least half said that they did not participate in such decision–making. The highest participations were registered for fishing, mangroves, and aquaculture of 1.89, 1.85, and 1.67 respectively. It can thus be inferred that residents are generally passive rather than active when it comes to participating in decision–making.

Table 23. Current and desired levels of participation in decision making, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139)

Activity		Rating Scores*					Not apply
		1	2	3	4	5	
Fishing	Current	81 (58.3)	3 (2.2)	9 (6.5)	4 (2.9)	17 (12.2)	25 (18.0)
	Desired	67 (48.2)	2 (1.4)	5 (3.6)	3 (2.2)	62 (44.6)	
Mangroves	Current	84 (60.4)	2 (1.4)	13 (9.4)	8 (5.7)	9 (6.5)	23 (16.5)
	Desired	72 (51.8)	3 (2.2)	3 (2.2)	5 (3.6)	55 (40.3)	
Aquaculture	Current	69 (49.6)	2 (1.4)	8 (5.8)	5 (3.6)	7 (5.0)	48 (34.5)
	Desired	74 (53.2)	3 (2.2)	5 (3.6)	2 (1.4)	54 (38.8)	1 (0.7)
Resort/pension/ hotel development	Current	73 (52.5)	1 (.7)	2 (1.4)	1 (.7)	4 (2.9)	58 (417)
	Desired	82 (59.0)	1 (.7)	3 (2.2)	3 (2.2)	49 (35.3)	1 (.7)
Residential development	Current	71 (51.1)	2 (1.4)	3 (2.2)	1 (0.7)	3 (2.2)	59 (42.4)
	Desired	82 (59.0)	2 (1.4)	2 (1.4)	4 (2.9)	48 (34.5)	1 (0.7)
Recreational climb/trek/camp	Current	70 (50.4)	3 (2.2)	1 (.7)		3 (2.2)	62 (44.5)
	Desired	83 (59.7)	2 (1.4)	3 (2.2)	1 (.7)	49 (35.3)	1 (.7)
Pebble gathering	Current	68 (48.9)	2 (1.4)	5 (3.6)	2 (1.4)	5 (3.6)	57 (410)
	Desired	84 (60.4)		2 1.4)	2 (1.4)	50 (35.0)	1 (.7)

Activity		Rating Scores*					Not
		1	2	3	4	5	apply
Tourist transportation	Current	60 (43.2)	1 (.7)	4 (2.9)	2 (1.4)	4 (2.9)	68 (48.9)
	Desired	84 (60.4)	1 (.7)	2 (1.4)	2 (1.4)	49 (35.4)	1 (.7)
Marine transportation	Current	62 (44.6)		4 (2.9)	2 (1.4)	4 (2.9)	67 (48.2)
	Desired	85 (61.9)		1 (.7)	2 (1.4)	49 (35.4)	1 (.7)

Note: Rating is on a scale of 1 – 5, with 1- no participation, and 5 – full participation

Though half of the residents still expressed that they had no desire to participate in decision making, it is noticeable that another 35% to 45% also said that they desired to fully participate, as reflected in the percentages for ratings of 5 (fully active) in all the listed resource uses/activities. Similar to the current levels of participation, the highest mean ratings for desired levels of participation were in fishing (2.94), mangroves (2.78), and coral reefs (2.70) (Table 24).

Table 24. Means and standard deviations of ratings of participation in decision making, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Resource Used/ Activity	Current Level of Participation			Desired Level of Participation		
	n	Mean	Std Dev	N	Mean	Std Dev
Fishing	114	1.89	1.51	139	2.94	1.94
Mangroves	116	1.84	1.68	139	2.78	1.93
Aquaculture	91	1.67	1.30	139	2.70	1.92
Resort/pension/hotel development	81	1.30	.97	138	2.54	1.91
Residential development	80	1.29	.90	138	2.52	1.90
Watersports	72	1.17	.80	138	2.44	1.92
Reacreational climb/trek/ camp	77	1.27	.91	138	2.50	1.90
Pebble gathering	82	1.46	1.12	138	2.52	1.92
Tourist transportation	71	1.44	1.10	138	2.50	1.91
Marine transportation	72	1.42	1.10	138	2.48	1.92

When the individuals' current levels were compared to their respective desired levels of participation, the differences were statistically significant (at the .01 level) for all resource

uses/activities thereby indicating that the respondents' desired levels of participation are higher than their current levels (Table 25). The highest paired differences between current and desired levels were in residential development and in other resource use activities with the lowest current levels. This is a good indication for the village and other local leaders; they may be able to seek greater participation from their community members. Though most may not have participated in the past, there is an expressed desire to become more involved in decision–making.

Table 25. Comparisons of current and desired levels of participation in decision making, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Resource Use/ Activity	Paired Corr	Paired Differences		t-value	df	Sig. (2-tailed)
		Mean	SD			
Fishing	.298**	.807	2.05	4.21	113	.000**
Mangroves	.254**	.647	2.16	3.22	115	.000**
Aquaculture	.270**	1.044	1.98	4.99	89	.000**
Resort/pension/hotel development	.269*	1.350	1.89	6.39	79	.000**
Residential development	.248*	1.903	1.90	6.44	78	.000**
Watersports	.117	1.403	2.04	5.82	70	.000**
Recreational climb/trek/camp	.219	1.43	1.95	6.41	75	.000**
Pebble gathering	.165	1.160	2.08	5.02	80	.000**
Tourist transportation	.179	1.400	2.07	5.65	69	.000**
Marine transportation	.190	1.380	2.07	5.63	70	.000**

 * significant at the .05 level
 * *significant at the .01 level

5.3.9. Membership in Resource Use Stakeholder Organizations

One possible reason that can explain the current low levels of participation in decision–making is the low membership of households to stakeholder organizations which serve as venues for vigorous community involvement of individuals (Table 26). There are only three organizations mentioned by the respondents – Barangay Fisheries and Aquatic Resources Management Council (BFARMC), 4P's (a poverty alleviation program of the national government under its Department of Social Work and Development), and CARDBank (a private microfinance business organization). Only the BFARMC is directly

related to resource use. The limited membership (23%) of households may thus be attributed to a lack of resource-based stakeholder organizations in the community.

Table 26. Household membership in resource use stakeholder organizations, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

No. of HH members Involved	Freq	%
None	107	77.0
1	23	16.5
2	9	6.5

Several community organizations were described by the key informants as influential in the management and direction of decision-making of coastal activities. BFARMC and 4Ps are viewed to be formal organizations whose main functions are on coastal management. Aside from these two organizations, there are other organizations that were present in the community like Barangay Health Workers (BWH) and Kapit Bisig Laban sa Kahirapan Comprehensive and Integrated Delivery of Social Services: Kapangyarihan at Kaunlaran sa Barangay (KALAHI-CIDSS), but their main concerns are on health, nutrition and community issues. These two organizations also influence both coastal resource management and the decision–making.

Key informants also identified an informal organization, which is the Clean and Green. Though its main function is not well known to the community, it is said to influence both coastal management and the direction of decision–making.

5.3.10 Perceptions of Coastal Management Problems and Solutions

Almost half of the residents did not know any coastal management problem in their community (Table 27). The other half gave at least one primary problem, with 30% of them giving an additional problem. Sanitation concerns, such as garbage dumping and waste management, were cited by 29% as one of the top two problems.   Other problems enumerated were: disorganized management of Bantay Dagat, BFARMC, and the village officials (17.4%), sea level rise/sand erosion (15.9%), and decrease in fish catch/exploitation of coastal resource for household and commercial use (14.5%).   The range of coastal

management problems cited and their corresponding frequencies can also be seen in the table below.

Table 27. Perceived coastal management problems, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Coastal Management Problems	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Livelihood related to coastal resource utilization	2	2.9	3	4.3	5	7.2
Illegal logging	8	11.6	1	1.4	9	13.0
Mangrove cutting	2	2.9	6	8.7	8	11.6
Natural calamities	4	5.8	8	8.2	12	17.4
Sea level rise/sand erosion	9	13.0	2	2.9	11	15.9
Not organized management (Bantay Dagat/BFARMC/ Village officials)	10	14.5	2	2.9	12	17.4
Entry of fishers from other villages/ municipalities (*dayuhang mangingisda*)	4	5.8	7	10.1	11	15.9
Decrease in fish catch/available coastal resources, exploitation of coastal resource for household or commercial use,	10	14.5			10	14.5
Sanitation (Pollution and garbage dumping, waste management)	14	20.3	6	8.7	20	29.0
Illegal fishing; use of cyanide	6	8.7	6	8.7	12	17.4
Others			1	1.4	1	1.4
Sub-total	69	49.6	42	30.2		
Don't know	68	48.9	97	69.8		
None	2	1.4				

Congruent to the perceived problems are also the perceived solutions. Similar to the perceived problems, the biggest group of response as to solutions was "don't know" (53.2%). As reflected in Table 28, 31 respondents (22.3%) perceived that governance through strict enforcement of fishing laws or village ordinances is a solution to their coastal management problems. Another often cited solution was mangrove reforestation, which falls under conservation of resources. In response to the problem of sanitation, proper waste disposal and management is the suggested solution. Table 29 summarizes the top coastal management problems and solutions perceived by the village residents.

Table 28. Perceived solutions to coastal management problems, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Coastal Management Problems	Solution 1		Solution 2		Combined	
	No.	%	No.	%	No.	%
Governance-enforcement: Strict implementation of fishing laws/Village ordinance	20	14.4	11	7.9	31	22.3
Livelihood project	3	2.2	6	4.3	9	6.5
Conservation of resources: Mangrove planting	18	12.9	14	10.1	32	23.0
Sanitation: Proper waste disposal/management	15	10.8	7	5.0	22	15.8
Governance-policy: Prevent intrusion of commercial fishing vessel, Disallow sand quarrying for commercial use	5	3.6	1	0.7	6	4.3
Governance-education: Conduct orientation/seminar related to proper utilization of coastal resources	6	6.3	4	2.9	10	7.2
Put up water supply system			1	0.7	1	0.7
Sub-total	62	44.6	37			
Don't know	74	53.2	100			
None	3	2.2				

Table 29. Top perceived coastal management problems and solutions, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Coastal Management Problems	Coastal Management Solutions
None–1.4% Don't know/not concerned – 48.9% With answer – 49.6%	None– 2.2% Don't know – 53.2% With answer – 44.6%
1. Sanitation (Pollution and garbage dumping, waste management) 2. Not organized management (Bantay Dagat/BFARMC/Village officials) 3. Illegal fishing; use of cyanide 4. Natural calamities	1. Governance-enforcement: Strict implementation of fishing laws/Village ordinance 2. Sanitation: Proper waste disposal/management 3. Conservation of resources: Mangrove planting 4. Governance-education: Conduct orientation/seminar related to proper utilization of coastal resources

Sanitation in coastal resource management becomes a problem when human-induced garbage/trash is thrown into the beach and coastal waters or is deposited by waterways leading to the sea. The community is aware that collectively, they need to adopt proper waste management practices rather than conduct periodic clean-ups which is a short-term

rather than a long-term solution. It also appears that residents expect more management skills from their village officials so that they would become better organized as a community. One corresponding solution to this is proper education by way of conducting orientations/seminars related to proper utilization of coastal resources. As to be expected in coastal areas that are heavily utilized, the community has been experiencing decreasing fish catches and declining coastal resources. Proper governance, particularly continuous and consistent enforcement of fishery rules and regulations, is their perceived solution. They generally believed that the laws were sufficient and only needed to be properly enforced at all times. Mangrove planting or reforestation is also seen as a general conservation measure that people can undertake. Sea level rise/sand erosion has also been experienced in the village and this has been partially addressed by building a seawall along the most vulnerable part of the residential settlement.

5.3.11 Perceptions of Successes and Challenges in Coastal Management

As reported in Table 30, only 2 out of every 5 residents were able to enumerate at least one success in coastal management. Responses of those who answered converged into four success areas ranked from highest to lowest in frequency: dike/seawall construction; mangrove planting; coastal cleanliness; and protected fish sanctuary.

Table 30. Perceived successes in coastal management, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Coastal Management Success	Success1		Success 2		Combined	
	No.	%	No.	%	No.	%
Conservation of resources: Mangrove planting	16	11.5	7	5.0	23	16.5
Community mobilization: Coastal cleanliness	6	4.3	16	11.5	22	15.8
Infrastructure: Dike/seawall construction	29	20.9	2	1.4	31	22.3
Conservation of fish habitat: Protected fish sanctuary	6	4.3	8	5.8	14	10.1
Sub-total	57	41.0				
None	82	59.0	105	75.5		
Don't know/no response			1	0.7		

The dike/seawall construction in the village was considered a success by 22.3% of the residents but another 18.0% of them also perceived the continuation of its construction a

challenge (Table 31). If sand erosion is a consequence of sea level rise which in turn is due to climate change, then the problem would still persist in the near future. The dike/seawall is only one of the many possible adaptive measures that the village may undertake against sea level rise. Another challenge, which was also earlier mentioned as a problem, is maintenance of coastal cleanliness (18.0%). Still, a much bigger percentage (70.5%) of residents said that there are no coastal management challenges in their community.

Table 31. Perceived challenges in coastal resources management, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Challenges in Coastal Management	Challenge 1		Challenge 2		Combined	
	No.	%	No.	%	No.	%
Infrastructure: Continuation of seawall construction	24	17.3	1	0.7	25	18.0
Governance-policy: enactment of municipality ordinance re fish sanctuary	4	2.9	1	0.7	5	3.6
Governance-enforcement: Strict implementation of fishing laws/ordinances	6	4.3	2	1.4	8	5.8
Sanitation: Maintenance of coastal cleanliness	6	4.3	9	6.5	15	18.0
Sub-total	40	28.8				
Don't know/no answer	1	0.7	5	3.6		
None	98	70.5	121	87.1		

Even though only 28.8% cited a challenge, their responses are parallel to the coastal resource management problems they earlier enumerated. Maintenance of coastal cleanliness is still the challenge, both from the perspectives of strictly enforcing the law and compliance to the resource rules and regulations of the users (Table 32). The multi-dimensionality of coastal resource management is highlighted in the residents' responses; some view the challenge as more of infrastructure-related in nature. Others, though, recognize that the difficulty is in the compliance of the resource users but a few consider it from the perspective of governance – law enforcement and fish sanctuary establishment. Meanwhile, village leaders added during the validation meeting that they also found that the Masaguisi River was already heavily silted and they have drawn up plans to launch a "Sagip Ilog" (Save the River) program in the community.

Table 32. Top perceived successes and challenges in coastal management, Barangay Cawayan, Bongabong, Oriental Mindoro, Philippines (n=139).

Coastal Management Successes	Coastal Management Challenges
None –59.0 % Don't know /no answer– 0.0% With answer – 41.0%	None – 70.5% Don't know /no answer – 0.7% With answer – 28.8. %
1. Infrastructure: Dike/seawall construction 2. Conservation of resources: Mangrove planting 3. Community mobilization; Coastal cleanliness 4. Conservation of fish habitat: Protected fish sanctuary	1. Infrastructure: Continuation of seawall construction 2. Sanitation: Maintenance of coastal cleanliness 3. Governance-enforcement (Strict implementation of fishing laws/ordinances) 4. Governance-policy: enactment of municipality ordinance re fish sanctuary

5.3.12 Perceptions of Community Problems and Solutions

Since the data on household income and employment showed that 66.1% of Masaguisi residents aged at least 16 years are unemployed, it is not surprising that close to half (45.3%) of those surveyed perceived unemployment as the topmost problem in the community (Table 33). Second and third in rank, though with much lesser frequencies are poverty and poor nutrition. These two problems may also exist as a consequence of unemployment. To put it simply, those without regular sources of income become poor and may have poor health.

Table 33. Perceived community problems, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Coastal Management Problems	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Poor nutrition	3	2.2	9	6.5	12	8.6
Poverty	13	9.4	6	4.3	19	13.7
Lack of electricity	3	2.2			3	2.2
Unemployment	53	38.1	10	7.2	63	45.3
Drugs and vices	5	3.6			5	3.6
Stealing/robbery	2	1.4			2	1.4
Sub-total	79	56.8			79	56.8
Don't know	60	43.2	114	82.0	60	43.2

There is general agreement among community members that the problem of unemployment can be addressed through the provision of livelihood programs with 54.7% citing this as a solution. During the community validation, village leaders admitted that there were already some livelihood projects initiated in the past. These included poultry raising as a supplement to farming, smoked fish making, sewing, and meat processing as livelihoods for women. However, these were short-lived because of the lack of a working capital and passive community involvement. They therefore suggested that livelihood assistance needs to be comprehensive by including provisions for marketing. To a much lesser extent, financial assistance and construction of a village health center were also mentioned. Other suggested solutions are listed in Table 34. Side-by-side, the perceived solutions correspond to the perceived problems enumerated earlier (Table 35).

Table 34. Perceived solutions to community problems, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Coastal Management Problems	Problem 1		Problem 2		Combined	
	No.	%	No.	%	No.	%
Employment; livelihood programs	62	44.6	12	8.6	76	54.7
Financial assistance	5	3.6	2	1.4	8	5.8
Educational trainings/seminars	2	1.4	1	0.7	3	2.2
Installation of electricity	2	1.4	2	1.4	4	2.9
Construction of Village health center	2	1.4	6	4.3	8	5.8
Active involvement of Village officials/tanods	3	2.2			3	2.2
Strict implementation of fishing laws and Village ordinance	2	1.4			2	1.4
Intensive health services			1	0.7	1	0.7
Sub-total	78	56.1				
Don't know/no answer	61	43.9	115	82.7		

Table 35. Top perceived community problems and solutions, Barangay Masaguisi, Bongabong, Oriental Mindoro, Philippines (n=139).

Community Problems	Community Solutions
don't know – 43.2%	don't know/no answer – 43.9%
With answer – 56.8%	With answer – 56.1%
1. Unemployment	1. Employment: livelihood programs
2. Poverty	2. Financial assistance
3. Poor nutrition	3. Construction of Village health center

5.3.13 Governance

Contrary to the perception of some community residents that there is no organized management of the village's Bantay Dagat, BFARMC, and village council, key informants in the village declared that the village council plans and enforces rules and regulations pertaining to coastal management activities in Barangay Masaguisi. It was also noted that this governing body is in the process of developing a coastal management plan for the village in order to set the direction of its coastal activities. However, despite having a legitimate and legal basis for performing coastal management activities, logistical problems hamper the BFARMC's performance of its functions, particularly the lack of regular fund allocations.

During the community validation, village leaders also complained that the municipal government grants permits for commercial fishers to operate within the 10.1 – 15 kilometer (from the shoreline) of municipal waters. Yet, these commercial fishers actually go beyond their limits and fish nearer within the 10.1 kilometers, thereby intruding into the fishing grounds of small fishers. They also mentioned that the municipal government previously allowed them to use fish aggregating device ("payaw" in the local dialect). But for reasons which seem unclear to them, their permits were not renewed this year, 2012. The decrease in fishers' catches was attributed to these two conditions.

The village council leaders have already initiated the delineation and protection of Masaguisi Reef as a fish sanctuary. They have passed a resolution requesting the Municipal Government of Bongabong to enact an ordinance establishing a fish sanctuary in the village. They have established its boundaries and are about to set up demarcation buoys, in addition to having two motor boats to patrol the reef. The village council has also deputized seven fish wardens and obtained a donation of a speed boat for the proposed fish sanctuary. Yet the village leadership is still waiting for the legislative council of the Municipal Government of Bongabong to pass a municipal ordinance declaring the reef as a fish sanctuary.

5.4. Recommendations

Based on the stated findings, the following recommendations are offered:

1. Verify the bio-physical status of the resources in the village to validate the residents' perceptions of the conditions of their coastal and non-coastal resources.

2. Monitor the resource areas to determine if the threats cited are still continuing up to the present so that necessary actions to mitigate and/or eliminate the existing threat can be undertaken.

3. Efficiently operationalize the BFARMC and Bantay Dagat as mass- and community-based organizations spearheading the protection of the coastal resources within the village.

4. Undertake wider dissemination of environmental rules and regulations, not only to the resource users but as well as to the community at large if resource protection and conservation will have to be a "community affair." This is because awareness of resource rules and regulations are mostly limited to the actual resource users.

5. Organize and/or strengthen agriculture-related stakeholder organizations so that more farmers may get involved in communal decision making. Barangay Masaguisi is a combined farming/fishing community with more households relying on farming rather than fishing as their occupation.

6. Designate environmental police personnel in critical areas who can immediately respond and confront violators. Give greater attention to the governance dimension, more specifically on enforcement of rules in coastal management. Though the BFARMC and Bantay Dagat members are deputized to apprehend offenders, they hesitate to do so because of the attendant risks to their lives.

7. Pass a municipal ordinance declaring the delineated coral reef area within the waters off the coast of Barangay Masaguisi as a fish sanctuary and provide logistical support to ensure that the integrity of the zone shall be established and maintained.

8. Harmonize policy being implemented by concerned government agencies. Although the municipal government permits commercial fishing vessels to operate from 10.1 to 15 kilometers away from the shoreline, it is quite difficult on the ground to ensure that they keep to their boundaries and not fish nearer than 10 km to the shoreline.

9. Consider other policy options that would ease the pressure on exploitation of coastal resources and fishery such as the regulation of fishing methods. Residents are already aware that there is over-extraction as evidenced by decreased fish catches and this trend would continue unless interventions are introduced to allow the fish stocks to recover.

10. Explore alternative/supplemental livelihood opportunities that would allow village residents to become micro-entrepreneurs and or self-employed, which is the most realistic employment option for them. The assistance should not only be limited to training and capital support but must also include organizational and marketing support. Fishers are already experiencing decreasing fish catch. Limiting fishing and resource use activities may further result to reduced income for them, in the short term. Hence, more viable alternatives to fishing as a livelihood need to be introduced.

11. Mobilize more community residents for coastal clean-ups, waste segregation programs, and monitoring/reporting of violators of resource rules and regulations. The more residents are involved in community work, the greater would be their sense of community responsibility and involvement.

12. Conduct and/or intensify information and education campaigns among all residents on the proper utilization and conservation of coastal resources, with emphasis on an ecosystem approach. There is also a need to focus on the role of man both as a user and steward of such resources.

13. Utilize the SocMon results to update development plan/s at the village and municipal levels and to formulate/review/evaluate resource use policy.

14. Undertake the same baseline study in the future. Because the data presented herein were collected in order to establish baseline conditions at Barangay Masaguisi, it is also recommended that a similar undertaking be conducted three or five years hence in order to monitor changes and trends, if any.

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Part 6 Appendices

"Socioeconomic Monitoring (SocMon) Program in the Philippines to Support Effective Coral Reef Conservation and Coastal Resources Management: Initiation in Oriental Mindoro Province and Continuation in Puerto Princesa City, Palawan Province"

Socioeconomic Monitoring (SocMon) Household Interview Questionnaire
(Patnubay sa Sambahayang- Panayam Para sa "Socioeconomic Monitoring")

Date of Interview *(Petsa ng Panayam)*:_____ Time Interview *(Oras ng Panayam)*: Start *(Simula)* _____ End *(Natapos):* _____

Survey Site: ___ Bongabong, Oriental Mindoro Barangay: _____ Sitio/Purok: _____ Street *(Kalye):* _____

___ Puerto Princesa City, Palawan Barangay: _____ Sitio/Purok: _____ Street *(Kalye):* _____

Interviewee *(Kinapanayam):* Name *(Pangalan)* _____Household Role *(Tungkulin)*: _____Sex: _____ Age: _____

Interviewer *(Tagapanayam)*: Name *(Pangalan)* _____Signature *(Lagda)*: _____

Checked by: Name of Field Supervisor: _____ Signature: _____ Date: _____

Encoded by: Name of Encoder: _____ Signature: _____ Date: _____

1. H O U S E H O L D   D E M O G R A P H I C S *(Demograpiya ng Sambahayan)*

H1-8. Age, Gender, Ethnicity, Education, Religion, Language, Occupation, Household Size:
(Edad, Kasarian, Ethnicity, Edukasyon, Relihiyon, Wika, Hanapbuhay, Laki ng Sambahayan):

H1A: Name of Household Member *(Pangalan ng Miyembro ng Sambahayan)*	H1B: Role/ Relationship with Household Head *(Tungkulin/ Kaugnayan sa Pinuno ng Sambahayan)*	H2 Age, to the nearest year *(Edad)*	H3 Gender *(Kasarian)* Male - 1 Female -2	H4 Education Level Completed (only ask if > 16 yr) *(Edukasyon)*	H5 Religion *(Relihiyon)*	H6A Birthplace *(Saan Pinanganak)*	H6B Ethnicity *(Pangkat Etniko)*	H7 Primary Language Spoken *(Pangunahing Wika)*	H8A Primary Occupation *(Pangunahing Hanapbuhay)*	H8B Secondary Occupation *(Pangalawang Hanapbuhay)*

H9. Household Income *(Kita ng Sambahayan)*

A. What is your household's most important source of income? _____
(Ano ang pinakamahalagang pinagmumulan ng kita ng inyong sambahayan?)

B. What is your household's second important source of income? _____
(Ano ang pangalawang mahalagang pinagmumulan ng kita ng inyong sambahayan?)

2. C O A S T A L A N D M A R I N E A C T I V I T I E S *(Mga Gawaing Pantabing-Dagat at Pandagat)*

H10-14: Household activities, Household Goods and Services, Types of Household Uses, Household Market Orientation, Household Uses *(Mga Gawain ng Sambahayan, Produkto at Serbisyo ng Sambahayan, Uri ng Pinaggagamitan ng Sambahayan, Oryentasyon ng Sambahayan sa Palengke, Pinaggagamitan ng Sambahayan)*:

H10 **Coastal and Marine Activities (eg fishing, tourism, etc)** *(Mga Gawaing Pantabing-Dagat at Pandagat)* *(hal. Pangingisda, turismo, atbp.)*	**H11** **Coastal and Marine Goods and Services** *(Uri ng Produktong Dagat at Serbisyong Pantabing-Dagat)*	**H14** **Household Uses (eg. sale, consumption, giveaway, payment to labor, etc)** *(Mga Pinaggagamitan ng Sambahayan: Pambenta, pagkain, pamigay, pambayad sa manggagawa, atbp.)*	**H13** **Household Market Orientation (eg Within the barangay/ outside the barangay)** *(Lokasyon ng bentahan: Sa loob ng barangay/sa ibang barangay ng munisipyo o lungsod/sa labas ng munisipyo o lungsod)*	**%** **Sold/ bartered**
1.	1	1	1	
		2	2	
		3	3	
	2	1	1	
		2	2	
		3	3	
	3	1	1	
		2	2	
		3	3	
2.	1	1	1	
		2	2	
		3	3	
	2	1	1	
		2	2	
		3	3	
	3	1	1	
		2	2	
		3	3	
3.	1	1	1	
		2	2	
		3	3	
	2	1	1	
		2	2	
		3	3	
	3	1	1	
		2	2	
		3	3	

3. A T T I T U D E S A N D P E R C E P T I O N S *(Saloobin/Palagay at Pansin)*

H15. Non- market and Non- Values:
Indicate degree of agreement/disagreement with the following statement using the scale: strongly agree (5); agree (4); neither agree nor disagree (3); disagree (2); strongly disagree (1).*(Tukuyin ang antas ng pagsang-ayon sa bawat pangungusap gamit ang sumusunod na sukatan :lubusang sumasang-ayon (5); sumasang-ayon (4); neutral o walang mapili (3); di sumasang-ayon (2); lubusang di-sumasang-ayon (1).*

_____**A.** The reefs are important for protecting land from storm waves. (indirect non- market value)
   (Mahalaga ang mga batuhan at bahura upang maprotektahan ang lupa laban sa malalakas na alon).

_____**B.** In the long- run, fishing would deteriorate if we cleared the coral. (indirect non-market value)
   (Sa kalaunan, mas mapipinsala ang pangisdaan kapag nawala ang mga bahura)

_____**C.*** Unless mangroves are protected, we will not have fish to catch. (indirect non-market value)
   (A*ng mga bakawan ay nakakatulong upang dumami ang mga isda.)*

_____**D.*** Coral reefs are only important if you fish or dive. (existence non-use value)
   (Mahalaga lamang ang mga bahura para sa mga mangingisda at maninisid.)

_____**E**. I want future generations to enjoy the mangroves and coral reefs. (bequest non- use value)
   (Gusto kong matamasa pa ng susunod na henerasyon ang mga bakawan at bahura).

_____**F.** Fishing should be restricted in certain areas even if no one ever fishes in those areas just to allow the fish
       and coral to grow. (existence value)
      *(Dapat limitahan ang pangingisda sa ilang piling lugar kahit na walang nangingisda doon upang hayaang
         lumaki at dumami ang mga isda at bahura).*

_____**G.** We should restrict development in some coastal areas so that future generations will be able to
      have natural environments. (bequest value)
      *(Dapat limitahan ang pagpapaunlad sa ilang parte ng tabing-dagat upang magkaroon pa ng natural
      na kapaligiran ang susunod na henerasyon).*

_____**H.*** Seagrass beds have no value to people. (existence value)
      (Walang halaga sa mga tao ang mga lusayan o nakalatag na damong-dagat).
      (Ang mga lusayan o damong dagat ay may halaga sa mga tao.)

H16. Perception of Resource Conditions *(Pagpansin sa mga Kalagayan ng Yaman)***:**
   How would you describe current coastal resource conditions on a scale from very good (5), good (4), not good nor bad
   (3), bad (2) to very bad (1) (edit list to reflect site resources):
   *Paano mo ilalarawan ang kasalukuyang kalagayan ng inyong tabing-dagat, gamit ang 5-puntong sukatan:
   napakaganda (5); maganda (4); di-maganda,di-pangit (3); pangit (2);napakapangit (1) ; hindi alam (9)* :

	Resource/ Rating *(Yaman/Rating)*	Perceived Condition *(Nakikitang Kondisyon)*
A	Mangroves *(Bakawan)*	1 2 3 4 5 9
B	Coral reefs *(Bahura))*	1 2 3 4 5 9
C	Upland Forests *(Kagubatan/gubat sa bundok)*	1 2 3 4 5 9
D	Seagrass *(Lusay o damong-dagat)*	1 2 3 4 5 9
E	Beach *(Aplaya)*	1 2 3 4 5 9
F	Spring *(Bukal)*	1 2 3 4 5 9
G	River/Creeks *(Ilog/Sapa)*	1 2 3 4 5 9
H	Waterfalls *(Talon)*	1 2 3 4 5 9
I	Ground Water *(Pinagkukunang-tubig na gamit pambahay)*	1 2 3 4 5 9

H17. Perceived Threats *(Mga Natuklasang Banta)***:**
What are the top 3 major threats to the health of coastal resources? (please list threats)
Ano ang 2 pangunahing banta sa kalusugan ng mga yaman sa tabing-dagat? (pakilista ang mga banta)

	Resource *(Yaman)*	Threat *(Banta 1)*	Threat 2 *(Banta 2)*	Threat 3 *(Banta 3)*
A	Mangroves *(Bakawan)*			
B	Coral reef *(Bahura)*			
C	Upland Forests *(Kagubatan/ gubat sa bundok)*			
D	Seagrass (*Lusay* o *Damong-dagat)*			
E	Beach *(Aplaya)*			
F	Spring *(Bukal)*			
G	River/ Creeks *(Ilog/sapa)*			
H	Waterfalls *(Talon)*			
I	Ground Water *(Pinagkukunang –tubig)*			

H18. Awareness of Rules and Regulations *(Kabatiran/Kamalayan sa mga Patakaran at Regulasyon)***:**
Are there rules and regulations related to the following activities in your communities? Please tick appropriate box. If yes, what types are these? *Sa inyong pagkakaalam, may regulasyon ba kaugnay sa pagpapaunlad ng mga gawaing nakalista sa ibaba? Bilugan ang binigay na sagot)*: 1 – Yes/Meron; 2 – none/wala; 9 – don't know/hindi alam. *Kung meron, saan nagmula ang regulasyong ito?* 1 – sa barangay; 2 – sa munisipyo/syudad; 3 – sa probinsya; 4 – sa bansa

	Activities *(Mga Gawain)*	**Response** *(Sagot)*	**If yes, Origin of Regulation** *(Pinagmulan ng patupad)*
A	Fishing *(Pangingisda)*	1 2 9	1 2 3 4
B	Mangrove Use *(Gamit ng bakawan)*	1 2 9	1 2 3 4
C	Aquaculture *(Pag-aalaga ng mga piling yamang-dagat)*	1 2 9	1 2 3 4
D	Resort/ pension house/ hotel development *(Bakasyunan/Bahay-panulugan/Pagpapalaki ng hotel)*	1 2 9	1 2 3 4
E	Residential development *(Pagpapalaki ng tirahan)*	1 2 9	1 2 3 4
F	Watersports *(Libangang-pantubig)*	1 2 9	1 2 3 4
G	Recreational climbing/ trekking/camping *(Nakalilibang na pag-akyat sa bundok/paglilibot/kamping)*	1 2 9	1 2 3 4
H	Pebble gathering *(Pagkuha ng graba/maliliit na bato sa aplaya)*	1 2 9	1 2 3 4
I	Tourist transportation *(daungan ng mga sasakyang-panturista)*	1 2 9	1 2 3 4
	Marine transportation *(daungan ng sasakyang pang-dagat)*	1 2 9	1 2 3 4
J	Others (specify)*:*	1 2 9	1 2 3 4

H21. Participation in Decision-making *(Partisipasyon sa Paggawa ng Desisyon)***:**
On a scale of 1 to 5 (1=no participation, 5= fully active participation), to what extent do you participate in coastal management decision-making? *Gamit ang 5 sukatan mula sa walang partisipasyon (1) hanggang napaka-aktibong partisipasyon (5), gaano kalawak ang iyong partisipasyon sa paggawa ng desisyon sa pamamahala sa tabing-dagat?*

	Coastal-Related Activities *(Mga Gawaing pang tabing-dagat)*	**Levels of Participation** *(Antas ng partisipasyon)*	
		Current Level *(Kasalukuyan)*	**Desired Level** *(Kagustuhan)*
A	Fishing *(Pangingisda)*	1 2 3 4 5	1 2 3 4 5
B	Mangrove Use *(Gamit ng bakawan)*	1 2 3 4 5	1 2 3 4 5
C	Aquaculture *(Pag-aalaga ng mga piling yamang-dagat)*	1 2 3 4 5	1 2 3 4 5
D	Resort/ pension house/ hotel development *(Bakasyunan/Bahay-panulugan/Pagpapalaki ng hotel)*	1 2 3 4 5	1 2 3 4 5
E	Residential development *(Pagpapalaki ng tirahan)*	1 2 3 4 5	1 2 3 4 5
F	Watersports *(Libangang-pantubig)*	1 2 3 4 5	1 2 3 4 5
G	Recreational climbing/ trekking/camping *(Nakalilibang na pag-akyat sa bundok/paglilibot/kamping)*	1 2 3 4 5	1 2 3 4 5
H	Pebble gathering *(Pagkuha ng graba/maliliit na bato sa aplaya)*	1 2 3 4 5	1 2 3 4 5
I	Tourist transportation *(daungan ng mga sasakyang-panturista)*	1 2 3 4 5	1 2 3 4 5
	Marine transportation *(daungan ng sasakyang pang-dagat)*	1 2 3 4 5	1 2 3 4 5
J	Others (specify) *(Iba pa, ilista):*		

H22. Membership in Resource Use Stakeholder Organizations *(Pagiging Miyembro sa Organisasyon ng Stakeholder)*.
How many from your household is/are member of a resource use stakeholder organization?
(Ilan sa inyong sambahayan ang miyembro ng organisasyon nauukol sa yamang natural ?

Number of HH members (check): ___0 (none) ___1   ___2 ___ 3 ___4 Others: specify ___

Name of Household Member *(Pangalan ng Miyembro ng Sambahayan)*	**Organization** *(Pangalan ng Organisasyon)*

For Questions H23-24. Complete the box below
(Para sa mga katanungan sa H 23-24. Sagutan ang mga kahon sa ibaba

H23. Perceived Coastal Management Problems *(Nakikitang Problema sa Pamamahala ng Tabing-dagat)***:**
Aside from threats, what do you see as the **two** major problems facing **coastal management** in the community? *(Maliban sa mga banta, ano sa iyong palagay ang **dalawang** pangunahing problema ng komunidad sa pamamahala sa tabing-dagat?)*

H24. Perceived Coastal Management Solutions *(Nakikitang solusyon sa pamamahala ng tabing-dagat)***:**

What do you see as solution to these problems?*(Anosa iyong palagay ang mga solusyon sa ganitong mga problema?)*

H.23. Two Major Problems *(Dalawang Pangunahing Problema)*	**H.24 Solutions to Problems** *(Solusyon sa mga Problema)*

H25 Perceived Community Problems *(Nakikitang Problema ng Komunidad)***:**

What are **two** major problems facing the **community**? *(Sa iyong palagay, ano ang 2 pangunahing problema ng inyong komunidad?)*

H.25. Two Major Problems *(Dalawang Pangunahing Problema)*	**H.25a Solutions to Problems** *(Solusyon sa mga Problema)*

H26. Success in Coastal Management *(Tagumpay sa pamamahala sa tabing-dagat)***:**

What two things do you think have worked well for coastal management in the community? *(Sa inyong palagay, anong dalawang bagay ang naging matagumpay sa pamamahala sa tabing- dagat ng inyong komunidad?)*

1. _____
2. _____

H27. Challenges in Coastal Management *(Mga Hamon sa Pamamahala sa Tabing-dagat)***:**

What two things do you think have not worked well for coastal management in the community? *(Sa iyong palagay, ano ang dalawang hamon ng inyong komunidad sa pamamahala sa tabing-dagat?)*

1. _____
2. _____

4. M A T E R I A L S T Y L E O F L I F E *(Materyal na Istilo ng Buhay)***:**

H28. Material Style of Life *(Materyal na Istilo ng Buhay)***:** For each house note and encircle appropriate number:

A. Type of roof *(Uri ng bubong)*
   1 = tile *(tisa)*
   2 = tin / GI sheet *(lata/yero)*
   3 = wood/ plywood *(kahoy/plywood)*
   4 = thatch/ bamboo *(kawayan)*
   5 = thatch / nipa *(pawid/nipa)*
   Others: _____

B. Type of outside structural walls *(Uri ng panlabas na kayarian ng dingding)*:
   1 = tiled *(tisa)*
   2 = brick/concrete *(kongkreto)*
   3 = wood /plywood *(kahoy/plywood)*
   4 = thatch/nipa *(pawid/nipa)*
   5 = thatch/ bamboo *(kawayan)*
   Others: _____

C. Windows *(Bintana)*:
   1 = glass *(salamin)*
   2 = steelbars/ grill *(bakal/rehas)*
   3 = wooden *(kahoy)*
   4 = open *(bukas)*
   5= none *(wala)*
   Others: _____

D. Floors *(Sahig)*:
   1 = tile *(tisa)*
   2 = wooden *(kahoy)*
   3 =cement *(semento)*
   4 = bamboo *(nipa/kawayan)*
   5 = dirt *(lupa)*
   Others: _____

E. Other Household Assets (Check, if applicable):
   1 = Vehicle (type): _____
   2 = Banca (type): _____
   3 = Computer: _____
   4 = Refrigerator
   5 = Television set
   6 = Other Appliances: _____

Other Observations & Notes: _____

Time of End of Interview: _____

Socioeconomic Monitoring (SocMon) Key Informant Interview/ Guide

Date of Interview *(Petsa ng Panayam)*:_____   Time Interview *(Oras ng Panayam)*: Start (Simula): _____
                                                                                End (Natapos):_____

Survey Site: ___ Bongabong, Oriental Mindoro   ___ Puerto Princesa City, Palawan

Interviewee *(Kinapanayam)*: Name *(Pangalan)*: _____   Sex: _____ Age: _____
                           Role *(Tungkulin sa komuninad)*: _____

Interviewer *(Tagapanayam)*: Name *(Pangalan)*: _____Signature *(Lagda):* _____
Checked by: Name of Field Supervisor: _____Signature: _____Date:_____
Encoded by: Name of Encoder: _____ Signature: _____

Part 1. COMMUNITY- LEVEL DEMOGRAPHICS (*Hanay ng Demograpiya sa Komunidad*)

KS1. Study Area: (*Lawak ng Pag-aaral*)
   What are the boundaries of the study area? Note on base map.
   Anu-ano ang mga hangganan ng lawak ng pag-aaral? Isulat sa mapa.

KS2. Population: (*Populasyon*)
   How many people live in the study area? (*Ilan ang mga taong naninirahan sa lugar na pag-aaralan?*) _____

KS3. Number of households: (*Bilang ng Sambahayan*)
   How many households are in the study area? (*Ilan ang sambahayan sa lugar na pag-aaralan?*) _____

KS4. Migration rate: (*Bilang ng Pandarayuhan*)
   What was the net increase or decrease in people moving into and out of the study area in the last year? (Note + or- to reflect moving in or out)
   (*Ano ang aktwal na karagdagan o kabawasan ng mga taong dumarating at umaalis sa lugar na pag-aaralan, nang mga nakarang taon?)(Isulat + o – upang ipakita ang dumarating o umaalis)*
   _____

KS5. Age: *(Edad)*
   What percent of the people in the study area are currently?
   (*Ilang porsyento ng mamamayan sa lugar na pag-aaralan ang kasalukuyang may edad na:*)

   ____ 0-18;   ____19-30;   ____31-50;   ____over 50?

KS6. Gender: *(Kasarian)*
   What percentage of the population is *(Ilang porsyento ang)*   male *(lalake)?* _____
                                                      female *(babae)?*_____

KS7. Education: (*Edukasyon)*

What is the average number of years of education of people over 16 years old in the study area?
Sa lugar na pag-aaralan, ano ang karaniwang bilang ng taon ng edukasyon ng mga mamamayang mahigit sa 16 na taong gulang?) _____

KS8. Literacy:

What percentage of the population is literate (can read and write) _____
(Pinag-aralan: Ilang porsyento ng populasyon ang may pinag-aralan? (nakasusulat at nakababasa)

KS9. Ethnicity: (*Ethnicity)*

What is the ethnic make-up of the study area (percent of each major ethnic group in the study area)?
(Ano and kabuuang bilang ng katutubo sa lugar na pag-aaralan?) (Porsyento ng bawat grupo ng pangunahing katutubo sa lugar na pag-aaralan.)

Major Ethnic Groups (please list)	Percent

KS10. Religion: (*Relihiyon)*

What is the religious make-up of the area (percent of each religious group in the study area)?
(Ano ang kabuuang relihiyon sa lugar na pag-aaralan?) (Porsyento ng bawat relihiyon ng grupo sa lugar na pag-aaralan)

Religion (please list)	Percent

KS11. Language: (*Wika)*

What are the major languages spoken in the study area (percent of each major religious group in the study area)?
(Anu-ano ang mga pangunahing wika sa lugar na pag-aaralan) (Porsyento ng bawat pangunahing wika ng grupo sa lugar na pag-aaaralan)

Major Languages Spoken	Percent

KS12. Occupation: Complete the following table
(*Hanapbuhay: Sagutan ang sumusunod na talahanayan*)

Major occupations in community (*Mga pangunahing hanapbuhay sa komunidad*)	Percent of working population conducting this occupation as **primary** occupation (∑n=100%) (*Porsyento ng populasyong nagtatrabaho na ang trabaho ay siyang pangunahing hanapbuhay*)	Number of people conducting this occupation as primary occupation **(pls count; give number)** (*Bilang ng mamamayan na ang trabaho ay pangunahing hanapbuhay*)	Percent of working population conducting this occupation as **secondary** occupation (*Porsyento ng populasyong nagtatrabaho na ang trabaho ay pangalawang hanapbuhay*)
1.			
2.			
3.			
4.			
5.			
6.			
7.			

Part 2. COMMUNITY INFRASTRUCTURE (*Balangkas ng komunidad*)

KS13. Community Infrastructure: Circle which services exist in the study area:
(*Balangkas ng komunidad: Bilugan kung alin ang umiiral na serbisyo sa lugar na pag-aaralan.*)

Schools, resident doctors, resident nurses, hospitals, medical clinics, electricity, telephone, internet access, radios televisions, news papers, sewage treatment plant, ice plant, hard top road access, water supply to homes, banking/credit union services, rotating credit associations, guesthouses/hotels/inns, restaurants.

(*Mga paaralan, naninirahang doktor, naninirahang nars, ospital, medikal klinik, elektrisidad, telepono, internet access, suplay ng koryente sa mga bahay, serbisyo ng bangko / naglilibot na asosasyong nagpapautang, radio at telebisyon, sewage treatment plant, pagawaan ng yelo, hard top road access, suplay ng tubig sa mga bahay, bahay-paupahan (guesthouse) / hotels / bahay-panuluyan (inns), at restauran.*)

Part 3 COASTAL AND MARINE ACTIVITIES (*Mga Gawaing Pantabing-dagat at Pandagat***)**

KS14-23. Activities, Goods and Services, Types of Use, Value Goods and Services, Goods and Services Market Orientation, Use Patterns, Levels of Impact, Types of Impact, Level of Use by Outsiders, Household Use

(Mga Gawain, produkto at serbisyo, uri ng gamit, kahalagahan ng produkto at serbisyo kaangkupan sa pamilihan ng produkto at serbisyo, pinaggagamitan, lebel ng bisa, lebel ng gamit ng tagalabas (outsiders), gamit ng sambahayan:)

Complete the following table (see Appendix A for examples of how to complete the table):*(Sagutan ang mga sumusunod na talahanayan) (Tingnan ang Apendiks A para sa halimbawa ng pagsagot)*

Coastal and Marine Activities *(Mga gawaing pantabing-dagat at pandagat)*	Costal and Marine Goods and Services *(Produkto at serbisyong pantabing dagat at pandagat)*	KS16/ H16 Types of Household Uses (identify specific method to acquire the goods and services or the device being employed) *(Pinaggagamitan ng Sambahayan) (tukuyin ang tiyak na paraan sa pagtamo ng produkto at serbisyo o ang kagamitan sa pagtatrabaho)*	Value of Goods and Services *(Kahalagahan ng mga produkto at serbisyo)* (ie: High, Medium, Low)	Goods and Services Market Orientation (primary) *(Mga produkto at serbisyong angkop sa pamilihan* (ie Within the barangay, outside the barangay,)	Use Patterns (Location of coastal and marine activities) *(tukuyin ang lugar na pinagkukunan ng mga gawaing pantabing-dagat at pandagat)* (eg. reef, bay, coast)	Level of Impact (of coastal and marine activities to resources) (ie: High, Medium, Low)	Types of Impact (primary) *(Identify the activities that have impact on resources)* (eg. overfishing, pollution, anchor damage, nutrient loading)	Level of (resource) use by Outsiders *(Lebel ng paggamit ng tagalabas)* (ie: High, Medium, Low)	Household Uses (eg. sale, consumption, giveaway, payment to labor, etc) *(Mga Pinaggagamitan ng Sambahayan) (hal. Pabenta, pagkain, pamigay, pambayad sa manggagawa, atbp.)*
1	1	1	1	1	1	1	1	1	1
	2	2	2	2	2	2	2	2	2
	3	3	3	3	2	3	3	3	3
2	1	1	1	1	1	1	1	1	1
	2	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3	3
3	1	1	1	1	1	1	1	1	1
	2	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3	3
4	1	1	1	1	1	1	1	1	1
	2	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3	3
5	1	1	1	1	1	1	1	1	1
	2	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3	3

KS24. Stakeholders: *(Stakeholders: individuals, groups, or organizations of people who are interested, involved or affected (positively and negatively by CRM)*

Complete the following table: *(Sagutan ang mga sumusunod na talahanayan)*

Coastal Activity* (*Gawaing patabing-dagat)*	Stakeholder Group 1 *(Pangunahing hanay/ grupo ng nakikinabang)*	Stakeholder Group 2 *(Ikalawang hanay/ grupo ng nakikinabang)*	Stakeholder Group 3 *(Ikatlong hanay/ grupo ng nakikinabang)*
1			
2			
3			
4			
5			

Part 4 GOVERNANCE *(Pamamahala)*

KS25-29. Management Body, Management Plan, Enabling Legislations, Resources Allocations, Formal Tenure and Rules:
        (Pangkat ng namamahala, Plano sa pamamahala, Paggawa ng batas, Alokasyon ng yaman. (Karaniwang panunungkulan at patakaran)

Complete the following table (see Appendix A, KS25-29 for examples of how to complete the table):
(Sagutan ang mga sumusunod na talahanayan) (Tingnan sa apendiks A, KS 25-29 ang mga halimbawa sa pagsagot)

Note: Formal Tenure: de jure use right/ access

Coastal Activity* *(Mga gawaing pantabing – dagat)*	Management Body(s) & Name (indicate: Yes or No) *(Pangkat ng namamahala)* *(Pangalan)*	Management Plan (indicate: Yes or No) *(Plano ng pamamahala)*	Enabling Legislation (indicate: Yes or No) *(Mga batas na nagbibigay bisa patungkol sa pamamahala)*	Number of Staff *(Bilang ng tauhan)*	Budget *(Perang nakalaan)*	Formal Tenure Arrangements (indicate: Yes or No) *(Karaniwang pagsasaayos ng panunungkulan)*	Relevant Rules and Regulations (indicate: Yes or No) *(Nauugnay na patakaran at regulasyon)*
1							
2							
3							
4							
5							

KS31: Stakeholder Participation: *(Partisipasyon ng Stakeholders)*

Complete the following table: *(Sagutan ang talahanayan)*

Stakeholder Group* *(Grupo ng Stakeholder)*	Stakeholder Participation (Yes/No) *(Partisipasyon ng Stakeholder) (Oo / Hindi)*

KS32: Stakeholder and Community Organizations: *(Organisasyon ng Stakeholder at komunidad)*

Complete the following table: *(Sagutan ang talahanayan)*

Community Organization *(Organisasyon ng komunidad)*	Formal or Informal *(Karaniwan o di-karaniwan)*	Main Functions *Pangunahing tungkulin)*	Influence (on coastal management; community issues; both; none) *(Impluwensya) (sa pamamahala sa tabing-dagat, isyu sa komunidad; pareho; wala)*

END

SOCIOECONOMIC MONITORING FIELD MANUAL

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Table of Contents

I.   INTRODUCTION

A.   *About the Manual*

This field manual is published as reference guide for the researchers and enumerators undertaking socioeconomic monitoring activities for the "The Last Frontier: Improved Law Enforcement & MPA Management" project of the Municipal Agriculturist Office of the local government of the Municipality of Taytay in the province of Palawan, Philippines. The project is being implemented under a $19,389 funding grant from the US National Fish and Wildlife Foundation – Coral Reef Conservation Fund 2011, with matching contribution from the Municipal Government of Taytay in Taytay, Palawan.

The first section of the manual provides an overview of the project. The second section presents the methodology of the project, as well as guidelines for enumerators. The third part describes the contents of the questionnaires and guidelines on how to administer them.

B.   *Background*

The project seeks to increase the capacity of the local government of Taytay, Palawan to improve fishery law enforcement and MPA management with the help of necessary equipment, community education, an eco-friendly guard station and increased monitoring capacity.

This project will implement objective 1.3 of NOAA's International Strategy on coral reef conservation by increasing local government capacity to protect and conserve the precious coral reef resources of Taytay Bay, a marine area within the Coral Triangle. With the assistance of NFWF, the local government will achieve the material and technical capacity to greatly improve fishery law enforcement and MPA management. The Office of the Municipal Agriculturist will gain the necessary materials to conduct law enforcement through all areas of the municipal waters and clearly mark three newly established MPAs with marker buoys and signs. In order to increase compliance with MPA codes the local government will conduct environmental and MPA awareness campaigns in nearby communities, which will culminate in the establishment of a fully functional guard station at the Dinot Island MPA constructed largely from plastic trash and bottles collected and prepared by school children from these communities, thereby increasing stakeholder investment in this MPA and concern for environmental conservation. Finally, the fisheries staff will gain the capacity to conduct biophysical and socioeconomic surveys from expert trainers from nearby universities, including the regional SocMon coordinator. The local government will then establish a regular schedule of biophysical and SocMon surveys in the area to ensure the ongoing monitoring of fisheries conservation practices, particularly MPA management. By the end of this project, local government capacity to implement fisheries law and manage MPAs will increase significantly to ensure the long term sustainable protection of Taytay Bay.

C.   Socmon Component Goal And Objectives

The goal of this component is to implement and strengthen the Socioeconomic Monitoring (SocMon SEA) Program in key coastal areas in the province of Palawan thereby promoting more effective coral reef conservation and coastal resources management in the Philippines. Implicit in this goal is to showcase the utility and practical applications that may be derived from using SocMon as tool for adaptive management. The associated objectives to achieve this goal are to:

1. train new researchers, managers and key stakeholders in applying the SocMon SEA methodology, in generating relevant socioeconomic information;
2. undertake SocMon field surveys at four coastal villages in the municipality of Taytay, province of Palawan, Philippines;
3. analyze the collected data and prepare appropriate technical reports, policy briefs and recommendations for use by relevant stakeholders, including documentation of the experiences and lessons learned on the use of SocMon; and
4. disseminate the results to policy makers, coastal managers, local communities and other relevant stakeholders to ensure that results are used for adaptive management.

This field manual is thus being produced as a material for the training of researchers and practitioners in the SocMon Methodology. It shall also serve as a guide during the researchers' actual field surveys to facilitate gathering, encoding and processing of data and to ensure data quality assurance.

II.   METHODOLOGY

A.   Survey Coverage

The SocMon Survey has four sections; the secondary data gathering, the household survey (HHS), the focus group discussion (FGD), and the Key Informant Interview (KII).

B.   Sampling Procedure

The sample size for the Household survey is determined using a statistical formula, with the total number of households in the study areas as the population size. The household samples are to be selected at random, using stratified proportional sampling (with sitios as strata) and systematic sampling (every household in the sitio will be visited, with k = number of households in the sitio/desired number of sample households in the sitio.

C. Confidentiality of the Survey

The role of an enumerator is very important and crucial. It demands impartiality and confidentiality at all times. Otherwise, the integrity of the survey, the Palawan State University and its partner institutions in the project and the interviewer himself will be compromised. The enumerator should never, in any way, engage the respondent in any unprofessional relationship nor take advantage of the research project for personal gains.

Information about the project to which the enumerator is involved must remain classified and must not be divulged to friends or relatives. Survey materials must be in a secure place to help maintain the confidentiality of the project. In addition, all personal and professional information about the respondent obtained by the enumerator during the course of the survey is privileged. Professional ethical standards of confidentiality must be maintained at all times regarding what the enumerator has learned from or about the respondents.

D. Selection Requirements for Field Staff

In choosing the enumerators, there are five (5) major factors being considered: education, mastery of the dialect, age, sex and civil status.

Education. Preferred enumerators should have at least a college-level background and have experience conducting surveys because interview work requires special communication skills, including the handling of people from different economic strata. Those who will be doing the FGDs and KIIs should be senior members of the survey team or those who have had similar exposures in the past.

Mastery of the language. Each of the interviewers must be conversant in the language (or dialect used) of the place.

Age. There is no strict preference as to age – interviewers are simply required to be healthy enough to take on the physical rigors of the job.

Sex. Females are given priority. Based on previous surveys, women interviewers are perceived as more acceptable and less threatening than the male counterparts to respondents, especially when the subject matter tended to be delicate or controversial.

Civil Status. Whether single or married, the status of interviewers should not at all disturb quality of performance or authenticity of work. It should be understood by everybody that the nature of work demands availability and flexibility of time.

Personal Qualities of Interviewers. Aside from the above factors, enumerators need to possess the following qualities:
1. Honest/sincere – must have unquestionable integrity in order for the enumerator to be credible
2. Patient/kind – must exert effort to draw answers from respondents without showing irritability
3. Punctual – being on time

4. Flexible/dependable – resourceful enough to find ways and means to accomplish task without being rigid
5. Legible handwriting – very important in gathering information for clarity purposes
6. Organized and thorough – must devise a system in order to fast track the activity
7. well groomed and personable – to ensure that the enumerator will be respectable in the eyes of the respondents
8. Has the right/positive attitude – it enables him/her to look at the bright side of work, making tasks easier
9. Always prepared – knowledgeable about the project, the objectives and the data needed to be gathered.

E. *Specific Duties of the Field Staff*

Site Team Leader (STL)
- Heads the overall implementation of the survey plan in the area
- Assures the accuracy and completeness of the entire data gathering process; conducts spot checks of enumerators
- Supervises the data collection and processing activities
- Evaluates completed questionnaires submitted by the enumerators
- Meets enumerators to discuss and resolve concerns/problems

Pre-Survey Duties
- Gets the master list of households from the concerned barangay, for the HHS.
- Gets list of stakeholders in the sample barangay and the municipality where it is located, as a basis for identifying the FGD and KII respondents
- Does the sampling for respondents, following the sampling procedures.
- Coordinates with barangay/sitio leaders to schedule interviews with sample respondents.
- Coordinates with concerned stakeholders to schedule FGDs and KIIs with sample respondents.

Enumerator
- Conducts or schedules interviews with sample HHS respondents.
- Submits completed questionnaires to the STL daily, after the field interviews.
- Obtain copies of the needed data.
- Documents significant events in the field in a log notebook.
- Writes neatly and legibly.

III. SURVEY FIELD GUIDE

A. *Preparations for the Survey*

The enumerator should check that his/her survey kit is complete. Knowing what to do and being equipped with the necessary materials will make the enumerator better prepared for the interview. Each enumerator should have the following materials: letter of introduction, ID, questionnaires, field notebook, pencils and pens.

During actual fieldwork:

The enumerator must look presentable. Since the enumerator is there to represent the institutional partners in the research, it is a must that he/she appears as professional as possible.

The enumerator must be in good physical condition, as fieldwork demands a lot of legwork and stamina. The enumerator should anticipate covering eight or more respondents a day.

The enumerator should be emotionally prepared. An enumerator meets various kinds of people from all walks of life and emotional stability is important in being able to establish proper rapport. The enumerator must be ready to listen and be able to handle all types of respondents. Personal concerns should not be allowed to affect the interview. Enumerator should not show surprise or shock with the answers of the respondents.

The enumerator must know the questionnaire and response codes by heart. The enumerator must be well-versed with the questionnaire, short of being able to memorize the exact question wordings so that he/she will be able to speak up well. Such will convey to the respondent confidence and pride in interview work.

B. *HHS Field Work Procedures*

For efficiency in the data collection process, the deployment plan for each project area will serve as guide for the actual field survey. The deployment plan contains the target households for the HHS and the target key informants for the KIIs and FGDs.

A. Approaching the respondent and establishing rapport.

Introduce self and purpose of visit. Show your credentials or the letter of introduction. If needed, request from the respondent to conduct an interview.
The field enumerator's approach, patience and persistence are important factors that affect the quality of interviewing.

Approach. It is important for the enumerator to maintain a smiling and cheerful countenance. The amount of cooperation from the respondent depends greatly on the respondent's first impression of the enumerator. It should be remembered that the enumerator is

a stranger meeting the respondent for the first time. A friendly smile will help the respondent to be at ease and be assured of the enumerator's good intentions.

It is also important to be polite at all times. A courteous greeting given to the respondent in the most charming manner can make the enumerator's job a lot easier.

When provoked by an ill-mannered respondent, the enumerator should never lose his/her temper. The enumerator should continue to treat the respondent nicely as though he/she is likeable. Nothing is ever gained by being impolite, graciousness may make the respondent realize his/her won rudeness.

Be always alert and ready. Before approaching a respondent, the enumerator should b ready to begin the interview, making sure that the correct questionnaire and interview materials are on hand.

Right after the introduction, the first question should be asked right away, getting on with the interview and avoiding wasted time in asking unnecessary questions and other social pleasantries, which may bias the interview.

As soon as an answer to the first question is given, the next question should be asked immediately. Once the enumerator hesitates or looks uncertain on what to say next, the respondent will have the opportunity to ask questions ahead.

The enumerator should know the questions as these are asked in the right order, short of memorizing them. Referring to the instructions for the next question is allowed during the first few interviews. After that, the enumerator should be able to deliver the questions from memory but without sounding mechanical. If the enumerator is not prepared, the respondent will show signs of irritation towards the middle of the interview and may even become uneasy and impatient for the interview to conclude.

The enumerator should be prepared to interview under inconvenient circumstances. He/she should never show signs of discomfort or disgust if not offered a seat, if the place is too hot or too cramped.

The enumerator should be alert for instances when the respondent drifts off to topics which are of no relevance to the question being asked. The enumerator should tactfully steer the conversation back to the questionnaire and obtain the needed information. He/She should remember always to confine the discussion within the scope of the survey and not engage in any business deals or discuss politics, religion or any controversial topic with the respondent.

It is also important to look and sound enthusiastic and interesting. The respondent's interest needs to be stimulated. Therefore, the enumerator should look and sound alive, fresh and show that he/she enjoys the interview. These conditions would encourage the respondent to take interest in the interviews and thus cooperate.

It is important to be flexible. The enumerator should use his/her discretion and judgment in selecting the most appropriate approach in every situation. The quality of information obtained from the respondents depends largely on the approach used.

The enumerator must take note of the time started. Indicate on the upper right part of the first page of the questionnaire. Also, take note of the time finished. Indicate on the lower right on the last page of the questionnaire.

6

Patience and persistence. The enumerator should take time in interviewing. Enough time should be given to the respondent to think, as some may be slow in giving answers. Irritability or impatience should never be shown. However, if there are indications that the respondent can no longer continue or will no longer want to continue with the interview, the enumerator can politely request for another appointment, or politely terminate the interview should the respondent refuse to continue participating in the survey.

For items where multiple answers are allowed, the enumerator should prompt the respondent and probe by asking "anything else?".

Handling "special" respondents

It is possible that some respondents fall under the category "special", that is, they may be more difficult to handle during the interview.

The gossip type. When interviewing a perfectly amiable type who happens to be a great gossiper, the enumerator should not entertain his/her chatter or the interview will never progress. When the respondent pauses for breath, the next question should be asked. He/She sill not notice that he/she has been interrupted.

The busy type. When coming across a respondent who says he/she does not have time with the interview, the enumerator should not get easily discouraged. The respondent may just be trying to put the interview off. A statement such as "This won't take long" or "We could do this in two parts" can help begin the interview and make the respondent give his/her full attention.

The hostile/uncooperative type. When coming across the type who simply refuses to answer questions or for some reasons is antagonistic to surveys, the first thing to do is to let things go out of the respondent's system. If the respondent makes a few strong statements and the enumerator listens to him/her sympathetically, the respondent would soon identify himself with the enumerator. If he/she still refuses to cooperate, repeating the purpose of the survey, without overdoing it, may help. However, insincere praise, which can be spotted as an obvious sales pitch, should be avoided.

Should the enumerator see that he/she is not getting anywhere despite all the efforts to establish rapport, it is better to terminate the interview and record the call as an outright refusal. Approach an alternative interviewee.

The suspicious type. Some respondents are suspicious at the start. The enumerator should listen carefully to what they say. Suspicions are usually allayed by explaining to the respondents the purpose of the study and that the information would be used for statistical purposes. An assurance that everything they say will be treated with utmost confidentiality can also help. Often, their suspicions will disappear as the interview goes on.

The nervous type. Some respondents are nervous in giving answers for fear that they might not have the correct answer. Prior to the start of the interview, it is necessary to give the respondents assurance that there are no wrong answers to the questions to allay the respondent's fear of saying the wrong things.

Presence of "kibitzers" or "onlookers. Should this scenario occur, it is important that these kibitzers and onlookers be requested to leave the place during the interview. Some ways of

getting rid of kibitzers or onlookers or at least minimizing their presence is:
- Diverting and side-tracking the outsider.
- Satisfying the outsider's curiosity like explaining the purposes of the survey simultaneously to the respondent and outsider before the interview.
- Role educating the outsider like giving the reason for needing privacy and that the presence of another person might bias the respondent's answers.
- Getting the respondent to initiate telling the outsider that the interview will not begin unless he outsider will leave the interview area.

C.   Interview Proper

The enumerator can use the "6 helpers" in the interview process: what, who, why, where, when, and how. He/she should give time to the respondent to think over the questions and answers.

A major source of erroneous data is the enumerator: when he/she cheats, introduces his/her personal biases, lacks rapport with the respondent, records answers improperly, misreads instructions, deviates from asking the actual questions and probes inadequately, among others.

In surveys, QUALITY IS MORE IMPORTANT THAN QUANTITY. The enumerator should aim for accuracy first, speed second.

It is important that each respondent is asked the same question in the same way. To do this, the enumerator is requested to read the questionnaire verbatim during the interview. The enumerator should never ad lib nor explain what a question means beyond what has been discussed. The enumerator must not say anything that would bias the respondent's answer. Any deviation from the phrasing of the definitive question can potentially affect the outcome of the survey.

It is also important that the enumerator records exactly and only what the respondent answered. The enumerator should not edit the answers of the respondent.

The enumerator should also not suggest specific answers to the respondent. The enumerator should leave the respondent alone to come up with his/her own responses. However, it is permissible to help the respondent in certain special cases, particularly if the question needs a factual answer and not an opinion.

A translated copy of the questionnaire is provided to be used for the interview of respondents who are not able to understand English well. The questionnaire is translated to Filipino or the local dialect in the area.

D.   Recording Accurately

The following are general instructions that enumerators should observe when administering the questionnaire:

1. Use only pencil (Mongol #2 or its equivalent) in recording the answers on the questionnaire. No need to re-write with ballpen the final answers.

2. Always indicate the Time Start and the Time End for all interviews.

3. For close-ended questions: just encircle the appropriate answer in the answer grid. In cases where the respondent's answer is not in the answer grid, just write the answer verbatim in the space provided for others. Record relevant side comments at the margin space. If no answer grid is provided in the question, write the answer provided by the respondent and its corresponding number code

4. For open-ended questions: Write the verbatim answers given by the respondent as the interview is in progress. Record all replies in the very words the respondent uses. Do not summarize or paraphrase answers. A good technique is to start repeating what the respondent has said while you are writing the replies. If vague, do some probing so that the given information would be relevant to the specific question. You may use abbreviations during editing of questionnaire.

5. For quantitative answers: For answers given as range, politely probe the respondent for his closest estimate. The final answer must be a single number or percentage. For responses that require lengthy computation or conversion, record verbatim response on the margin space to save time. Compute the exact response right after the interview.

6. In cases where the respondent cannot answer the question, verify whether the respondent cannot respond because he/she does not know the answer or refuses to answer the question. Record all responses as coded No question should be left unmarked. A blank means negligence of the interviewer.

7. If respondent gave abbreviated answers, ask for the meaning of these abbreviations.

8. Likewise, there should be no prompting of a possible answer to any question. Interviewees should not be lead towards a desired answer.

9. If an interviewer fails to immediately answer, wait for a while in case he/she might be taking time before giving out answers. Should it be necessary, repeat or rephrase the question without altering its main thought.

10. Fill out the questionnaires neatly and legibly.

11. If number codes are given to possible answers to an open-ended question, write the number code. If the answer does not have a number code, write it as given.

12. There should be no prompting of any question by the interviewer. Try to sense the respondent, he/she might be taking time before giving out answers.

13. Fill out the questionnaires neatly and legibly. Ensure that all questions are answered by the respondent.

E.   Closing the Interview

Review if all questions have been asked or answered. Then, thank the respondent for sharing his/her time. Indicate on the last page of the questionnaire the exact time of end of interview.

F.   Setting Appointments

Set appointment for a call-back for data gaps, should it be necessary.

G.   Rules for Replacement.

Use the replacement household if the sampled household is not available for the interview. If the replacement household is still not available for interview, ask the field supervisor for another replacement.

H.   Post-HH Survey Interview

1. For certain variables, code the given responses using the coding guide (refer to next section of this field manual) immediately after the interview, before the accomplished interview is submitted to the field supervisor.
2. The field supervisor may conduct spot checks with the interviewee to ensure data quality and accuracy.
3. The field supervisor reviews the filled-up interview questionnaire and ensures that all questions are appropriately responded to. The field supervisor has to return the questionnaire to the enumerator should there be data gaps or inconsistencies that have to be addressed.
4.   After reviewing the filled-up questionnaire and ensuring that all questions are responded to, the field supervisor signs s his/her name on the first page, and indicates the date signed.
5. The encoder who enters the questionnaire interview data in the data base needs to sign his/her name on the first page, and indicates the date of encoding.

I.   Documentation

1. Enumerators must log in the logbook for visitors of the barangay, if there is a logbook.
2. Enumerators must write in their field notebook the address and name of the household Head, interview date and time (start and end). Other uncovered information that maybe relevant to the study but uncovered in any of the survey questions should also be noted down.
3. After each day of the field surveys, the field team leader should note down in his/her map of the study area the specific location of the household interviewed and indicate its corresponding questionnaire identification number.

IV. IMPLEMENTING THE HOUSEHOLD SURVEY QUESTIONNAIRE

A. *Preliminary Household Survey Information*

The HHS questionnaire will be administered mainly through personal interviews with the selected respondents identified in this project. It consists mostly of questions with pre-coded responses. Although instructions are provided in the questionnaires to guide field interviewers, editors and coders, more specific guidelines for certain questions are presented in this manual to make sure that accuracy in data-gathering and uniformity in the interpretation of questions are achieved. The interviewer must let the respondent answer on her own unless it is stated on the question that the interviewer can read out the options to aid the respondent in answering.

Instructions for the enumerator, coders, and editors are incorporated within the questionnaire. The training provided to all enumerators should prepare them to have the proper mind-set and skills to conduct the interviews.

The enumerator must fill out the indicated spaces on the first page of each questionnaire (see example below) before he/she proceeds with the interview proper.

1. Ensure that there is an identification code for the questionnaire, as indicated by the HH Survey ID No _____- _____ - ____ where the first element identifies the barangay, the second element is for the sitio/purok in the barangay, and the third element is the household sample number.

2. Indicate te date of the interview; time started in hours and minutes (on first page) and time ended in hours and minutes (on last page)

3. Enumerator to fill out on the first page information on the barangay, sitio, address where the household is located, name and age of the interviewee and position in the household. Note whether the interviewed respondent is male or female, and his/her age, in years.

4. Enumerator, site team leader and encoder to sign above their printed names and the corresponding date after doing their respective assignments. Format of the date is dd/mm/yy (i.e. 13/5/2011)

The interviewee should be a senior member of the household; the household head or his/her spouse; a parent of the household head; or the household head's child who is at least 21 years old. If nobody among them is physically present in the house, seek an appointment when the interviewer will return and an interviewee is available. Should there really be none after the first and second tries, then the interviewer may replace the household with another one nearest to the targeted household.

Before starting with the interview, enumerator must introduce him/herself and the project for which the survey is being conducted. A guide for introducing the enumerator and the project would be provided; enumerator must memorize this.

B.   *Household Demographics*

Data for this part of the questionnaire should be collected for each household member. It is better to seek the required data for each household member in sequence, getting and filling up information from left to right, per row.

HHSize Indicate the total number of individuals residing in the household, including relatives and helpers living in the house on a long-term basis.

H1A Write the first and last names of every member of the household. The name of the respondent being interviewed should be written on the first row. Relatives and helpers living in the household should also be listed.

H1B Indicate the position or role/relationship of HH member to the HH head.
1 – HH head
2 – wife of HH head
3 – child of HH head
4 – parents/parents-in-law of HH head
5 – grandchild of HH head
6 – son/daughter in-law of HH head
7 – others (i.e. relative, helper)

H2 Write the age as of the nearest birthday, opposite the name of the HH member.

H3 Sex of the HH members; 1 is male and 2 is female. Encircle the sex of the respondent. Ask this for other household members being enumerated.
1 - male
2 - female

H4 Education level completed by each HH member listed who is <u>at least 16 years old</u>. Leave space blank if HH member is less than 16 years, based on response given in H2.
1 – no formal schooling
2 – reached grades 1 – 4
3 – grades 5 – 6 /elem grad
4 – 1st to 3rd year high school
5 – 4th year HS/HS grad
6 – college undergraduate
7 – college graduate

8 – with some years of vocational/technical education
9 – vocational/technical education graduate
10 – with masteral units
11 – with at least master's degree
99 – not known

H5A   Primary occupation/main source of income of each HH member. List
answer and code as follows *(expand coding guide to include other responses that
may arise during the interview):*
 0 - none
 4 – fishing for finfish
 5 - harvesting other marine life
 6 - aquaculture/mariculture
 7 – seaweed farming
 8 – fish/marine-based product processing
 9 – farming
10 - tourism-related enterprise
11 – handicrafts making
12 – regular government employment
13 – private professional employment
14 – laborer/construction worker
15 – self-employment as trader/businessman
16 – Others; _____
17 – Others; _____
18 – Others: _____

NOTE: THIS QUESTION MAY BE ASKED AND ANSWERED LATER IN
CONJUNCTION WITH H9: HOUSEHOLD INCOME.

H5B   Secondary occupation. Additional source of income of each HH member,other
than the primary occupation. List answer and use coding for H5A.

NOTE: THIS QUESTION MAY BE ASKED AND ANSWERED LATER IN
CONJUNCTION WITH H9: HOUSEHOLD INCOME.

H6   Migration Status. Ask whether family of respondent is a long-time resident or
newly (within the last ten years) migrated into the area. If yes, ask what year
did the family transfer into the area.

H7A   Primary language spoken and used by most members of the household. Ask and
write primary language spoken and used in the household, use code below
(expand coding guide to include other responses that may arise during the
interview):
1 – Tagalog   7 - _____
2 – Cebuano   8 - _____
3 – Ilonggo   9 - _____
4 - Ilocano   10 - _____

5-_____   11 - _____
        6 - _____   12 - _____

H7B   Secondary language spoken and used by most members in the household. Ask if there is another language or dialect spoken and used in the household, use code below *(expand coding guide to* include other responses that may arise during the interview):
        1 – Tagalog   7 - _____
        2 – Cebuano   8 - _____
        3 – Ilonggo   9 - _____
        4 - Ilocano   10 - _____
        5-_____   11 - _____
        6 - _____   12 - _____

H8   Religious affiliation of household. Ask religion of most members of the members of the household. Refer to coding guide and write number corresponding to stated religion. Write down given religion if it is not in the list. If there is more than one religion being practiced in the household, write down at most two. *(expand* coding guide to include other responses that may arise during the interview):
        1 – Roman Catholic   6 – Others: _____
        2 – Iglesia ni Kristo   7 – Others: _____
        3 – Protestant   8 – Others: _____
        4 – Moslem   9 – Others; _____
        5 – Seventh Day Adventist

C.   *Household Income*

H9A   Main Livelihood Sources for Cash Income Generation/Household Use, and HH Members Involved. Probe into the sources of income for the household, and indicate whether each activity provides cash income or goods being used by the household. In case the activity provides both cash income to and goods used by the household, ask for approximate percentages that go for household use and for generation of cash income.

        For sources of income that are seasonal rather than year-round, ask and write down the particular months when the household derives income from the source/activity.

        Ask how many in the household are engaged in each activity, and indicate the role in the household of those involved (e.g., father, mother, son, daughter, etc.)

H9B   Primary occupation/main source of income of each HH member. List
        answer and code as follows *(expand coding guide to include other responses that may arise during the interview):*

0 - none
4 – fishing for finfish
5 - harvesting other marine life
6 - aquaculture/mariculture
7 – seaweed farming
8 – fish/marine-based product processing
9 – farming
10 - tourism-related enterprise
11 – handicrafts making
12 – regular government employment
13 – private professional employment
14 – laborer/construction worker
15 – self-employment as trader/businessman
16 – Others; _____
17 – Others; _____
18 – Others: _____

NOTE: THIS QUESTION MAY BE ASKED AND ANSWERED IN CONJUNCTION WITH H5A AND H5B

D. Household Coastal and Marine Activities

For this part, information is being sought about the coastal and marine activities engaged in by at least one of the household members. Since the unit of analysis is the household, it is not necessary to identify how many and who among the household members are involved.

H10   Coastal and Marine Activities. Identify the household uses of coastal and marine resources in the study area. The respondent is asked to identify ALL uses of coastal and marine resources by household members. A respondent may be prompted by asking him/her if anyone of the HH members is involved in *fisheries*, in *marine-based tourism*, in *aquaculture*, *marine recreation* or any related activity. Each answer is listed in the column for H10. Possible responses and their codes are:

1 – fishing	7 – marine transportation
2 – fishing-related: mari/aquaculture	8 - agriculture
3 – tourism	9 – coral mining
4 – mangrove clearing	10 – sand mining
5 - pebble gathering/quarrying	11 - dredging
6 – seaweed farming	12 – oil-gas development

13 – others: _____
14 – others: _____

H11   Coastal and Marine Goods and Services. Ask about the specific products produced for each household coastal and marine activity identified in H10. Possible answers include extractive goods such as sea food/fish (specify type or

species), seaweeds, mangrove wood, coral products, and sand; and non-extractive services such as tourism/recreation activities like resort operation, hotel development, diving, etc. List answers as given. If the activity is fishing, specify the types/species of fish caught

H14   Household Uses. For extractive goods such as sea food/fish (specify type or species), seaweeds, mangrove wood, coral products, and sand, ask about the household use of each. List answers as given, and code as follows:
1 – for sale
2 – household consumption
3 – give-away
4 – payment to laborer
5 – barter/exchanged with other goods/services
6 – others: _____
7 – others; _____

H13   Household market orientation. Identifies the primary market in which each coastal and marine product produced by the household is primarily sold. List responses and code. Ask approximate percent of good/product that is sold/serviced to the primary market and indicate in the adjoining column:
1 – local, within the barangay only
2 – local, within the municipality only
3 – local, within the province
4 – regional, within Region IV-B
5 – national, within the country
6 – international, outside the country

H12A   Perceptions of Seafood Availability. Ask the respondent of his/her experiences
H12B   on the availability of seafood for their consumption this year (H12A) compared to five years ago (H12B). For both questions, use a 10-point ladder-scale where 1 is lowest for "not available at all" and 10 is highest for "more than enough is available".

E.   Attitudes and Perceptions

H15   Non-market and Non-use Values of Coastal Resources. Measures how people think about the value of coastal resources that are not traded in the market (non-market) and the value of the resources to the portion of society that does not use the resources (non-use).

Non-market value is the value of resources (e.g. fish) and services (e.g. diving) that are not traded in any market. These include direct uses such as divers who have travelled to dive by private means; and indirect uses such as biological support functions in the form of nutrients, fish habitat and coastline protection from storm surge.

Non-use values are not associated with any use and include option value (the value of knowing that the resource is available should one decide to use it at some future time), bequest value (the value of knowing that the resource will be available to future generations, and existence value (the value of knowing that the resource exists in a certain condition.)

Agreement or disagreement to each of the item statements are to be sought from the respondent, with five possible response options:
1 – strongly disagree;
2 – disagree;
3 – neither agree nor disagree;
4 – agree;
5 – strongly agree.
9 – don't know/no answer
Should the respondent refuse to answer or say that he does not know the answer, encircle 9.

Statements **D** and **H** are stated negatively and hence, scoring for the responses are to be reversed, i.e. strongly disagree – 5, … strongly agree – 1

H16   Perceptions of Resource Conditions. These measure what people think about the conditions of the coastal resources in their community. The description of the current conditions of each coastal resource is obtained by asking the respondent to choose from any of the following options:
1 – very bad;
2 – bad ;
3 – neither good nor bad;
4 – good;
5 – very good
9 – don't know/no answer
0 – Not applicable

Should the respondent refuse to answer or say that he does not know the answer, encircle 9. If the respondent says that the resource is not available, encircle NA and code as 0.

H17   Perceived Threats to Coastal Resources. Ask respondent to identify at most three (3) threats for each of the coastal resources listed, and write down the responses on the table. Possible responses and codes are:

Mangroves:
0 - none
1 – clearing
2 – cutting for commercial use
3 – cutting for household use
4 – charcoal making
5 – conversion into fish pond

6 – illegal fishing activities
7 – disease/infestation of mangroves
8 – natural phenomenon (i.e. typhoons, big waves)
9 – pollution/dumping of garbage
10 – others: _____
11 – others: _____
98 – not applicable (the resource is not available in the barangay)
99 - don't know

Coral reefs:
0 - none
1 – clearing/mining/digging
2 – coral gathering for household/commercial use
3 – cyanide/compressor fishing
4 – dynamite/blast fishing
5 – tourist-related, i.e. recreational diving
6 – illegal fishing activities
7 – coral bleaching
8 – natural phenomenon (i.e. typhoons, big waves)
9 – pollution/dumping of garbage
10 – others: _____
11 – others: _____
98 – not applicable (the resource is not available in the barangay)
99 - don't know

Upland Forests:
0 - none
1 – cutting of trees for commercial use
2 – cutting of trees for household use
3 – charcoal making
4 – conversion into residential settlements
5 – illegal logging
6 – kaingin/slash and burn farming
7 – natural phenomenon (i.e. typhoons, etc)
8 – conversion into farm lands
9 – others: _____
10 – others: _____
98 – not applicable (the resource is not available in the barangay)
99 - don't know

Sea grass:
0 - none
1 – clearing/mining/digging
2 – gathering for commercial use
3 – gathering for household use
4 – dynamite/blast fishing

5 – tourist-related, i.e. recreational diving
6 – illegal fishing activities
7 – fishing using dragnets/gleaning
8 – natural phenomenon (i.e. typhoons, big waves)
9 – pollution/dumping of garbage
10 - disease
11 – gathering of shells and other inhabitants of sea grass
12 – others: _____
13 – others: _____
98 – not applicable (the resource is not available in the barangay)
99 - don't know

Beach:
0 - none
1 – gathering of pebbles and stones for commercial use
2 – gathering of pebbles and/stones for household use
3 – quarrying of sand for commercial use
4 – quarrying of sand for household use
5 – development of resorts & tourist-related facilities
6 – soil erosion from the uplands
7 – natural phenomenon (i.e. typhoons, big waves)
8 – expansion of residential areas intruding into the beach
9 – pollution/ dumping of garbage
10 – beach erosion/sea level rise
11 – others: _____
12 – others: _____
98 – not applicable (the resource is not available in the barangay)
99 - don't know

Springs:
0 - none
1 – contamination of water
2 – salt intrusion
3 – over-exploitation for household consumption
4 – deforestation/cutting of trees in watershed
5 – development of resorts & tourist-related facilities
6 – soil erosion
7 – natural phenomenon (i.e. typhoons)
8 – sedimentation
9 – pollution/ dumping of garbage
10 – establishment/expansion of human settlements nearby to the spring
10 – others: _____
11 – others: _____
98 – not applicable (the resource is not available in the barangay)
99 - don't know

Rivers & Creeks:
0 - none
1 – gathering of pebbles and stones for commercial use
2 – gathering of pebbles and/stones for household use
3 – quarrying of sand for commercial use
4 – quarrying of sand for household use
5 – development of resorts & tourist-related facilities
6 – soil erosion
7 – natural phenomenon (i.e. typhoons)
8 – sedimentation
9 – pollution/ dumping of garbage
10 – establishment/expansion of human settlements nearby
11 – others: _____
12 – others: _____
98 – not applicable (the resource is not available in the   barangay)
99 - don't know

Water falls:
0 - none
1 – development of resorts & tourist-related facilities
2 – deforestation/cutting of trees
3 – natural phenomenon (i.e. typhoons)
4 – establishment/expansion of human settlements nearby to the spring
9 – pollution/ dumping of garbage
5 – others: _____
6 – others: _____
98 – not applicable (the resource is not available in the   barangay)
99 - don't know

Groundwater:
0 - none
1 – contamination due to sewage
2 – salt intrusion
3 – over-exploitation for household consumption
4 – deforestation/cutting of trees
5 – development of resorts & tourist-related facilities
6 – natural phenomenon (i.e. typhoons)
7 – establishment/expansion of human settlements
9 – pollution/ dumping of garbage
8 – others: _____
9 – others: _____
98 – not applicable (the resource is not available in the barangay)
99 - don't know

H18   Awareness of Rules and Regulations. Ask respondent if he/she knows about the existence of rules and regulations for each of the coastal resources listed in H14.

Possible answers are:

0 - No/none

1 – Yes,

9 – don't know/no answer.

If the answer is yes, follow-up and ask about the enactment of the regulation/s, and classify its origin as

1 - barangay

2 - municipality/city

3 - province

4 - country

H21A   Current Participation in Decision Making. Measures how active people are in coastal management, particularly in decision making. For each of the coastal resources listed in H14, ask the respondent's current level of participation in decision making with 2 response options:

0 – No participation

1 – Yes

9 – NA/not applicable (the resource is not available in the barangay)

H21B   Desired Participation in Decision Making. Measures the desire of people to participate in coastal management, particularly in decision making. For each of the coastal resources listed in H14, ask the respondent whether he desires to participate in decision making, with responses the same as H21A:

0 – No participation

1 – Yes

9 – NA/not applicable (the resource is not available in the barangay)

H22   Membership in Resource Use Stakeholder Organizations. Refers to both formal membership and informal membership. The stakeholder organizations include direct users (e.g. fishermen's cooperative, diving club) as well as people whose activities impact the resources (e.g. hotel association, foresters association), and people who do not use or impact the resources, but have a stake in management (e.g. environmental organizations). List the household member and the corresponding resource use stakeholder organization to which he/she is a member. Count and indicate total number who are members of stakeholder organizations.

H23   Perceived Coastal Management problems. This question assesses what people think are the top two problems facing the community with respect to coastal management.   Ask and list the top two problems described by respondent. Possible answers and their corresponding codes are:

0 – none

1 – livelihood related to utilization of coastal resource

2 – decrease in fish catch or available coastal resource

3 – over-exploitation of coastal resource for household/commercial use

6 – pollution and garbage dumping

7 – waste management

8 – illegal fishing
9 – use of cyanide in fishing
10 – use of compressors in fishing
11 – illegal logging
12 – mangrove cutting
13 – natural calamities
14 – inadequate water supply
15 – others: _____
16 – others: _____
17 – others; _____
99 – don't know/no answer

H24   Perceived Coastal Management Solutions. Ask the respondent what he/she thinks are the solution to each of the problems he/she gave in H23. List all perceived solutions that the respondent provides.

H25A   Perceived Community problems. This question assesses what people think are the top two problems facing the community at large (e.g. poor nutrition, poverty, lack of electricity, etc.) outside of costal management. List the top two community problems given by respondent.

H25B   Perceived Solutions to Community Problems. Ask the respondent what he/she thinks are the solutions to each of the problems he/she gave in H23. List all perceived solutions that the respondent provides.

H26   Successes in Coastal Management. This question solicits what two things the respondent thinks has worked well for coastal management in the community. List responses.

H27   Challenges in Coastal Management. This question solicits what two things the respondent thinks has not worked well for coastal management in the community. List responses.

F.   *Material Style of Life*

H28   Material style of life is an indicator of the relative social status of a community and is often used as an indicator of wealth. It can involve assessing house construction materials (e.g. roof, walls), household furnishings and home electronics. Data are most easily collected by observation of respondent's house materials. If something is not clear, ask the respondent. Record the observed information for each house.

A. Type of roof *(Uri ng bubong)*
  5 = tile *(tisa)*   2 = thatch/ bamboo *(kawayan)*
  4 = tin / GI sheet *(lata/yero)*   1 = thatch / nipa *(pawid/nipa)*
  3 = wood/ plywood *(kahoy/plywood)*   Others: _____

B. Type of outside structural walls *(Uri ng panlabas na kayarian ng dingding)*:
  5 = tiled *(tisa)*   2 = thatch/bamboo *(kawayan)*
  4 = brick/concrete *(kongkreto)*   1 = thatch/nipa *(nipa/pawid)*
  3 = wood /plywood *(kahoy/plywood)*   Others: _____

C. Windows *(Bintana)*:
  5 = glass *(salamin)*   2 = bamboo/nipa *(kawayan/nipa/pawid)*
  4 = steelbars/ grill *(bakal/rehas)*   1= open *(wala)*
  3 = wooden *(kahoy)*   Others: _____

D. Floors *(Sahig)*:
  5 = tile *(tisa)*   2 = bamboo *(kawayan)*
  4 = wooden *(kahoy)*   1 = dirt *(lupa)*
  3 = cement *(semento)*   Others: _____

E. Other Household Assets
  1 = Vehicle (specify type): _____; 0 = none 1 = owns vehicle
  2 = Banca (specify type): _____; 0 = none 1 = owns banca
  3 = Computer (specify type): _____;   0 = none 1 = owns computer
  4 = Refrigerator: 0 = none 1 = owns a refrigerator
  5 = Television set: 0 = none 1 = owns a TV set
  6 = Other Appliances: _____

Other Observations & Notes (specify and list): _____

V. IMPLEMENTING THE KEY INFORMANT INTERVIEW SCHEDULE

Key informants are individuals who, because of their position, experience and/or knowledge can provide insight and information into the larger population and/or a particular group. Key informants can therefore provide common knowledge, shared knowledge and specialized knowledge. Some KIs are:

- the barangay officials can provide insight into the entire community,
- the president of the fishermen's association can provide insight into fishermen's activities
- the minister of the local church can   provide insight into Christians' perceptions in the community
- may be one of the stakeholders:
  - BFARMC

- BFAR
- Municipal Planning Officer
- MAO
- Foresters
- Barangay Officials
- Presidents of (Women, Youth, Coop) groups within the community
- informal leaders and members of resource user groups such as that of fishers, seaweed farmers, bulk buyers of fish/marine products, vendors, processors of fish/marine products

A.   Key Informant ID Number

The ID numbering for the KII will be as follows: _____ -_____ - _____ where the first element is the barangay, the second element is the institution or agency being represented, and the third element is the number corresponding to the respondent's name.

The KII schedule will be administered mainly through personal interviews with the selected respondents identified in this project.   It consists mostly of questions pertaining to the community. Although instructions are provided in the questionnaires to guide field interviewers, editors and coders, more specific guidelines for certain questions are presented in this manual to make sure that accuracy in data-gathering and uniformity in the interpretation of questions are achieved. The interviewer must let the respondent answer on her own unless it is stated on the question that the interviewer can read out the options to aid the respondent in answering.

Instructions for the enumerator, coders, and editors are incorporated within the questionnaire. The training provided to all enumerators should prepare them to have the proper mind-set and skills to conduct the interviews.

The enumerator must fill out the indicated spaces on the first page of each questionnaire (see example below) before he/she proceeds with the interview proper.

1. Indicate the date of the interview; time started in hours and minutes (on first page) and time ended in hours and minutes (on last page)
2. Enumerator to fill out the information sheet regarding the barangay, sitio, address where the household is located, name and age of the interviewee and position in the household. Note whether the interviewed respondent is male or female.
3. Enumerator, site team leader and encoder to sign above their printed names and the corresponding date after doing their respective assignments. Format of the date is dd/mm/yy (i.e. 13/5/2011)

The interviewee should be individuals who, because of their position, experience and/or knowledge can provide insight and information into the larger population and/or a particular group. Key informants can therefore provide common knowledge, shared knowledge and specialized knowledge.   Before starting with the interview, enumerator must introduce him/herself. A guide is provided on the cover page of each questionnaire to guide him/her was and the project before the interview starts. A guide for the enumerator is provided; enumerator must memorize this.

B.   Part 1.   Community- Level Demographics

KS1. Study Area. The study area refers to the location of the coastal and marine resources and the stakeholders where the study is being conducted. The boundaries of the study area are determined by the physical location of the resources and by where the stakeholders live and work. The study area will therefore often encompass a coastal area and the adjacent water catchment area. The stakeholders may be highly mobile and spread far wider than the area that is managed. There may be one or several communities in the defined study area that include all important stakeholders.

Information on the study area is usually obtained from maps of the area and discussions with key informants, such as the village captain or secretary or from the local development office. The informant is asked what the boundaries of the study area are, then the response is noted on a base map.

KS2. Population, and KS3. Number of households
The population is the total number of people residing in the study area. The number of households is the number of occupied houses in the study area, regardless of the number of families residing in the houses.

Data on population and household number are usually obtained from national, regional and/or local census statistics, which may be available from the census office, and the municipal planning and development office. It is important to cross-check these data with key informants, such as the village captain or secretary or from the local development office. This information on how many people live in the study area is written down on the space provided for in the KII schedule. The information on how many households are in the study area is also listed down.

KS4. Migration rate. Migration rate refers to the percentage change in population size as a result of people moving into or out of the study area in the past year.

Data on migration rate are usually obtained from national, regional and/or local census statistics, which may be available from the census office, and the municipal planning and development office. It is important to cross-check these data with key informants, such as the village captain or secretary or from the local development office. The informant is asked about the net increase or decrease in people moving into and out of the study area in the last year. The reponse is written down as + or - to reflect moving in or out.

KS5-11. Age, Gender, Education, Literacy, Ethnicity, Religion,   Language.

Age, gender, education, literacy, ethnicity and religion are basic demographic indicators. Education is measured by the average number of years of formal schooling completed by study area members over 16 years old. Literacy is measured by the percentage of study area members able to read and write. Age is measured by the percent of study area members in different age categories. Gender is measured by the percentages of the population that are male and female. Ethnicity and religion are measured by the percent of study area members that have the various ethnic and religious affiliations, respectively. Basic demographic information on the study area is typically available from secondary sources.

KS5. Age. Obtain and record what percent of the people in the study area who belong on the age ranges identified.

KS6. Gender. Obtain and record what percentage of the population is male or female.

KS7. Education. Obtain and record what is the average number of years of education of people over 16 years old in the study area.

KS8. Literacy.   Obtain and *r*ecord what percentage of the population is literate (can read and write).

KS9. Ethnicity. Obtain and record what is the ethnic make-up of the study area. Populate the table by listing down the ethnic groups identified and by recording the corresponding percent of each major ethnic group in the study area.

KS10. Religion. Obtain and record the religious make-up of the area. Populate the table by listing down the religious groups identified and by recording the corresponding percent of each religious group in the study area

KS11. Language.   Obtain and record the major languages spoken in the study area. Populate the table by listing down the major languages spoken and by recording the percent of each major language in the study area.

KS12. Occupation. Occupation refers to an activity that provides livelihood, such as income, food or other means of sustenance. The primary occupation is the main source of livelihood, whereas the secondary occupation is the second most important source of livelihood.

Complete the table by listing down the major occupations in the community in the first column of the table; then ascertain the percent of working population conducting each particular occupation as primary occupation in the second column. Calculate the number of people conducting each identified occupation as primary occupation as a number out of the total population in the study area.

C. Part 2. Community Infrastructure

KS13. Community Infrastructure. Community infrastructure is a general measure of the local community development and wealth. It is a description of the level of community services (e.g. hospital, school) and infrastructure (e.g. roads, utilities), which can include informationessential to determining sources of man-made impacts on coastal resources (e.g. sewage treatment).

Encircle from the listed choices which services exist in the study area. This can also be done doing observation, as well as, from asking an informant. If the identified infrastructure is not part of the given list, the interviewer records it along with the encircled choices.

D.   Part 3. Coastal and Marine Activities

KS14-23. Activities, Goods and Services, Types of Use, Value Goods and Services, Goods and Services Market Orientation, Use Patterns, Levels of Impact, Types of Impact, Level of Use by Outsiders, Household Use . *This portion of the questionnaire is aided by a table where the responses are to be written. The table presents how the KII Schedule Part 3 indicators relate with one another. The columns of the table are arranged to indicate indicators KS14 to 23 respectively.*

KS14 Activities. Coastal and marine activities is the identification of the uses of coastal and marine resources in the study area. These may include activities directly or indirectly using or affecting the coastal and marine resources. These may include, for example: fishing, tourism, aquaculture, marine transportation, agriculture, coral mining, sand mining, dredging, oil-gas development, military bases, mangrove clearing, forest clearing, industry and conservation.

Populate the column by obtaining from the KI the coastal and marine activities in the study area. Record the responses.

KS15 Goods and Services. Coastal and marine goods and services are the specific products produced from the identified coastal and marine activities. These include extractive goods such as lobster, mangrove wood, coral products and sand; and non-extractive services such as diving, snorkeling, glass bottom tours, mangrove tours and recreational fishing.

Populate the column by obtaining from the KI the coastal and marine goods and services correspondingly derived from the identified coastal and marine activities (from column 1) in the study area. Record the responses.

KS16 Types of Use. Types of use identifies the specific method or development being employed (e.g. traps, nets, guest houses, scuba diving) for each coastal and marine good and service.

Populate the column by obtaining from the KI the specific methods used to acquire the corresponding coastal and marine goods and services (from column 2). Record the responses

KS17 Value of Goods and Services. Types of use identifies the specific method or development being employed (e.g. traps, nets, guest houses, scuba diving) for each coastal and marine good and service.

Populate the column by obtaining from the KI this information. Ask the informant to put a value **(high, medium, low)** on the product of each coastal and marine goods and services (from column 3). Record the responses

KS18 Goods and Services Market Orientation.   Coastal and marine goods and services market orientation is the identification of the market in which each product is primarily sold.

Populate the column by obtaining from the KI this information. Ask the informant to asked to identify the primary market in which each good or service is sold (international, national, regional, or local). Record the response.

KS19 Use Patterns. Use patterns refers to the location of coastal and   marine   activities.

Populate the column by obtaining from the KI this information. Ask the informant to identify the location of each coastal and marine activity (from column 1) according to the good or service (from column 2) and note this on the KII Schedule.

KS20 and KS21 Levels of Impact and Types of Impact. Levels and types of impacts are measures of the perceptions of the general public and types of impact of coastal and marine activities on coastal and marine resources. This is not a scientific assessment of levels and types of impacts, but rather a documentation of what people think.

The key informants are asked to identify using a scale of **high/medium/low/none** the level of impact of each coastal and marine activity according to its goods and services. While they will need to be adapted for each study area, high could mean severe and irreversible impacts on the resources, such as cutting and filling mangrove areas; medium could mean moderate impacts on the resources, such as cutting mangrove areas; low could mean minor impacts on the resources, such as a small percentage of mangrove area being disturbed; and none could mean no impact. The primary types of impacts are then briefly noted on the KII Schedule.

KS22 Level of Use by Outsiders. Level of use by outsiders refers to the amount of outsiders using the coastal resources relative to the amount of local users from the study area. For example, if there are 1000 foreign fishermen and only 10 local fishermen, then the level of use by outsiders is high. Outsiders are people who do not live in the study area. They may be from a neighbouring village or another country.

The key informants are asked what the current level of use by outsiders for each coastal and marine activity is using a scale of **high, medium and low**. The scale will need to be defined for each study area, but high could mean a great deal of use by outsiders, such as the majority of fishing in the study area is conducted by outsiders; medium could mean moderate use by outsiders, such as a few international tourists, and low could mean minor use by outsiders, such as one guest house out of twenty in the study area is owned by a foreigner. Record the responses in the KII Schedule.

KS23. Household Use. Household use of coastal and marine goods and services is a measure of how households in the study area utilize coastal and marine goods and services for consumption, leisure and sale.

The key informants are asked to identify and rank the general household use of each good or service. They are asked if they use the resource for their **own consumption, leisure or sale.** "Own consumption" means use in the household, such as fish for food; "leisure" means for recreation; and "sale" means selling to obtain money or to barter for other goods.

KS24. Stakeholders. Stakeholders are individuals, groups or organizations of people who are interested, involved or affected (positively and negatively) by coastal resource management. These stakeholders may or may not actually live within or adjacent to the site, but are people who have an in interest in or influence on coastal resource management.

This part of the questionnaire will involve populating another table. Column 1 of the table is identified as **KS 14. Activities.**   The remaining three columns are used for listing down identified stakeholders who use or befit from the coastal activities identified in Column 1) The responses is obtained by asking informants (e.g. government officials, elected officials, fishers,

business leaders) in the area to identify the three main stakeholder groups for each coastal activity (e.g. **fishing, aquaculture, tourism**).

E. Part 4. Governance

KS25-29. Management Body, Management Plan, Enabling Legislations, Resources Allocations, Formal Tenure and Rules. *This portion of the questionnaire is also aided by a table where the responses are to be written. The table presents how the KII Schedule Part 4 indicators relate with one another. The first column of the table is identified in KS 14 activities, while the remaining columns of the table are arranged to indicate indicators KS25 to 29 respectively.*

KS25 Management Body. A management body is an institution that governs how coastal resource management is undertaken and ensures that there is a transparent process for planning, establishing and enforcing rules and regulations. Management bodies may be government, non-government or community organizations and may operate at the international, national, state/provincial, or local level. There may be multiple management bodies in the study area for different coastal activities such as coastal zone management, fisheries, aquaculture, mangroves, tourism, marine transportation and residential development.

It is important to confirm the existence and name of each management body for each coastal activity by identifying and interviewing a person responsible for the management body's operation. Informant is asked to identify whether there are management bodies existing for each particular coastal and marine activity (**yes or no)** and the name of the management body is also recorded.

KS26 Management Plan. The management plan sets out the strategic directions for the coastal resources management program. The management plan is a document that states the overall management program goals and objectives, the institutional structure of the management system and a portfolio of management measures.

For each coastal activity, the informant is asked to identify whether (**yes or no**) a management plan exists. This is noted in the KII schedule.

KS27 Enabling Legislations. Enabling legislation is the formal legislation in place from government to provide coastal resources management with a sound legal foundation so that the plan, management structures, rules and regulations, and enforcement procedures can be recognized, explained, respected and enforced. For example, a national fisheries law or code is considered to be enabling legislation since it defines how fisheries will be used and managed in the country.

The interviews and document reviews are conducted to determine the existence (**yes or no)** of enabling legislation to support the management plan for each coastal activity. This information is recorded in the KII schedule.

KS28 Resources Allocations Resource allocations refers to the human and financial resources that carry out the activities of the management plan.

Information on resource allocations can be collected by interviewing the manager or director of each management body in the study area. The manager or director is requested to present the organization chart which should identify staff allocations
by program or activity. The number of staff (full-time, part-time, volunteer) assigned to each program or activity is identified. Where no organization chart exists, one can be developed with the manager or director by first identifying each of the programs or activities of the management body and then identifying the staff members. The manager or director is also asked for the overall budget for the management body and for implementation of the management plan. The responses are noted in the table columns 5 and 6 respectively.

KS29 Formal Tenure and Rules. Formal tenure is concerned with use rights with respect to coastal activities. Formal tenure is considered to be a *de jure* use right, that is, legally written into law. For example, a formal tenure arrangement is the right given to a fisher to access an area to fish.

Formal rules are legally written into law and define specifically what acts are required, permitted and forbidden by stakeholders and government agencies concerning the use of coastal resources. Rules establish how use rights are to be exercised. For example, for those fishers with a formal tenure use right to access an area to fish, a formal rule is that they may only use hand lines to fish in the area.

For this indicator the focus is on formal operational rules and regulations which directly affect day-to-day decisions made by resource users concerning when, where and how to use coastal resources. These rules and regulations are specific to a coastal activity and will be established by an agency with legal responsibility for managing that coastal activity.

For each coastal activity, ask the informant to identify **(yes or no)** if there exists a formal tenure arrangement(s) and a formal rule(s) at the community level. Note the responses in table columns 7 and 8 respectively.

KS31: Stakeholder Participations. Stakeholder participation is a measure of the amount of involvement of stakeholders in making coastal management decisions.

Column 1 of this table refer to the list of stakeholder groups identified in KS24. Column 2 is populated by obtaining responses from informants. Key informants are asked if stakeholders are involved in making coastal management decisions **(yes or no).**

KS32: Stakeholder and Community Organizations. Community and stakeholder organizations are means for representing resource users and stakeholders in coastal resource management and for influencing the direction of decision-making and management.

As noted in the *Key Informant Interview Schedule* table, for each organization, information is collected on whether the organization is formally or informally authorized and on the organization's main functions. Key informants are asked whether the organization influences coastal management issues, community issues, both coastal management and community issues, or has no influence.

VI. IMPLEMENTING THE FOCUS GROUP DISCUSSION (FGD)

Focus group is a small group of people brought together and guided by a moderator through an unstructured, spontaneous discussion about some topic . The goal of a focus group is to draw out ideas, feelings, and experiences about a certain issue that would be obscured or stifled by more structured methods of data collection (ie HHI or KII). It is called a focus group because a moderator serves to focus the discussion on a certain topic and does not let the group move off onto tangents or irrelevant points.

Focus group interviews (FGDs) are a type of semi structured interview. FGDs involve a selected group of informants (usually 4 to 10) who share homogeneous characteristics -common background or knowledge (eg. use patterns, language, organization membership). The selection of focus group participants is largely by the purpose of the focus group. If a group discussions to take place, it is important for that the physical arrangement of the group be comfortable and conducive to group discussion.

Like semi-structured interviews, FGDs are based on a set of open-ended questions or discussion points, and generate qualitative information. This is a flexible method of interviewing allowing the moderator to probe for answers, follow-up the original questions and pursue new lines of questions during the interview.   Therefore, the interview and information evolve allowing the moderator to cover a range of topics. FGDs are usually done in the middle or end of the field data collection, after the team has a strong understanding of the stakeholder groups, their priority concerns and internal dynamics.

## A.	Purpose of FGDs

- Generates primarily qualitative information on a range of topics and on specific issues
- Provides information on the views of a particular stakeholder group as a whole
- Identifies local terminology, language and priorities that may help the assessment team interpret other information received during the course of the assessment.
- Allows an exchange of information between the moderator and the participants.

## B.	The FGD Moderator's Role and Responsibilities

The moderator is the most crucial factor influencing the effectiveness and usefulness of a focus group. He moderator is a person who conducts the entire session and guides the flow of discussion across specific topics (questions) that are important to the research.

The moderator must strive for a balance between stimulating, natural discussions among all of the group members while ensuring that the focus of the discussion does not stray too far from the topic (question).

A good moderator must have excellent observation, interpersonal, and communication skills to recognize and overcome threats to a productive group discussion. He or she must be prepared, experienced and armed with a detailed list of topics to be discussed. It will also be

helpful if the moderator can eliminate any preconceptions on the topic from his or her mind. The best moderators are experienced, enthusiastic, prepared, involved, energetic, and open-minded.

The FGD's success depends on the participants' involvement in the discussion and their understanding of what is being asked of them. Productive involvement s largely a result of the moderator's effectiveness, which in turn is dependent on the purpose and objectives of the interview.

C.   Some Tips and Guidelines ("Tricks" of the Trade) for FGD Moderators

1. How to make the group great every time.
- Be prepared
- Be energized
- Be nice but firm
- Make sure everything about the experience is comfortable

2. How to build rapport with participants
- Make meaningful eye contact during each person's introduction
- Learn and remember names
- Welcome folks as they come into the room (area where FGD is conducted) and use small talk

3. How to bring a drifting group back into focus
- Tell them the topic (question) is "for another group" and that they need to focus on the topic (question) for this group
- Make a note and tell them they will come back to this topic if there is time.
- Tell them the topic is "interesting" but not the subject at hand and refer to the next question
- Suggest that they can talk about it on their own after the focus group is over.

4. How to get participant's to talk about deeper things than top- of the mind answers
- Play naive or dumb and ask them to help understand by letting them explain   further
- Use probes
- Ask for specifics

5. Oftentimes it is more convenient to have someone take down notes or be assigned as a record keeper during the FGD or have the proceedings of the FGD on audiotape.

D.   FGD Guide for Selected Socmon Variables

D.1. KS 14-24. Coastal and Marine Activities, Goods and Services, Types of Household Uses, Household Uses, Market Orientation.

These variables are as defined and characterized earlier in the Key Informant Guide. Instead of individual interviews, however, the key informants shall be gathered together for a group discussion

with the moderator.

FG Members: Resource Users (fishers, seaweed / aquaculture farmers, resort owners, etc.)

FGD Materials: Village Map (base map); Multicolored Pens or Boardmarkers; Multicolored Paper (metacards) or Post-its; Double-sided/Masking Tape; Manila Paper (2 pcs); Guide Questions

FGD Mechanics:
1. Participants will be asked to identify the coastal and marine resources in the study area.
2. Participants will mark the areas in the village map that corresponds where the coastal and marine resources are located
3. Participants will be asked what activities transpire in the location of the coastal and marine resources and identify how households use the coastal and marine resources n the area
4. Participants will be asked what are the goods and services (ie. specific products) are derived from the coastal and marine activities, its uses and where are these are sold.
5. The responses of participants will be recorded using an FGD summary table which will also serve as the basis for transcription of the FGD results, while the map from items 1 and 2 can be utilized as additional material for the report writing.

FGD Guide Questions:

1. What are the uses of coastal and marine resources in the study area?
   a. KS 14 and KS 15: Using a map, identify and mark the location of your community's coastal and marine resources. Where are the key fishing areas? the aquaculture areas? mangrove areas? coral reef areas? beach areas? seaweed areas? farming areas? residential areas?
   b. KS 14: What activities transpire in the coastal and marine resources in the area? Are people involved in fisheries? Tourism? Aquaculture? Mariculture? Marine transportation? Agriculture? Coral mining? Sand mining? Dredging? Oil-gas development? Mangrove clearing? Forest clearing? Industry and conservation?
   c. KS 14: How do households use the coastal and marine resources in the area?
   d. KS 24: Who are the users of the coastal and marine resources in the area? Fishermen from what area? Resort/hotel owners and employees? Aqua/mariculture farmers and employees? Tourists? Watersport operators?

2. KS 15 and KS 19: What are the goods and services (.ie. specific products) from the coastal and marine activities? Where are the specific locations in the community map where these goods/ Services/specific products are found or caught (site of bay/reef/mangrove)?
   a. What are the extractive goods that are derived from the coastal and marine activities? (e.g. fish species - , mangrove wood, coral products, sand, etc)
   b. What are the non-extractive goods that are derived from coastal and marine activities? (e.g . tourism, recreation activities, aquaculture, etc.)
   c. What species of fishes are caught in the different fishing areas of the community? What are other marine life/products harvested in the different coastal and marine areas?

3. KS 16: What are the specific methods or development being employed (e.g. hook and line, traps, nets, guest houses, scuba,diving gears, etc) for each coastal and marine good and services?

a. What is the method being used or employed to derive each coastal and marine good and services?

b. What materials and/or fishing gears are used for each kind of fish caught or marine product harvested?

4. KS 23: What are the primary household use for each good or service from coastal/marine activities? The objective is to determine how the household uses the products of the marine activities.

a. What do you do with the fish catch/products from these activities?

b. Are these products/goods and services for sale? used for own consumption? For leisure?

5. KS 18: For goods and products that are being marketed or sold,

a.. Where is the primary market for each of these products or services?

b. For products or services having multi-markets, what is the percentage distribution for each?

6. KS 17: Determine the value of each costal and marine good/service/product, using a 3-point scale of high – medium – low. The value may be based on the price of and demand for the good/service /product.

7. KS 21: Identify the type of negative impacts on coastal and marine resources of each coastal and marine activities, as perceived by the resource users and the general public. Possible impacts are over-fishing, pollution, anchor damage, nutrient loading, etc.

8. KS 20: Identify the level of impact of each coastal and marine activity, according to its good/service/product, as to none (no impact on resources), low (minor impact on resources), medium (moderate impact on resources), and high (severe and irreversible impact)

9. KS 22: Level of use by outsiders refers to the amount of outsiders using the coastal resources relative to the amount of local users from the community. What is the current level of use by outsiders for each coastal and marine activity? Responses are on a 3-point scale of High (a great deal of use by outsiders) – Medium (moderate use by outsiders) –Low (minor use by outsiders)

Format: Sample Summary Table for H10-14:

KS 14: Coastal and Marine Activities *(Column 1)* *Note: Indicate KS24 involved stakeholder groups*	KS 15: Coastal and Marine Goods and Services *(Column 2)*	KS 16: Device/ Methods/ Gears Used (identify specific method to acquire the goods and services or the device being employed (*(Column 3)*	KS 23: Household Uses (eg. sale, consumption, giveaway, payment to labor, etc) *(Column 4)*	KS 18: Household Market Orientation (eg Within the barangay/ outside the barangay) *(Column 5)*
1.	1.	1.	1	1
	2.	2.	2	2
	3.	3.	3	3
2.	1.	1.	1	1
	2.	2.	2	2
	3.	3.	3	3
3.	1.	1.	1	1
	2.	2.	2	2
	3.	3.	3	3

Some Options for Column 1: A-Fishing; B- Mariculture/ Aquaculture; C-Tourism; D-Pebble-gathering/ Quarrying;   E- Seaweed farming, G-Others_____
No options for Column 2, 3 – Write the answers using metacards
Some Options for Column 4: A- Sale   B- consumption; C- Giveaway; D- Payment to labor   E-Others _____
Options for Column 5: A-Within the barangay; B- Outside the barangay, C- Others _____

KS 14: Coastal and Marine Activities Note: Indicate KS24: involved stakeholder groups	KS 15: Coastal and Marine Goods and Services	KS 17: Value of Goods & Services (High/Medium/Low)	KS 21: Type of Impact on Coastal Resources	KS 20: Level of Impact on Coastal Resources (None/Low/ Medium/HIgh)
1.	1.	1.	1	1
	2.	2.	2	2
	3.	3.	3	3
2.	1.	1.	1	1
	2.	2.	2	2
	3.	3.	3	3
3.	1.	1.	1	1
	2.	2.	2	2
	3.	3.	3	3

KS 15: Coastal and Marine Goods and Services	KS 19: Use Patterns (Where the Goods/ Services are Found	KS 21: Type of Impact on Coastal Resources	KS 20: Level of Impact on Coastal Resources (None/Low/ Medium/HIgh)	KS 22: Level of Use by Outsiders (Low/Medium/ High)
1.	1.	1	1	
2.	2.	2	2	
3.	3.	3	3	
1.	1.	1	1	
2.	2.	2	2	
3.	3.	3	3	
1.	1.	1	1	
2.	2.	2	2	
3.	3.	3	3	

D.2. H19. Compliance *(Pagsunod)* and H20. Enforcement *(Pagpapatupad)*

Compliance measures to what extent people are perceived to be   complying with regulations. Ask the FGD participants about   their perceptions pertaining to compliance with coastal   management rules and regulations. Enforcement is measured by people's perceptions of how much the rules and regulations are   enforced. This is similar to compliance, except compliance addresses people's behaviour (i.e. are people adhering to the rules?). Enforcement addresses management activities, such as patrolling, imposing fines and confiscating illegal gear.

FG Members: Resource Managers and Resource Users

FGD Materials: Metacards and/or Paper Cut Outs or Pictures; Multicolored Pens or Boardmarker; Double-sided/Masking Tape; Manila Paper (2 pcs); Guide Questions

FGD Mechanics:
1. Participants will be asked to enumerate rules and regulations that they aware of regarding coastal and marine resources in the study area.
2. Participants will be asked to identify which of the rules and regulations that they are aware of are related/ applicable to a list of coastal and marine resources that can be found in the study area.
3. Participants will be asked about the degree of compliance and enforcement of the rules and regulations that they mentioned using a 5-point scale.
4. The responses of participants will be recorded using an FGD summary table which will also serve as the basis for transcription of the FGD results.

FGD Guide Questions:

1.   Are there rules and regulations about the use or development of coastal and marine resources?
2.   What are the rules and regulations that you know of that pertain to coastal and marine resources in the area? (Output: Generate a listing of the rules and regulations)
3.   Which of these rules are related/ applicable to: (1) fishing; (2) mangrove use; (3) aquaculture; (4) resort/pension house/ hotel development); (5) residential development; (6) watersports; (7) recreational climbing/ trekking/ camping; (8) pebble gathering; (9) tourist transportation; (10) others (Output: Categorization of rules and regulations)
4.   To what extent do people (resource users) generally comply with each of the coastal management rules and regulations? Which rules do most people comply with? The group should arrive at the answer through consensus, using a scale of 1 to 5 (1= no compliance, 5= full compliance). Take note of the group's basis/bases for their rating.
5.   To what extent are these rules pertaining to coastal management rules and regulations enforced? The group should arrive at the answer through consensus, using a scale of1 to 5 (1 = no enforcement, 5=full enforcement)   Take note of the group's basis/bases for their rating.
6.   How many people are apprehended because of non compliance to regulations concerning marine activities?

Format: Sample Summary Table for H19-20:

Rules	Rules Applicable to what Resource?	Levels of Compliance	Levels of Enforcement
1.		5 4 3 2 1 9	5 4 3 2 1
2.		5 4 3 2 1 9	5 4 3 2 1
3.		5 4 3 2 1 9	5 4 3 2 1

Notes to Facilitator and Co-Facilator: Column 1 will be accomplished by writing the responses of participants; Columns 2 will be accomplished by adding the picture/ drawing of the resource or by writing corresponding codes pertaining to the resources; and Columns 3-4 will be completed by encircling the codes that correspond the participants' responses

D.3.   KS30: Informal Tenure and Rules, Customs and Traditions

FG Members: Resource Users and Managers

FG Materials: COLORED CARTOLINA METACARDS, PENTEL PENS, DOUBLE SIDED TAPES

FGD Mechanics:
- The group will be given 5 minutes to do the activity.
- Write on the Manila paper the different coastal/marine activities.
- Ask them to enumerate any beliefs, customs and traditions, informal tenure arrangements, and informal rules that are being observed in the community.

FGD Guide Questions:
1. Are there informal management system - tenure and rules, customs and traditions – being observed by the community of resource users?
2. What are these informal tenure and rules, customs and traditions (provide brief statement) ? To what coastal/marine resource and/or activity does each apply

Coastal/Marine Activities	Customs and Traditions	Informal Tenure Arrangements	Informal Rules
Fishing			
Tourism			
Aquaculture			
Agriculture (coconuts, nipa,			

mango, cashew, etc)			
Sand Mining			
Coral Mining			
Seaweeds Farming			

D.4. KS31: Stakeholder Participation

FG Members: Resource Users and Managers

FG Materials: COLORED CARTOLINA METACARDS, PENTEL PENS, DOUBLE SIDED
        TAPES

FGD Mechanics:
- The group will be given 5 minutes to do the activity.
- Using the FGD 9 output, ask the participants to determine if the enumerated stakeholders have actively participated in the coastal management decision-making by writing YES or NO in their metacards.

FGD Guide Questions:
1. Are stakeholders involved in coastal management/resource decision making?
2. If yes, who are the stakeholders involved? In what way do they participate?

Stakeholder	Stakeholder Participation

E.   *Writing the FGD Report*

Data Analysis
1. Develop a plan for analysis consisting of:
   - background of the research
   - objectives
   - methods
   - discussion details
   - focus group discussion guide
2. Analyze the content of the group discussion by
   - reviewing the notes from the focus group
   - listening again to the cassettes from the session (if tape recorded)
   - grouping research findings according to key themes
   - identifying the different positions that emerged under each key theme

- summarizing each of the different positions and assess the extent to which each position was held by participants
- pulling out verbatim phrases that represent each position.
3. Synthesize the group discussion by:
  - reviewing the notes of each discussion made by the moderator
  - identifying the recurrent ideas that came out during the discussion
  - interpreting these recurrent ideas based upon other findings that emerged in the groups

F.   Reporting and Use of FGD Results

The report lists all the themes that have become apparent, and it notes any diversity of opinions or thoughts expressed by the participants. Some reports may also include complete transcripts of the FGD. This information is then used as a basis for further research studies or other focus groups If the information is used for subsequent focus groups, the client uses the first group as a learning experience, making any adjustments to the discussion topics as needed to improve the research objectives.