

Transaction Costs of a Community-Based Coastal Resource Management Program in San Miguel Bay, Philippines

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TRANSACTION COSTS OF A COMMUNITY-BASED COASTAL RESOURCE MANAGEMENT PROGRAM IN SAN MIGUEL BAY, PHILIPPINES

Zenaida M. Sumalde and Suzette L. Pedroso¹

EXECUTIVE SUMMARY

Community-based coastal resource management (CBCRM) is a scheme that gives a community a certain degree of management responsibility, such as the ability to supervise access and use of the coastal resource. The Fisheries Sector Program (FSP) is one of the government-initiated CBCRM programs intended to augment the income of small-scale fishermen and preserve the coastal resource. However, despite the numerous studies carried out relating to CBCRM programs, none dealt with the transaction costs (TC) associated with their implementation.

This study generally aims to estimate and analyze the TC associated with the implementation of a multi-level and multi-stakeholder program such as a CBCRM program. TC are indirect costs incurred in reaching and enforcing agreements. Tools for analysis used in this study included the estimation of direct project costs (DPC) and TC at each phase of the San Miguel Bay Coastal Resource Management Program (SMB-CRMP) and their distribution among the different stakeholders; determination of transaction costs share (TSC) and analysis of factors affecting TC. Similarly, effect of TC on performance of people's organizations (POs) was analyzed.

This study was conducted in the San Miguel Bay coastal area which is one of the pilot sites of the FSP. Thirty-eight POs in various barangays from seven municipalities with jurisdiction over San Miguel Bay were the focus of the study. The POs were classified as successful or less successful based on the success index developed from the criteria and indicators (C&I) that were adopted, modified and field-validated for applicability. Transaction costs incurred by the POs, local government units (LGUs) and the other stakeholders at the different phases (i.e., institutionalization, capability building and implementation) of the SMB-CRM were accounted for.

Results of the study show that TC accounted for 37% of the total project cost (TPC). The instability of financial support resulted in high TC, which was estimated to be 86% of the TPC during the implementation phase. Further

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analysis of TC by phase as a share of the total TC show that the implementation phase contributed the highest share of 74% to the total TC. This may be attributed to the minimal budgetary allocation for the DPC during the implementation phase. The share to the total TC was highest among the POs (especially the successful ones) who were beneficiaries of the program. A large part of the TC represents the value of their time spent in CRM activities.

The number of people involved in the transactions, number of activities undertaken and performance of the POs were among the factors found to have significant effect on the TC. Results of the analysis also show that while higher TC led to better performance of the stakeholders at the initial stage of project implementation, an increasing level of TC eventually slowed down the performance of the parties involved in the project.

Based on the results, this study makes the following policy recommendations:

- (i) policymakers at the national level should consider the TC involved in implementing program activities particularly at the local level;
- (ii) the higher share of the POs to the total TC points to the need for the provision of initial funding for projects to be implemented at the local level;
- (iii) a high level of TC will slow down the performance of the parties involved in the project, hence, the need for provision of funding during the initial stage of project implementation; and
- (iv) there is a need for a study that will look into the gender dimension of TC.

The study was not able to address the last concern due to the absence of gender-segregated field data.

1.0 INTRODUCTION

1.1 Background

Community-based resource management (CBRM) became popular in the 1990s due to its feature of mobilizing communities to participate in planning, implementing and managing the coastal resource. The concept of community-based management was conceived based on the lessons learned from the management measures of governments that employed regulatory instruments² in promoting resource conservation. These instruments have been proven ineffective in achieving the goals of conservation and sustainability due to the perverse incentive system brought about by the top-bottom approach and the lack of participation in planning by the beneficiaries (Munro, Bingham and Pikitch, undated).

CBRM, which placed considerable emphasis on the role of communities in resource management, is a policy that displaced the top-bottom approach. In the Philippines, the government has implemented a number of CBRM programs and projects in coordination with non-governmental organizations (NGOs), people's organizations (POs) and international organizations. These CBRM programs/projects cover various ecosystems including upland forests and coastal areas (Bailey, 1997). Although CBRM gained momentum only after the passage of the Local Government Code (LGC) in 1991, the concept has been used in several development programs/projects. A pioneering CBRM program in the Philippines was the Central Visayas Regional Project-I implemented in 1984 until 1991.

Although strategies of CBRM vary by geographical location and type of ecosystem, they all share the same objective of increasing the resource capabilities of local communities and of encouraging them to establish new resource management regimes to facilitate the sustainable management of local resources (Bailey, 1997). In this scheme, communities are given a certain level of management responsibility, including the ability to regulate control over access and use of the resources. Thus, community-based coastal resource management (CBCRM) is a management policy where the communities are given greater responsibilities over the activities that aim to sustain the use and management of economically and ecologically valuable resources in the coastal areas. Concepts and experiences in CBCRM, which tackled poverty alleviation and rehabilitation of coastal resources, have been pioneered in the Philippines (Hancock, 1994).

² Examples of these instruments are stewardship contract, licensing, annual allowable cut and concessions for forestry; closed season, gear restrictions, licensing, ITQs, limited entry, etc. for fisheries.

One of the government-initiated CBCRM programs in the Philippines is the Fisheries Sector Program (FSP) of the Department of Agriculture (DA). This five-year program aims to conserve the coastal resource and diversify the income sources of the low-income, small-scale fishers. It was actively promoted through the Local Government Code (LGC) and several other initiatives in the early 1990s. The FSP was prepared to enact the first phase of the government's systematic efforts in addressing the following goals: (i) regeneration, conservation and sustained management of aquatic resources with balancing fishing effort to maximum sustainable yield; (ii) rehabilitation and protection of the coastal environment; and (iii) alleviation of poverty among municipal fishermen through the provision of an alternative livelihood.

Geographically, the FSP covers 12 of the country's priority bays, one of which is the San Miguel Bay (SMB) in the Bicol Region (Region V). As an institutional reform of the FSP to conserve the SMB, the San Miguel Bay Management Council (SMBMC) was formed. The SMBMC is expected to formulate plans, generate funds and carry out all the activities related to resources management and conservation of the Bay. It is composed of the mayors of the seven municipalities with jurisdiction over the SMB, representatives from each of the fisherfolk's organizations, academe, NGOs, and private sector. (Details of the FSP-SMB and the study area are presented in Section 2.0.)

1.2 Statement of the Problem and Significance of the Study

CBCRM has been viewed as the building block for ecologically and economically sustainable fisheries (Pinkerton and Weinstein, 1995). However, a review of the different CBCRM programs in the Philippines showed that it is not a panacea for resource conservation and sustainability (Pomeroy, et al. 1996). The study reported that while there were successful CBCRM programs, there were also less-successful ones. Reasons for this ranged from personal to economic and political factors. Policies are normally formulated at the national level but implementation and enforcement are carried out by the local government units (LGUs) and usually involve different groups of people (Field and Olewiler, 1994). Thus, the policies are normally set up without much thought of transaction costs (TC) on the assumption that the LGUs will find the necessary resources for enforcement, monitoring and motivation. This is exactly the setup of the FSP-SMB-CRMP in the Philippines in general. As a participatory approach to CRM, the issue of TC associated with implementation is often overlooked.

Given the multi-stakeholder nature and the multi-objective character of the SMBMC – a body created to manage the resource – the TC would be expectedly high and these need to be shared by each party. Unfortunately, no study relating to TC of this type of organization has been conducted in the Philippines.

In addition, the definitions of TC and how meaningful these definitions are in applied research remain an issue. Moreover, the aspect of the distribution of the TC among transacting parties is still wanting. Answers to these issues and questions would be very important for policymakers in designing community-based programs and other institutional reforms. There are also other issues related to TC that have not been fully explored.

Kuperan, et al. (1998) estimated the TC of a co-management approach in a fisheries project in the Philippines. His study focused on a specific project: a fish sanctuary implemented in a Zambales village. The study estimated the TC as a whole but did not show the distribution of the TC among the parties involved. Considering that CBCRM programs involve several transacting parties, it is useful to know how the TC are distributed among the parties. No study has been conducted so far that looked into the distributional aspect of the TC. This information would be useful in formulating policies at the national level, particularly the consideration of TC in targeting output or performance and budgetary formulation. Thus, this study was carried out.

1.3 Research Objectives

In general, this study aims to estimate and analyze the TC associated with the implementation of a CBCRM program in San Miguel Bay, Philippines. Specifically, it aims to:

- a) assess performance of the CBCRM project using the criteria and indicators adopted from the Center for International Forestry Research (CIFOR) and Ruitenbeek and Cartier (1998);
- b) estimate the TC of the evolving SMB-CBCRMP and their distribution among the various parties involved in the transactions;
- c) evaluate the TC in relation to the performance (success or failure) of the program and of the POs involved;
- d) identify and analyze the factors affecting TC;
- e) explore the different definitions of TC; identify how meaningful they are in applied research; identify and quantify a more “preferred definition” that specifies the different components of the TC; and
- f) identify policy implications based on the results.

1.4 Methodology

Place and Scope of the Study

The study was conducted in the San Miguel Bay coastal area. It focused on the seven LGUs or municipalities and the POs within each LGU. The seven LGUs were: Mercedes and Basud in Camarines Norte; and Cabusao, Calabanga, Sipocot, Siruma and Tinambac in Camarines Sur. A total of 38 POs were sampled based on the recommendation of the municipal agricultural officer of each LGU and on the willingness of the POs to cooperate with the study. Transactions made by all seven municipalities and POs during the three phases of the CRM program were taken into account. In addition to the LGUs and POs, the study also analyzed the activities performed by other parties involved in the SMB-CRM. These other parties included the FSP-BFAR-DA, NGO, DA Regional Field Unit-Region 5 (DA-RFU5) and others.

The 38 POs were classified into two categories: successful POs and less-successful POs. Initially, the classification was based on the key informants' perception. However, based on the criteria and indicators of success listed by the CIFOR and the list of economic criteria by Ruitenbeek and Cartier (1988), a success index was formulated, field tested and adopted in reclassifying the POs. Details of the performance indicators and classifications of the POs are discussed in Section 3.0.

Data Gathered and Sources

The study used both primary and secondary data. Primary data or information including perception about SMB, POs, agencies involved, and direct and indirect benefits were obtained from focused group discussions (FGDs) among key informants from the LGUs and POs.

Separate FGDs were conducted among representatives of NGOs, DA-RFU, POs and Barangay Councils in the seven LGUs, and the mayor and Municipal Agricultural Officer (MAO) or the person in charge of the fisheries program in each LGU. A separate interview was, likewise, conducted with the former project manager of the SMBMC.

Secondary data consisted of records of activities, lists of people involved, time involvement and project costs contributed by the different parties involved in the FSP-SMB. These parties were the FSP-BFAR-DA, Regional Field Unit-Region 5 (RFU5), Caceres Social Action Foundation Inc. (CASAFI), LGUs, Barangay POs and others. Relevant information was obtained from the records/documents of CASAFI, DA-RFU5, POs and LGUs, particularly the MAO.

Analysis of Data

Tools for analysis of data consisted of the estimation of TC and project costs, determination of transaction costs shares (TCSs), distribution of TC and project costs, discussions of the factors affecting TC, and success criteria and indicators. Provided subsequently were further explanations on how these tools were employed.

Estimation of Direct Project Costs and Transaction Costs

Direct Project Costs (DPC) related to CRM by the parties involved were directly obtained from available records. The DPC consisted of the actual expenses necessary to carry out the FSP-CRM activities. TC consisted of the cash costs and non-monetary contributions of the parties involved in enforcing the activities at the different stages of FSP-CRM. Non-monetary costs included the value of time spent attending to CRM-related activities. For the POs/fishers, the value of time spent in the planning, follow-up and monitoring activities was estimated based on the expected net income from fishing, which was classified into lean and peak seasons. For the other parties involved, the opportunity costs of time were based on their respective salaries on a daily basis. TC were computed for each PO classification and for each stage of the CRM program. These costs were expressed on a per PO/barangay basis and on a per participating member basis.

Distributions of DPC and TC

The distributions of DPC and TC were computed to ascertain the relative share of the different parties involved in the transactions. As such, these values determined which party shared the greater portion of the costs at each phase of the CBCRM program. The values were derived by finding the proportion of each party's TC and DPC to the estimated total TC and total DPC, respectively. This was done for each of the three phases of the CRM program.

Transaction Costs Share (TCS)

The TCS was computed as share to the TPC and was disaggregated by phase of CBCRM implementation. As share to the TPC, the ratio of the TC to the TPC was computed; where the TPC are equal to the sum of the DPC and TC at each phase of the CRM program. To further analyze the TC, the share of the TC for each phase to the total TC was estimated. These estimations are not really alternative ways of computing TCS; rather, they give different results based on the objective of the estimation.

Analysis of the Factors Influencing TC

Several factors were hypothesized to affect TC. These included the number of PO members, income of the barangay/PO, distance of PO to the town or service center, number of PO activities and the success index. Regression analysis was carried out to determine which of these hypothesized variables affect the TC. In equation form, the relationship of the TC with the explanatory variables is expressed as:

$$TC = a + bN + cY + dD + eP + fA + u$$

where: TC = transaction costs
N = number of members
Y = income of PO, represented by the internal revenue allotment of the barangay, in pesos
D = distance of the barangay from the town or service center, in km
P = performance dummy; 1 if successful and 0 otherwise
A = number of activities conducted by the PO
u = error term
b, c, d, e, f = regression coefficients

TCS and POs' Performance

It was hypothesized that the size of the TC affects performance of the POs. To test this hypothesis, a regression analysis was carried out with the success index as the dependent variable and the TCS as the explanatory variable. To test further what happens to the success index as the TCS gets higher, the square of the TCS was included in the explanatory variable. The equation for this test is as follows:

$$SI = a + b TCS + cTCS^2$$

where: SI = success index estimated for each PO
TCS = transaction costs share
a, b, c = regression coefficients

2.0 THE STUDY AREA AND THE FISHERIES SECTOR PROJECT

2.1 The Study Area

The study was conducted in the San Miguel Bay coastal area covering seven municipalities, namely: Mercedes and Basud in Camarines Norte and Cabusao, Calabanga, Sipocot, Siruma and Tinambac in Camarines Sur (Figure1).

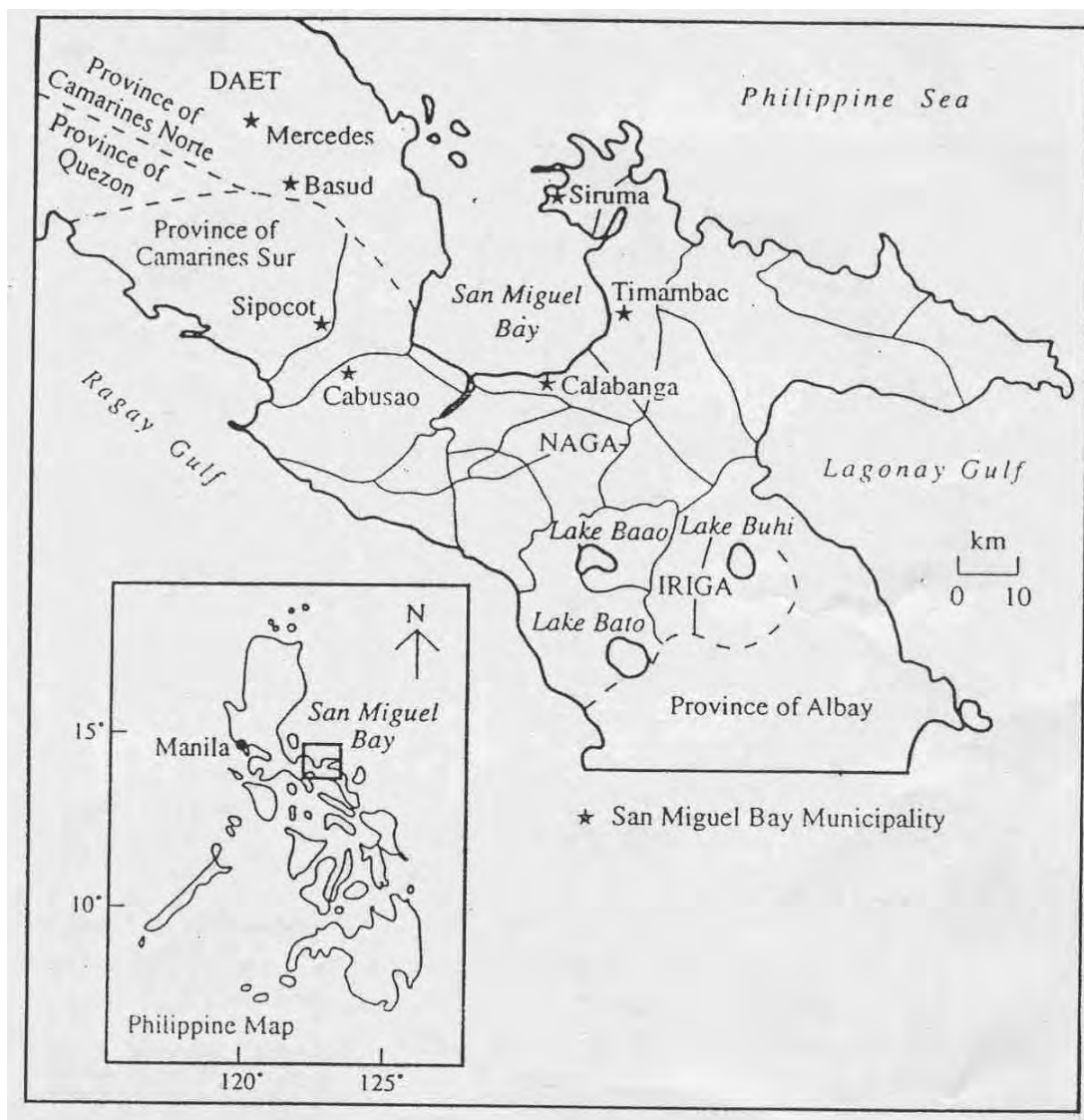


Figure 1. Map of San Miguel Bay Coastal Areas

The San Miguel Coastal Zone consists of the following:

- All water areas and islands encompassed by the mean high water spring tide (MHWST) level of the mainland shore and a line running eastward from Grove Pt., Camarines Norte (122°18'14"E, 14°08'06"N) and southeast to Quinabusan Pt., Camarines Sur (123°20'23"E, 14°06'19"N).
- All land areas from MHWST level of the shore going inland to a distance of 5 km or from the outer boundary of the adjoining watershed, whichever comes first.

The coastal zone's inland boundaries were selected to include areas with a high population dependence on coastal areas where land activities have an immediate impact on the coastal resource. The coastal zone covers roughly 1,919 km² consisting of 1,115 km² of water area and 18 km² of coastal land area. This zone encompasses portions of the seven coastal municipalities, as listed above (SMB-ICFM Plan, 1994).

Biophysical Environment

The coastline of SMB measures 280 km from Grove Pt. in Mercedes to Quinabusan Pt. in Siruma with a seaward boundary measuring 40 km between these two points. The widest distance in the Bay extends 29.7 km.

The climate in San Miguel Bay is characterized by no dry season, with pronounced rainfall from November to January. SMB is a shallow estuary with an average depth of 4.0 fathoms. Soft-bottom areas with sandy or muddy substrates comprise 95% of the Bay's substrate. As an estuary, freshwater inflows significantly dilute seawater, especially near the mouth of the Bicol River. In addition, SMB possesses a high potential for biological production. Plankton, which forms the base food web in the aquatic environment, is abundant near the river mouths of the bay where freshwater inflows carry nutrients from the land. The Bay contains both resident species and transient species that come in from the sea to take advantage of the Bay's food abundance (SMB-ICFM Plan, 1994).

Significant Coastal Habitats

There are three significant coastal habitats in SMB: the coral reefs, mangroves and soft-bottom communities (SMB-ICFM Plan, 1994).

The reefs have a total area of 3,774 ha which is composed of 648 ha of corals, 2,885 ha of sand/rubble and 240 ha of rocks. Small beds of seagrasses and seaweeds are found in the shallow subtidal zones of most reef areas. The reefs help maintain biodiversity by supporting a multitude of organisms. The Bay's reefs contain at least 241 fish species, 41 seaweed species, 8 seagrass species, and several invertebrate species. Among the invertebrates, squid, octopus,

lobsters and crabs are included in the fishermen's catch. Both coral-reef species and pelagics are caught from the reefs. Based on the bay assessment, reef conditions in SMB range from fair to good with living coral cover ranging from 36% to 68%.

There is no recent information about mangroves in SMB. The data available was that of 1987, which reported about 1,402 ha of mangroves located mostly on the coast of Siruma and Tinambac. There are 13 species of mangroves in the Bay, the most dominant of which is the *Rhizophora apiculata*. It was reported lately, however, that there has been a decrease in the mangrove area due to the establishment of fishponds in the Bay. The importance of mangroves to the Bay's fisheries resources can be inferred from the catch composition of trawlers. It was reported that about 42% of the fish species caught by trawlers are mangrove dwellers.

The soft-bottom communities consist of tiny organisms that burrow into the sandy or muddy substrate. These communities function as the food supply for demersal fish and shrimp species.

2.2 The FSP – San Miguel Bay

The co-management approach to CBCRM was adopted in the implementation of the FSP in San Miguel Bay. The FSP is a new strategy of sustainable fisheries management that includes a package of policy and institutional reforms and strategic interventions aimed to rationalize the utilization of fishery resources. The FSP mainly aims to help ameliorate the income of small fishers and to conserve the fisheries resource. For SMB, the main output was the institution of the San Miguel Bay Management Council (SMBMC) which was expected to carry on the programs identified in the formulated Integrated Coastal and Fisheries Management Plan (ICFMP). The program covers the seven municipalities or LGUs with jurisdiction over the Bay. These consist of two municipalities in Camarines Norte, namely: Mercedes and Basud; and five municipalities in Camarines Sur, namely Cabusao, Calabanga, Sipocot, Siruma and Tinambac.

Components/Stages of the FSP-SMB

In general, the FSP has six major components:

- (i) resource and ecological assessment;
- (ii) coastal resource management (CRM);
- (iii) research and extension;
- (iv) law enforcement;
- (v) credit; and
- (vi) infrastructure.

Among these, CRM is considered the core of the program and the others as its support. For SMB, no records of credit and infrastructure activities were obtained but there was an enormous amount of data on law enforcement, which was considered the most important component of the FSP in the area.

Community organizing, which is also a sub-component of CRM, was contracted to an NGO in the province. Resource and Ecological Assessment (REA), on the other hand, was commissioned to the International Center for Living Aquatic Resources Management (ICLARM). The various LGUs that have jurisdiction over SMB constituted themselves to form the SMBMC.

Based on the review of records of activities available, the SMB-CRMP was divided into three phases listed below:

- 1) *Institutionalization Phase*. This phase covered activities that served as forerunner in the implementation of CRM. The activities included the REA study, conceptualization and organization of SMBMC, signing of the memorandum of agreement (MOA) among the council members, and formulation of the ICFMP. This covered the period from mid-1993 to December 1995.
- 2) *Community Organizing (CO)/Capability Building Phase*. This phase consisted of the activities that helped prepare the community to handle coastal resource management activities. Among the activities were seminars, orientation about fisheries laws, cooperative pre-membership training, and training on livelihood activities (Table 1). The CO was undertaken by the CASAFI, an NGO based in the Bicol Region. CO primarily aimed to establish and strengthen the POs who are expected to play a key role unifying fishers to voice their sentiments, in providing women and children roles to play in the community and in helping them gain support from local governments and access to training for occupational skills (Ablaza, Carreon, 1998). The time frame of this phase overlaps with those of the institutionalization and implementation phases since the different barangay POs have different periods of organization and time frames of activities. This phase is divided into two sub-phases covering the periods from January 1993 to July 1996 (Phase I) and June 1995 to December 1997 (Phase II).
- 3) *Implementation Phase*. The project implementation phase in the study covered the period after the formulation of the ICFMP, from January 1995 to December 1998. The activities during this stage focused mainly on conducting livelihood projects, resource enhancement and resource management.

Table 1. Topics Covered During Community Organizing Phase

<i>Topic</i>	<i>Duration (days)</i>
<i>Fisheries Laws</i>	
a. Community Planning on CRM	2
b. Ecology Orientation Seminar	2
c. Orientation re: EO 240	3
d. Training on Ecological Concepts and Awareness of Local Environmental Situations for Environmental Planning	2
e. Basic Paralegal Training	3
f. Lakbay-Dagat	5
g. Orientation Seminar on Fishery Laws, Artificial Reef and Mangrove Management	2
<i>Cooperative Pre-membership</i>	
a. Basic Cooperative Orientation	1
b. Accounting for Non-Accountants	3
c. Organizational Management Training	1
d. Community Organization Volunteer Training	5
<i>Livelihood</i>	
a. Baseline Data Presentation	2
b. Group Building Seminar	2
c. Leadership Training	2
d. Planning, Monitoring and Evaluation Seminar	2
e. Self & Group Awareness Seminar	2
f. Joint Consultative Meeting	1

Note: Duration refers to time actually spent for each activity. It excludes travel and preparation time.

Some livelihood projects were funded by the FSP. Such projects were rendered with the cooperation of the DA-RFU and the LGUs concerned. Other projects conducted were products of either the LGUs' or Pos' initiatives in support of the program's objectives. Funds for these projects were solicited from institutions/agencies or apportioned from their general funds (Ablaza and Carreon, 1998).

Resource enhancement aimed to reduce the depletion of fisheries resources. Projects directed to support this concern included the establishment of fish sanctuaries and marine reserves, construction of artificial reefs and mangrove reforestation.

Resource management was undertaken through law enforcement actively participated in by LGUs, Fishers' Associations (FAs) and CRM councils at the barangay, municipal and bay levels. This aimed to intensify efforts toward protection and conservation and to abate the occurrence of destructive fishing activities in the nearshore and coastal areas.

The transaction costs incurred by all seven LGUs during these three phases of the CBCRM program implementation were taken into account and valued in this study.

2.3 Fisheries Management Issues

Management issues in SMB consisted of:

- (i) ecological issues;
- (ii) economic issues;
- (iii) social issues;
- (iv) political issues; and
- (v) administrative/institutional issues (ICLARM, 1993).

Among the ecological issues were excessive fishing effort, growth overfishing, destructive/illegal fishing methods, coral reef degradation, destruction/conversion of mangroves, pollution and siltation. It was stressed that trawling and inappropriate fishing methods are critical issues since these activities destroy the fish habitat. Moreover, such activities are non-selective in the kinds and sizes of fish caught, and can affect the quantity of catch available to small fishers.

Economic issues included lack of an alternative livelihood, low returns from fishing, lack of infrastructure support facilities and an inefficient marketing system.

Social issues included inequity/conflict between municipal and commercial fishers, inequity/conflict between municipal fishers and other users, and lack of/low moral value. Lack of public/community participation in the management of the Bay, inadequate laws/laws in need of amendments, and resistance to regulation/management were among the political issues. Limited financial resources, lack of/inappropriate institutional capabilities, ineffective enforcement of laws and regulations and excessive bureaucracy/red tape made up the administrative issues.

2.4 Description of the SMB Municipalities

Socio-Economic Profile

As of 1995, the seven coastal municipalities of SMB have a combined population of 257,896 comprising 43,352 households, 33% of which depend on fishing (Records at DA-RFU5). This figure represents 14% of the combined population of the two provinces of Camarines Norte and Camarines Sur and 6% of the regional population. These coastal municipalities occupy a total area of 1,142 km² with a population density of 210 persons/km². The total number of

fishers is estimated to be 4,770 which excludes some 500 who are engaged on a part-time basis.

The types of municipal fishing gears operating in the bay are classified into gill-net, lift-net, filter-net, fish-corral, mini trawl, hook-and-line, push net and fish-pot. Trawls and purse-sienes also operate outside the bay. Gears used by small trawlers range generally from 1 to 3 GT, use 68-160 hp engines and have outriggers. Medium trawler gears, which are technically commercial vessels ranging from 3 to 6 GT, are often falsely registered with municipalities as 2.99 GT. Nevertheless, they are classified as municipal fishing gears. Small and medium trawlers are commonly classified as baby trawlers in the Philippines and are permitted to fish legally in waters deeper than four fathoms (7.2 meters). The inclusion of baby trawlers in the same category as unmotorized gill-netters has caused problems in regulating trawling activities despite the passage of EO 240 and RA 8550 (Fisheries Code of 1998), the codes which prohibit the operation of trawls in municipal waters.

A summary of the socio-economic characteristics of the municipalities studied is presented in Table 2.

In general, the municipalities belong to the 3rd to 5th class category with annual incomes coming from internal revenue allotment ranging from P149,000 to P30,058,291.22. Income from fishing contributes a very small proportion of this income. This may be because of the very low income derived from fishing such that small fishers report no income tax to the municipality. In fact, the figures in the last column of Table 2 came from registration fees for fishing vessels and also included some fees from other activities aside from fishing. Efforts and activities of the LGUs towards fisheries concerns were also taken into account. These include: passing of municipal ordinances such as definition of municipal waters and allowable fishing gears; provision of an annual budgetary allocation for fishery projects; provision of alternative livelihoods; mangrove reforestation and registration of fishers (from FGD among LGUs).

Table 2. Socio-Economic Characteristics of the Seven Municipalities Surrounding San Miguel Bay

Province/ Municipality	Class	Land Area (ha)	Population			Household		Barangay		Income (IRA)	
			Male	Female	Total	No.	No. of fishing dep	No.	No. of fishing dep	Amount (Pesos)	Y from fishing (Pesos)
Camarines Norte											
Basud	4 th	25,509	na	na	34,663	5,468	341	29	3	18,977,674.54 (10,284,448.00)	12,443.00*
Mercedes	4 th	15,510	na	na	38,641	1,362	1,200	26	16	21,755,920.18	5,300.00**
Camarines Sur											
Cabusao	5 th	2,981	8,224	7,742	15,966	2,948	2,097	9	6	11,445,200.52 (10,281,987.00)	25,365.00
Calabanga	3 rd	16,384	17,318	28,962	46,280	11,073	3,182	48	11	30,058,291.22	45,134.00
Sipocot	4 th	24,129	30,761	27,280	58,041	10,379	496	46	5	28,272,511.29 (24,635,572.00)	none
Siruma	5 th	14,000	na	na	15,120	3,000	2,850	22	14	149,000.00 (14,107,993.00)	4,470.00
Tinambac	3 rd	29,690	na	na	49,185	9,122	4,393	44	19	22,183,997.37 (20,486,152.80)	64,600.00

Source: Records from LGUs

Note:

Information on income and/or IRA of the six municipalities is of the year 1998.

Other information on Cabusao, Calabanga, Mercedes, Siruma and Tinambac is based on year 1995. However, that of Basud and Sipocot is based on 1998 and 1994, respectively.

na = no available data

* includes live births and bicycle registration fees

** includes registration fees of live births

By municipality, Tinambac, a 3rd class municipality, is recorded to have the biggest land area of 29,690 ha. This is followed by Basud, a 4th class municipality, with 25,509 ha. The smallest municipality in terms of land area is Cabusao (5th class category) with only 2,981 ha. In terms of population, Sipocot (4th class) and Tinambac (3rd class) take the lead with 58,041 and 49,185 residents, respectively. Calabanga (3rd class) meanwhile has the highest number of households. This may be because, Calabanga has more urban areas compared to the other municipalities.

Of the seven municipalities, only three have a high dependency on fishing: Siruma, 95%; Mercedes, 88%; and Cabusao, 71%. These figures imply that 71% to 95% of the households rely on fishing for their livelihood. Basud and Sipocot are considered least dependent on fishing as shown by the smaller number of households and barangays who depend on fishing. This may be because these two municipalities have few coastal barangays. It could also be noted that income from fishing constitutes a very minimal proportion of the municipalities' income. This can be attributed to the subsistence nature of small fishermen, hence, very limited income is reported to the municipal treasury. Although there are a number of big fishers and trawl owners/operators, the system of revenue collection by the LGU from these big fishers may not be very effective.

It is worth noting that except for Cabusao, all the LGUs have passed municipal ordinances relating to the conservation of San Miguel Bay. These include registration of fisherfolk, a definition of municipal waters and allowable fishing gears and a definition of seasonal operation of trawlers. The latter is specific to Tinambac where most trawlers operate. Similarly, most of LGUs have plans and projects with budgetary allocation to support their respective ordinances. For Sipocot, no budgetary allocation was provided for SMB since their planned activities are intended for Ragay Gulf which has its own funding support.

The socio-economic characteristics of the barangays will somehow affect the performance of the POs where they are located. Table 3 presents the socio-economic characteristics of the barangays where the POs included in the study are located. As shown, the barangays varied in terms of land area and population. Land area ranges from 48.58 ha to as wide as 1,313.11 ha. However, land area is not directly proportional to population and household number. For example, the smallest barangay in terms of land area (48.58 ha) has a population and households of 2,325 and 449, respectively; while the biggest barangay with a land area of 1,313.11 ha has a population of only 2,154 with 431 households. Differences in terms of distance and accessibility of the barangay from the town proper are also noticeable. That is, the closer the barangay is to the town proper, the higher the population and number of households. Not much variation in income from internal revenue allotment is noted among the barangays.

Table 3. Socio-Economic Characteristics of the Selected Barangays/POs in the Seven Coastal Municipalities

<i>Municipality</i>	<i>Barangays</i>	<i>Land Area (ha)</i>	<i>Pop'n</i>	<i>No. of Households</i>	<i>Accessibility (Travel Time)</i>	<i>Distance from Town Center (km)</i>	<i>IRA (Pesos/Year)</i>
<i>Camarines Norte</i>							
Basud	Taba-Tab*	193.42	493	88	3 hrs	7.50	281,673.00
	Mangcamagong	286.81	1,238	201	3 hrs	7.50	366,749.00
Mercedes	Caringo Island*	361.20	907	173	4 hrs	13.00	253,883.00
	Masalong-salong*	1,120.22	900	148	4 hrs	21.10	253,246.00
	Hinipaan	331.12	1,270	227	3 hrs & 45 mins	19.30	286,952.00
	Mambungalon	972.41	1,520	303	3 hrs	4.50	309,727.00
	Manguisoc	670.82	2,949	555	1 hr & 30 mins	1.00	439,909.00
	Matoog-toog	1,066.60	1,288	225	3 hrs & 30 mins	17.00	288,592.00
<i>Camarines Sur</i>							
Cabusao	Sta. Cruz*	49.33	958	174	20 mins	0.50	236,305.99
	Sta. Lutgarda*	23.08	891	163	10 mins	0.15	259,098.66
	Barcelonita	115.74	2,476	425	2 hrs & 30 mins	5.50	409,110.25
	Castillo	189.44	4,046	779	20 mins	0.50	587,131.23
	New Poblacion	199.73	1,180	235			288,577.93
	Pandan	787.53	1,933	321	1 hr & 30 mins	2.50	355,046.28
Calabanga	Cagsao*	159.40	1,087	201	1 hr & 45 mins	15.00	270,281.00
	Sabang*	295.16	4,257	794	30 mins	2.00	559,067.00
	Sibobo*	133.08	1,101	215	1 hr & 30 mins	12.00	271,555.00
	Belen	259.94	1,034	194	2 hrs & 15 mins	4.50	265,555.00
	Bonot	137.34	2,157	389	2 hrs & 25 mins	8.30	265,453.00
	Manguiring	768.81	2,659	519	1 hr	8.00	413,491.00
	Sogod	137.34	730	133	1 hr	2.00	237,757.00

Sipocot	Cotmo*	411.00	1,009	170	3 hrs & 20 mins	11.00	258,711.00
	Mangga*	210.00	1,249	226	2 hrs	9.00	258,165.00
	Anib	446.00	1,626	253	3 hrs & 45 mins	12.50	307,541.00
	Calampinay	352.00	590	103	3 hrs & 10 mins	10.00	223,365.00
	San Vicente	519.00	4,942	178	4 hrs	15.00	257,162.00
Siruma	Pamintan-Bantilan*	130.81	872	135	30 mins	1.00	250,776.00
	Poblacion*	608.28	938	144			367,393.00
	Vito*	921.64	1,675	258	2 hrs	8.00	418,181.00
	Boboan	517.64	1,063	164	1 hr & 30 mins	8.50	225,314.00
	Cabugao	572.16	1,002	167	2 hrs & 30 mins	12.00	339,421.00
	Sulpa	510.46	1,076	166	3 hrs	14.00	323,179.00
Tinambac	Bagacay*	320.94	2,462	466	40 mins	10.00	439,568.00
	Buenavista	1,059.78	1,812	321	1 hr & 30 mins	8.00	373,758.00
	Caglilog	1,313.11	2,154	431	2 hrs	15.00	408,384.00
	Daligan	591.49	1,223	233	2 hrs & 30 mins	25.00	314,123.00
	Magtang	347.94	498	97	1 hr & 45 mins	11.00	240,719.00
	Sogod	48.58	2,325	449	20 mins	1.00	425,698.00

Source: Records from LGUs.

Note:

- Income (IRA) is based on 1998 data.
- Demographic characteristics of Sipocot are as of 1994, while those of Cabusao, Calabanga and Siruma are based on 1995. The characteristics of Basud and Tinambac are as of 1998.
- Accessibility refers to the travel time plus waiting time from the barangay to the town center.
- Barangays with asterisk (*) are classified successful by Key Informants.

Similarly with the LGUs, there are barangays that have plans and budgetary allocations related to fisheries. Reasons cited by those who did not provide any budgetary allocation for fisheries concerns included the following: their coastal territory is small compared to agricultural area; they have other priority projects such as infrastructure; and the income of the barangay is insufficient to accommodate a budget for fisheries. Although the activities of the barangays are conducted in cooperation with the POs, the latter also identified some activities that they pursue. These include law enforcement (patrolling), installation of artificial reefs, cleaning of the seashore and several income-generating activities. There are POs that do not have any activities and are said to be inactive or non-functional. This will be discussed in the next section.

3.0 DEVELOPMENT OF PERFORMANCE INDICATORS

3.1 Definition of Successful and Less-Successful POs as Perceived by Key Informants

As stated in Section 1.0, the barangay POs were classified into two groups: successful and less successful. As an initial step, key informants (KIs) from the respective LGUs and the CASAFLI, the NGO that conducted the community organizing activities, and the fisherfolk's representative to the Social Reform Agenda (SRA) were consulted for the Pos' classification. Their perceived bases of classification included the extent of PO members' participation in CRM activities, particularly law enforcement and the line-up of activities to be conducted compared with the other POs. There were initially 14 successful POs and 24 less-successful ones.

3.2 Factors in Evaluating the POs

The bases for KI classification can be considered arbitrary. Chances are that during the time of community organizing and law enforcement activities, the POs are actively participating. However, chances are that they may not have the succeeding activities to sustain their members to work together. Literature shows that there are several criteria in evaluating the performance of an organization. These criteria may include, among others:

- (i) economic efficiency, equity and sustainability;
- (ii) relevance to different points of intervention (institutional and policy levels); and
- (iii) administrative applicability (national, regional, local).

As such, the study developed some criteria and indicators that eventually became the bases in evaluating the performance of the POs.

3.3 Development and Field Validation of Performance Indicators

CIFOR has listed several criteria and indicators (C&I) for evaluating success in forestry management. Similarly, Ruitenbeek and Cartier (1998) came up with the list of economic C&I. These C&I were reviewed and combinations were adopted and modified for validation in the study area. A total of 11 criteria with 25 indicators were field tested and validated for applicability in the study area (Table 4).

Table 4. List of Indicators and Success Criteria used in Evaluating Performance

<i>Criteria</i>	<i>Indicators</i>
1. A comprehensive coastal/fishery management plan is available	Resource inventory available Programs properly identified Plans are based on recent and accurate information
2. Sustained and adequate funding is available	Funds sources are identified Permanent marine reserve/fish sanctuary is adequately protected
3. Management plan is effectively implemented	Programs/projects /activities are carried out
4. Monitoring and evaluation system is in place	Documents and records of all coastal/fishery resources management activities are available List of licensed/registered fisheries and gears used are available
5. Support processes to maintain biodiversity of the coastal ecosystem are enhanced	Interventions are specific, selections are based on the attributes of the locality Local or endemic water fauna and flora are protected
6. Legal framework protects coastal/fishery resource and access	Representative areas (e.g. marine reserve/fish sanctuary/coral reefs) are appropriately managed Illegal fishing activities are apprehended Fishery laws/ordinances enforced
7. Stakeholders'/fishers' user rights are secured	Territorial rights are identified User rights are well-defined Opportunities exist for coastal communities to avail of the social and economic benefits (e.g. employment, trainings, livelihood programs) and support services (e.g. credit assistance) from the government
8. Other policies do not distort coastal resource/fishery management	Alternative livelihood program is not in conflict with objective of resource conservation
9. Equitable access to benefits from the resource and decision making	Access of small fishers to the resource Employment of coastal communities in coastal mgmt Participation of local communities in management, planning and program implementation
10. Equitable distribution of benefits	Fishery participants get the value for their efforts
11. Coastal communities/fishers participate in coastal/fishery resource management	Two-way flow of communication between the community and the government (national, local) An understanding of plans and interests between government (national, local) officials and communities and among the people in the community Conflicts are minimized or settled

Note: Modified from CIFOR C&I and Ruitenbeek and Cartier (1998). Economic Criteria and Indicators for Sustainable Management of Tropical Forest (downloaded from the Internet with permission).

These C&I were tested to evaluate the performance of the different parties involved in the SMB-CRM including the SMBMC, the seven LGUs and the different POs.

Based on these C&I, a success index was estimated for each of the parties mentioned. This was done by assigning a score for each criterion and underlying indicator such as: 2 if the indicator was met; 1 if the indicator was affected sporadically; and 0 if the indicator was not fulfilled at all.

The rating for each criterion was derived by getting the average score of the indicators. With 11 criteria and 2 as the highest score, the highest possible score that a party could get would be 22 or a success index of 1.0. The success index was derived by getting the ratio of the total score to 22. Thus, if the total score of a party is 18, the success index would be $18/22$ or 0.82. The closer the party's success index is to 1.0, the more successful it is. For purposes of classification, parties with a success index of 0.60 and above were classified as successful, otherwise, they were listed as less successful.

3.4 Success Index and Classification of the POs, LGUs and SMBMC

Based on the success index of the POs developed, the POs under each municipality were evaluated to determine their success rating. As shown in Table 5, only 10 out of the 14 POs initially classified as successful by KIs remained under the successful category. Four of the POs initially classified as successful by the KIs failed to meet the 0.60 cut-off for success. The aggregate success index of the successful POs was 0.83 while the less-successful ones had an aggregate success index of 0.36 (Table 6). The transaction costs of the POs by the success category were calculated in this study.

The same cut-off on success index was applied for the SMBMC and the seven LGUs. SMBMC achieved a success index of 0.63, an indication that the association was able to meet some of the indicators cited (Table 6). Among the criteria where the SMBMC was rated low were: effective implementation of plan; funding; monitoring and evaluation system; and legal protection of resources. These indicators must have been affected by a lack of capable manpower to manage the organization. It is worth mentioning that the mayor of one of the municipalities served as the chair of the SMBMC and a project manager was hired. However, the change in LGU leadership automatically terminated the chairmanship. Hence, no continuity of responsibility took place. In addition, it was thought that after the finalization of the ICFMP, the SMBMC would be able to prepare the full-blown proposals to be submitted to funding institutions. This did not automatically take place due to a lack of the necessary logistics.

Among the seven municipalities, only four were classified successful based on the C&I. These were the municipalities of Cabusao, Calabanga, Mercedes and Siruma (Table 6). As indicated in Table 5, these were also the

municipalities with more successful POs. Hence, it can be deduced that the success of the POs may also be a reflection of the performance of the LGUs, the latter usually giving some logistical support to the activities of the former.

Table 5. Classification of the POs by Municipality Based on the Success Criteria and Indicators

<i>Province/Municipality</i>	<i>Successful POs</i>	<i>Less-Successful POs</i>
<i>Camarines Norte</i>		
Basud	Taba-Tabá (0.86)	Mangcamagong (0.57)
<i>Mercedes</i>	Caringao Island (0.89)	Hinipaan (0.55) Mambungalon (0.44) Manguisoc (0.32) Masalong-salong (0.45)* Matoog-toog (0.36)
<i>Camarines Sur</i>		
Cabusao	Sta. Cruz (0.69)	Barcelonita (0.37) Castillo (0.08) New Poblacion (0.08) Pandan (0.48) Sta. Lutgarda (0.33)*
<i>Calabanga</i>	Cagsao (0.85) Sabang (0.85) Sibobo (0.64)	Belen (0.59) Bonot (0.45) Manguiring (0.59) Sogod (0.56)
<i>Sipocot</i>		Anib (0.32) Calampinay (0.08) Cotmo (0.45)* Manga (0.25)* San Vicente (0.10)
Siruma	Pamintan-Bantilan (0.77) Poblacion (0.82) Vito (0.92)	Boboan (0.38) Cabugao (0.27) Sulpa (0.40)
Tinambac	Bagacay (0.95)	Buenavista (0.40) Caliliog (0.40) Daligan (0.42) Magtanag (0.12) Sogod (0.12)
<i>All municipalities</i>	10	28

* Initially classified as successful by KIs.

Figures in parentheses are success indices.

Table 6. Summary Ratings for the C&I of the Different Parties Involved in CRM Activities

<i>Criteria</i>	<i>Party</i>									
	SMBMC	BASUD	CAB	CAL	MER	SIP	SIR	TIN	SPO	LSPO
1. Availability of a comprehensive coastal/fisheries management plan	2.00	0.66	1.33	1.33	1.33	0.66	0.66	0.66	1.26	0.40
2. Sustained and adequate funding available	1.00	1.0	1.66	1.66	1.66	0.66	1.0	1.0	1.80	0.49
3. Management plan is effectively implemented	1.00	1.0	2.0	2.00	2.0	1.0	1.0	1.0	1.90	0.50
4. Monitoring and evaluation system is in place	0.50	1.0	1.5	1.50	1.5	0.5	1.0	1.0	0.75	0.32
5. Support processes to maintain biodiversity of the coastal ecosystem are enhanced	1.00	1.0	2.0	1.50	2.0	0.5	1.0	1.0	1.55	0.64
6. Legal framework protects coastal/fisheries resource and access	1.00	1.0	1.66	1.66	2.0	0.66	1.0	1.0	1.70	0.63
7. Stakeholders'/fishers' user rights are secured	1.33	1.0	2.0	2.00	1.33	1.0	1.0	1.0	1.70	0.72
8. Other policies do not distort coastal resource/fisheries management	2.00	2.0	2.0	2.00	2.0	2.0	2.0	0	2.00	0.57
9. Equitable access to benefits from the resource and decision-making	1.66	1.33	2.0	1.33	2.0	1.33	1.66	1.0	1.97	1.14
10. Equitable distribution of benefits	1.00	1.0	1.0	1.00	1.0	1.0	1.0	1.0	1.60	0.79
11. Coastal communities/fishers participate in coastal/fishery resource management	1.33	1.33	1.33	2.00	1.66	1.33	2.0	1.33	1.97	1.64
Total	13.82	12.32	18.48	17.98	18.48	10.64	13.32	9.99	18.19	7.85
Success Index*	0.63	0.56	0.84	0.82	0.84	0.48	0.60	0.45	0.83	0.36

Note:

*Success Index = C&I Score divided by 22, where 22 is the maximum possible score. The closer a party's Success Index is to 0.60, the more successful it is.

SMBMC – San Miguel Bay Management Council

Local Government Units: BASUD – Basud
CAB – Cabusao

MER – Mercedes
SIR – Siruma

SIP – Sipocot
CAL – Calabanga

SIP – Sipocot
TIN – Tinambac

Barangays: SPO – Successful PO

LSPO – Less-successful PO

4.0 TRANSACTION COSTS ANALYSIS

The discussion of transaction cost economics was presented by Ronald Coase (1937) in his seminal paper “The Nature of the Firm”. According to Coase, the decision whether to have a transaction within a firm will be determined by TC. When activities involved multiple individuals and where complex activities must be coordinated over time and space, parties may attempt to reduce the uncertainties through various forms of implicit or explicit agreements that involve costly activities. In fisheries co-management, Kuperan et al. (1998) broadly categorized major cost items namely: (i) information costs; (ii) collective fisheries decision-making costs; and (iii) collective operational costs. Using Williamson’s (1985) identification of transaction costs, the first two are ex ante and the latter as ex post transaction costs. The case of the FSP-CRM in San Miguel Bay followed the co-management approach and TC could be categorized similarly with the classifications of Kuperan, et al. However, difficulties in the analysis arose since the information gathered was not specific enough to permit such categorization. As such, the study resorted to analysis of TC by phase of activities.

This section presents the analysis of TC associated with the formulation and implementation of the FSP-CRM in San Miguel Bay. It should be recalled that TC are just a component of the total project costs (TPC). Hence, the need to look into the TPC associated with the activities involved in SMB-CRMP. TPC consist of direct project costs (DPC) and TC. DPC include the direct costs necessary to carry out the activities embodied in the FSP components. TC on the other hand, include cash costs and the value of time spent in planning, monitoring, coordinating, motivating people and follow-up to enforce the activities.

4.1 Total Project Costs (TPC)

TPC incurred in the SMB-CRMP are summarized in Table 7. Estimated TPC amounting to P64.72 million consist of DPC and TC. As shown, capability building incurred the highest share amounting to 42 % of the TPC for all phases. Specific project implementation with TPC of P20.66 million contributed 32 % while the institutionalization phase incurred 26% of the TPC. The higher expenses for capability building was attributed to DPC, while for the project implementation component, the TPC was dominated by TC.

On average, TC comprised 37% of the TPC across all phases. By specific phase, project implementation had the highest TC that accounted for 86% of the TPC. For the institutionalization and capability building components, TC contributed 18% and 11%, respectively, to the TPC.

Table 7. Summary of the Total Project Costs (in Pesos) and Ratio of Transaction Costs to TPC by FSP-CRM Phase

<i>Phase</i>	<i>Total Project Costs (TPC)</i>	<i>Direct Project Costs (DPC)</i>	<i>Transaction Costs (TC)</i>	<i>TC as % of TPC</i>
Institutionalization	16,657,238 (25.74)	13,642,850 (33.40)	3,014,388 (12.63)	18.10
Capability Building	27,395,591 (42.33)	24,306,957 (59.50)	3,088,634 (12.94)	11.27
Specific Project Implementation	20,665,559 (31.93)	2,898,192 (7.10)	17,767,367 (74.43)	85.98
All Activities	64,718,388 (100)	40,847,999 (100)	23,870,389 (100)	36.88

Note: Figures in parentheses are percents of column total.

Source of basic data: Records from DA-RFU5.

4.2 Direct Project Costs by SMB-CRMP Stakeholders and CRM Phase

These consist of the direct expenses by the parties involved in the different phases of FSP-CRMP. From the records available at the RFU5, NGO, LGUs and POs, information on expenditure incurred for the three phases of the CRM program was obtained. This represent the expenses necessary to carry out the activities embodied in the FSP components. Estimates of the DPC totaled P40.845 million. Highest expenses amounting to P24.31 million were incurred for the community organizing/capability building phase. This was followed by the institutionalization phase with P13.19 million. Total expenses incurred by each transacting party for the three phases and the total for each of the phases were computed to provide a comparison of the contribution of each stakeholder involved in the activities (Table 8).

Table 8. Percentage* Contribution to DPC of the Parties Involved in Different FSP-CRM Phases

<i>Stakeholder</i>	<i>Phase</i>			<i>Total DPC</i>
	<i>Institutionalization</i>	<i>CO/Capability Building</i>	<i>Implementation</i>	
FSP/BFAR	91.6	100	8.0	90.7
DA National	2.9	-	25.5	2.8
LGUs	5.5	-	56.6	5.9
POs	-	-	9.0	0.6
<i>Successful</i>	-	-	7.8	0.55
<i>Less-successful</i>	-	-	1.2	0.09
NGO			-	-
Private Sector	-	-	0.8	0.06
Total	13,642,850	24,306,957	2,898,192	40,847,999

Source of basic data: Available records from BFAR, DA-RFU, CASAFI, LGUs, Barangay Councils and POs.

* As percent of column total.

It can be noted that the contributions of the FSP-BFAR-DA were highest for the institutionalization (91.6%) and community organizing (100%) phases. This is expected since BFAR is the agency mandated to lead the execution of the FSP, a program instituted as a multisectoral effort under the DA. The POs contributed only a minimal amount (0.6%) to the DPC.

Institutionalization Phase

The amount recorded for the FSP-BFAR-DA under the institutionalization phase covered the expenses for the Resource and Ecological Assessment (REA) which was commissioned by ICLARM, cross-visits to other CBCRM sites, maintenance and operating expenses, and personnel services. The amount recorded for the REA study may be understated since direct payments made by BFAR to individual consultants involved in the activity were not recorded at the RFU5 office and cannot be accounted for. BFAR staff said that records have been submitted to the DA main office, but because of the change in leadership, these can no longer be retrieved. For the LGUs, their contribution which accounts for 5.5% during the institutionalization phase, represented the pledges of each municipality amounting to P50,000 yearly starting in 1994. The pledge was stipulated in the MOA signed by the mayors of the respective LGUs during the formation of the SMBMC. However, it was learned from the key informants during the focused group discussions that not all the LGUs paid the pledges in full. The LGUs with few coastal barangays argued that they were not supposed to pay since they would not directly benefit from the program as they have small populations dependent on fishing. The change in the LGU administration after the local election also resulted in non-payment of the pledge stipulated in the MOA. No other direct expenses were recorded for LGUs and the POs since it was found out in the records that expenses for transportation and meals during this phase were paid for and formed part of the expenses listed under the FSP.

Community Organizing/Capability Building Phase

For the CO phase (January 1993-December 1997), all expenses were paid for by the FSP-BFAR-DA. The amount of P24,306,957 served as total payment for the NGO contracted to conduct the CO activities. In this phase, no other parties incurred direct expenses.

Implementation Phase

For the implementation phase, the amount under the FSP-BFAR-DA covered the materials and fish fry for the milkfish (Bangus) technology-demonstration farm, mangrove reforestation in one of the municipalities and the cost of office equipment for the SMBMC. The contribution of the DA amounting to 25.5% of the expenses for the implementation phase, consisted of the P739,500 procurement cost of the patrol boat donated for the law enforcement component of the program. This amount, together with the P400,000 contributed during the institutionalization phase, was separated from that of the FSP because they were not part of the FSP/BFAR budget. The contribution of the LGU came

in the form of payment for boat rental and gasoline used in patrolling the Bay, the share of the municipality for the SMBMC operation during its active period (1995-1996), and a counterpart fund for the materials used in the Bangus techno-demonstration farm. It should be noted that during the project implementation, the LGU contributed the highest share of 56.6%. On the other hand, the 9% contribution of all the POs to the direct expenses represented the costs incurred in the different CRM activities for four years (1995-1998). By classification, the contribution of the successful POs was six times more than those of the less-successful ones (Table 8).

Among the transacting parties, the largest contribution during the implementation phase was from the LGUs, with an average contribution of P234,504. The contributions of the LGUs comprised their counterpart funds in implementing CRM activities. Many of these activities were their own initiatives in line with the program's objectives. Examples of these are seaweed culture, crab culture and mangrove reforestation (Table 9). As shown, the municipality with the greatest number of activities conducted was Mercedes, which had eight, followed by Basud and Calabanga, which had four activities each. These municipalities are among those classified as successful ones (Table 6).

Table 9. CRM Activities Undertaken by the Seven LGUs, 1995-1998

CRM Activity	Municipality						
	<i>Basud</i>	<i>Cabusao</i>	<i>Calabanga</i>	<i>Mercedes</i>	<i>Sipocot</i>	<i>Siruma</i>	<i>Tinambac</i>
Law enforcement	-	x	x	x	x	x	x
Mangrove reforestation							
Installation of ARs	-	-	x	x	-	-	-
Livelihood projects	x	-	-	x	-	-	-
<i>Bangus techno-demo farm</i>							
<i>Seaweed culture</i>	-	-	x	-	-	-	-
<i>Crab fattening</i>	x	-	-	x	-	x	-
<i>Livestock dispersal</i>	x	-	-	x	-	-	-
<i>Relending for fishing gears</i>	-	-	-	x	x	-	-
Training/Seminars	-	-	-	x	-	-	-
	x	x	x	x	-	x	x
Total	4	2	4	8	2	3	2

Source of basic data: Available records from LGUs.

By specific activity, there are only 26 out of 38 POs interviewed that have conducted or are still conducting CRM activities. The other 12 POs did not function at all after they were organized. Law enforcement accounted for the highest (85%) contribution to the TPC of all POs during the implementation phase (Table 10). This activity was conducted by 19 barangay POs but only 12 claimed that they contributed a cash amount for the activity.

Table 10. Percentage* Contribution of the POs to the DPC by Specific FSP-CRM Activities

Activity	Barangay/PO		Total
	Successful	Less-successful	
Artificial reef	-	-	-
Bangus culture	0.07	0.58	0.14
Billboards	-	0.14	0.02
Cleaning of seashore	-	5.80	0.76
Law enforcement	91.48	41.07	84.83
Lobster culture	4.21	-	3.65
Mangrove reforestation	0.23	1.90	0.46
NFA rice retail	-	41.80	5.50
Seaweed culture	3.97	8.71	4.59
Tree planting	0.04	-	0.04
Total (in Pesos)	227,052	34,450	261,502

Source of basic data: Available records from POs.

* As percent of column total.

The second activity which received the second-largest contribution was NFA rice retail which was conducted by only one PO. Seaweed culture, on the other hand, was accomplished by five POs which are based in Siruma and Mercedes. The activity represents 4.6% of the total DPC of all the POs.

Lobster culture, which contributed 4% of the POs' direct expenses, was carried out in four successful barangays: Taba-Taba in Basud; and Cagsao, Sabang and Sibobo in Calabanga. The expense was incurred by the POs as counterpart in installing fish cages. However, it was reported that the project was not pushed through due to the failure of the LGU-MAO to secure the lobster stock. As a result, the POs and the community were disappointed, thus they expressed reluctance towards future projects of the LGU-MAO. In almost all activities, contributions of the successful barangays were notably higher than the less-successful ones. The same pattern was also noted on per-PO and per-person bases (Tables 11 and 12).

On the per-PO basis, each contributed P41,647, on average, to the DPC. However, it is apparent that the expenses of each successful PO (P48,762 on the average) were more than twice that of the less-successful POs (Table 11). By expense category, law enforcement accounted for the highest share to the DPC of the successful POs. On the other hand, the rice retailing activity, conducted by one of the less-successful POs, was recorded to have the highest (66.41%) share to the DPC of the less-successful POs.

Table 11. Percentage* Contribution to the DPC, per Barangay/PO and by Specific FSP-CRM Activities

<i>Activities</i>	<i>Barangay/PO</i>		<i>Total DPC</i>
	<i>Successful</i>	<i>Less-successful</i>	
Bangus culture	0.11	0.23	0.13
Billboards	-	0.23	0.12
Cleaning of seashore	-	9.22	4.80
Law enforcement	85.19	9.32	44.39
Lobster culture	4.90	-	5.73
Mangrove reforestation	0.37	0.75	0.41
NFA rice retail	-	66.41	34.58
Seaweed culture	9.23	13.83	9.60
Tree planting	0.20	-	0.24
Total (in Pesos)	48,762	21,684	41,647

Source of basic data: Available records from Barangay POs.

* As percent of column total.

Table 12. Percentage* Contribution to the DPC, per Person and by Specific FSP-CRM Activities

<i>Activity</i>	<i>Barangays</i>		<i>Total</i>
	<i>Successful</i>	<i>Less-successful</i>	
Bangus culture	0.16	1.22	0.27
Billboards	-	0.16	0.05
Cleaning of seashore	-	5.47	1.67
Law enforcement	84.41	33.99	65.10
Lobster culture	12.37	-	14.89
Mangrove reforestation	0.62	2.70	0.77
NFA rice retail	-	47.06	14.37
Seaweed culture	2.38	9.40	2.87
Tree planting	0.04	9.40	2.87
Total (in Pesos)	4,825	1,224	4,009

Source of basic data: Available records from POs.

* As percent of column total.

During the course of the study, it was learned that the Barangay Councils have recently made resolutions to allocate certain percentages of their development funds to CRM, particularly to law enforcement. These allocations were not yet included in the analysis since they were just starting. Similarly, the LGUs' recent plans with regard to additional allocation for the implementation of CRM activities were not included in the analysis. If this allocation of funds by the LGUs materializes, it can be considered as an important milestone of the CRM program.

4.3 Transaction Costs Analysis

Total transaction costs (TC), which were estimated at P23.870 million, consist of indirect expenses related to the activities of each of the three phases (Table 13). These included, among others, cash costs and foregone income or opportunity costs of time in planning, coordinating, motivating members, communication, and follow-ups related to implementation of activities. However, no complete specific records were available to enable the analysis of TC by these specific activities. Rather, TC were analyzed based on broad phases of the FSP-CRM namely: (i) institutional phase; (ii) community organizing/capability building phase; and (iii) project implementation phase and the distribution of the TC among the stakeholders or transacting parties for each phase.

In general, the POs have the highest contribution of 78% to the total TC (Table 13). This was followed by FSP-BFAR with 16.4%. The significantly higher share of the POs compared to the other stakeholders may be explained by the active participation of the former in the community organizing and project implementation phases. Details of these are discussed in the succeeding sections.

Table 13. Percentage* Distribution of Total Transaction Costs by Phase of FSP-CRM Activities and by Various Stakeholders

Stakeholder	Phase			Total
	<i>Institutionalization</i>	<i>CO/Capability Bldg.</i>	<i>Implementation</i>	
FSP/BFAR	94.5	-	5.9	16.4
DA National	1.2	-	-	0.2
LGUs	3.2	-	6.5	5.3
POs	-	98.8	87.5	77.8
NGO	0.3	1.2	-	0.3
Others**	0.8	-	-	0.1
Total (in Pesos)	3,014,388	3,078,634	17,767,367	23,860,389

Source of basic data: Available records from BFAR, DA-RFU, CASAFI, LGUs, Barangay Councils and POs.

* As percent of column total.

** Includes representatives from PNP, DOJ, trawl operators and academe.

Institutionalization Phase

For this phase, the total transaction costs were estimated at P3,014,388 (Table 13). This amount accounted for the opportunity cost of time spent by all the parties involved that was valued at P165,918 and the cash expenses amounting to P2,848,470 (Table 14).

Table 14. Percentage* Distribution of TC by Components and by Various Stakeholders During the Institutionalization Phase of FSP-CRM

<i>Stakeholder</i>	<i>TC Component</i>		<i>Total TC</i>
	<i>Cash Costs</i>	<i>Value of Time</i>	
FSP-BFAR	100	-	94.50
RFU	-	22	1.20
LGUs (seven municipalities)		58	3.20
POs		-	-
NGO	-	5	0.25
Others	-	15	0.82
Total (in Pesos)	2,848,470	165,918	3,014,388

Source of basic data: Available records from BFAR, DA-RFU, CASAFI, LGUs, Barangay Councils and POs.

* As percent of column total.

The FSP/BFAR was the main contributor to the TC with expenses mostly in the form of cash, accounting for more than 94% of the TC. Far behind the FSP/BFAR's TC are the LGUs, which played a significant role in the establishment of the SMBMC.

As a whole, cash costs represent 94% of the total TC. The cash costs consisted of the expenses for communication, coordination, attending meetings and incentives (motivation) for those involved in the formation of the SMBMC. The total time spent by the parties involved was estimated to be 458 man-days. Of this figure, 211 man-days (46.1%) were spent by the seven LGUs with jurisdiction over San Miguel Bay (Appendix 1). The DA-RFU contributed 21.6% of the total time. The remaining time was contributed by the NGOs (3.5%) and other parties (28.8%). The latter was composed of representatives from the academe, Philippine National Police, Department of Justice, and others. The relatively higher amount of time spent by the LGUs was attributed to the time spent in travelling from their respective municipalities to the DA-RFU. This may also be the case for the NGOs, where one of them came from Metro Manila, such that the travel time contributed more than half of the indirect costs. In the case of DA-RFU, the time spent was attributed to meeting preparation and coordination with LGUs and other parties. The value of the time contributed by each of the parties involved, which represented TC, was estimated at P165,918. This amount accounted for 5.5% of the total TC for this phase (Table 14). Of the total value of time, 58% was contributed by the LGUs. DA-RFU and other parties shared 22% and 15%, respectively, to the total value of time while NGOs contributed 5%.

Community Organizing/Capability Building Phase

Since this component was directly transacted by the FSP-DA with the local NGO, there were only a few parties involved. Specifically, the parties involved in the CO/capability building phase were the NGO and barangay POs. Hence, only their cash expenses and time involvement were accounted for. The activities during this phase were rendered by the CASAFI and these involved

only minimal coordination with the LGUs. In fact, during the field visits and interviews with LGUs, they aired the lack of coordination during the community organizing activities. The LGU felt that the NGO should have coordinated with them more so that monitoring and follow-up activities would have been done by the LGU after the CO phase. Most activities were conducted within the barangay; some were held in the CASAFI Training Center, in DA-RFU or in other barangays.

The total cost of transactions for the CO was estimated at P3,088,634, consisting of P15,945 as cash costs and P3,072,689 as the value of time spent in transacting (Tables 13 and 15). A total time of 9,195 man-days was devoted for transacting the activities, 98% of which were contributed by the POs (Appendix 1). In terms of time, there was not much difference between the contributions of the successful and less-successful POs, each contributing 4,821 man-days and 4,179 man-days, respectively. However, the value of time between the two PO classifications differed widely, since the contributions of the less-successful POs came during the lean months where the income was low due to the small catch. The value of time of the successful POs was estimated to be P2,162,247 compared with P924,037 for the less-successful POs.

Implementation Phase

The implementation phase included activities directly related to coastal resource management conducted in the barangays of all seven municipalities. The CRM activities conducted by many POs, in cooperation/coordination with the MAO of each LGU, were milkfish techno-demo farming/culture, law enforcement, lobster culture, mangrove reforestation, seaweed culture and tree planting. Milkfish culture was carried out by eight POs, law enforcement by 19, lobster culture by four, mangrove reforestation by nine, seaweed culture by five, and tree planting by three. Other activities such as installation of an artificial reef, lapu-lapu culture and NFA rice retail exhibited the lowest initiative since each was conducted by only one barangay PO.

Table 15. Percentage* Distribution of TC by Components and by Various Stakeholders During the Community Organizing Phase of FSP-CRM

<i>Stakeholder</i>	<i>TC Component</i>		<i>Total TC</i>
	<i>Cash Costs</i>	<i>Value of Time</i>	
FSP	-	-	-
RFU	-	-	-
LGUs	-	-	-
POs	100	98	98
<i>Successful</i>	78	58	58
<i>Less-successful</i>	22	40	40
NGO	-	2	2
Total (in Pesos)	15,945	3,072,689	3,088,634

Source of basic data: Available records from CASAFI and POs.

* As percent of column total.

The POs incurred the highest value of TC during the implementation phase, followed by the LGUs. This may be attributed to various activities which came from their own initiatives since the projects indicated in the program's ICFMP have no definite sources of funds. Among the three phases, the implementation phase has the highest TC because it was during this phase that many projects or activities were carried out in different barangays. This was also the period when they had to put into practice what they had learned from the first two phases.

Total transaction costs for implementing the activities amounted to P17,767,365 (Table 13). This was shared by only three parties, namely: FSP-BFAR-DA, LGUs and POs from the seven municipalities. The contribution of FSP-BFAR-DA which accounted for 85.29% of the total cash costs was in the form of cash costs used in coordinating, motivating, meeting and sending communications when the SMBMC was still active. The total TC of LGUs and POs in seven municipalities represent 6.52% and 87.55% of the total TC for this phase. These consisted of both the cash costs and value of time of those involved in the activities (Table 16). For the LGUs, they consisted of 12.91% as cash costs and 6.04% in terms of value of time. On the other hand, the total TC for the POs constituted 93.94% value of time and 1.80% cash costs. It should be noted that the NGO did not have any record of contribution during the implementation phase. This may imply that the role of the NGO centered only on the CO phase that was contracted to them by the FSP, hence, they did not conduct any follow-up on what happened to the POs after the CO activities. In fact, during the field visits, the POs expressed some frustrations with the way the NGO handled the CO activity. They were expecting some follow-up activities from the NGO but allegedly did not get any.

Table 16. Percentage* Distribution of TC by Component and by Various Stakeholders During the Implementation Phase of FSP-CRM

<i>Stakeholder</i>	<i>TC Component</i>		<i>Total TC</i>
	<i>Cash Costs</i>	<i>Value of Time</i>	
FSP	85.29	-	5.93
LGUs	12.91	6.04	6.52
POs	1.80	93.94	87.55
<i>Successful</i>	<i>0.88</i>	<i>91.70</i>	<i>85.39</i>
<i>Less-successful</i>	<i>0.92</i>	<i>2.24</i>	<i>2.16</i>
Total (in Pesos)	1,235,364	16,532,003	17,767,367

Source of basic data: Available records from BFAR, DA-RFU, CASA FI, LGUs, Barangay Councils and POs.

* As percent of column total.

The time involved for the implementation of CRM activities was estimated at 23,229 man-days. Of this, only 10.2% was from the LGUs and the rest was contributed by the POs. Of the total time contributed by the POs, the contributions of the successful POs amounting to 78% of the total time spent by all the POs were enormous (Appendix 1).

By specific activities, it appeared that law enforcement, which accounted for 18,925 man-days, consumed most of the time spent for CRM activities (Appendix 2). This may be attributed to the claim that the biggest problem in San Miguel Bay was the presence of both the small and commercial trawlers, which, as prescribed by the RA 8550 (Fisheries Code 1998), should be phased out of the municipal waters. Hence, patrolling to apprehend the trawlers appeared as the main activity to conserve the Bay. Other activities were carried out on a smaller scale due to lack of funds and limited manpower. In fact during the last visit, some of the activities were no longer being done (e.g., artificial reef, NFA rice) because of a lack of funds.

The value of time of the POs was estimated at P15,532,920. About 97%, amounting to P15,161,176, was contributed by successful POs (Appendix 2) while the time spent by the less-successful POs was valued only at P371,744 or 3%. As mentioned earlier, the difference in the value of time may be attributed to the seasonal time involvement of the POs. The successful POs joined the CRM activities during the peak and lean fishing seasons while the less-successful POs joined only during the lean season when the value of time is low due to the low catch.

For a clearer comparison between the two types of POs, the time spent and value of time were expressed on a per PO and per person basis. The per-PO basis was computed to take into account the POs that participated in a particular activity, while the per-person basis considered the actual number of people who played a role in the implementation of each CRM activity indicated.

4.4 Analysis of Transaction Costs Share (TCS)

The share of the TC to the total project costs (TPC) for each phase of the project implementation was obtained. For further analysis, the ratio of TC to total TC for each phase was also derived. The first ratio indicates at what phase of project implementation the TC were highest relative to the TPC, while the second ratio determines the relative distribution of TC across all phases of the project implementation.

Share of TC to TPC

As a whole, TC comprised almost 37% of the TPC. For the implementation phase, the ratio of TC to TPC was 85.98% and was recorded to be highest among the three phases (Table 17). This may be attributed to the limited amount of DPC allocated for the activities and the number of parties and people involved. In addition, it was during this phase that the LGUs and POs devoted more time to the different activities, particularly in fund sourcing, such that the value of the time was reasonably higher than the cash cost they incurred. It was also during this phase when there were more activities undertaken by the POs.

Many parties were also involved during the institutionalization phase. However, the TCS to TPC was considerably low (18.10%) compared to the TCS during the implementation phase. This was because plans about the implementation of CRM in the area were still being prepared in this phase. Most of the activities during this phase comprised SMBMC meetings and preparation of the ICFMP, but with only few people involved. It should be recalled, though, that it was during this phase where technical consultants were hired for the conduct of the REA and preparation of the ICFMP, the expenses for which were not captured in the analysis. Moreover, the contribution of the POs during this phase was negligible, a manifestation that they were not fully involved in the preparation of the plan, a contradiction of the very essence of CBCRM.

The lower value of the TCS (11.24%) during the CO/capability building phase may be due to the fewer number of parties involved.

Share of TC to Total Transaction Costs

In relation to the total TC for all phases, the share of TC of 74.46% was highest during the implementation phase. The shares at the institutionalization and capability building phases were almost equal with 12.63% and 12.90%, respectively (Table 17).

In the study of Kuperan et al. (1998), three stages of management were identified and the TC for each type were compared under two types of fisheries management: government management and co-management. Stages one and two were the stages where new management and community education were initiated. Stage three was the period when monitoring, enforcement and conflict resolution were carried out. The study's findings indicated that TC were higher in the first two stages and lower in the third stage for the co-management approach than the centralized government approach. These findings attested that TC were lower in the implementation stage for co-management because the community was more likely to abide by the rules and regulations developed by the community as a whole than with regulations imposed by an external authority.

Table 17. Transaction Costs Share (TCS) and Breakdown of DPC and TC Incurred by FSP-CRM Phase and by Various Stakeholders

Stakeholder	Phase						Total	
	Institutionalization		CO/Capability Building		Implementation			
	DPC	TC	DPC	TC	DPC	TC	DPC	TC
FSP/BFAR	91.6	94.5	100		8.0	5.9	90.70	16.40
DA National	2.9	1.2			25.5		2.80	0.20
LGUs	5.5	3.2			56.6	6.5	5.90	5.30
POs				97.70	9.02	87.55	0.64	77.83
Successful				67.80	7.83	85.42	0.56	72.35
Less-successful				30.00	1.19	2.13	0.08	5.48
NGO	-	0.3	-	2.10	-	-	-	0.30
Others*		0.8			0.80		0.06	0.10
Total (in Pesos)	13,642,850	3,014,388	24,306,957	3,078,634	2,898,192	17,767,367	40,847,999	23,860,389
TCS (as % of TPC for each phase)	18.10%		11.24%		85.98%		36.87%	
TCS (as % of Total TC)	12.63%		12.90%		74.46%		100%	

Source of basic data: Available records from BFAR, DA-RFU, CASAFI, LGUs, Barangay Councils and POs.

Note: Figures for stakeholders are in percent of column total.

* Includes representatives from PNP, DOJ, trawl operators, academe, private sector, etc.

In contrast to the findings of Kuperan et al. (1998) in the fisheries co-management in San Salvador, Zambales, the implementation stage of the FSP-SMB-CRM showed higher TC. This may be attributed to many parties being involved and the many activities conducted during the implementation phase of the FSP-SMB-CRM relative to that of San Salvador. However, the most important factor that may explain the contradicting results may be related to the funding source. In the case of San Salvador, the activities were assured of funding and were already well in place before the management was turned over to the community or association. For the SMB-CRM, the POs had to start from zero: they had to do everything, including fund sourcing, for the activities to be implemented.

4.5 Factors Affecting Transaction Costs

Several factors have been identified to affect TC. Studies showed that the number of transacting parties, the type of institutional arrangements, the size of firm and sites, the attributes of goods being exchanged and the type of contractual arrangements usually affect TC (See for example, Dixon, 1994; Kuperan et al., 1998; Allen and Lueck, 1993; and Milgrom and Roberts, 1992). For this study, the factors hypothesized to affect TC included number of people involved, distance/accessibility, income of the barangay (in terms of IRA) and types of activities.

Number of Parties or People Involved

It is evident in Tables 12 and 16 that as more parties are involved, the larger the TC incurred are and the higher the TCS will be to the TPC. During the institutionalization phase, the most represented were the LGUs since they have the biggest role in implementing CRM in their respective jurisdictions. The Mayor and the Municipal Agricultural Officer and/or Agricultural Technician usually represent each of the seven LGUs. The fewest number was from the NGO because it has only two or three representatives to the Council. Community members who attended training and seminars conducted during the CO/capability building phase incurred the largest TC. It was during this phase that people were formed into an organization. A session involved more than 20 people in the barangay.

The POs likewise incurred the greatest TC during the implementation phase. As discussed earlier, there were numerous PO members involved in carrying out CBCRM activities.

Types of CRM Activities Undertaken

Activities during the FSP-CRM can be classified into two types: preparatory and implementation. The preparatory activities were those carried out during the institutionalization and CO/capability building phases. During the institutionalization phase, regular meetings were held to consolidate the various

stakeholders of the program. Furthermore, they collaborated to prepare the ICFMP, which was intended to provide the necessary technical input. The plan took into account the technical results of the Resource and Ecological Assessment study. The activities conducted during the CO/capability building phase, on the other hand, helped prepare community members through training and seminars. Topics varied from ecological awareness and appreciation to discernment and understanding of existing laws. Basic cooperative training/workshops were also rendered to educate the people in forming an organization. CO/capability building was deemed important to make the people understand the program's objectives and the importance of CRM before projects could be implemented.

Activities conducted during the implementation phase were applications of the things learned from the first two phases. These activities emphasized the provision of an alternative livelihood for fisherfolk and the protection and improvement of coastal resources.

As presented in Tables 12 and 16, TC were low during the institutionalization and CO/capability building phases where preparatory activities were undertaken, and were high in the implementation phase where knowledge obtained was applied to the activities. It was also during these phases that the contribution of the POs to the total TC was considerably lower.

Distance and Accessibility

The factors of distance and accessibility greatly affected the extent of participation of the parties involved in the FSP-SMB-CRM. The farther the venue of a particular activity, the higher the TC were because it entailed a greater degree of coordination, information dissemination and even motivation. Hence, there was usually low participation of POs in activities rendered outside their respective barangays.

Income of the Barangay/PO

Income of the barangay/PO was hypothesized to affect TC since activities cannot be performed without the money or logistics. If the association has more income, chances are that more activities can be implemented. This in turn would entail more planning, coordination and follow-up activities.

4.6 Analysis of Factors Affecting TC of the POs

To determine the extent of effects of the hypothesized variables on TC, regression analysis was performed. The regression result is presented below:

$$TC = -1388273 + 1.513 Y^{ns} + 68240.12N^{***} + 51868.13 D^{ns} + 234.06A^{**}$$

(0.50) (4.712) (1.31) (2.96)

$$R^2 = 0.65 \quad F \text{ value} = 9.23^{***}$$

*** = significant at 0.01 level

** = significant at 0.05 level

ns = not significant at 0.10 level

where:

TC = transaction costs

Y = income of the POs, represented by the internal revenue allotment

N = number of PO members

D = distance/accessibility, represented by kilometers

A = number of activities conducted

The R^2 shows that 65% of the variability in TC is explained by the variables included in the analysis while the F value indicates that, overall, the regression is highly significant at a 0.01 level. Of the variables included, only three, namely performance dummy, number of PO members and number of activities appear to have effects on the TC. All variables conform to an 'a priori' economic expectation. The positive signs of the regression coefficients indicate a positive relationship between the variables and TC while the negative signs indicate an inverse relationship between TC and the variables. The positive sign of the performance coefficient implies that the more successful the PO, the higher the TC would be. This may be understandable since the successful POs have more activities, hence more transactions which entail higher costs take place. Similarly, the number of members is also positively related to the TC since it takes more time to coordinate with more people than with fewer ones.

Income or internal revenue allotment appears to have an insignificant effect on the TC. This may be because the allocation of the barangay for the activities where TC are estimated are relatively low compared to the costs involved. On the other hand, the insignificant result of distance may be due to the difference between distance and accessibility. The distance was represented by distance in kilometers from the town proper while accessibility refers to how fast it is to get in and out of the place. The barangay may appear closer to the town proper but it may take a longer time to reach the area because of

unavailability of public transport or the area may be an interior barangay where transportation is limited.

4.7 Transaction Costs and Performance

While it has been established that several factors affect TC, it was also hypothesized that the size of the TC would have a bearing on the performance of the POs. It is presumed that TC and success are negatively related. That is, as TC increase, the performance of the PO may suffer. To test this hypothesis, a regression was run using TC as an independent variable and the success index (SI) formulated in Section 3.0 as a dependent variable. Results of the regression run are as follows:

$$\begin{aligned} \text{SI} &= 0.276 + 0.351\text{TCS}^* - 0.051\text{TCS}^{2**} \\ R^2 &= 0.55 \qquad \qquad \qquad \text{F value} = 6.003*** \end{aligned}$$

*** significant at 0.01 level
** significant at 0.05 level
* significant at 0.10 level

where:

SI = success index of each PO
TCS = transaction costs share of each PO
TCS² = square of transaction costs share of each PO

The results show that 55% of the variation in the SI is explained by the TC. The positive coefficient of the TCS indicates that as the TCS increases by one point, the PO will succeed by 0.35 of a point. However, as the TCS increases further, that is when the TCS is squared, the relationship with the SI becomes negative. Since success index is a composite of several activities, these results indicate that initially, some amount of TC are needed for the activities of the POs to be initiated. However, as TC get higher, the POs will tend to slow down, if not abandon their activities, leading to a lower SI. The results show that while higher TC lead to a better performance of stakeholders at the initial stage of project implementation, an increasing level of TC will eventually slow down the performance of the parties involved in the project.

5.0 OTHER ISSUES RELATING TO TRANSACTION COSTS

The foregoing discussions focused on the issues concerning the distribution of TC among the different stakeholders and the share of TC to TPC. However, there are other issues that are directly or indirectly related to TC and affect how the latter are measured or estimated. These issues include among others the following: definition(s) of TC; applicability of these TC definitions in applied research; how TC are measured; and other issues like gender, and allocation of fixed government budget and resources to multiple activities or tasks. These issues will be discussed in more detail in this Section.

5.1 Definitions of Transaction Costs

Transaction costs (as a concept) has been defined in several ways. Some authors define TC broadly while others give specific definitions depending on how the concept is applied. These definitions and qualifiers are summarized in Tables 18 and 19.

One of the important definitions of TC relates to legal and institutional rights. Its main application is to a liability system wherein plaintiffs and defendants compete in a court of law to determine the question of liability and the appropriate amount of compensation. As such, TC specifically cover all the legal costs associated with the gathering of evidence, presenting a case, challenging opponents, awarding and collecting damages, etc (Field and Olewiler, 1995). This definition is now widely used in resolving issues where the parties can be easily classified as plaintiff and defendants. In environmental issues, this can be viewed as classifying the agents/parties involved into victims/pollutees and polluters.

In organizational, institutional and contractual arrangements, TC include coordination costs and motivation costs (Milgrom and Roberts, 1992), where coordination costs are said to arise from the need to determine prices and other details of transactions to make the existence and location of potential buyers and sellers known for them to transact business. On the other hand, motivation costs arise in cases of informational incompleteness, asymmetries and imperfect commitment.

Another definition of TC related to institutional arrangements was forwarded by Randall (1975). He used this definition in clarifying relationships between property rights, incentive structures and institutions. According to him, “transaction costs are the costs of resolving situations where involved parties have conflicting interest including the costs to each party of gathering information, determining their position and strategy; the costs of bargaining, negotiating, arbitration, judicial or any other processes by which an agreement is reached; and the costs of enforcing the agreement made.”

Table 18. Definitions of Transaction Costs

<i>Term</i>	<i>Definition/Description</i>
Transaction Costs	• Costs of running an economic system which include costs of enforcement, monitoring, information, etc. (Arrow, 1970) • Identifying relevant parties, collecting pertinent information, conducting negotiations, and so on; can be sufficiently costly to prevent many transactions from being achieved (Coase, 1960) • In clarifying relationships between property rights, incentive structures and institutions, refer to costs of resolving situations where involved parties have conflicting interest including the costs to each party of gathering information, determining their position and strategy; the costs of the bargaining, negotiating, arbitration, judicial or any other processes by which an agreement is reached and the costs of enforcing the agreement made (Randall, 1975) • Comparative costs of planning, adapting and monitoring task completion under alternative governance structures (Williamson, 1989) • Costs of measuring the valuable attributes of what is being exchanged and the costs of protecting rights and policing and enforcing agreements (North, 1990) • Costs incurred in the process of assigning liability among the various parties involved (Dixon, 1994) • Costs of gaining information about the resource and what users are doing with it, reaching agreements and coordinating with others in the group with respect to the use of the resource, and enforcing agreements that have been reached; these costs arise from the problems of information, coordination and control that stem primarily from the fact that fisheries resource management decisions involve multiple actors with different interests in long term, and with interdependent and uncertain process • Costs of searching out information, costs of bargaining over terms, and costs of making sure an agreement is actually carried out; also apply to liability systems in determining the appropriate amount of compensation; costs of all legal costs associated with gathering evidence, presenting a case, challenging opponents, awarding and collecting damages, etc. (Field and Olewiler, 1990)

Table 19. Types of Transaction Costs

<i>Term</i>	<i>Definition/Description</i>
Negotiating Costs	• Key component in determining whether a given externality would become internalized through voluntary rearrangements of property rights, such as "buying out" affected parties or making an agreement to reduce the level of external impacts (Demsetz, 1964)
Coordination Costs	• Arise from the need to determine prices and other details of transaction to make the existence and location of potential buyers and sellers known to one another, and to bring the buyers and sellers together to transact (Milgrom and Roberts, 1992)
Motivation Costs	• Informational incompleteness and asymmetries — situations in which the parties to a potential or actual transaction do not have all the relevant information needed to determine whether the terms of an agreement are mutually capable and whether these terms are actually being met • Imperfect commitment — inability of parties to bind themselves to follow through on threats and promises that they would like to make but which, having made, they would later renounce (Milgrom and Roberts, 1992)
Measurement Costs	• The costs of measuring and dividing both the input and output (Allen and Lueck, 1993)
Information Costs	• The costs incurred when an individual seeks and disseminates information

Yet another definition of TC includes negotiating costs, measurement costs, information costs and organization costs. Demsetz (1964), in discussing property rights, identified negotiating costs as a key component in determining whether a given externality would be internalized through voluntary rearrangements of property rights, such as “buying out” affected parties or making an arrangement to reduce the level of external impacts. Allen and Lueck (1993), used TC in production synonymously with measurement costs, which include the costs of measuring and dividing both the inputs and outputs. Information costs were also identified with TC, the former include the costs incurred when an individual seeks and disseminates information. In 1994, the concept of organization costs, which is used interchangeably with transaction costs, was introduced by Papandreou, although the former term was preferred since it does not elicit a sense of physical transactions.

In addition, Williamson (1979) defined TC as comparative costs of planning, adapting and monitoring task completion under alternative governance structures. According to North (1990), TC are costs of measuring the valuable attributes of what is being exchanged and the costs of protecting rights, and policing and enforcing agreements.

In Coase's theorem, TC analysis forces economists to think about the costs involved in human interaction that explains the reason for the existence of firms or conditions under which the allocative implications of microeconomic theory are held. In addition, North (1997) recognized that "the study of TC gives us insights into static analysis and also holds the key to unlocking the door to an improved understanding of economic and societal performance through time."

5.2 Applicability of the TC Definitions to Applied Research

The following discussions provide a detailed analysis of how the different definitions of TC are used in various types of applied research. Further discussions also present possible applications of these definitions in analyzing the TC of different parties involved in CRM activities in San Miguel Bay.

Coase (1960) did not explicitly define TC in his study but provided some factors, such as identifying relevant parties and conducting negotiations which, when sufficiently costly, may prevent many transactions from being achieved. This is supported by Demsetz (1964), who identified negotiating costs as a key component in determining whether a given externality would become internalized through voluntary rearrangements of property rights, such as "buying out" affected parties or making an agreement to reduce the level of external impacts.

To analyze the impacts of alternative property rights assignments when TC are non-zero, Bromley (1991) incorporated TC into a two-externality model. He observed that "it is the party not protected by the extant legal structure who must initiate action to deal with the other party. Information and contracting are expensive, and the costs are, for the most part, borne by the party that is vulnerable to unwanted costs in the status quo."

Transactions regarding current issues and/or activities in San Miguel Bay such as law enforcement, and community organizing, are not limited to two parties alone. Residents of the coastal barangays surrounding the Bay adhere to a multi-level approach of transactions; more so, transactions take much time in every activity. Representatives of a barangay go to and from the municipal/DA office and other barangays to coordinate activities related to CRM. Not only money (from their own pocket) is expended but effort and time as well. Although the government provided a fixed fund to support the activities geared towards CRM, the fund was not substantial. The contracting parties, though very much willing to help, are constrained by financial inadequacy. Hence, they resort to using their own resources and get reimbursed subsequently – claims which can take days to process. Continuous transactions (e.g., follow-up, coordination) with the municipal offices cost them lost time – time they could have devoted to income-generating activities.

Furthermore, problems between small-scale fishermen and trawlers need to be resolved by municipal mandates. The process of resolving such conflict may take time because legal technicalities should be recognized, and a series of

discussions/dialogues are usually asked to take place. The fishermen attest that actions taken by the government favor the more influential or prominent members of society. They feel their needs are ignored and that the concern for fisheries is of low priority to the government. With minimal government support, much of the effort and resources needed to implement the activities for the conservation of the resource have to be borne by the fishers.

Different organizational forms, and institutional and contractual arrangements represent different solutions to the problems of coordination and motivation. These problems give rise to TC that manifest themselves differently in various contexts. Milgrom and Roberts (1992) identified two types of TC: coordination costs and motivation costs.

Coordination costs refer to continuous communication with the relevant parties, preparations and following-up of activities. These costs arise from the need to determine prices and other details of a transaction to make the existence and location of potential buyers and sellers known to one another, and to bring them together to transact (Milgrom and Roberts, 1992). This definition, which is based on vertical integration, is limiting as far as CRM and CBRM in general is concerned; considering the multi-layer and multi-objective nature of the program.

The definition of coordination costs provided is limited to the relationship between buyers and sellers known to one another. People's organizations of coastal barangays coordinate not only with other nearby barangays and government officials they know, but also with other agencies and institutions that could help them design and take corrective and preventive measures for their damaged resources.

Motivation costs, on the other hand, arise from initiating and holding a series of workshops, training and seminars that aim to instill in the people the importance of CRM and their roles in this. Motivation costs are characterized by informational incompleteness, asymmetries and imperfect commitment (Milgrom and Roberts, 1992).

In San Miguel Bay, for example, people in some barangays did not know that certain rules exist. In fact, even the local authorities such as the provincial Philippine National Police were not aware that the Implementing Rules and Regulations of the Philippine Fisheries Code already existed until informed in a meeting held on 14 August 1998. Also passed on 31 March 1995 was a municipal ordinance proclaiming an area, which is 15% from the total municipal coastline, as a fish sanctuary or marine reserve to lessen resource depletion. Therefore, fishers are not allowed to catch fish within the designated area. However, there are fishermen who still violate this ordinance. They may have violated the existing rules intentionally to get a good harvest; or they may be truly ignorant of them – nonetheless, this is no excuse. Hence, the indirect costs incurred related to these activities have to be accounted for.

The situation in San Miguel Bay since the implementation of the Fisheries Sector Program 1 (FSP-1) in the early 1990s until the present manifests the three contractual arrangements mentioned, each contributing a small proportion. Activities from advocacy to implementation were participated in by both the national and municipal governments, NGOs, academe, other agencies/institutions, and fisherfolk. However, the sharing of responsibility does not imply co-management in its truest sense.

Fisheries co-management, the concept of CBCRM adopted in the conceptualization of the SMBMC, covers various partnership arrangements and degrees of power-sharing and integration of local and centralized management systems (Kuperan et al., 1998). Under this scheme, the fishers are consulted by the government before introducing a regulation; or in other circumstances, the fishers design, implement and enforce laws and regulations with advice and assistance from the government.

With regard to implementation and enforcement, the government in the case of San Miguel Bay provided a patrol boat to be used in monitoring the status of established artificial reefs or that of marine culture (e.g., oysters, milkfish), and in controlling the entry of illegal trawlers in fishing boundaries designated for the small-scale fishers. However, there were only limited funds provided from the municipal government for the boat's gasoline. Thus, people assigned were not able to patrol the Bay on a regular basis, leading to high enforcement costs. Too many people chased too few fish and most fishing technologies were ecologically destructive. Furthermore, fishing practices did not discriminate between species, thus creating a large by-catch to be thrown back overboard. Violations were rampant, especially among trawlers.

To help strengthen law enforcement, both the LGUs and Barangay Councils reportedly pledged to allot a certain amount from their general funds or Internal Revenue Allotment (IRA) for patrolling. If this endeavor were to be sustained, enforcement activities could be done more regularly and result in a lower enforcement cost. Supervision costs, on the other hand, were high because not all of the seven coastal municipalities were active in the implementation and enforcement of CRM.

Dixon (1994) defined TC as costs incurred in the process of assigning liability among the various parties involved in a site. The liability approach was preferred by many policymakers and interest groups because of its following attributes: (i) attempts to make the polluter pay for cleanup; (ii) does not require a large increase in tax revenue to fund a traditional public works program; and (iii) creates a strong incentive for firms to more carefully handle hazardous substances, although such incentives require only prospective, as opposed to retroactive, liability. Nevertheless, participants and other stakeholders perceive that advantages of the liability assignment in any agreement generate substantial TC (Dixon, 1994). An example of this is the Superfund in the US. In 1980, the US Congress passed Superfund to clean up the nation's worst inactive hazardous waste sites and adopted a liability-based approach. Held liable for cleanup are the

parties that generated or transported the hazardous materials to a site or that owned or operated the site.

The Superfund cleanup process in the US generates TC because the law, and the way the US Environmental Protection Agency (EPA) implements it, creates a complex set of often-contentious interactions among the many different players. Concerned parties in implementing the Superfund are the participating potentially responsible parties (PRPs), non-participating PRPs, insurers, reinsurers, local community, states and the EPA. The dealings of the PRPs and the government exemplifies such a complex interaction, where TC are generated in arguing over the cleanup standards and remedy, in negotiating settlements, and, when negotiations fail, in enforcing actions.

Data collected by the US EPA suggests that the litigation approach adopted by the US generates substantial TC. First, TC accounted for 32% of private-sector PRP expenditure through 1991. Second, the overwhelming majority (88%) of insurer expenditure on insurance claims related to hazardous waste cleanups were TC. Finally, the private sector incurred \$11.3 billion in expenditure, of which 36% was transactional in nature.

Transaction costs and TCS vary considerably across firms and sites. It was observed that firm expenditure is higher but the TCS is lower for firms with larger volumetric shares. Also, the TCS are higher in sites with more PRPs. Transaction costs are higher but the TCS is lower in sites with greater cleanup costs, as well as in the later stages of the cleanup process (Dixon, 1994).

The San Miguel Bay-CRM, as a major activity, is composed of several different activities such as community organizing, law enforcement, mangrove reforestation, establishment of artificial reefs and reforestation, among others. Compared to the US Superfund process, the San Miguel Bay-CRM is more complex. The study provided clear linkages showing the players and interactions in the Superfund process. However, the latter is quite uncomplicated because it only focused on one particular aspect: the cleanup process.

Transaction activities of contracting parties in San Miguel Bay are similar to those studied by Dixon (1994) with respect to the complexity of contentious interactions among many different players. Transaction costs are expectedly high in the San Miguel Bay-CRM because planning, implementation and enforcement are subject to multi-level concerns. This means that the process has to go through the government and to the immediate parties before the activities can be finally implemented. But unlike the Superfund, which is extensively supported by the US government (in terms of both financial and administrative assistance), the San Miguel Bay-CRM receives insufficient support from the Philippine government, both at the local and national levels. Hence, some resource management activities have been initiated but not continued, while some have not been started at all. CRM cannot be completed in three or four years. Rather, it should be regarded as a continuous activity in sustaining resource conservation and in enhancing marine productivity.

Colby (1989) conducted a study on the roles of regulation and transaction costs in resource allocation processes, focusing on water as the resource. He attested that the ability to impose TC is an important determinant of different interests' influence on resource allocation, from a public policy perspective. Transaction costs are often characterized as factors that prevent markets from operating efficiently, or that prevent markets from developing altogether. The ability to impose TC on those proposing to transfer water is conferred by state laws governing who may hold water rights and who may file protests. Market transactions are undertaken for economic gain, based on the perception that water supplies will generate higher returns in their new use than in their former use. The power to erode this expected gain through imposing TC gives third parties leverage with transfer proponents and a role in the water reallocation processes.

The study was confined to TC incurred in the state water court system's evaluation of change in water use. It was mentioned that over half of the TC were warranted by judicial proceedings and attorneys' fees. In the San Miguel Bay-CRM, transactions are not restricted to two or three parties and involve not only legal arrangements but also other procedures such as awareness enhancement, information, coordination and implementation.

Nonetheless, public and state policies are likewise important in administering proper resource management of San Miguel Bay. Ideally, these policies should encompass all concerns of the fisheries sector and define clearly the parameters within which bargaining over access to the fisheries resource occurs.

The most recent study on TC in fisheries management was that conducted by Kuperan, et al. (1998). The authors defined TC as the costs of gaining information about the resource and what users are doing with it, reaching agreements and coordinating with others in the group, and enforcing agreements that have been reached. These costs arise from the problems of information, coordination and control that fundamentally originate from the fact that fisheries resource management decisions involve multiple participants with different long-term interests, and with interdependent and uncertain processes.

Kuperan, et al.'s study was conducted in San Salvador Island of Masinloc municipality in the province of Zambales, Philippines. From 1989 to 1993, the municipal government, the community and the Haribon Foundation, an NGO, jointly implemented the Marine Conservation Project for San Salvador (MCPSS). It had initial funding support from the Netherlands Embassy and the Jaime V. Ongpin Foundation and lately, from the World Wildlife Fund Debt-for-Nature Swap. In 1993, the project was turned over to *Samahang Pangkaunlaran ng San Salvador* (SPSS), a PO which the Haribon Foundation helped establish. The village and municipal government sustained project initiatives, proving that they could share responsibility for fisheries management.

This is a concrete case of an established project turned over for continuous implementation and funding to the municipal government and the community.

Since it is already established, Kuperan, et al. (1998) concluded that the TC for implementing a co-managed fisheries resource is definitely lower compared to a centrally managed fisheries resource. The study also showed the differences between centrally managed and co-managed systems. The key factor that differentiates the two systems is the level of user participation in the design and implementation of the management activities. These activities are resource assessment, determining management objectives, selecting management measures, allocating the resource among users, allocation of the resource over time, and enforcing regulations. A centralized approach is said to face low program design costs but high implementation and enforcement costs because the management regime may have little legitimacy with user groups. On the other hand, the co-management approach faces higher program design costs since effective participation is time-consuming and therefore costly. However, this approach leads to lower costs in implementation, monitoring and enforcement because management is shared between the external authority and user groups and the program is well in place before it is turned over to the community.

Closest to the San Salvador study is the TC analysis of the San Miguel Bay-Coastal Resource Management Program (SMB-CRMP). Transactions in both studies involved local and national governments, NGOs, and fishers. SMB-CRMP's flow of transactions closely follows that of San Salvador. Initiation, implementation, enforcement and monitoring of the activities in San Miguel Bay are more or less the same as those of San Salvador. However, unlike the MCPSS, the SMB-CRMP covers several communities and projects, making transactions more complex. Moreover, the ICFM plan of San Miguel Bay was prepared without funding assurance, unlike the San Salvador case where a small and already-established project was turned over to the community and to the local government. Therefore, TC incurred between the two projects would differ. The SMB-CRMP confronts a multi-stakeholder process, implying discussion forums, a series of consultations, or negotiation/mediation activities and fund sourcing, making it vulnerable to high TC.

5.3 Preferred Definition of Transaction Costs

After going through the different definitions of TC and the studies where these definitions were applied, it was found that applicability of the definitions depends on the focus of a particular study. The definitions have some applications to the analysis of TC in SMB-CRM but these definitions do not cover all the activities included in the CRM concept. After going through the field visits and analysis of the activities in the different phases of the SMB-CBCRMP the definition of TC provided by Kuperan, et al. is preferred since it provides a more complete description of how the CRM is carried out. Accordingly, the authors mentioned that “when a program involved multiple objectives and individuals with complex activities and coordination over time and space, people may attempt to reduce the substantial uncertainties they face through various forms of implicit and explicit agreements.” These agreements always involve TC that consist of the costs of gaining and/or disseminating

information about the resource and what users are doing with it, reaching agreements and coordinating with others in the group, and enforcing agreements that have been reached.

Similarly, multi-level transactions occurred during the FSP since it involved various parties from the national and local levels. Furthermore, the program constituted many objectives and complex activities such as information dissemination, coordination with other parties and enforcement of agreements made. In the case of San Miguel Bay, one of the concrete agreements was the yearly contribution of the LGUs to the operation of the San Miguel Bay Management Council. However, some of the members failed to comply with this agreement such that the result led to the inactivity of the SMBMC. Another important observation in the study was the lack of continuous flow of information from the national government down to the local government. Most of the LGUs and POs claimed that they were not fully aware of the provisions of the New Fisheries Code. Because of this, they were not able to fully enforce the law, which led to the dismay of the communities, and eventually to non-implementation of activities.

5.4 Importance of TC Measurement

Another issue related to TC estimation relates to how TC are measured. This is so because one can simply count all costs as transaction costs. However, as indicated in the different studies reviewed, TC are costs due to activities that do not directly involve production or output. These are the values of time lost or spent doing the transaction. In litigation, time wasted is attributed to the rescheduling of activities. Kuperan, et al. (1998) provided a usable definition and example of TC estimation. In San Miguel Bay, the incidence when fisherfolk cannot accomplish enforcement activities due to unavailability of funds and the loss of time in coordinating, motivating and follow-up activities of those involved in identified projects are among the sample cases.

As illustrated in the studies discussed, estimation of TC provides important input for decision-making by policymakers, as well as the private sector. As stated earlier, policies are formulated at the national level but implementation and enforcement are conducted at the local level and involve different groups of people (Field and Olewiler, 1995). Thus, the policies are normally set up without much thought of transaction costs on the assumption that the LGUs will find the necessary resources for enforcement.

The results of this study pointed to the need for policymakers to consider TC in designing multi-objective programs that will be implemented at the local level. Similarly, information on the extent of TC at different stages of the program's initiation and implementation would be helpful in designing and allocating budget funds for a multi-level and multi-objective program like the CBCRM program.

5.4 Other Issues

Gender

The issue of gender is considered one of the more important dimensions of any development program. In SMB-CRM it was found that the role of men, women and children in planning and implementation of activities cannot be overemphasized. Unfortunately, no gender-segregated data or information was available, hence the analysis can be considered 'gender blind'. However, during the field visits, qualitative information about the role of women in CRM activities was generated. From the key informants' survey, it was revealed that women and children also have considerable direct and indirect contributions to CRM activities.

For example, in Calabanga, a municipality covered by SMB, the mayor was a woman and was very much concerned about CRM. In fact, it was under her current leadership that the municipality allocated P250,000 per year – the most so far – for CRM activities. Calabanga is considered as one of the three municipalities countrywide that received recognition from the BFAR-DA for its CRM endeavors in 1998. Another example is in one barangay where the chair of the PO was a woman. Although she was not directly patrolling the Bay against illegal fishers, she was very vocal in discussing strategies on how the activity could be better handled. In addition, the other activities of the Pos, such as swine raising and other livelihood activities indirectly helped the activities related to CRM.

An historical account of women's participation in fisheries was also conducted among male and female KIs in a village. Activities way back in 1950 were recalled by elder KIs. Apparently, during the 1950s, women were actively involved in fishing activities. During that period, women went with their husbands out to fish since they need not go far out to sea to have a bountiful catch. They recounted that the participation of women in actual fishing diminished towards the later period when they had to go far out into the deep to be able to have more catch. Finally, due to the declining quantity of fish and shrimps, women were forced to no longer join their husbands since their time was just wasted due to the small catch. Nowadays, the role of women is limited to sorting the catch and taking the fish for sale to the market.

Similarly, the key informants were asked about the participation of women in the recent CRM activities. It is worth noting that the respondents were unanimous in their answers that women are not directly participating in the CRM activities, specifically in law enforcement, since most of the deputized fish wardens are men. However, they mentioned that since the men are busy attending to CRM activities, women and sometimes children are the ones working to earn money for their daily needs. Thus, it is apparent that the time spent in transacting activities related to CRM, although performed by men, should be considered shared contributions by both men and women, and sometimes children. Unfortunately, no records are available to quantify the sharing. With the recent

concern of the development program on gender issues, it is expected that the sharing of TC among men, women and children will also be looked into.

Allocation of Fixed Government Budget to Multiple Activities and Programs

Budget or resource allocation is usually contentious. Under normal circumstances, chances are that the most aggressive party gets a bigger share of the pie. In most cases, it is also the “who you know” that matters. Thus, it is apparent that TC are incurred in the process of budget availment and allocation.

In the case of the FSP, there was a fixed budget for the whole program. This budget was divided among the program sites depending on the extent of work and area of coverage. However, by the time this study was completed, records of the actual allocation for the SMB-FSP could no longer be obtained from the BFAR main office. Accordingly, after the change in administration, from the President to Cabinet members and key officer in 1998, all the records were submitted to the DA main office, and unfortunately can no longer be traced. In terms of manpower, a site coordinator and staff from the regional office were assigned to specific pilot areas. There were also cases where emergency staff were hired and assigned to the pilot area depending on the need. However, the involvement of BFAR-DA officials and other staff who were called to attend to activities relating to the SMB-FSP were not properly recorded. As such, the sharing of the fixed budget and resources (both human and non-human) among the activities of the different programs is difficult to estimate from the secondary information, especially if there were changes of guard during the implementation.

The absence or unavailability of information on the concluded program does not speak very well of how the program has been managed. It is very disturbing that important documents are not available when a follow-up program has just commenced. It is thus recommended that monitoring and evaluation, with emphasis on proper recording (this aspect is missing in the SMB-FSP implementation records) of the different components of the program(s) be incorporated in the overall program plan to provide information on how all the resources are allocated and shared. In addition, file copies of documents relating to the program should be kept at the offices where the programs are implemented. This information would be very useful in evaluating programs, especially for those where benefits are not immediately realized.

6.0 SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Summary

Introduction and Methodology

Community-based coastal resource management gained its momentum as the importance of mobilizing communities to participate in planning, implementing and managing resources was being recognized. This scheme gives communities a particular degree of management responsibility, which includes the ability to supervise access and use of the resource. CBCRM is regarded as significant in promoting an ecologically and economically sustainable fisheries industry. Nevertheless, a review by Pomeroy, et al. (1996) showed that the scheme is not a remedy to all resource conservation and sustainability problems. The review indicated that there are successful and less-successful CBCRM projects. The success of a CBCRM project may be attributed to certain social, economic and political reasons.

The Fisheries Sector Program, which was implemented under the Department of Agriculture, is one of the government-initiated CBCRM projects in the Philippines. This five-year program was implemented in 12 coastal areas, including the San Miguel Bay. It was envisioned to ameliorate the income of small-scale fishers and preserve the coastal resources.

This study was conducted to determine how TC are distributed among transacting parties, considering that CBCRM projects usually involve multi-level transactions. In general, the study aims to estimate and analyze the TC associated with the implementation of a CBCRM project in the Philippines. Specifically, the study aims to: (i) validate potential success criteria for coastal resource management and the specific indicators under each criterion; (ii) review the activities of evolving the SMB-CRMP and estimate the TC associated with these activities; (iii) determine the distribution of the TC among the various stakeholders; (iv) evaluate the TC in relation to the performance (success or failure) of the program and of the people's organizations involved; (v) identify and discuss the factors affecting TC; (vi) explore the different definitions of TC, identify how meaningful they are in applied research, and identify a more preferred definition that specifies the different components of the TC; and (vii) draw policy implications based on the results.

The CBCRM project in San Miguel Bay was chosen for this study. It is a pilot project of BFAR-DA under the FSP. The area was chosen because of its considerable progress towards improved fisheries management and the major management issues/problems related to fisheries and coastal resources prevalent in the area. It focused on the seven municipalities surrounding San Miguel Bay which are the municipalities of Basud and Mercedes in Camarines Norte; and Cabusao, Calabanga, Sipocot, Siruma and Tinambac in Camarines Sur.

The implementation of the CBCRM project was divided into three phases in the study:

- (i) institutionalization;
- (ii) capability building/community organizing; and
- (iii) project/activity implementation.

All transactions rendered by the seven municipalities during the three phases were accounted for.

Thirty-eight barangay POs included in the capability building component from the seven municipalities were randomly selected for the quantitative analysis of TC. These POs were initially classified as successful and less successful based on the suggestions of the key informants. The classification was based on the degree of the PO's participation in CBCRM activities relative to other POs. However, the study adopted and modified some success criteria and indicators (C&I) from the Center for International Forestry Research (CIFOR) and the positive economic criteria identified by Ruitenbeek and Cartier, 1998. These C&I were validated in the study area, after which a reclassification of the POs was made.

The study used both primary and secondary data. Primary data/information was obtained from focused group discussions while secondary data were obtained from the records/documents of CASAFI, DA-RFU5, POs and LGUs, particularly the MAO.

Performance Indicators

From the CIFOR's C&I list of criteria for evaluating forestry management and the positive economic C&I of Ruitenbeek and Cartier (1998), a total of 11 criteria and 25 indicators were adopted, modified and validated in the study area. Based on the validated C&I, success indices of the POs, LGUs and SMBMC were estimated by assigning a score for each criterion. The success index became the basis for reclassifying the POs: those with a success index of 0.60 and above were classified successful; otherwise, they were less successful. Results show that four of the POs that were initially classified as successful were reclassified as less successful. The aggregate success index of the successful POs was 0.83 while the less-successful POs had an aggregate success index of 0.36.

Using the same cut-off used in evaluating the performance of the POs, four of the seven LGUs were considered successful. These municipalities were also those with more successful POs, an indication that the success of the LGUs may also be a reflection of the performance of the POs.

Transaction Costs Analysis

The total project costs (TPC) incurred in the SMB-CRMP were estimated to be P64.72 million over a span of six years. The TPC consist of direct project costs (DPC) and transaction costs (TC). Of the TPC, 37% was accounted for by TC. The capability building phase incurred the highest share of 42.33% and 59.50% of the TPC and DPC, respectively, while the majority (74%) of the TC for all phases were recorded for the implementation phase.

Among the stakeholders, the POs contributed the highest share of 77.8% to the total TC. By the CBCRM program phase, the FSP-BFAR's share dominated the TC during the institutionalization phase while the TC of the other phases were dominated purely by the POs. The TC of the POs during the community organizing phase was dominated by the cash costs they infused in transacting while in the implementation phase, the TC were dominated by the value of time spent in coordinating, motivating and follow-up activities. The value of time of the POs during the implementation phase accounted for 94% of the TC. In all activities, TC were highest for the successful POs compared to the less-successful ones. This is as expected since the successful POs have more activities to attend to and, hence, have higher TC.

An analysis of the transaction costs share (TCS) for all activities included in the SMB-CRMP revealed that the total TC accounted for 37% of the TPC. By phase, the TCS was highest during the implementation wherein TC constituted 86% of the TPC. Further analysis of TC as a ratio of the total TC also showed that the implementation phase had the highest share of 74%. This result was in contrast to the finding of Kuperan, et al. (1998) in their study of TC of a co-managed fishery in San Salvador, Zambales, Philippines. Their results showed that TC were lower during the last stage (including monitoring, enforcement and conflict resolution) of the co-managed fishery program. The differences in results maybe attributed to the number of parties involved. There were more parties transacting in the SMB-CRM compared to the San Salvador co-managed fishery. Another reason may be due to the funding source. San Salvador had an assured funding and was already well in place before it was turned over to the fishers' association. In the case of the SMB-CRM, the PO had to do the fund sourcing and all the activities to get the project going, hence requiring them to transact more.

An analysis of the hypothesized factors affecting TC showed that three out of the five variables appeared to have a significant influence over the TC. These variables were the performance dummy, number of PO members and number of activities conducted. Income of the POs and distance to the town center appeared to have no significant effect over the TC.

The study also found that at the initial stage of implementation, the TC were positively related to performance of the POs. That is, as TC increase, the success index of the POs likewise increases. However, as the TC continue to get

higher, the success index decreases. This pointed out that high TC pose a constraint to the successful performance of the POs.

Other Issues Related to TC Analysis

Among the issues revisited were the definitions of TC and the applicability of these definitions to applied research, TC measurement, a preferred TC definition and other issues like the gender dimension and allocation of fixed government resources to different programs.

All the definitions of TC were based on the concept of their being indirect costs involved in reaching and enforcing agreements. However, the applicability of the different definitions depends on the nature of the problem to be analyzed. For multi-objective and multi-stakeholder programs, the definition of Kuperan, et al. (1998) seemed to be more appropriate.

Limitations of the Study

The study does, however, have some limitations. First, there were no quantitative analyses on the benefits realized from the FSP mainly, because of the difficulty in obtaining information brought about by the sporadic implementation of CBCRM activities. Second, analysis of TC was limited to the phases of CBCRM rather than by specific components such as monitoring, motivation, information and follow up. Incomplete information did not permit the analysis of specific components. Moreover, TC were indicative estimates only since information was based merely on the records available from various sources and the recall of the different key informants. The latter is attributed to the improper documentation by stakeholders. In addition, information about the actual allocation and releases for the SMB-CBCRM project was no longer available from the BFAR office due to a change in administration. Lastly, no disaggregated information was available to warrant the inclusion of the gender dimension in the analysis.

6.2 Conclusions

Based on the results, the conclusions of the study are as follows:

- 1) It is possible to adopt and modify success criteria and indicators used by other researchers. This was verified in this study when the CIFOR's list of C&I for forestry management and the positive economics indicators identified by Ruitenbeek and Cartier (1998) were modified, validated and finally adopted for evaluating the performance of the FSP-SMB-CRMP.
- 2) Transaction costs appeared to be high as more effort and cash costs were expended on an activity. This was evident in the TC incurred by those municipalities and barangays that implemented many activities relative to others. Transaction costs for all phases of the SMB-CRMP constitute 37% of the TPC. The instability of the financial support resulted in high TC,

accounting for 86% of the TPC during the implementation phase. Further analysis of TC as a share of the total TC showed that implementation phase had the highest contribution of 74% to the total TC. The value of time accounted for 93% of the TC during the implementation phase. By stakeholder, the POs contributed 94% of the value of time for this phase.

- 3) The share to the total transactions was highest among the POs who were the final beneficiaries of the program. This was due to the monetary value of their time spent in transacting the activities related to CRM, particularly during the implementation phase. Hence, it is apparent that the policy formulated at the national level ignored the costs of transactions when the policies were translated into programs/projects at the local level. Furthermore, it is not surprising that even if good programs are packaged at the national level, they may not be acceptable at the local level if they would entail high transaction costs. Thus, it is imperative that TC should be considered in any program planning.
- 4) The factors found to affect TC included the number of people involved in the transactions, the number of activities and the performance of the organization. The results on relationships between the TC and these variables conformed with an 'a priori' expectation and likewise supported the results of previous studies which showed that TC increase with an increasing number of participants and as the transactions increase.
- 5) While higher TC led to better performance of the stakeholders at the initial stage of project implementation, a further increasing level of TC will eventually result in the slowing down of the performance of the parties involved in the project.
- 6) There is no specific TC definition that can be applied to any TC studies. The applicability of the different definitions of TC in applied research depends on the nature of the problem to be analyzed. For multi-objective and multi-stakeholder programs, a definition that will capture all the components and objectives of the program had to be considered.
- 7) The absence of gender-segregated information did not allow the analysis of the gender dimension in the TC analysis. Thus, it is recommended that a study that will focus on TC and gender be conducted to determine the distribution of TC between and within genders.

6.3 Policy Implications

Based on the results of the study, several policy implications can be put forward. These include the following:

- 1) The high transaction costs share during the implementation of the SMB-CRM activities points to the need to consider the transaction costs involved in the activities. Program planners at the national level should provide for budgetary allowance for programs that will be implemented at the local or LGU level.
- 2) The higher share of the POs who are beneficiaries of the program is an indication that the design of the program needs to be redirected to provide initial funding during implementation. While higher TC lead to better performance of the POs at the initial stage of project implementation, a further increasing level of TC will eventually slow down the performance of the parties involved in the project. This is because the great bulk of the transaction costs of the POs is attributed to the value of time spent in looking for funds for the project(s).
- 3) The absence of readily available information that can be used in analyzing financial flows and operation of the SMB-CRM is a manifestation that monitoring and evaluation has not been effectively carried out. Hence, it is imperative that program planners should see to it that effective monitoring and evaluation be made an integral part of any program. This would enable the implementers to identify the bottlenecks such that any necessary redirection in program implementation can be made.
- 4) The importance of the gender dimension in a community-based program cannot be overemphasized. In the case of the SMB-CRMP, no records showing the gender consideration were available. Hence, a study that will focus on the gender dimension and TC should be initiated.
- 5) Experiences during the field visits revealed that the concept of CBCRM was not well understood by the different stakeholders. This was manifested by the varied interpretations given by the key respondents. This implies that, in order to avoid confusion, the stakeholders of a CBCRM project should be properly oriented on the true meaning of the concept.

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APPENDIX 1

Distribution of Time (in Man-days) and Value of Time* (in Pesos) at Each Phase by Stakeholders

Stakeholder	Phase						Total	
	Institutionalization		CO/Capability Building		Implementation			
	Time	Value of Time	Time	Value of Time	Time	Value of Time	Time	Value of Time
FSP/BFAR	-	-	-	-	-	-	-	-
DA Nat'l/RFU	99 (21.6)	36,707 (22.1)	-	-	-	-	99 (0.3)	36,707 (0.2)
LGUs	211 (46.1)	96,707 (58.3)	-	-	2,368 (10.2)	999,081 (6.0)	2,579 (7.8)	1,095,788 (5.5)
POs	-	-	9,000 (97.9)	3,008,766 (97.9)	20,861 (89.8)	15,532,922 (94.0)	29,861 (87.8)	18,541,688 (93.7)
Successful	-	-	4,821	2,084,729	18,499	15,161,176	23,320	17,250,645
Less Successful	-	-	4,179	924,037	2,362	371,746	6,541	1,291,043
NGO	16 (3.5)	7,650 (4.6)	195 (2.1)	63,923 (2.1)	-	-	211 (0.6)	71,573 (0.4)
Private Sector	-	-	-	-	-	-	-	-
Others	132 (28.8)	24,854 (15.0)	-	-	-	-	132 (0.4)	24,854 (0.1)
Total	458	165,918	9,195	3,072,689	23,229	16,532,003	32,882	19,770,610

Source of basic data: Available records from BFAR, DA-RFU, CASAFI, LGUs, Barangay Councils and POs.

Note:

Others refer to representatives from academe, PNP, DOJ, etc.

Figures in parentheses are percentages of column total.

* Value of time was estimated by multiplying time by the respective foregone income.

APPENDIX 2

Total Time Spent (in Man-days) and Value of Time (in Pesos) of POs by Specific CRM Activities

<i>Activity</i>	<i>Successful Barangay/POs</i>		<i>Less-successful Barangay/POs</i>		<i>Total</i>	
	<i>Time</i>	<i>Value of Time</i>	<i>Time</i>	<i>Value of Time</i>	<i>Time</i>	<i>Value of Time</i>
Artificial reef	10	6,153	-	-	10	6,153
Bangus culture	259	24,102	67	1,550	326	25,652
Billboards	-	-	25	1,587	25	1,587
Cleaning of seashore	-	-	120	9,187	120	9,187
Lapu-lapu culture	7	4,307	-	-	7	4,307
Law enforcement	17,119	14,588,564	1,806	236,447	18,925	14,825,011
Lobster culture	648	27,083	-	-	648	27,083
Mangrove reforestation	114	2,685	152	103,300	266	105,985
NFA rice retail	-	-	48	5,587	48	5,587
Seaweed culture	294	443,402	72	9,088	366	452,490
Tree planting	48	64,880	72	4,998	120	69,878
Total	18,499	15,161,176	2,362	371,744	20,861	15,532,920

Source of basic data: Available records from POs.

APPENDIX 3

List of Acronyms

BFAR	Bureau of Fisheries and Aquatic Resources
CASAFI	Caceres Social Action Foundation, Inc
CBCRM	Community-Based Coastal Resource Management
CBRM	Community-Based Resource Management
CIFOR	Center for International Forestry Research
CRM	Coastal Resource Management
DA	Department of Agriculture
DA-RFU	Department of Agriculture-Regional Field Unit
DPC	Direct Project Costs
EPA	US Environmental Protection Agency
FAs	Fishers' Associations
FGD	Focused Group Discussion
FSP	Fisheries Sector Program
ICFMP	Integrated Coastal and Fisheries Management Plan
ICLARM	International Center for Living Aquatic Resources Management
IRA	Internal Revenue Allotment
KIs	Key Informants
LGC	Local Government Code
LGU	Local Government Unit
MAO	Municipal Agriculture Officer
NGO	Non-Government Organization
PO	People's Organization
REA	Resource and Ecological Assessment
SMB	San Miguel Bay
SMB-CRMP	The San Miguel Bay Coastal Resource Management Program
SMBMC	San Miguel Bay Management Council
SRA	Social Reform Agenda
TC	Transaction Costs
TCS	Transaction Costs Share
TPC	Total Project Costs