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Household Perceptions of the Long-Term Impact of Coastal Resources Management in Panguil Bay

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Household Perceptions of the Long-Term Impact of Coastal Resources Management in Panguil Bay

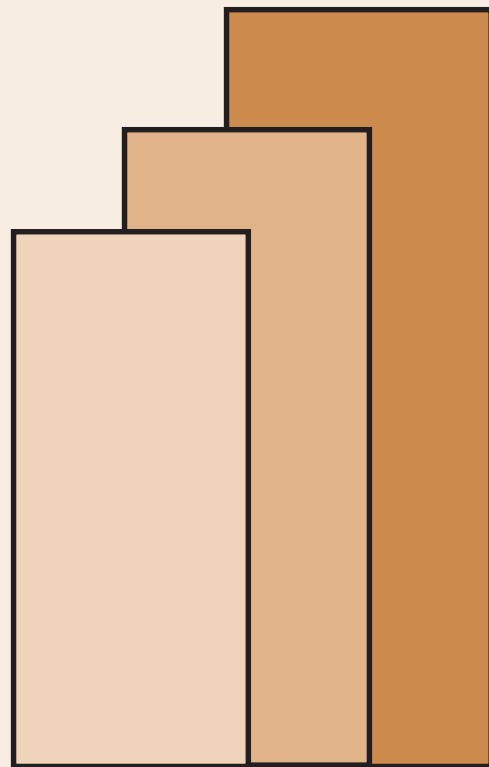
Danilo C. Israel et al.

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Abstract

The study analyzed the perceptions of fishermen households of the long-term impact of Coastal Resources Management (CRM) using Panguil Bay in Mindanao as case study. It used data gathered through a survey that measured perceptions using a ladder diagram along a 10-point scale.

The study found that fishermen households in Panguil Bay perceived that their harvest, income and overall well-being have deteriorated in the last ten years when CRM was in implementation and will continue to decline in the next ten years. They further believed that the well being of the coastal resources on which they depend on has decreased in the last ten years and will continue to do so in the future. Based on these results, the study concluded that in the eyes of fishermen households in Panguil Bay, CRM has failed to attain the long-term objectives of improving their well being and that of the coastal resources in their areas.

Since the perceptions of the fishermen households are important to their acceptance of CRM as a management approach, the study asserted that efforts must be exerted to seriously address the limitations of CRM for its future improvement. It further argued that the phenomenal growth of the approach and the large public investment put into it by the country now requires the in-depth evaluation of their impact and performance. Along this line, the study suggested that CRM impact indicators be further refined, the variables for their actual measurement developed, and the required time-series data and information be gathered on a consistent basis.

Keywords: Coastal Resources Management, Long-Term Impact Indicators, Ladder Diagram, Panguil Bay

HOUSEHOLD PERCEPTIONS OF THE LONG-TERM IMPACT OF COASTAL RESOURCES MANAGEMENT IN PANGUIL BAY

by

Danilo C. Israel, Elvira Y. Adan, Nydia F. Lopez and Jennifer C. de Castro*

1. INTRODUCTION

Coastal resources management (CRM) has flourished as a management approach for coastal areas in the Philippines. This development is reflected by the phenomenal growth of CRM and CRM-type activities over the past two decades or so (Pomeroy and Carlos 1996). These undertakings include a significant number of large-scale projects implemented with nationwide or specific-area coverage and financed significantly with public resources (FRMP 2001a).

The proliferation of CRM, coupled with the reasonably long period of time it has been in implementation, now calls for an evaluation of its long-term impact as a management approach. This is particularly true when a series of CRM activities have been conducted over many years in a specific coastal area and where some evidence of performance can be generated.

A cursory look at the literature shows that evaluation efforts on CRM as a management approach have been at the program and project levels mostly. Many of these were in the form of mid-term reviews done halfway through activities (e.g. FRMP 2001b), annual reports (e.g. FRMP 2002), and terminal reviews conducted after the end of the project (e.g. PRIMEX and ANZDEC 1996a, 1996b). These evaluation works mainly assessed the performance of CRM activities vis-a-vis their short-term or medium-term objectives. In-house staff, commissioned evaluators and independent researchers usually conducted the analyses.

This study evaluates the long-term impact of CRM, not based on the perspectives of technical people, but in the eyes of its intended primary beneficiaries, the fishermen households. Furthermore, it does so not by looking into a specific CRM program or project but into a succession of CRM projects and activities conducted in a single coastal area over the years, Panguil Bay, Mindanao. The objectives were to generate information useful for the future conduct of CRM, identify its constraints and recommend courses of actions to address them.

The study is important because how the long-term impact of CRM is perceived by fishermen households speak a lot about the political acceptability of the approach in the coastal areas. It should be noted that there have been studies that used household perceptions to assess CRM performance already (e.g. Mulekom and Tria 1999, Katon et al. 1998, Katon et al. 1997, Pomeroy et al. 1997, Pomeroy and Carlos 1996). However, this study sets itself apart by not

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only dealing on specific programs or projects, as the other works did, but by looking into a series of CRM activities implemented in one coastal area over a reasonably long period of time.

The study uses three sources of data: published and unpublished literature on CRM, key informant interviews and the household survey. The first source includes general publications on CRM and published and unpublished materials from the CRM projects in Panguil Bay. The second source is comprised interviews with key informants from the national and local governments, CRM projects, NGOs and other organizations involved in CRM activities in Panguil Bay. The third source is the survey conducted by among fishermen household in the bay.

This paper is organized as follows. The second section discusses the development of CRM in the Philippines while the third section presents a background of Panguil Bay. The study methodology is discussed in the fourth section while the study results and analysis are presented in the fifth section. The sixth section of the paper discusses the constraints to CRM implementation in Panguil bay while the last two sections present the conclusions and recommendations.

2. DEVELOPMENT OF CRM IN THE PHILIPPINES

CRM has many definitions and variants. In this study, CRM is used as a generic term that represents all CRM-type activities, including community-based coastal resources management (CBCRM), integrated coastal management (ICM), co-management and similar activities. CRM is defined as “a planning process which focuses on managing coastal resources in an integrative and systematic manner through an interdisciplinary research and decision-making process” (Hancock 1994). A government-produced literature called it “the participatory process of planning, implementing and monitoring sustainable use of coastal resources through collective action and sound decision-making” (DENR/DA-BFAR/DILG 2001a).

As a coastal management approach, CRM actually started in the U.S. in the 1970s (Hancock 1994). One of the earliest CRM-type activities in the Philippines was the 1974 reef conservation initiative undertaken by the Silliman University in the Apo Island and Sumilon Island of Western Visayas. Later on, the World Bank funded Central Visayas Regional Project I (CVRP I) that utilized CRM approaches. Then, in 1986, the ASEAN/USAID/ICLARM Coastal Resource Management Program (CRMP) was piloted in Lingayen Gulf, together with pilot sites in other Southeast Asian countries. Since then, CRM activities, both small-scale and large-scale, have flourished in the country as earlier mentioned. In general, these undertakings have been implemented and funded by various institutions either working individually or in tandem, including foreign donor organizations, international loan-granting development institutions, national and local government agencies, non-governmental organizations (NGOs), public and private universities and colleges, people’s organizations and various types of cooperatives, and other public and private entities. As also earlier cited, many of the large-scale CRM projects have been funded to a significant extent by the government.

There has been no attempt to list all CRM activities in the Philippines since the management approach was first applied. Such effort would have been difficult to conduct and fraught with

problems. For one, identifying fully the numerous coastal management-related activities that have been conducted over time and subsequently establishing those that are actually CRM by definition will be difficult. Moreover, many CRM activities are not only truly small-scale in nature but are also conducted locally without any participation and monitoring by agencies at the national level. This renders the proper identification of these CRM activities even more problematic.

FRMP (2001a) made a listing of some of the recent major coastal resource management and related initiatives in the country, most of which have CRM-type components. There were 24 such undertakings conducted in different areas since 1993. Some ended during the second half of the last decade while others will terminate in the first half of the current decade. Some of the initiatives have regional coverage while others concentrated on specific provinces, communities or important areas such as islands, seas, bays, gulfs, sounds and marshlands.

On the legal aspect, two important laws that devolved significant powers from the national to the local governments hastened the development and implementation of CRM (DENR/BFAR-DA/DILG 2001a, 2001b, Elazegui et al. 1999, PIAF 1998, LGC 1996). The first is the Local Government Code (LGC) or Republic Act (RA) 7160 which was passed by the Congress of the Philippines in 1991 to decentralize governance in the country. This law has several features that provided the legal basis for local management and in effect the expansion of CRM. Among the important provisions is Section 149 that provided the municipal governments the exclusive right to grant fishery privileges and impose rental fees and charges in the use of municipal waters without permission from the national government

The other national law of great significance to the development of CRM is the Philippine Fisheries Code or RA 8550. This law was enacted in 1998 to codify all laws then existing and to implement new concepts for fisheries management. It has various provisions that explicitly defined the role of the local governments in the management of coastal resources in various aspects including jurisdiction, enforcement, legislation, protection/conservation, regulation, and coordination and consultation. Among others, the Fisheries Code reaffirmed the jurisdiction of the municipal and city governments over municipal waters and the scope of municipal waters earlier defined in the LGC. Another important feature of the Code with direct bearing on CRM is its recognition of the importance of the active participation of the local fishermen, other stakeholders and the coastal communities in management.

3. BACKGROUND OF PANGUIL BAY

Panguil Bay is in the southern island of Mindanao and bordered by the provinces of Lanao del Norte in the east and Zamboanga del Sur and Misamis Occidental in the west (Figure 1). It is shaped like a canine tooth from where it derives its name. The Bay has a water area of 18,000 hectares (MSUNFSTDI 1996, MSU-A 1991). Its total catchment area is 309,738 hectares that is traversed by rivers and creeks that originate from two mountain ranges.

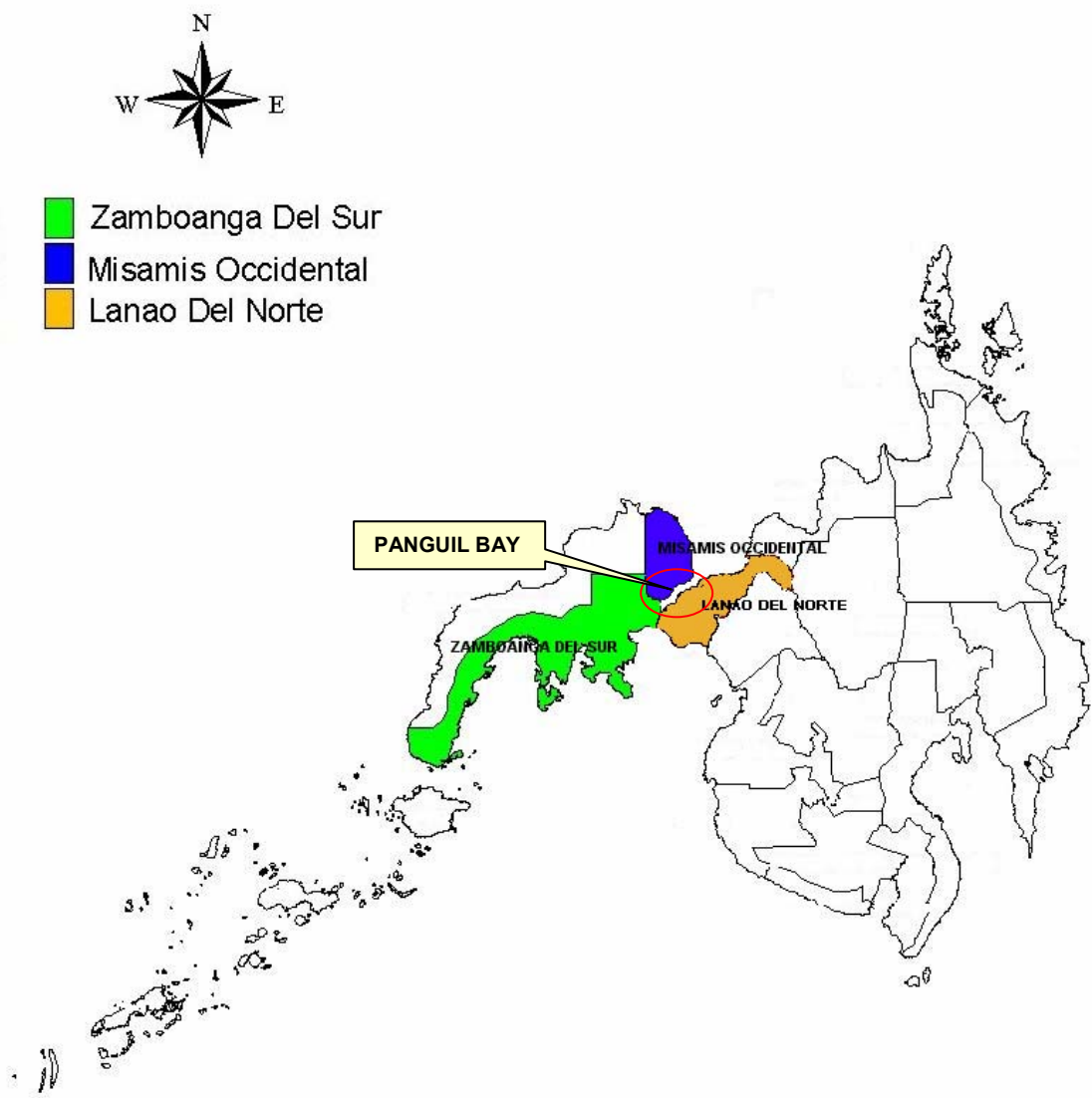


Figure 1. Map of Mindanao showing the provinces bordering Panguil Bay

Fishing is an important source of livelihood among the population living in the coastal barangays of Panguil Bay. In general, fishing in the bay is artisanal and subsistence in nature. In 1980, a total of about 4,000 persons comprised the fishing population in the coastal barangays of Panguil Bay, either as part time or full time fishermen (Adan 2000). This number of fishermen increased to an estimated 7,036 people in 1990 and to 9,847 in 1995.

Panguil bay is home to various important fish and seafood species. Among the most important are penaeid shrimps and prawns, gobies, anchovies, mullets, pony fishes, blue crabs, therapons, carangids, lantern fishes, and hairtails (De Guzman et al.1996). However, while fish and seafood were abundant in the bay, a reduction in the species composition of the stock has been observed over the years. In particular, in 1983, a total of 201 species falling under 86 families and 19 orders of finfishes, crustaceans and mollusks were identified to exist in the area (Adan 2000). This number went down to only 145 species in 1991 and to only 121 species in 1996.

In addition to the decreasing stock composition, interacting socioeconomic, environmental, institutional and political pressures related to fishing have negatively impacted on manifested on Panguil Bay. Among others, these include worsening environmental degradation, deepening poverty among coastal fishermen, and overall poor and ineffective coastal resources management. It was against this backdrop that the national government implemented various CRM activities in the area. Between 1990 and 1994, the Fisheries Sector Program (FSP) was implemented, a large-scale effort financed through loan assistance from the ADB and the Overseas Economic Cooperation Fund (OECF) of Japan. The objective of the program was to attain sustainable fisheries management through a package of policy and institutional reforms and strategic interventions for the purpose of rationalizing the utilization of fisheries resources (PRIMEX AND ANZDEC 1996b, ADB 1989). Overall, FSP covered Panguil Bay and 11 other bays throughout the country.

When FSP ended, the Fisheries Resource Management Project (FRMP), another large-scale undertaking, was implemented to continue and build and follow up on its gains. FSP was conducted from 1998 to 2003 with funding assistance from the ADB and Japan Bank for International Cooperation (JBIC). Its stated objectives were to promote conservation and sustainable management of the coastal fisheries resources by reversing the trend of fisheries resource depletion in municipal fisheries, reduce the extensive poverty of fisherfolks in coastal areas by promoting income diversification that will reduce the reliance of coastal communities on fishing and increase their incomes and living standards (FRMP 2002, 1999). In addition to the original 12 bodies of water covered by FSP, FRMP was also implemented in 7 other coastal areas in the country.

4. METHODOLOGY

To analyze the perceptions of the long-term impact of CRM in Panguil Bay, the study employed the Baseline Dependent Approach methodology that used fishermen households as the units of analysis (e.g. Pomeroy et al. 1996). In this case, the long-term impact of CRM was viewed in terms of its effects on the impact indicators representing the overall well-being of both the human and non-human elements of the ecosystem, or the household well-being (Household) and well-being of the resource (Resource) indicators (with the acronyms in parenthesis). From previous works (e.g., Mulekom and Tria 1999, Katon et al. 1998, Katon et al. 1997, Pomeroy et al. 1997, Pomeroy and Carlos 1996), other impact indicators including

access to sources (Access), control over resources (Control), ability to participate in community affairs (Participate), ability to influence community affairs (Influence), community conflict (Conflict), community compliance with resource management (Compliance), and amount of traditionally harvested resource in the water (Harvest). were also included in the analysis.

To generate the data on the perceptions of the fishermen households of changes in the aforementioned impact indicators between before CRM and the present and between the present and the future, the survey was conducted. The perceptions were gathered using a questionnaire that poses questions employing a ladder diagram, along a 10-point scale, through which the degree of satisfaction or dissatisfaction of the fishermen households over certain propositions relating to the impact indicators were ascertained. The study assumed that the households have the ability to make dependable judgments on the change in the indicators based on informed knowledge and experience on what is going on in their area related to CRM in the span of time under consideration. In addition to household perceptions, the survey gathered demographic and socioeconomic information to support the analysis.

The specific areas covered by the survey were selected coastal barangays in Panguil Bay. The barangays were chosen on the basis of their having experienced continued CRM activities under both FSP and FRMP from the early 1990s up to the time of the study. The actual respondents of the survey were the fishermen household heads in the barangays. Overall, there were 57 coastal barangays in Panguil Bay. Of these, 11 or about 20 percent were selected for coverage. The selection of the barangays were based on various considerations including available resources, security in the barangay, familiarity of survey enumerators of the barangay, distance of the barangay from the study base, and the level of CRM activity in the barangay over the years.

To generate the sample of respondent fishermen households per barangay, a list of households were generated from barangay officials, based on which fishermen households were first identified. The specific fishermen household respondents were then selected at random. In the actual survey, a formal and pre-tested questionnaire was the instrument applied by trained enumerators. The actual survey commenced in August 2002 and ended in December 2002.

There were about 2,165 fishermen households in all the barangays covered by the survey (Table 1). Of these, 442 (20.42 %) were selected as survey respondents. Of these household respondents, 226 were from Lanao del Norte including 82 from Maigo, 96 from Kolambugan and 48 from Kapatagan. In Maigo, there were 30 household respondents from Sigapod, 31 from Balagatasa and 21 from Kulasihan. In Kolambugan, there were 48 household respondents each from Mukas and Tabigue. In Kapatagan, 48 respondents were selected from Taguitic.

Of the household respondents, 120 were from Misamis Occidental. Of these respondents, 48 came from Bonifacio, 48 were from Ozamis City, and 24 were from Clarin. The respondent in Bonifacio were from Migpangi, those in Ozamis City were from San Antonio while those in Clarin were from the Poblacion. In Zamboanga del Sur, 96 household respondents were surveyed. Of these, 48 were from Balas in Aurora and another 48 were from Cabgan in Tambulig.

Table 1. Fishermen Household Population and Number of Survey Respondents, by Province, by Municipality, by Barangay, Panguil Bay, 2002

Province/Municipality/ Barangay	Fishermen Households	Number	Respondents	
			Percent to Total Survey Respondents	Percent to Total Households
Lanao del Norte	948	226	51.13	23.84
Maigo	415	82	18.55	19.76
Sigapod	230	30	6.79	13.04
Balagatasa	146	31	7.01	21.23
Kulasihan	39	21	4.75	53.85
Kolambugan	305	96	21.72	31.48
Mukas	105	48	10.86	45.71
Tabigue	200	48	10.86	24.00
Kapatagan	228	48	10.86	21.05
Taguitic	228	48	10.86	21.05
Misamis Occidental	505	120	27.15	23.76
Bonifacio	106	48	10.86	45.28
Migpangi	106	48	10.86	45.28
Ozamis City	239	48	10.86	20.08
San Antonio	239	48	10.86	20.08
Clarín	160	24	5.43	15.00
Poblacion	160	24	5.43	15.00
Zamboanga del Sur	712	96	21.72	13.48
Aurora	530	48	10.86	9.06
Balas	530	48	10.86	9.06
Tambulig	182	48	10.86	26.37
Cabgan	182	48	10.86	26.37
Panguil Bay	2,165	442	100.00	20.42

5. RESULTS AND ANALYSIS

Of the 442 households surveyed in Panguil Bay, 373 (84.39%) were Catholic while 67 (15.16%) were non-Catholic (Table 2). Most of the households were Cebuanos by ethnic origin (72.85%) while the rest belonged to other ethnic groups. The average number of years in the barangay of the households was 30 years. Of the households, 259 (58.6%) were natives of the barangay while only 177 (40.05%) were migrants. The average size of the households was 5 persons.

Table 2. Descriptive Statistics of Fishermen Household Respondents, Panguil Bay

Variable	Average	Frequency	Percent
1. Religion			
Catholic		373	84.39
Non-Catholic		67	15.16
No Response		2	0.45
Total		442	100
2. Ethnicity			
Cebuano		322	72.85
Others		115	26.02
No Response		5	1.13
Total		442	100.00
3. Number of years in the barangay	30	442	100.00
4. Origin			
Native		259	58.60
Migrant		177	40.05
No Response		6	1.36
Total		442	100.00
5. Household size	5	442	100.00
6. Age of respondents	39	442	100.00
7. Highest educational attainment of respondents			
Elementary & Below		309	69.91
High School		115	26.02
Post Secondary		18	4.07
Total		442	100.00
8. Number of years fishing	30	442	100.00
9. Plan to migrate?			
Yes		8	1.81
No		417	94.34
No Response		17	3.85
Total		442	100.00
10. Is fishing seasonal?			
Yes		271	61.31
No		171	38.69
Total		442	100.00
11. Would like to be a fisherman again?			
Yes		351	79.41
No		91	20.59
Total		442	100.00
12. Received any support from government in fishing activity?			
Yes		72	16.29
No		358	81.00
No Response		12	2.71
Total		442	100.00

Table 2. Continued

Variable	Average	Frequency	Percent
13. Awareness on any FSP/FRMP projects in the area?			
Yes		301	68.10
No		90	20.36
No Response		51	11.54
Total		442	100.00
14. Awareness of FSP/FRMP project objectives?			
Yes		293	66.29
No		101	22.85
No Response		48	10.86
Total		442	100.00
15. Employed in the project?			
Yes		71	16.06
No		325	73.53
No Response		46	10.41
Total		442	100.00
16. Relatives directly employed in the project?			
Yes		57	12.90
No		321	72.62
No Response		64	14.48
Total		442	100.00
17. Benefit from the project other than financial gain?			
Yes		211	47.74
No		184	41.63
No Response		47	10.63
Total		442	100.00
18. Attended training sessions?			
Yes		93	21.04
No		299	67.65
No Response		50	11.31
Total		442	100.00
19. Other member of household attended training sessions?			
Yes		19	4.30
No		373	84.39
No Response		50	11.31
Total		442	100.00
20. Attended CRM-Oriented trainings in the past 10 yrs?			
Yes		42	9.50
No		353	79.86
No Response		47	10.63
Total		442	100.00

The average age of the household heads responding to the survey was 39 years. Most of them, 309 (69.91%) were elementary graduate or below while 115 (26.02%) were in the high school level and 18 (4.07%) were in the post-secondary level. Their average number of years fishing was 30 years. Most of the household heads, 417 (94.34%), have no plans to migrate elsewhere. There were 271 (61.31%) of them who fished on a seasonal basis. If given the chance to choose, 351 (79.41%) or most of them would prefer to be a fisherman again.

Of the household heads, only 72 (16.29%) said that they received support from the government in their fishing activity while most, 358 (81%), mentioned that they did not. Majority of them, 301 (68.10 %) mentioned that they were aware of FSP/FRMP projects in their area and 293 (66.29 %) at the same time said they were also aware of the objectives of the projects. Most, 325 (73.53 %), reported that they were not employed in those projects and 321 (72.62 %) said that they did not have relatives who were directly employed in the projects. However, 211 (47.74%) also mentioned that they gained certain benefits from the projects other than financial gain. Of the household heads, only 93 (21.04%) said that they have attended training sessions conducted by the FRMP/FSP projects and only 19 (4.3 %) mentioned that other members of their household have attended trainings. Of them, only 42 (9.59 %) mentioned that they have attended CRM-oriented trainings in the past ten years.

The next step undertaken was the analysis of the perceptions of households on the impact indicators presented to them for evaluation. Based on the perception data gathered through the survey employing the ladder diagram, the mean ranks of the impact indicators for Today, Before (ten years ago), and After (ten years from now) were computed; the difference between the mean ranks of the indicators for a) Today and Before and b) After and Today were also measured. An approximate Z-value for the Wilcoxon Signed Rank Test were computed to test if observed difference in the mean ranks is statistically significant. The analyses presented below were for the entire Panguil Bay.

For the Today and Before comparison for Panguil Bay households covered by the survey, significant difference exists between the mean ranks of the indicators Household, Resource, Income, Access, Conflict, and Harvest (Table 3). Furthermore the signs of the difference were negative which implies that the fishermen households in Panguil Bay perceived that household well-being, resource well-being, local income, access to resources, community conflict and harvest have deteriorated in the last ten years. On the other hand, there was also significant difference between the mean ranks of the indicators Control and Compliance. The signs of the difference were positive which means that the households perceived that control over resources and community compliance have improved in the last ten years.

For the After and Today comparison, significant difference exists between the mean ranks of the indicators Household, Resource, Income, Access, and Harvest (Table 4). The signs were negative which suggests that the households in Panguil Bay perceived that household well-being, resource well-being, household income, access to resources, and harvest would also decrease in the next ten years. In contrast, there was significant difference between the mean ranks of the indicators Control and Compliance. The signs were positive which suggests that the households believed that control over resources and community compliance would improve in the next ten years.

Table 3. Perceived Changes in Indicators, from Before State to Today State, Panguil Bay

	Today	Before	Today-Before	Approximate Z - value **	P value
Household	5.69	6.61	-0.91	-13.18	0.000*
Resource	5.94	7.65	-1.71	-17.23	0.000*
Income	5.57	6.57	-0.99	-13.48	0.000*
Access	5.77	6.97	-1.19	-14.73	0.000*
Control	5.75	4.82	0.93	12.01	0.000*
Participate	5.49	5.50	-0.01	-0.40	0.692
Influence	5.33	5.32	0.00	-0.20	0.843
Conflict	5.68	5.78	-0.10	-3.11	0.002*
Compliance	6.10	5.07	1.03	14.31	0.000*
Harvest	5.89	7.77	-1.88	-17.10	0.000*

Note: * - significant at 5%

** - Approximate z value of Wilcoxon sign rank test

Table 4. Perceived Changes in Indicators, From Today State to After State, Panguil Bay

	After	Today	After-Today	Approximate Z value	P value
Household	5.38	5.69	-0.31	-8.56	0.000*
Resource	5.20	5.94	-0.74	-13.12	0.000*
Income	5.26	5.57	-0.31	-8.18	0.000*
Access	5.30	5.77	-0.47	-10.68	0.000*
Control	6.45	5.75	0.70	13.04	0.000*
Participate	5.53	5.49	0.04	1.66	0.096
Influence	5.33	5.33	0.01	0.93	0.352
Conflict	5.70	5.68	0.02	-0.50	0.614
Compliance	6.63	6.10	0.53	12.07	0.000*
Harvest	4.87	5.89	-1.02	-14.50	0.000*

Note: * - significant at 5%

** - Approximate z value of Wilcoxon sign rank test

For further analysis, CRM beneficiary households were disaggregated from the total respondent households of the survey. These were households whose heads were directly employed by FSP and/or FRMP, received benefits other than financial gains from the projects and/or attended trainings from the projects. Furthermore, beneficiary households also included those whose relatives were directly employed or trained by the projects. Again, the statistical analysis done for all households were applied for the CRM beneficiary households.

For the Today and Before comparison for Panguil Bay CRM beneficiary households, significant difference existed between the **mean ranks** of the indicators Household, Resource, Income, Access, Conflict, and Harvest ((Table 5). Furthermore the signs of the difference were negative which implies that the fishermen households in Panguil Bay perceived that household well-being, resource well-being, local income, access to resources, community conflict and harvest have deteriorated in the last ten years. On the other hand, there was significant difference between the **mean ranks** of the indicators Control and Compliance. The signs of the difference were positive which means that the households perceived that control over resources, and community compliance have improved in the last ten years.

For the After and Today comparison, significant difference existed between the **mean ranks** of the indicators Household, Resource, Income, Access, and Harvest (Table 6). The signs were negative which suggests that the CRM beneficiary households in Panguil Bay perceived that household well-being, resource well-being, household income, access to resources, and harvest would decrease in the next ten years. In contrast, there was significant difference between the **mean ranks** of the indicators Control, Participate and Compliance. The signs were positive which suggests that the households believed that control over resources, participation in community affairs, and community compliance would improve in the next ten years.

In review, the descriptive analysis of the fishermen households in Panguil Bay indicated that most of them were Catholic, Cebuano, have lived in their barangays for an average of 30 years, and have sizes of 5 members. The household heads were on average 39 years of age and have been fishing on average for 30 years. Most have elementary education, no plans to migrate, been fishing on a seasonal basis, and would prefer to be a fisherman again. Most said they received little support from the government but many were also aware of CRM activities, particularly FSP and FRMP, in their area and the objectives of said activities. Only a few of the households were directly employed in CRM projects or have relatives who were but many benefited from the projects other than financial gain. Furthermore, only a few received CRM training or had other members in their households who attended trainings.

Based on the above, some important observations need highlighting about the profile of the fishermen respondent households in Panguil Bay. In particular, most fishermen households in Panguil bay belonged to one faith, one ethnic tribe, have a family size about the same as the national average (see NSO 2001) and have lived in their respective barangays for a long time. The fishermen themselves were relatively young, have been fishing for a long time and likely started doing so at an early age, were under-educated, were doing fishing on a seasonal basis and were dedicated to fishing as a form of livelihood.

Table 5. Perceived Changes in Indicators, from Before State to Today State, CRM Beneficiaries, Panguil Bay

	Today	Before	Today-Before	Approximate Z - value **	P value
Household	5.97	6.86	-0.90	-9.51	0.000*
Resource	6.21	8.04	-1.83	-13.15	0.000*
Income	5.83	6.81	-0.98	-9.98	0.000*
Access	6.03	7.45	-1.41	-12.22	0.000*
Control	5.93	5.09	0.84	8.25	0.000*
Participate	5.75	5.73	0.02	0.20	0.842
Influence	5.54	5.50	0.04	0.36	0.718
Conflict	5.97	6.11	-0.14	-1.98	0.047*
Compliance	6.35	5.34	1.01	10.74	0.000*
Harvest	6.20	8.24	-2.05	-12.98	0.000*

Note: * - significant at 5%

** - Approximate z value of Wilcoxon sign rank test

Table 6. Perceived Changes in Indicators, From Today State to After State, CRM Beneficiaries, Panguil Bay

	After	Today	After-Today	Approximate Z value	P value
Household	5.64	5.97	-0.32	-6.49	0.000*
Resource	5.41	6.21	-0.80	-9.98	0.000*
Income	5.50	5.83	-0.33	-6.08	0.000*
Access	5.46	6.03	-0.57	-8.42	0.000*
Control	6.67	5.93	0.74	10.09	0.000*
Participate	5.81	5.75	0.07	2.32	0.021*
Influence	5.54	5.54	0.00	0.69	0.492
Conflict	6.04	5.97	0.07	0.81	0.416
Compliance	6.90	6.35	0.56	9.40	0.000*
Harvest	5.00	6.20	-1.20	-11.57	0.000*

Note: * - significant at 5%

** - Approximate z value of Wilcoxon sign rank test

That the fishermen households in Panguil Bay were to a significant extent homogeneous in faith and tongue is favorable for CRM. In terms of community organizing, this trait should help reduce social frictions. That the households have lived in the barangay for a long time and have no plans to migrate elsewhere should also be an advantage because of the permanence or continuity in the local people targeted by the CRM activities. Being young and dedicated are also positive traits among the fishermen since these provide the vigor and interest among them in the long-term development of the resources on which they depend on. Even the under-education among the fishermen should be taken as a positive as it provides areas for improvement under CRM. That they are educated at all at the elementary level means that they can read and write materials about CRM and can be developed through further education and training.

The statistical analysis shows some interesting results as well. On the negative side, whether CRM beneficiaries or not, fishermen households in Panguil Bay perceived that their fish harvest, income and overall well-being have deteriorated in the last ten years when CRM was in implementation and will continue to do so in the next ten years. They further believed that the well-being of the coastal resources on which they depend on has decreased as well and will continue to decline in the future. Furthermore, results indicated that other impact indicators have also worsened as well and will continue to do so. On the positive side, however, the fishermen households consistently asserted that two institutionally related impact indicators, their control over resources and community compliance to rules and regulations, have improved in the last ten years of CRM and will continue improving in the future. These results speak well of the aspects of CRM that are designed to effect the institutional changes, particularly the legal and the monitoring, enforcement components.

6. CONSTRAINTS TO CRM

In this section, some of the major constraints to the implementation of CRM in Panguil Bay over the last ten years or so are discussed. The issues are based on information generated from national and local key informants, including the fishermen respondent households in the bay. The discussion proceeds in a general manner and is by no means exhaustive. Furthermore, the issues are not ordered in terms of importance. The purpose is simply to highlight the important problems faced as seen by the key actors and stakeholders.

At the government level, the changing priorities and support afforded by public officials is cited as among the major factors affecting the effective implementation of CRM in Panguil. Changing priorities and support are due to the politically sensitive positions of public officials and the short tenures under which they serve. At the national and regional levels, the appointive officials of the various agencies involved in CRM implementation have come and gone many times over in the last ten years and the level and intensity of government support for CRM has changed also. At the provincial, municipal and barangay levels, public officials in Panguil Bay likewise have changed often over time and so have local government priorities in terms of CRM. A shift in priorities among public officials going against CRM means the diminution of its importance in the overall programs of government. Even mixed changes, sometimes going in favor or against CRM at certain periods, would provide confusion and inconsistent signals at the least regarding the seriousness of the government in pursuing CRM as the chosen approach for managing coastal areas.

At the local government and private sector levels in Panguil Bay, another important constraint to CRM is the failure of integrated bay management to take root during the past ten years. In general, the prevailing attitude among government managers and private resource users is still that coastal management is to be done mainly at the individual barangay, municipality and provincial levels. It is for this reason that fishermen cooperatives and similar organizations in Panguil Bay are municipality and barangay based and their activities, including monitoring and enforcement, are also confined this way. The isolated approach with which things have been done is brought about partly by the dominance of political subdivisions as the basis of management in the country and the turf driven mentality of local government officials.

Across CRM projects in Panguil Bay, an important constraint to the implementation of CRM is the discontinuous way with which individual projects have been undertaken over time. Between FSP and FRMP, this discontinuity was brought about by a couple of reasons. First, the two projects were taken as activities separate from each other when they were planned and implemented. Thus, even though FSP may have set some of the foundations for FRMP, the two projects were actually significantly different in terms of objectives, scopes and activities. Second, there was a time gap of a few years between the end of FSP and the start of FRMP and this vacuum effectively created a physical discontinuity in the implementation of CRM activities in the bay. This also created diminished interests as well as substantial attrition rates among the implementers, beneficiaries and other CRM participants. The halt in the activities for some years was critical since it stopped CRM momentum and caused some efforts, such as community organizing, to be conducted all over again from square one.

The comparatively lower overall budget of FRMP compared to FSP and the relative decrease in the geographical scope and activities of the latter in Panguil Bay, due to the lower fund allotment and the subsequent need to prioritize, has created another important implementation problem. Some local government officials have been unhappy over the exclusion of their areas from FRMP coverage while others have been complaining about the sporadic and low level of activities in their sites. Furthermore, FSP may have created so much expectation in terms of scope and coverage that disadvantaged succeeding FRMP efforts. What is clear is that the disharmony between CRM implementers and the local participants have worked much against the spirit of full cooperation and integrated management.

The heavy reliance on research, particularly in the case of FSP, and the low level of use of the subsequent results of research, for both FSP and FRMP was another problem faced in Panguil Bay. FSP placed so much emphasis on research that it even became a cruel joke that the researchers and consultants were actually the main beneficiaries of the program and not the targeted fishermen households and other local stakeholders. Up to the present, the results of many FSP researches remain in the paper reports stacked somewhere in the archives of government. The FRMP and BFAR are doing compilation of some of these but there is really little effort to effectively use the research results as important tools for CRM management. Beyond the submission of reports and meeting the terms of reference, there is also not much initiative on the part of the CRM implementers, researchers and consultants to present the results of research to the public in Panguil Bay. Has this been done, it would have greatly increased the practical value of the products of research to fishermen and other stakeholders.

The high expectations that FSP instilled into the fishermen of Panguil Bay, especially in the area of providing alternative livelihood assistance, may have worked also against the effectiveness of the program, and that of FRMP later. At the early stages of FSP, fishermen

were said to be very enthusiastic in joining the activities because they hoped that it would help improve their lives materially. For many fishermen, however, the livelihood assistance did not materialize leading to their disillusionment with CRM. When FRMP came along, the past experience of the fishermen with FSP led many to think of the project and the entire CRM effort in the bay as another government program that provides much talk, some hope, and not much else.

The image of FSP as a politically influenced program in Panguil Bay may have negatively affected further not only itself but also FRMP later. During its implementation, FSP implementers were perceived by many stakeholders as at times politically influenced in their decisions, particularly in the selection of sites for its mangrove reforestation and other activities. This bias led to the selection of technically poor but politically preferred sites, where high mortality rates of the planted mangroves were experienced, for instance, causing the failure of the entire reforestation activities. Although not documented, the perceptions of FSP in Panguil Bay as being politically influenced, has been inherited by FRMP by virtue of its being a similar government program.

At the level of the individual projects, an even more serious and often mentioned problem in CRM implementation in Panguil Bay is the delay and untimely releases of project funds. The cycle of approval of contracts and other budget-related documents takes a long time to complete due to various reasons, including the long government budgetary process, involvement of numerous signatories, indifference of some of signatories who for one reason or another bide their time to approve documents, and other unwanted features of the government bureaucracy. This problem is so significant that many implementers and stakeholders considered it as the single most constraining factor in CRM implementation. Among other, the delay in the release of project funds upsets the timing of project activities, reduces their effectiveness, opens to question the credibility of implementers, reduces the interest of various partners and beneficiaries, and threatens the entire rationale of CRM projects.

In addition to funding delays, fund underutilization is yet another problem in CRM implementation. In a significant way, this problem is caused by the delay in the approval of contracts between the project and those hired to conduct specific activities. Fund underutilization is particularly critical when a CRM is nearing its end. In this case, it is forced to fast track its activities in order to utilize the funds it need to spend before closing shop. With substantial funds still at hand and the limited time available, hastiness in the selection and conduct of activities may occur and this further puts to risk project performance.

Still another problem in CRM implementation in Panguil Bay that is partly related to fund management is that after 10 years or so of implementation, the critical mass of staff and workers for CRM has yet to be attained. For one thing, many of the staff members who worked for FSP have moved on and were not involved with FRMP. This created a big loss for CRM since these people have been trained for years using FSP money. Another thing, some FRMP staff members who worked for the project in the early stages have already moved on to other CRM projects or areas of work outside of CRM. This exodus is mainly caused by the low level of incentives offered by CRM projects to their staff, particularly to those who are government employees seconded only from the national and local governments. As a result, many of the remaining CRM staff and workers have been forced to do multi-tasking. While there are advantages to this, multi-tasking develops less specialist skills among the staff as well as overworks them. In general, the lack of appropriate

incentives renders personnel prone to resignation. Furthermore, when incentives are perceived as unevenly provided, e.g., between seconded staff and project recruited staff, demoralization develops.

Lastly, another important problem going against CRM, and particularly FRMP, is that many local stakeholders in Panguil Bay view it as conducting too much training without the necessary follow-up in terms of production oriented and livelihood promotion activities. The low level of performance in production oriented activities and livelihood assistance were said to be caused by some critical factors, particularly the delay in the selection and contracting of NGOs to conduct the community organizing for livelihood promotion and the backing out of some already selected NGOs to do the work. These in turn were traced to the inefficiency of the bureaucracy in releasing the needed funds. Just the same, the image of a mainly training-oriented CRM project does not quite speak well of FRMP in particular and CRM as a whole.

In fairness, some of the important problems constraining CRM in Panguil Bay are actually present also in other areas of public governance in the country. For instance, bureaucratic inertia manifested in the unreasonably long budgetary process that delays the implementation of activities is common in government. The short tenures of public officials that force them to have myopic agenda that run counter to the long-term goals of CRM is another general government malaise. That the coastal fishermen themselves are part of the problem, having taken CRM not as a vehicle for their long-term betterment but only a palliative for meeting their immediate needs is likewise common in the country where the majority of the population lives in poverty. Having said these, it is on the other hand clear that CRM has specific problems not usual elsewhere, some of which can be effectively addressed with better management.

7. CONCLUSIONS

In review, the study looked into the household perceptions long-term impact of CRM using Panguil Bay as case study. The study generated the following findings and conclusions about the fishermen and fishermen households in the bay:

- a) fishermen households were highly homogeneous in faith and ethnic origin which is perceived as favorable for CRM, particularly in the organizational aspects of work;
- b) fishermen households have lived in their barangays for a long time and have no plans to migrate which is an advantage for CRM because of the continuity in the people targeted by activities;
- c) fishermen were generally young and dedicated which are positive traits since these make them physically capable for and psychologically committed to the long-term development of their livelihood and the resources it depends on;
- d) fishermen were mostly literate but under-educated which should be considered as challenges and areas for improvement under CRM;
- e) fishermen in general have many positive attitudes and values, including the sense of responsibility to coastal resources they exploit, which also should augur well for the implementation of CRM.

Despite the above positives going in favor of CRM in Panguil Bay, the study generated the following findings in terms of the long-term impact of the implementation of the management approach in the bay:

- a) in general, whether CRM beneficiaries or not, fishermen perceived that their harvest, income and overall well-being have deteriorated in the last ten years when CRM was in implementation and will continue to be so in the next ten years;
- b) they believed that the well-being of the coastal resources on which they depend on has decreased in the last ten years and will continue to decline in the future; and
- c) they thought that their control over resources and community compliance to rules and regulations have improved in the last ten years and will continue to improve in the future.

Caveats must be cited regarding the abovementioned conclusions. First, the perceptions of fishermen households about the changes in the impact indicators over time could be unintentionally biased, e.g. due to the limited or wrong information on which they are based on, or intentionally biased, e.g. to heap praise or scorn on CRM as a management concept and/or on its practitioners (see e.g. Pomeroy et al 1996). Second, impact indicators in Panguil Bay are certainly not only determined by CRM but also by various other development factors. In general, economic, social, and environmental changes as well as over developmental progress or retrogress within and outside Panguil Bay can significantly influence in either direction the actual impact changes over time and the perceptions of people about them.

Assuming that the perceptions of the fishermen households are reasonably unbiased and the other development factors influencing changes in the impact indicators are neutral, the results indicate that although it has some positive contributions, CRM in Panguil Bay in general may have failed to attain its long-term objectives of improving the well-being of the fishermen households and the resources they depend on. If the other factors are not taken as neutral, the results may mean simply that the long-term objectives of CRM were not attained in Panguil Bay because said factors have their own effects which on the net negated whatever good results that CRM has brought about. Whichever the case, the consistent results of improvement in terms of the perception of fishermen households on their control over resources and community compliance to rules and regulations are encouraging and should be highlighted. They suggest the implementation of CRM may have a real positive impact in Panguil Bay specifically in terms of helping put up the necessary institutional developments that effect such changes.

8. RECOMMENDATIONS

The problems faced by CRM in Panguil Bay have to be addressed especially if there is going to be yet another CRM project there in the future. If the problems exist not only in the bay but also in other CRM areas in the country, the more that they should be addressed partly for the bay to serve as a model for future CRM refinement for other CRM sites to follow.

On the issue of changing priorities and support by the government, FRMP is in the right direction to engage in Memorandum of Agreements (MOAs) and similar formal agreements

to commit government units to CRM even beyond the terms of signatory government officials. A coordinated effort to inform and educate incoming government officials on CRM will also increase chances of support, especially if these officials are given active roles in the implementation process. It would help further if CRM implementers would be politically neutral and desist from being seen as supporting the agenda of certain politicians in the course of project implementation. Lobbying by implementers for the appointment of candidates for public positions who are seen as strong allies of CRM must be avoided since this could backfire if the positions are not awarded to them. Furthermore, the entire planning and implementation of CRM should be broad based to encompass a wide political spectrum.

The failure of the integrated management approach to take root in Panguil bay is partly a factor of time since ten or so years pale in comparison to the decades of management experience under the current political subdivision approach. One can hope that in time society will realize the value of integrated management for the bay. In a way, CRM as it is practiced has contributed to the fragmented approach of management with its emphasis on certain municipalities and barangays. Future CRM projects in Panguil Bay should rethink its current strategy and move toward a more holistic approach where the whole bay is given precedence over some of its parts. Regardless of the availability of funds, efforts must be geared to implement activities that serve more the interests of the entire bay than those of individual communities.

Long-term and integrated planning for a series of CRM projects will help avoid the problem of discontinuity between projects. With a forward-looking mindset, this should not be that difficult to do. Other things the same, projects should be consistent with one another particularly in terms of overall objectives. Furthermore, if a CRM project in the future in Panguil Bay will have to deal more with aquaculture than capture fishing, as implied by some key informants, this should not be pursued at the expense of the latter. Doing so would be tantamount to starting one task without finishing the previous one as there is so much unfinished business left behind with the current endeavors concentrating mainly on coastal capture fishing.

When funds are tight and prioritization in terms of covered areas is needed, the initial conflicts that arise may be minimized by properly explaining to the specific local governments and the other sectors on the losing side why and how prioritization was made. If possible, it would help if all the stakeholders get involved in the prioritization process itself so succeeding explanations will not be necessary. Criteria for prioritization must be set clearly and commonly agreed to by the contending parties so that the level of acceptance of the results would be high.

Research has a key role in CRM and should remain so in succeeding efforts. However, for CRM, academic and upstream research will have less relevance compared to downstream and action-oriented research. Therefore, the latter kind of research must be supported over the other, other things the same. Research works for instance on the economic, social and political dynamics of illegal fishing in Panguil Bay may have more relevance at present than the biological aspects of CRM. In a similar vein, researchers and consultants in CRM must be more action-oriented than academic-oriented by way of involving themselves with dissemination and advocacy work related to their research. It would be easier for the stakeholders in the bay to accept CRM concepts, methodologies, empirical findings and the like if they are promoted with passion and conviction by their sources. Of course, if goes

without saying that people in research must be afforded adequate resources, as part and parcel of their total CRM funds, to conduct things way beyond their research call of duty.

Stakeholders disappointed and disheartened by false expectations and unfulfilled promises related to CRM are unavoidable in a learning process that takes a long time to produce tangible results and in effect true believers. In time, if mistakes are corrected and CRM implementation finally develops its steady stride, more and more doubting Thomases will likely change their minds. What is important at present is that the approach of promising too much and delivering too little is recognized and, even if truly unintended, accepted as a fault in CRM implementation. Then, the implementers can move on by making stakeholders understand that CRM is less about attaining short-term gains and more about achieving long-term objectives.

The politics involved in implementing CRM on the ground is a problem that is difficult to address. As earlier mentioned, it is desirable that CRM implementers are unbiased between local politicians in the conduct of activities, a stance that is better said than done. It is enough said that the objectives of CRM must not be sacrificed at the altar of local politics, especially when this brings about the complete failure of activities. It would help if CRM implementers can come up with a system with which a conniving staff is appropriately penalized for any serious problems have done. In a similar light, a system may be established with which the staff of highly successful CRM projects and activities can be honored and rewarded.

The problem of delay in fund releases due to bureaucratic inertia runs across the entire gamut of the public sector, as mentioned. The budgetary process and its inherent weaknesses are some of the worst problems of government that still have to be solved. If laws can be changed, then the budgetary process for critical projects, such as CRM, should be special cases to be hastened by streamlined procedures. If not, then CRM implementers may just have to be resourceful in playing around with the procedures and short of breaking the law come up with an internal system that will accelerate the approval of contracts and related documents. Some agencies in the government have addressed in a significant way the problem of fund delays and CRM implementers should study their experiences and adopt their innovations wherever applicable.

As a product of fund delays, fund underutilization would have related solutions as well. It will be ill advised for existing CRM projects and activities to be hasty in spending funds simply to meet utilization requirements of donors under time pressure. This mindless approach will be a clear waste of public resources since the objective is not really to spend what is appropriated but to appropriate wisely what can be spent. To catch up on fund utilization properly, it is not double time spending but double time effort in the assessment and selection of activities than can be justifiably funded that should be done by project implementers.

Building a critical mass of CRM workers require both investments into the training and education of said workers and the incentives to keep them where they are. At present, investment in training and education may not be at critically low levels. The problem lies more in keeping the workers motivated in their work enough for them to stay around. Incentives for performing CRM implementers, both in money and in kind, such as further education and career development, would help address this problem. Incentives will also help bright and environmentally oriented college graduates think more about CRM work as a real job option.

That too much emphasis on training has been done, whether perceived or real, is a negative image that has to be corrected in the implementation of CRM in Panguil Bay and other areas. As an approach for solving problems in the coastal areas, CRM should be less in theory and more in action and actual results. A closer look into the current activities is in order to see if training is done properly or just conducted to make up for deficiencies in other work. Training is just a means and more of it than what is required is a poor cover for non-performance.

To close, the phenomenal growth in CRM activities all over the country and the large amount of public investment into them now requires the thorough evaluation of its impact and performance. This study, which looks into the case of Panguil bay, serves as a starting point particularly in ascertaining the long-term impact of CRM. Its major limitation is its use of household perceptions instead of actual data as basis for analysis. This choice is enforced by the lack of reliable actual time-series data that can be utilized to assess the long-term performance of CRM. It is strongly suggested that future CRM activities should include serious efforts to refine impact indicators of performance, develop the variables for their measurement, then monitor and record changes in these variables over time for an accurate evaluation.

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