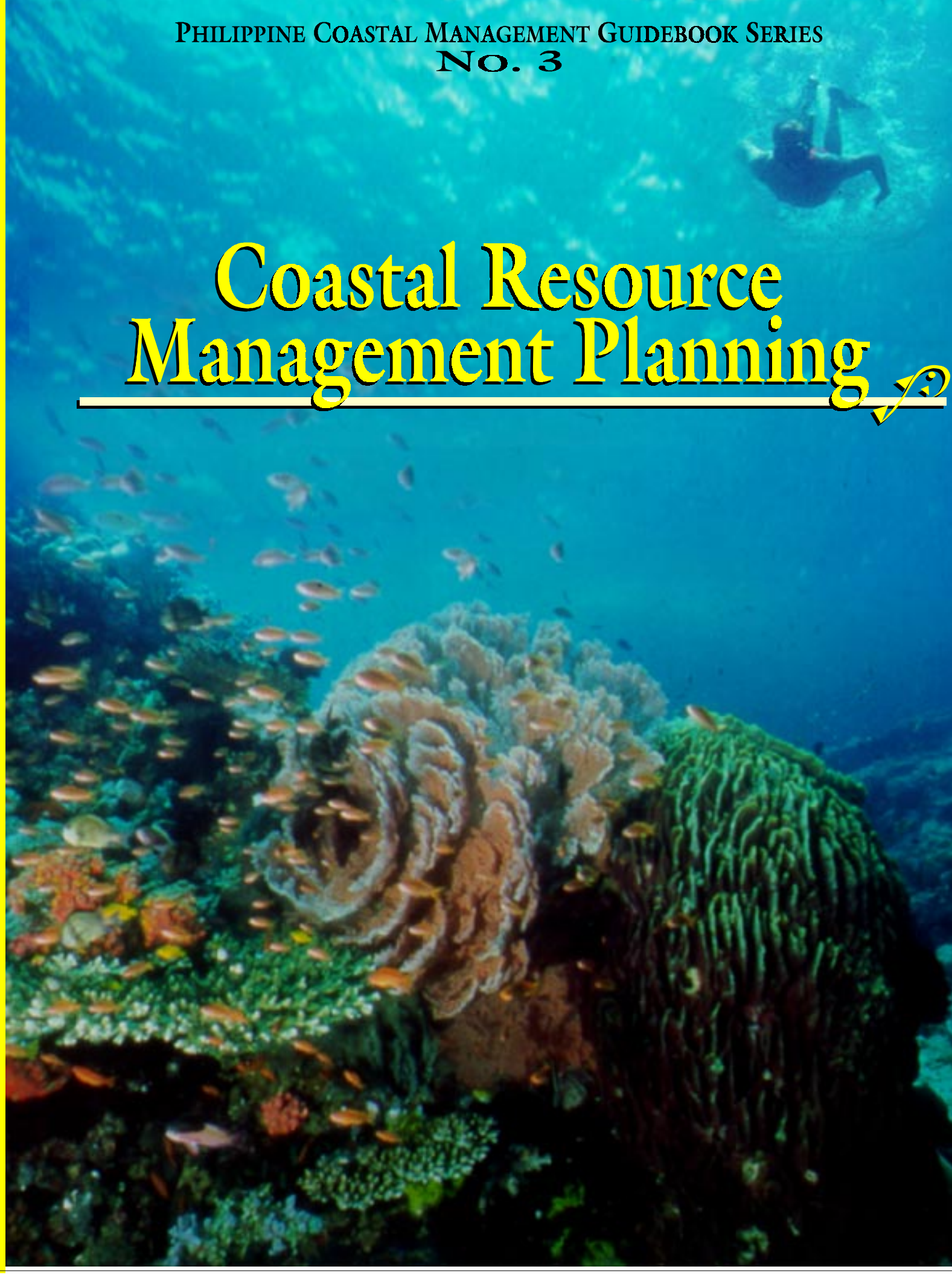
PHILIPPINE COASTAL MANAGEMENT GUIDEBOOK SERIES
NO. 3

Coastal Resource Management Planning



PHILIPPINE COASTAL MANAGEMENT GUIDEBOOK SERIES

NO. 3:

COASTAL RESOURCE MANAGEMENT PLANNING

By:

Department of Environment and Natural Resources

Bureau of Fisheries and Aquatic Resources
of the
Department of Agriculture

Department of the Interior and Local Government

and

Coastal Resource Management Project
of the
Department of Environment and Natural Resources
supported by the
United States Agency for International Development

Philippines

PHILIPPINE COASTAL MANAGEMENT GUIDEBOOK SERIES
NO. 3

Coastal Resource Management Planning

by

Department of Environment and Natural Resources (DENR)
Bureau of Fisheries and Aquatic Resources of the Department of Agriculture (DA-BFAR)
Department of the Interior and Local Government (DILG)
and
Coastal Resource Management Project (CRMP)

2001

Printed in Cebu City, Philippines

Citation:
Department of Environment and Natural Resources, Bureau of Fisheries and Aquatic Resources of the Department of Agriculture, and Department of the Interior and Local Government. 2001. *Philippine Coastal Management Guidebook No. 3: Coastal Resource Management Planning*. Coastal Resource Management Project of the Department of Environment and Natural Resources, Cebu City, Philippines, 94 p.

This publication was made possible through support provided by the United States Agency for International Development (USAID) under the terms and conditions of Contract No. AID-492-C-00-96-00028-00. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the USAID. This publication may be reproduced or quoted in other publications as long as proper reference is made to the source.

Photo credits: *Front cover:* Lynn Funkhouser and Mike Ross. *Back cover:* Alan White and Maria Fe Portigo.

CRMP Document No. 03-CRM/2001

ISBN 971-92289-2-X

Contents

List of tables v

List of figures vii

List of acronyms and abbreviations ix

Acknowledgments xi

Foreword xiii

Preface and orientation to this guidebook series xiv

Chapter 1. Introduction 1
- What is coastal resource management planning? 3
- Why is coastal resource management planning important? 7
- Who should conduct coastal resource management planning? 7

Chapter 2. Coastal management as a basic service of local government 9
- Local government mandate for coastal management 9
- Coastal resource management planning process adapted for the Philippine local government 12
- Scope and context of coastal resource management planning at municipal and city levels 16
- Coastal resource management planning at different spatial scales 19
- Consistency of coastal resource management plans at different levels of government 19
- Legal framework to support coastal resource management planning process 22
- Key players in coastal management 27
- Community participation in coastal resource management 31

Chapter 3. Issue identification and baseline assessment – Phase 1 33
- Program preparation 33
- Secondary information gathering 36
- Field assessment/Participatory coastal resource assessment 37
- Database and profile development 41
- Prioritization of issues and analysis of causes 43
- Roles and benchmarks 44

Chapter 4. Coastal resource management plan preparation and adoption – Phase 2 47
- Establish management bodies 47
- Define goals and objectives 49
- Develop coastal resource management strategies and action plan 51
- Roles and benchmarks 54

Chapter 5. Action plan and project implementation – Phase 3 **55**
Coastal resource management plan implementation 55
Legislation and regulation 57
Coastal law enforcement 58
Revenue generation 58
Annual program preparation and budgeting 60
Roles and benchmarks 60

Chapter 6. Monitoring and evaluation – Phase 4 **61**
Monitoring 62
Evaluation 65
Refining the management plan 68
Roles and benchmarks 70

Chapter 7. Information management, education and outreach – Phase 5 **71**
Information management 71
Education and outreach 75
Mainstreaming coastal resource management 79
Roles and benchmarks 80

Chapter 8. Emerging themes for effective local management **81**
National policy framework in support of local coastal resource management 82
Investment and revenue generation to sustain benefits from coastal resources 82
Coastal resource management certification to sustain local government unit efforts 85
Multisectoral and inter-LGU collaboration 88
Sustainability of coastal management efforts 90

References **91**

List of tables

Table 1	Benefits derived from planning and managing coastal resource use	1
Table 2	Total annual national economic benefits derived from coral reefs, fisheries, and mangroves in the Philippines, 1996	2
Table 3	Key operational definitions for local CRM planning	3
Table 4	The five phases in the CRM planning process	5
Table 5	Benefits of CRM planning to LGUs	7
Table 6	Key national legislation and local government mandates for CRM	11
Table 7	Coastal management phases and steps as a basic LGU service and the roles of various sectors	13
Table 8	Time horizons considered in municipal CRM planning	17
Table 9	Legal framework to support local level CRM planning process	22
Table 10	Specific roles of government and nongovernment groups in coastal management	28
Table 11	Key elements of a workplan	36
Table 12	Framework for using PCRA methods in the information gathering phase of CRM	38
Table 13	Table of contents of a coastal environmental profile	42
Table 14	Types of databases	43
Table 15	Composition of the Municipal Fisheries and Aquatic Resources Management Council	48
Table 16	Composition of a Protected Area Management Board	49
Table 17	Definitions of key terms in the planning process	50
Table 18	Types of coastal management strategies	52
Table 19	CRM plan checklist	54
Table 20	Requirements for successful implementation	57
Table 21	Different types of socio-environmental indicators	63

Table 22	Examples of process and results indicators for monitoring CRM programs and plans	64
Table 23	Major types of evaluation approaches for CRM programs and plans	66
Table 24	Illustrative composition and areas of responsibility of a municipal CRM monitoring and evaluation team	67
Table 25	Illustrative evaluation questions based on contents of a typical CRM plan	69
Table 26	Some example inputs for the Municipal Coastal Database	73
Table 27	Definition of information, education, and communication concepts	76
Table 28	IEC program planning questions and considerations	78
Table 29	New paradigms for coastal management in the Philippines	81
Table 30	Coastal management agenda from the 1999 Conference of Coastal Municipalities	83
Table 31	CRM best practices	86
Table 32	CRM certification criteria and levels for local government	87
Table 33	Benefits of CRM certification	88
Table 34	Lessons learned and emerging directions in coastal management in the Philippines	90

List of figures

Figure 1	Net present value of blast fishing to individuals and associated losses to society per km^2 of reef from destruction to tourism, physical coastal protection, and foregone sustainable fishery income	2
Figure 2	The coastal management planning process adapted for Philippine local government	6
Figure 3	Administrative boundary map showing approximate municipal and city land boundaries and area covered by municipal waters in the Philippines	10
Figure 4	Spatial coverage of a municipal CRM plan	17
Figure 5	Types of municipal plans and review processes related to CRM	18
Figure 6	CRM planning at different spatial scales	20
Figure 7	Aligning CRM plans and development plans at different levels of government	21
Figure 8	Key players in coastal management	27
Figure 9	Key steps in issue identification and baseline assessment	33
Figure 10	Example maps showing municipal jurisdiction	35
Figure 11	Example coastal resource habitat map generated using participatory coastal resource assessment for Olango Island	40
Figure 12	The coastal environmental profile and database support the planning cycle	44
Figure 13	Identification of causes of low fish catch and effects	45
Figure 14	Key steps in CRM plan preparation and adoption	47
Figure 15	Steps in CRM plan preparation and adoption	48
Figure 16	Illustrative zoning plan for the coastal zone and municipal waters	53
Figure 17	Key steps in action plan and project implementation	55
Figure 18	Overview of institutional arrangements and implementation activities for CRM in the province of Negros Oriental	56
Figure 19	Key steps in monitoring and evaluation	61
Figure 20	Monitoring and evaluation framework for CRM	68

Figure 21	Key steps in information management, education and outreach	71
Figure 22	Information flow and management between local and national levels	74
Figure 23	Information, education, and communication conceptual framework to achieve critical mass of CRM	76
Figure 24	Percentage of municipalities with CRM benchmarks based on the 1999 survey of coastal municipalities	89

List of acronyms and abbreviations

AFMA	-	Agriculture and Fisheries Modernization Act
BFAR	-	Bureau of Fisheries and Aquatic Resources
CB-CRM	-	Community-based coastal resource management
CRM	-	coastal resource management
CRMC	-	coastal resource management certification
CRMP	-	Coastal Resource Management Project
DA	-	Department of Agriculture
DENR	-	Department of Environment and Natural Resources
DILG	-	Department of the Interior and Local Government
DPWH	-	Department of Public Works and Highways
DSWD	-	Department of Social Welfare and Development
DTI	-	Department of Trade and Industry
EIS	-	environmental impact statement
FARMC	-	Fisheries and Aquatic Resources Management Council
GIS	-	geographic information system
ICM	-	integrated coastal management
IEC	-	information, education, and communication
IFARMC	-	Integrated Fisheries and Aquatic Resources Management Council
LGC	-	Local Government Code
LGU	-	Local Government Unit
MAO	-	Municipal Agriculture Office
MARINA	-	Maritime Industry Authority
MCD	-	Municipal Coastal Database
MDC	-	Municipal Development Council
MFARMC	-	Municipal Fisheries and Aquatic Resources Management Council
MOA	-	Memorandum of Agreement
MPDO	-	Municipal Planning and Development Office
MTDP	-	Medium-Term Development Plan
NAMRIA	-	National Mapping and Resource Information Authority
NGA	-	national government agency
NGO	-	nongovernment organization
NIPAS	-	National Integrated Protected Area System
PAGASA	-	Philippine Atmospheric, Geophysical, Astronomical Services Administration
PAMB	-	Protected Area Management Board
PAO	-	Provincial Agriculture Office
PCG	-	Philippine Coast Guard

PCRA	-	participatory coastal resource assessment
PCSD	-	Palawan Council for Sustainable Development
PPDO	-	Provincial Planning and Development Office
PN	-	Philippine Navy
PNP	-	Philippine National Police
PO	-	people's organization
PPA	-	Philippine Ports Authority
RA	-	Republic Act
RDC	-	Regional Development Council
SB	-	*Sangguniang Bayan*
SP	-	*Sangguniang Panlalawigan/Panlungsod*
TWG	-	Technical Working Group
USAID	-	United States Agency for International Development

Acknowledgments

This book represents the composite work of many individuals and organizations. The authors are:

Catherine A. Courtney, Ph.D., Chief of Party, Coastal Resource Management Project
Mary G. Gleason, Ph.D., Coastal Resource Management Project
Alan T. White, Ph.D., Deputy Chief of Party, Coastal Resource Management Project
Kem Lowry, Ph.D., Professor, Department of Urban and Regional Planning, University of Hawaii

The following Departments have endorsed, reviewed, and made contributions to this book:
Department of Environment and Natural Resources
Department of Agriculture
Department of the Interior and Local Government

The technical editors and reviewers include:
Ruth Rowena Alensonorin, Ramon Aboitiz Foundation Inc.
Bonifacio Apura, Assistant Regional Executive Director, Department of Environment and Natural Resources - Region 11
Sandy Arcamo, Bureau of Fisheries and Aquatic Resources - Fisheries Resource Management Division
Flor Barangan, Director, Department of Environment and Natural Resources - Coastal Environment Program
Romeo Basada, Ph.D., Department of Environment and Natural Resources - Region 11
Joseph Batac, League of Municipalities of the Philippines
Serafin Blanco, Director, Tañon Strait Commission
Atty. Juanito G. Cambangay, Provincial Planning and Development Coordinator, Province of Bohol
Ada Sharon B. Campeon, Fisheries Resource Management Project, Bureau of Fisheries and Aquatic Resources - Region 11
Marco Carreon, Project Director, Fisheries Resource Management Project
Fatima I. Chaneco, Chief, Fisheries Resource Management Division, Bureau of Fisheries and Aquatic Resources - Region 11
Rafael I. Erte, Provicial Planning and Development Coordinator, Davao del Norte
Araceli T. Exclabada, Office of the Provincial Agriculture, Davao del Sur
Rodrigo Fuentes, Coastal Resource Management Project
Rudolf Hermes, PhD., Philippine Council for Aquatic and Marine Research and Development
Melania Jabat, Bureau of Fisheries and Aquatic Resources - Region 7

William Jatulan, Training Coordinator, Coastal Resource Management Project
Demetrio Kho, Department of Environment and Natural Resources - Region 7
Lorna Manila, National Economic and Development Authority - Region 7
Evangeline Miclat, Kabang Kalikasan ng Pilipinas
Dewey Monsanto, City Agriculture Officer, Lapu-lapu City, Cebu
Roy Olsen de Leon, Silliman University
Nelson F. Plata, PEO II - Provincial Planning and Development Office, Davao del Norte
Emil Ramoran, Director, Department of Environment and Natural Resources - Coastal Environment Program
Glenn Adonis M. Rico, OIC CENRO, Department of Environment and Natural Resources Panapo, 11
Benito Secuya, Jr., Municipal Agriculture Officer, Badian, Cebu
Moreno Tagra, Department of Environment and Natural Resources - Region 7
Eustaquito Tandug, Director, Department of Environment and Natural Resources - Coastal Resource Management Project
Alexis Yambao, Coastal Management Specialist, Coastal Resource Management Project

This book has been supported by the Coastal Resource Management Project of the Department of Environment and Natural Resources with support from the United States Agency for International Development. Copy editing was done by Leticia Dizon and final production was assisted by Ysolde Collantes, Dexter Allen Besa, and Leslie Tinapay.

Foreword

Department technical personnel have reviewed and fully endorse the *Philippine Coastal Management Guidebook Series* as an essential information guide to assist in improving the status of Philippine coastal resources and their management. This series of guidebooks strengthens our capacity to enhance coastal management efforts in the country. It clearly identifies roles and responsibilities for all concerned departments, agencies, and organizations in this collaborative coastal environmental management effort.

Let us enjoin all users of these guidebooks to collectively work for sustainable management of our coastal resources for the economic and environmental well-being of our country!

Department of Environment and Natural Resources

Department of Agriculture - Bureau of Fisheries and Aquatic Resources

Department of the Interior and Local Government

Preface and orientation to this guidebook series

This book is the third in a series of eight guidebooks on coastal management in the Philippines. The titles and basic content of these eight books are shown next page. The series covers major topics concerning all aspects of coastal management in the Philippines and follows a theme of local government perspective, while highlighting the role of various stakeholders and other factors that affect coastal environments.

This third book, *Coastal Resource Management Planning,* presents a detailed guide to the planning process focused on the local government unit perspective. The first chapter provides an overview of integrated coastal management and why it is so important. The second chapter discusses why coastal resource management should be provided as a basic service of local government and how that can be conducted through a five phase planning process. The following chapters provide details on each phase of the coastal management planning process. This book thus presents the information needed by the local government to plan and implement coastal resource management and should be read in conjunction with *Guidebook 4: Involving Communities in Coastal Management* that provides additional information on how to involve local communities in the process. Coastal resource management plans that are created through partnership with nongovernment organizations and the local community and are implemented with full participation and support of the community are more likely to succeed. The final chapter discusses other supporting factors such as a national policy framework and external sources of revenue.

Coastal management is the theme of these books because of the urgent need to manage and protect the coastal resources of the Philippines. These resources are known to be incredibly valuable and important to the country's security. If the management problems are not addressed soon using integrated approaches, the environmental and food security of the country will be further threatened. These guidebooks lay out a process to address deteriorating coastal environments, loss of resources, increasing poverty, and to reverse current trends. They are holistic in approach while offering many specific solutions that are easy to implement. Read, comprehend, and make use of these guidebooks!

Philippine Coastal Management Guidebook Series—Titles and contents

1. Coastal Management Orientation and Overview	◆ Definitions and trends in coastal management ◆ Issues, resources, and impacts of concern in the Philippines ◆ Introduction to the coastal management process in the Philippines ◆ Guidebook series and how to use it
2. Legal and Jurisdictional Framework for Coastal Management	◆ All laws pertaining to coastal management ◆ All jurisdictions affecting coastal areas and resources ◆ The roles and mandates of government agencies
3. Coastal Resource Management Planning	◆ Coastal management planning process from local government perspective ◆ Key steps and procedures in the process ◆ How to develop the coastal management plan
4. Involving Communities in Coastal Management	◆ Importance of involving coastal communities ◆ Community organization process and participatory approaches ◆ Information, education, and communication techniques ◆ Sustainability of community-based coastal management
5. Managing Coastal Habitats and Marine Protected Areas	◆ The coastal marine ecosystem and how it functions ◆ Management considerations of critical coastal habitats ◆ Creating and managing marine protected areas
6. Managing Municipal Fisheries	◆ Municipal waters and legal jurisdiction for fisheries management ◆ Planning for fisheries management ◆ Management interventions and how to apply them
7. Managing Impacts of Development in the Coastal Zone	◆ Roles of planning and environmental impact assessment ◆ Environmental guidelines for coastal development ◆ Government role and mandate to prevent development impacts ◆ Managing coastal and marine pollution
8. Coastal Law Enforcement	◆ Major issues in effective law enforcement in coastal management ◆ Roles and responsibilities of major law enforcement groups ◆ Initiatives to improve fishery law enforcement

Coastal resources including fisheries, coral reefs, seagrass beds, and mangroves have the capacity to provide sustainable wealth for this and future generations when coastal habitats are protected and coastal resource use is planned and properly managed.

chapter 1

Introduction

Coastal resources and coastal ecosystems are vital to the health and well-being of the Philippine people. Fisheries, coral reefs, seagrasses and mangroves, provide both direct and indirect benefits in coastal communities in the Philippines and their proper management brings benefits to the entire country (Table 1). The inherent economic value of coastal resources leads to utilization by a broad spectrum of resource users. Unfortunately, poor planning coupled with uncontrolled use of coastal resources has resulted in significant degradation of the health and integrity of the coastal environment as well as the benefits derived by humans (Courtney *et al.* 1999; Courtney and White 2000). With the primary mandate for coastal resource management (CRM) devolved to local government, coastal municipalities, cities, and provinces must take immediate and decisive action to stop the degradation of these life-giving resources and invest in their rehabilitation for food security, economic development, and the overall well-being of the Filipino people.

Table 1. Benefits derived from planning and managing coastal resource use *(adapted from White and Cruz-Trinidad 1998)***.**

Food Security

- Marine fisheries provide 50 percent of dietary protein for the nation and up to 70% in rural coastal areas comes from marine products
- Healthy coral reefs produce 20 t/km^2/year of fish

Economic Development

- Abundant and well-managed coastal resources serve as a foundation for sustainable development in the coastal zone
- Mangrove areas contribute PhP 4.8 million/km^2/year in direct and indirect benefits
- Coral reefs contribute PhP 2.0 million/km^2/year in direct and indirect benefits

Shoreline Protection

- Mangrove forests protect coastal areas from erosion during storms
- Coral reefs protect coastal areas from waves and are a natural source of sand for beaches

Biodiversity Conservation

- The Philippines is distinguished globally as being located in the richest tropical marine biodiversity region of the world
- Marine species have great potential to provide valuable medicines to combat a variety of diseases
- Well-managed, healthy coral reefs are better able to withstand and recover from periodic high sea surface temperatures associated with global climate change as well as other stressors

The problems facing coastal resources in the Philippines threaten to undermine many local economies. Lack of investment in planning and management results in ineffective implementation of coastal laws and loss of benefits derived from coastal resources. Ineffective implementation of coastal laws allows a few individuals to derive most of the existing benefits (Figure 1) compared to substantial loss of economic benefits to coastal communities as a whole. If current trends of overfishing and environmental degradation continue, coastal resources will not be able to provide enough food for the Philippine's growing population and the health of the coastal environment will be irreversibly destroyed.

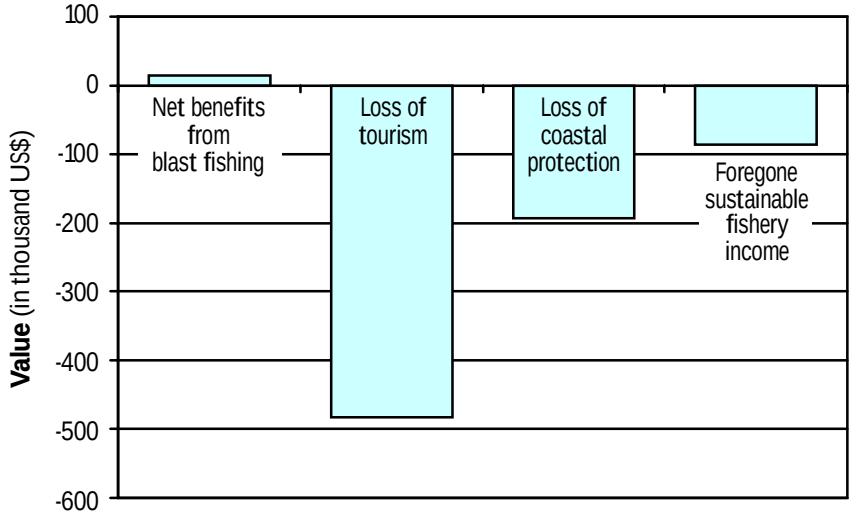


Figure 1. Net present value of blast fishing to individuals and associated losses to society per km² of reef from destruction to tourism, physical coastal protection, and foregone sustainable fishery income (in thousand US$; over 25 years; 10% discount rate) *(Cesar 1996)*.

At a national level, estimates of the total annual economic benefits to the country derived from coastal resources (Table 2) are substantial contributing US$3.5 billion (approximately 17 percent of the Gross Domestic Product in 1996). These economic benefits are declining at a rate of US$0.5 billion every year, however, without significantly increased attention to management of coastal resources in the country. In the absence of regular and appropriate investments in management, national and local benefits derived from coastal resources, such as economic development, food security, and biodiversity are rapidly being degraded. It is imperative that local government units (LGUs), and coastal municipalities and cities in particular, which have the primary mandate for CRM in the Philippines, develop and implement CRM plans to achieve food security, reduce economic losses, and protect critical coastal habitats for coastal communities that depend on these resources.

Table 2. Total annual national economic benefits derived from coral reefs, fisheries, and mangroves in the Philippines, 1996 *(White and Cruz-Trinidad 1998)**.***

Ecosystem/resource	**Area/yield in the Philippines**	**Value** (in US$)
Coral reefs	27,000 km^2	1.35 billion
Fisheries		
Tourism		
Coastal protection		
Mangroves	140,000 ha	84 million
Fisheries		
Wood*		
Other contributions		
Fisheries	Open marine water	1.25 billion
Municipal (less reef fish)	909,000 t	0.64 billion
Commercial	879,000 t	0.61 billion
Aquaculture	Brackish and marine 981,000 t	0.83 billion
Total		**US$3.5 billion** (PhP140.56 billion)

US$1 = PhP40 in 1998

**Wood is not included because there is legally little mangrove wood harvesting allowed.*

WHAT IS COASTAL RESOURCE MANAGEMENT PLANNING?

CRM is a participatory process of planning, implementing, and monitoring sustainable uses of coastal resources through collective action and sound decision-making (Table 3). Planning at all levels of local government, including *barangay*, municipal, city, and provincial, is essential in guiding regular and appropriate investments in CRM. Planning is a way of organizing the attention, resources and energy of government agencies, resource user groups, nongovernment organizations (NGOs), and others on the coastal issues that matter most to the community. Municipal or city CRM plans (Table 3) set forth resource issues to be addressed in the territory of municipality or city, establish goals to be achieved, map the management area, indicate a set of management strategies and activities, and define co-management regimes between government,

Table 3. Key operational definitions for local CRM planning.

Coastal resource management (CRM). CRM is a participatory process of planning, implementing, and monitoring sustainable uses of coastal resources through collective action and sound decision-making.

Collaborative management or co-management. Collaborative management or co-management is based on the participation of all individuals and groups that have a stake in the management of the resource. Important elements include (White *et al*. 1994):

- All stakeholders have a say in the management of a resource on which they depend;
- The sharing of the management responsibility varies according to conditions of authority between local community organizations and government. However, in virtually all cases, a level of government continues to assume responsibility for overall policy and coordination functions; and
- Social, cultural, and economic objectives are an integral part of the management framework. Particular attention is paid to the needs of those who depend on the resource and to equity and participation.

(continued)

Table 3. (continued)

Coastal area/zone. The coastal zone is a band of dry land and adjacent ocean space (water and submerged land) in which terrestrial processes and uses directly affect ocean processes and uses, and vice versa; its geographic extent may include areas within a landmark limit of one kilometer from the shoreline at high tide to include mangrove swamps, brackish water ponds, *nipa* swamps, estuarine rivers, sandy beaches, and other areas within a seaward limit of 200-m isobath to include coral reefs, algal flats, seagrass beds, and other soft-bottom areas (RA 8550).

Municipal waters. Municipal waters are within the territorial jurisdiction of municipalities to 'include the streams, lakes, inland bodies of water, and tidal waters within the municipality that are not within protected areas (defined under RA 7568 the National Integrated Protected Areas System, NIPAS, Law), public forest, timber lands, forest reserves or fishery reserves, but also the marine waters included between two lines drawn perpendicular to the general coastline from points where the boundary lines of the municipality touch the sea at low tide and a third line parallel with the general coastline including offshore islands and 15 km from such coastline. Where two municipalities are so situated on opposite shores that there is less than 30 km of marine waters between them, the third line shall be equally distant from opposite shore of the respective municipalities' (RA 8550).

Municipal/city CRM plan. A municipal/city CRM plan defines the goals, objectives, policies, and strategies for managing coastal resources over a 5-year or medium-term time horizon consistent with the goals, objectives, and timeframe of the National Medium Term Program Development Plan (MTPDP). Essential elements of a municipal CRM plan include:

- description of the area
- maps
- management issues
- goals and objectives
- strategies and actions
- institutional and legal framework
- timeline
- monitoring and evaluation

Annual operations and investment plans are prepared in support of the municipal/city CRM plan to describe yearly program activities and provide budgets. Under certain conditions, such as bays and gulfs, several municipalities may need to join forces in the formulation of a bay-wide CRM plan. The support of communities and involvement of Municipal Fisheries and Aquatic Resources Management Councils is essential to ensure successful implementation of the plan.

Provincial CRM framework plan. A provincial CRM framework plan sets the policy framework and development direction of the province. It contains guidelines on how to implement the different coastal management programs and strategies at the provincial and municipal/city levels. It does not enumerate the details of the activities and projects in each of the strategy. Instead, it provides broad policies and guidelines on how to address issues and problems concerning the province and the municipalities/cities. It could also contain guidelines as to how the municipalities and cities could jointly manage a bay or fishing ground used by two or more contiguous LGUs, or any other management areas. It may also serve as framework for the municipalities and cities in the preparation of their respective plans.

The programs and strategies contained in the plan can be directly implemented by the province or by the municipalities or component cities, with technical assistance from the province. The support of the national government, particularly the Department of Environment and Natural Resources and the Bureau of Fisheries and Aquatic Resources, academic institutions, NGOs, private institutions, and the general public is very important to ensure success of the implementation of the plan.

NGOs, and resource user groups for implementation of the management plan. The primary geographic focus of municipal and city CRM plans is the coastal zone and municipal waters.

The CRM planning process, adapted for Philippine local government, consists of five phases (Table 4). Phase 1 of this process, issue identification and baseline assessment, is an essential first step in any municipal CRM program. During this phase, community involvement ensures that critical issues are identified and prioritized and that coastal resource conditions and uses are described. The identification of key issues are needed to guide CRM plan preparation and adoption in Phase 2. A municipal CRM plan charts the course of future activities and serves as a guide for managers to direct annual and day-to-day activities and to foster informed decision-making. At the municipal or city level, CRM planning involves designing specific management strategies such as zoning municipal water use, regulation (e.g. licenses and permits) of human uses and activities, enforcing existing laws, designing alternative enterprise development programs, establishing marine protected areas, and educating resource user groups. The strategies and actions articulated in the CRM plan are implemented in Phase 3 through specific municipal programs and actions. Monitoring and evaluation is the fourth and very critical phase of the CRM process as adapted for Philippine LGUs. Coastal municipalities having completed Phases 1 to 3, need to monitor the implementation of their CRM plans and programs as a basis for evaluating performance, progress, budgeting, and possible refinements to plans and programs. During the monitoring and evaluation phase, the effectiveness of municipal CRM plans and programs are reviewed and assessed against benchmarks of performance and best practices.

Table 4. The five phases in the CRM planning process.

Phase 1:	Issue identification and baseline assessment
Phase 2:	CRM plan preparation and adoption
Phase 3:	Action plan and project implementation
Phase 4:	Monitoring and evaluation
Phase 5:	Information management, education and outreach

The planning cycle is an iterative process whereby the plan is periodically refined and revised as new information is obtained or conditions change (Figure 2). The municipal CRM plan prepared and adopted in Phase 2 of the CRM process should serve as a basis for monitoring and evaluation (Phase 4). Monitoring and evaluation of the CRM plan and plan implementation should be conducted annually. CRM plans are not static documents and CRM programs should be flexible and adaptive. Goals and strategies often have to be refined or adapted to meet changing circumstances or when better information or a new understanding of the coastal issues has been gained. Insights into the viability or utility of management strategies or better knowledge about the agencies or individuals responsible for implementation can also lead to program changes. The plan may require refinements and adaptations to incorporate community feedback and improve its support and credibility within the community.

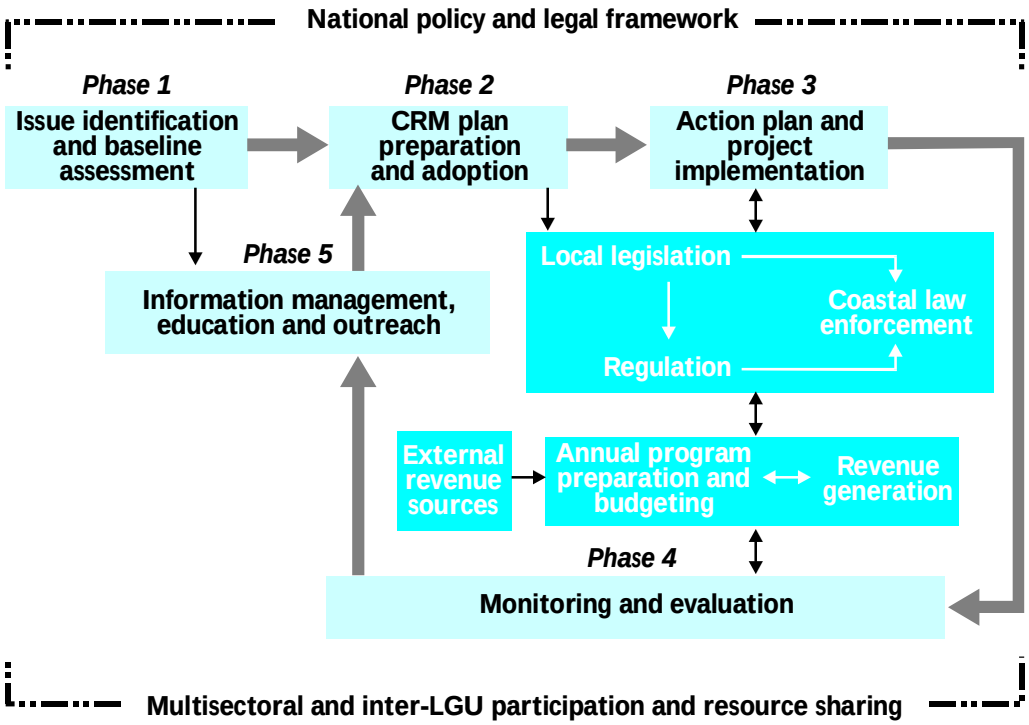


Figure 2. The coastal management planning process adapted for Philippine local government.

The results of annual monitoring and evaluation are used as a basis for updating the Municipal Coastal Database (MCD) and as input to education and outreach programs (Phase 5). In addition, revisions or adjustments to the municipal CRM plan and implementation strategies should be based on the results of annual monitoring and evaluation as shown by a feedback loop returning to Phase 2 in Figure 2. Annual programming should reflect these refinements for budgeting purposes.

Some of these phases of the CRM planning process may occur sequentially and simultaneously. For instance, Phase 5, Information management, education and outreach, is an important aspect of CRM throughout the planning cycle and should begin simultaneously with Phase 1, Issue identification and baseline assessment. During Phase 3, specific CRM strategies, such as the establishment of marine sanctuaries may be initiated prior to the formulation of a municipal or city CRM plan. Critical in CRM planning, however, is to ensure that the process is participatory to gain the broadest acceptance, that all phases are activated and that a municipal or city plan is ultimately formulated that ties together in a rationale manner the goals, objectives, and strategies of the LGU toward sustainable coastal resource use. Overall, successful implementation of CRM plans has several characteristics in common including (White 1997):

- Active participation of key stakeholders;
- Relevant baseline information about human activities affecting the coastal environment;

- Understood and supported by government officials, resource user groups, and other stakeholders;
- Flexible enough to allow for adaptions to changing sociopoliticial conditions;
- Resolution of conflicts among key stakeholders;
- Organized to insure a continuing management effort; and
- Designed to provide measurable results.

WHY IS COASTAL RESOURCE MANAGEMENT PLANNING IMPORTANT?

CRM planning is a basic service that must be provided by local government as an essential part of the governance process designed to insure that fisheries and the habitats that support them are used in ways that insure their long-term availability to the people of the Philippines, produce the greatest benefits, help reduce risks of coastal hazards, prevent coastal pollution, and reduce conflicts among coastal users. CRM planning defines the process and framework under which issues are prioritized, policies are defined, actions programs implemented, and informed decisions are made by the local government for sustainable use of coastal resources (Table 5). With the primary mandate for managing coastal resources devolved to the local government, CRM planning is essential in reconciling and aligning socioeconomic development and land use plans of local government for sustainable coastal resource use.

Table 5. Benefits of CRM planning to LGUs.

- Guides local chief executives on priority issues to be addressed
- Establishes local legislative agenda for municipal, city, and provincial councils
- Provides direction to technical staff on actions to be taken to address priority issues
- Provides a framework for making informed decisions about coastal resource use
- Provides continuity during changes in political administration
- Contributes to long-term sustainability of economic development activities

WHO SHOULD CONDUCT COASTAL RESOURCE MANAGEMENT PLANNING?

CRM must be employed by local government, in particular, coastal municipalities and cities, to fulfill their mandate under the Local Government Code (LGC) of 1991, Fisheries Code (FC) of 1998, and Agriculture and Fisheries Modernization Act (AFMA) of 1997.

Coastal municipalities and cities should initiate and guide CRM planning through a participatory process that involves all stakeholders. The Municipal or City Planning and Development Office (MPDO) may serve as the overall coordinator of CRM planning activities with active involvement and consultation with Municipal Fisheries and Aquatic Management Councils (MFARMCs), Municipal Agriculture Office (MAO), Municipal Environment and Natural Resources Office (MENRO), *Sangguiang Bayan* (SB), and all coastal *barangays*. Consultations with all stakeholders including fisherfolk, commercial fishing operators, tourism operators, and other private sector representatives should be held during CRM planning. Municipalities and cities

should solicit technical assistance from the provincial government, national government agencies (NGAs), NGOs, and academe throughout the planning process as well as plan implementation.

LGUs must develop and implement plans to manage coastal resource use to sustain food production and economic benefits. Planning provides the framework and process to chart the course of coastal resource rehabilitation and sustainability. Leadership and investment are needed to make difficult decisions that will sustain the benefits derived from coastal resource use. This guidebook discusses CRM as a basic service of local government and describes five phases in the CRM planning and implementation process detailed from the local government perspective. This guidebook should be read in conjunction with *Guidebook 4: Involving Communities in Coastal Management* which provides additional information on community organizing, participatory tools, and education and outreach activities that are needed throughout planning and implementation to gain community support for coastal management efforts.

ALAN WHITE

Unplanned and unregulated development along the shoreline results in environmental degradation and resource conflicts.

Structures built too close to the sea result in water quality degradation and shoreline erosion.

chapter 2
Coastal management as a basic service of local government

Local government plays a pivotal role as both the front line stewards and the last safety net for the recovery of severely depleted coastal and marine resources in the Philippines. In the Philippines, 54 percent of municipalities, 68 percent of cities, and 82 percent of provinces are coastal. The area of municipal waters is almost as large as the entire land area of the Philippines (Figure 3). The devolution of authority for coastal management from central to local governments (province, city, and municipality) presents an enormous challenge since few coastal cities and municipalities have the capacity to manage their resources. At this time, LGUs generally lack trained personnel, budget, and capability in planning and technical knowledge in coastal management. In spite of this, there is high motivation among many LGUs to manage their resources once they recognize the seriousness of the problem and what they stand to lose if they do not act. This chapter presents an overview of coastal planning processes and management measures as the delivery of basic services of LGUs including provincial, municipal, and *barangay* levels.

LOCAL GOVERNMENT MANDATE FOR COASTAL MANAGEMENT

CRM may be viewed as among the inherent functions of LGUs in accordance with their general powers for management within their territorial jurisdictions. The primary mandate for managing municipal waters out to a distance of 15 km from the shoreline has been largely devolved to the LGU under the 1991 Local Government Code (LGC, Republic Act 7160) and more recently defined in the 1998 Fisheries Code (FC, RA 8550) (see *Guidebook No. 2: Legal and Jurisdictional Framework for CRM in the Philippines*). These legal mandates have had significant impact on roles and responsibilities for coastal management.

As a basic service, CRM covers all local government powers and responsibilities including planning, protection, legislation, regulation, revenue generation, enforcement, inter-governmental relations, relations with people's organizations (POs) and NGOs, and extension and technical assistance (Table 6). CRM as a basic service of local government means that municipalities, cities, and provinces regularly allocate budgets for staff, maintenance and operations, and capital outlay in support of local CRM programs. These basic services cannot be delivered, however, without cooperation between LGUs and without the support of coastal communities and partners from the national government, NGOs, academe, private, and other sectors.

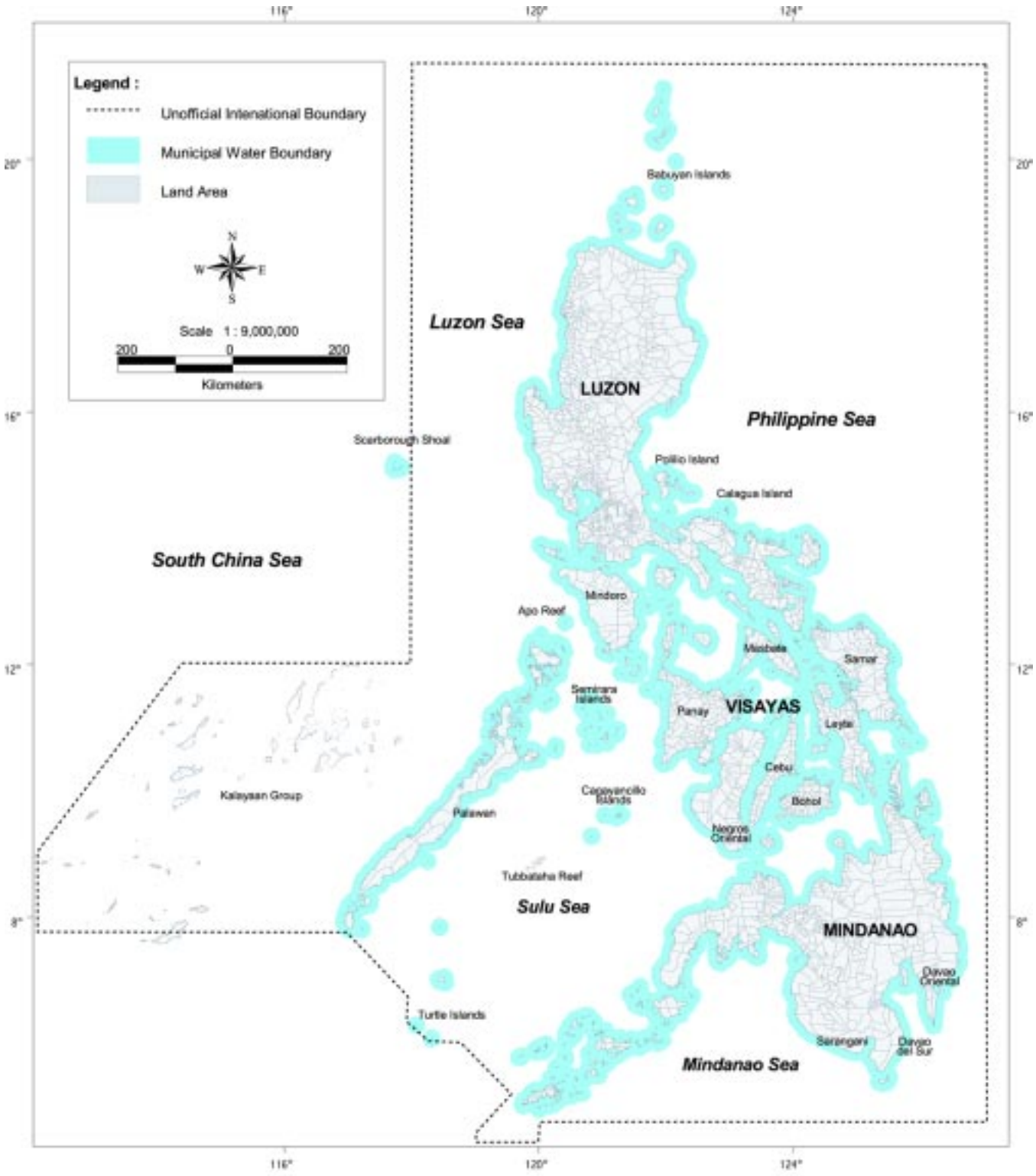


Figure 3. Administrative boundary map showing approximate municipal and city land boundaries and area covered by municipal waters in the Philippines *(WRI 2000)*.

Table 6. Key national legislation and local government mandates for CRM.

Key legislation	LGU mandates for CRM	Illustrative examples
RA 7160 Local Government Code (LGC)	Planning	Developing medium-term CRM plans
	Protection	Protecting coastal habitats by establishing marine sanctuaries
		Preserving ecosystems in the province
RA 8550 Fisheries Code	Legislation	Enacting local ordinances in accordance with the national laws and policies
	Regulation	Regulating the use of municipal waters through zoning, granting fishery privileges, imposing rentals, fees and charges, and registering and licensing municipal fishers
RA 7586 National Integrated Protected Areas System (NIPAS)	Enforcement	Enforcing national laws and local ordinances that protect the environment
RA 8435 Agriculture and Fisheries Modernization Act (AFMA)	Intergovernmental relations	Estabishing co-management regimes for CRM plan implementation
	Relations with POs and NGOs	Promoting participation in CRM through training and the active involvement of MFARMCs, POs, and NGOs
	Extension and technical service	

For coastal management to be considered a basic service of local government, the LGU should assume responsibility for five key service areas:

- **Coastal Management Planning Process:** Institutionalizing the five phase planning, implementation, and monitoring process for sustainable use of municipal waters as a routine and regular function of local government;
- **Allocating Budget and Staff:** Regular and appropriate investments in CRM in the form of annual budgets and dedicated staff are required to sustain national and local benefits derived from coastal resources;
- **Local Legislation, Regulation, and Enforcement:** Adopting and enforcing municipal ordinances to support the CRM plan. Regulating resource use through permits and fees. Providing staff and coordination to support community and national surveillance and enforcement teams;
- **Revenue Generation:** Establishing revenue-generating mechanisms for cost recovery such as local fees, fines, and taxes; and
- **Multisectoral and Inter-LGU Collaboration:** Cost-sharing, resource-sharing, and planning across sectors and among LGUs to support integrated coastal management and the resolution of complex problems.

Powers of local government can only be exercised within its territorial jurisdiction. The LGC encourages the formation of partnerships between LGUs, NGOs, and POs as discussed in *Guidebook 4: Involving Communities in Coastal Management* to encourage co-management. Under the Fisheries Code, municipal fisherfolk are given preferential use of all fishery-related activities in municipal waters and thus need to be included in the planning and management process. The powers and responsibilities of local governments identified in the LGC and Fisheries Code and relevant laws and regulations are detailed in *Guidebook 2: Legal and Jurisdictional Framework for Coastal Management*.

COASTAL RESOURCE MANAGEMENT PLANNING PROCESS ADAPTED FOR THE PHILIPPINE LOCAL GOVERNMENT

The generic planning process has been adapted and made more specific to the situation of local government units that are now responsible for coastal management in the Philippines (Figure 2). The five phases in coastal management planning listed in Table 4 are basic and essential prerequisites to successful CRM. The CRM process shown in Figure 2 has been detailed from the perspective of the local government, in particular, municipalities and cities, who are now tasked by law with the primary responsibility for the nation's coastal resources. This process can be facilitated and partially supported by local government together with partner communities at the *barangay* level, as well as province and NGAs as well as NGOs. The participation of local communities and governments in a hands-on manner is intended to build constituencies for co-management of coastal resources.

MARIA FE PORTIGO

Coastal municipalities and cities must take the lead in managing coastal resoruces through a participatory process that involves communities and partners from provincial government, national government, NGOs, academe, and other sectors.

The major outputs and activities in each phase of the planning process, as well as key roles of government and stakeholders are summarized in Table 7. More detailed descriptions of the specific steps that should be undertaken in each phase in the planning process are provided in Chapters 3 through 7. This process is not a detailed blueprint; the intention is to provide guidelines that can make the process of developing a coastal management program less intimidating and mysterious. These planning phases also require support and input from a national policy and legal framework and external revenue sources and greatly benefit from multisectoral and inter-LGU collaboration, as discussed in Chapter 8.

Table 7. Coastal management phases and steps as a basic LGU service and the roles of various sectors .

Phases and steps	Activities and outputs	Roles of local municipal or city government, community and stakeholders	Technical assistance roles of national and provincial government, nongovernment organizations, academe, and donors
PHASE 1 **Issue identification and baseline assessment**			
a. Program preparation	◆ Allocate budget ◆ Determine boundaries and scope ◆ Make workplans/budgets ◆ Assign personnel ◆ Secure consensus on overall approach	◆ Source funding for CRM planning activities ◆ Annual investment plan for CRM ◆ Enter into memoranda of agreement ◆ Participate in discussion ◆ Communicate needs and potential roles ◆ Agree on design	◆ Prepare workplans ◆ Formulate working agreements ◆ Contract and train staff ◆ Facilitate consensus on design
b. Secondary information gathering	◆ Compile existing maps, reports, data ◆ Interview information sources ◆ Compile existing laws, plans ◆ Review other sources of information	◆ Provide information ◆ Assist to compile information ◆ Begin to develop information storage and retrieval system	◆ Locate sources of information ◆ Compile information in useful form ◆ Coordinate activities
c. Field assessment/ Participatory Coastal Resource Assessment (PCRA) and other research	◆ Train practitioners ◆ Conduct PCRA mapping and data collection ◆ Contract special research studies on fish stock assessment, habitat condition, water quality, enterprise, and others	◆ Conduct PCRA with technical assistance ◆ Participate in special research and data collection ◆ Assist to analyze data ◆ Provide inputs to mapping	◆ Train practitioners ◆ Facilitate PCRA ◆ Conduct specialized research ◆ Analyze research data ◆ Make results available
d. Database and profile development	◆ Maps completed ◆ Set up data storage and retrieval system ◆ Compile coastal environmental profile ◆ Use profile as planning base ◆ Refine boundaries and further research needs	◆ Provide information ◆ Assist with profile analysis ◆ Data validation ◆ Use profile for planning ◆ Decide on boundary demarcation ◆ Present profile to legislative bodies	◆ Determine data storage site, personnel ◆ Write profile ◆ Distribute profile ◆ Facilitate discussions on boundaries and research needs
e. Prioritization of issues and analysis of causes	◆ Conduct community and municipal-based planning sessions ◆ Develop issue tree ◆ Prioritize issues for management	◆ Participate in process and provide major input ◆ Participate in conflict resolution ◆ Set priorities in real terms	◆ Facilitate process ◆ Interject outside perspectives, research findings, policies, etc. ◆ Help translate issues into causes

(continued)

Table 7. (continued)

Phases and steps	Activities and outputs	Roles of local municipal or city government, community and stakeholders	Technical assistance roles of national and provincial government, nongovernment organizations, academe, and donors
PHASE 2 **CRM plan preparation and adoption**			
a. Establish management bodies	◆ *Barangay* and municipal FARMCs established and active ◆ Multisectoral Technical Working Group established	◆ Advisory body to LGU ◆ Provide basic policies ◆ Provide major inputs to plan ◆ Build consensus among community	◆ Facilitate planning process ◆ Conduct planning workshops ◆ Provide technical guidance ◆ Assist to set up management bodies
b. Define goals and objectives	◆ Conduct CRM planning workshop ◆ Identify and evaluate management options ◆ Management strategies and actions identified	◆ LGU support to planning process	
c. Develop CRM strategies and action plan	◆ Proposed water use zones delineated and mapped ◆ Multi-year management plan drafted ◆ Community consultations on draft management plan conducted ◆ Proposed CRM plan presented in multisectoral forum ◆ Multi-year CRM plan finalized and adopted	◆ LGU and community participation in planning process ◆ Plan presented to concerned legislative bodies for adoption and support	◆ Facilitate inter-agency coordination
PHASE 3 **Action plan and project implementation**			
a. CRM plan implementation	◆ Establish and staff municipal CRM office ◆ Action plans developed for CRM plan implementation ◆ Secure support as required ◆ Increase implementation effort ◆ Marine sanctuaries established and functional ◆ Environment-friendly enterprises established ◆ Mangrove areas rehabilitated and managed under CBFMA	◆ Take full responsibility ◆ Participate in implementation ◆ Provide local personnel ◆ Organize community groups to assist with implementation ◆ Enter stakeholder agreements ◆ Source funding	◆ Facilitate initial implementation ◆ Provide seed funding ◆ Provide technical guidance ◆ Conduct training course as required

(continued)

Table 7. (continued)

Phases and steps	Activities and outputs	Roles of local municipal or city government, community and stakeholders	Technical assistance roles of national and provincial government, nongovernment organizations, academe, and donors
	◆ Registry of municipal fishers established		
b. Legislation and regulation	◆ Ordinances enacted for CRM plan and implementation ◆ Permits and licenses issued for municipal water uses consistent with CRM plan	◆ Participate in decision process ◆ Endorse and implement	◆ Assist to draft ◆ Provide information with examples
c. Law enforcement	◆ Coastal law enforcement units trained and operational ◆ Ordinances enforced	◆ Participate and support ◆ Deputize and organize fish wardens	◆ Technical training ◆ Assist in coordination
d. Revenue generation	◆ Taxes, fines, and fees collected from enterprise development, coastal law enforcement, and municipal water use	◆ Establish regular collection system ◆ Use revenue for CRM	◆ Provide examples and technical assistance
e. Annual program preparation and budgeting	◆ Review implementation progress of CRM plan ◆ Annual Investment Plan prepared and budget allocated for CRM ◆ Staffing requirements identified ◆ Operation and maintenance needs identified ◆ Capital outlay requirements identified ◆ Special projects identified ◆ Training, technical assistance, and outreach needs identified	◆ Conduct public review ◆ Develop Annual Investment Plan for CRM ◆ Allocate budget ◆ Commit staff	◆ Technical assistance as appropriate ◆ Policy guidance ◆ Source funds
PHASE 4 Monitoring and evaluation			
a. Monitoring and evaluation	◆ Train monitoring and evaluation team ◆ Monitor environment and CRM process and feedback to database and plan ◆ Performance evaluations conducted ◆ Management capacity assessments conducted ◆ Outcome evaluations conducted ◆ Annual monitoring and evaluation report prepared	◆ Collect data ◆ Participate in process ◆ Take responsibility	◆ Assist to train LGU personnel ◆ Assist to analyze data ◆ Assist to set up sustainable system

(continued)

Table 7. (continued)

Phases and steps	Activities and outputs	Roles of local municipal or city government, community and stakeholders	Technical assistance roles of national and provincial government, nongovernment organizations, academe, and donors
b. Refine management plan	◆ Annual CRM plan review and revision	◆ Use data to refine plan and update database	◆ Provide input on plan refinement
PHASE 5 Information management, education and outreach			
a. Information management	◆ Establish and update Municipal Coastal Database ◆ Produce and update municipal water use and coastal habitat maps ◆ Annual CRM status reports and maps produced ◆ Information management system functions and institutionalized	◆ Process data into useful information	◆ Design information system ◆ Maintain provincial and national coastal databases ◆ Provide training
b. Information, education, and communication	◆ Information disseminated for education and planning ◆ Technical assistance and outreach program established ◆ Conduct education campaigns for municipal CRM programs ◆ Hold public hearings for proposed CRM plans and ordinances	◆ Disseminate and use information ◆ Feedback to plan ◆ Disseminate municipal report on status of coastal resource managment	◆ Assist with information and education materials development ◆ Prepare and disseminate provincial and national reports on the status of coastal resource management

Source: Modified from White (1997)

SCOPE AND CONTEXT OF COASTAL RESOURCE MANAGEMENT PLANNING AT MUNICIPAL AND CITY LEVELS

Municipalities and cities are responsible for planning land use and overall socioeconomic development at the local government level. A municipal or city CRM plan must address and rationalize land use, water use, and socioeconomic development plans in the coastal zone (extending 1 km inland from the high tide) and municipal waters (Figure 4) in the context of sustainable resource use.

CRM planning must incorporate long-term, medium-term and short-term time horizons (Table 8). A CRM vision can be established for a long-term planning horizon to establish broad goals and objectives over a 10 to 25-year period. Restoration of damaged coastal environments may require long time horizons, especially in the case of coral reef ecosystems that may take as

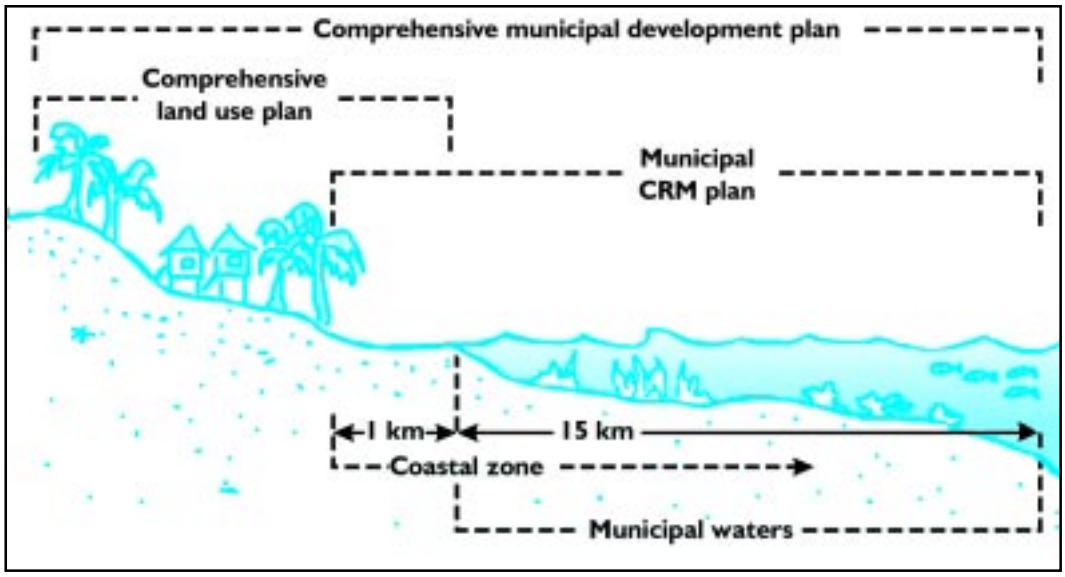


Figure 4. Spatial coverage of a municipal CRM plan.

Table 8. Time horizons considered in municipal CRM planning (Kay and Alder 1999)**.**

Time horizon	CRM planning objectives
Long-term (10-25 years)	Vision, goals, and objectives for sustainable coastal resource use
Medium-term (5 years)	Priority issues and concerns addressed with specific strategies and actions in a municipal CRM plan
Short-term (1 year)	Annual operations and investments programmed in support of the municipal CRM plan

much as 50 years to rehabilitate. Municipal CRM plans should articulate strategies and actions to address priority issues and concerns over a medium-term (5-year) planning horizon, consistent with national, and provincial medium term development plans. Finally, annual operations and investment must be programmed to support the implementation of municipal and city CRM plans and budget requests.

A CRM plan is one of several plans that a municipality must prepare (Figures 4 and 5). The goals and objectives of all of these plans must be consistent for successful implementation. Key elements of the municipal CRM plan should be incorporated into the comprehensive municipal development and land use plans. CRM plans must be reviewed and adopted by the MFARMC and at several levels of local government including the Municipal Development Council and *Sangguniang Bayan*. CRM plans, comprehensive municipal development plans, and comprehensive land use plans must be reviewed, reconciled, and consistent in order to ensure successful implementation.

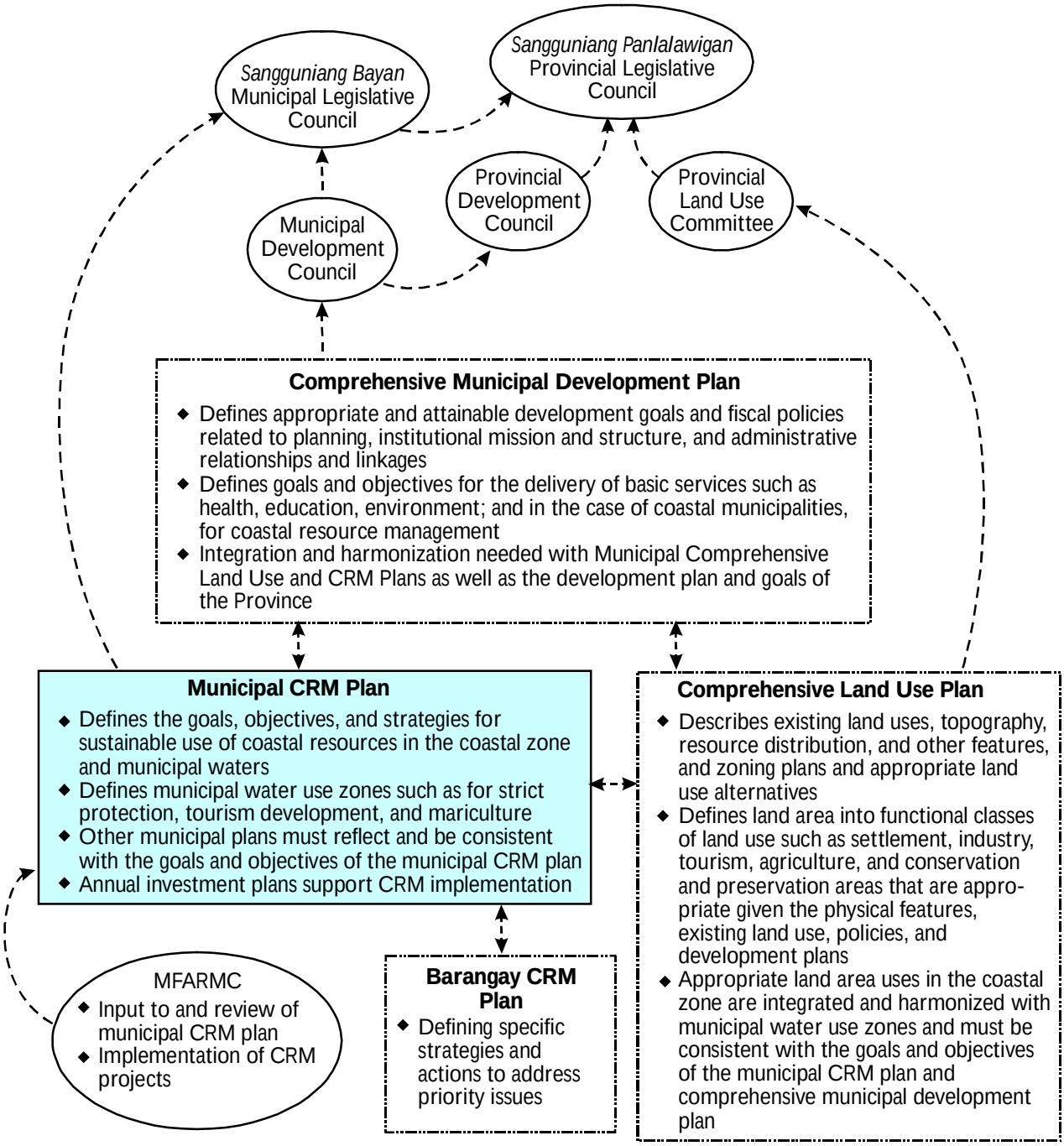


Figure 5. Types of municipal plans and review processes related to CRM.

COASTAL RESOURCE MANAGEMENT PLANNING AT DIFFERENT SPATIAL SCALES

The scope and context of CRM planning may vary depending on the spatial scales of priority issues. *Barangay* CRM plans developed through community participatory processes are incorporated within municipal CRM plans. Municipal CRM plans may need to address issues outside the municipality or upland from the coastal zone (Figure 6). In this case, multi-municipal planning must occur to address issues outside the jurisdiction of a particular municipality or city. Bay-wide CRM plans are encouraged where several municipalities share a common physical feature such as bay. Integrated coastal management plans may be required when addressing upland or watershed issues that affect the coastal zone (Cicin-Sain and Knecht 1998).

CONSISTENCY OF COASTAL RESOURCE MANAGEMENT PLANS AT DIFFERENT LEVELS OF GOVERNMENT

CRM plans must be aligned and integrated vertically between different levels of government as well as horizontally between the same levels of government (Figure 7). Integration must be viewed as an iterative process that occurs from the bottom-up as well as the top-down. National laws and policies establish overall principles, rules, guidelines, and standards to ensure sustainable use of the country's coastal resources. National laws and policies are translated into the Medium-Term Development Plan (MTDP) which includes goals, objectives, strategies and indicators for sustainable coastal and marine resource management over a 5-year planning horizon taking into consideration the overall status of fisheries and other coastal resources in the country. The goals and objectives of the MTDP provide direction to NGA programs in supporting local initiatives. Vertical integration and consistency of municipal CRM plans with provincial and national plans is necessary in order to reflect both local and national CRM goals and objectives. The CRM plans of local and national government must be integrated, reconciled, and validated through an information-driven process in order to achieve the overall goal of rehabilitation and sustainability of coastal resources in the Philippines. Local and national government plans for CRM must be guided by the same goals and objectives.

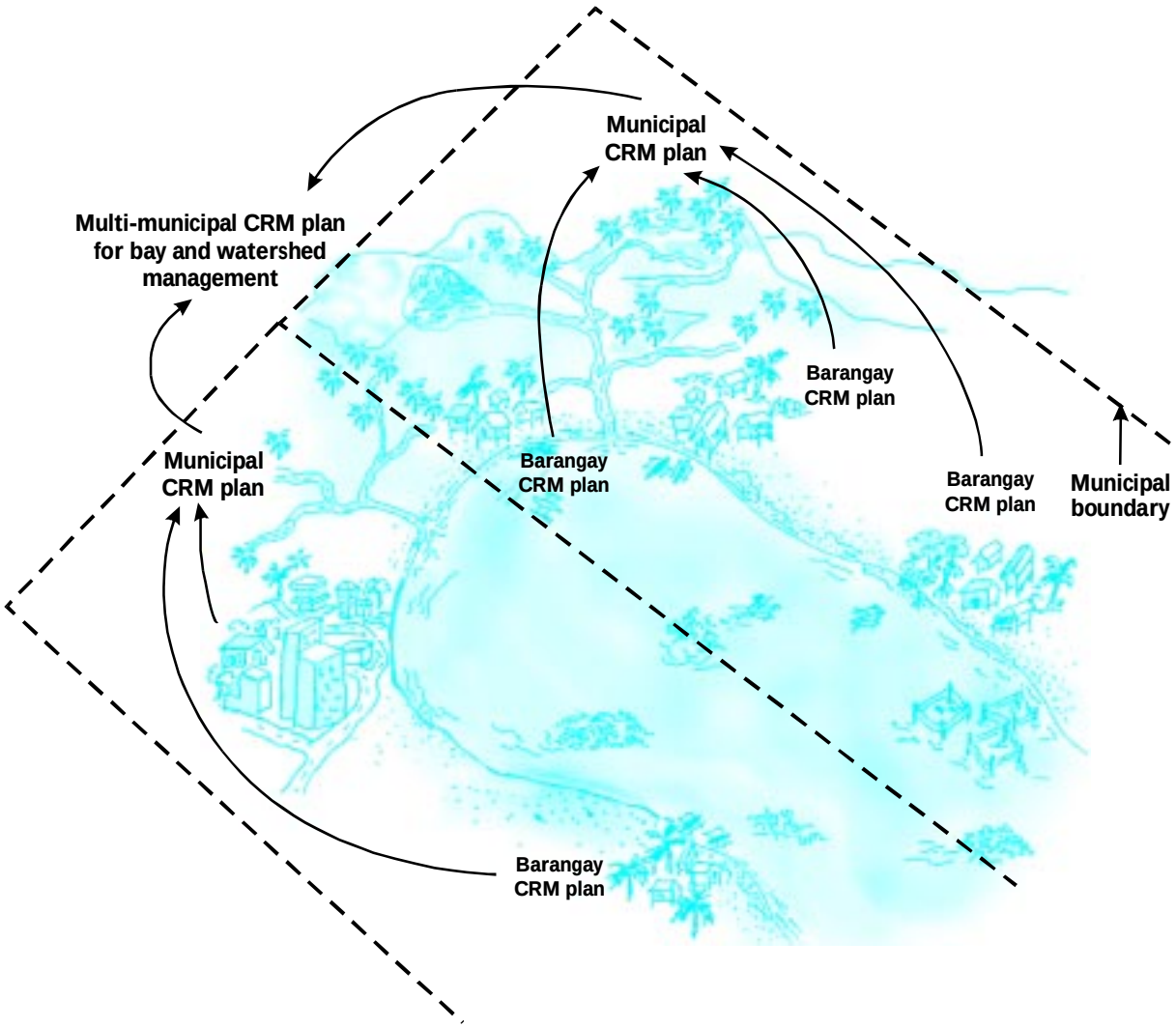


Figure 6. CRM planning at different spatial scales.

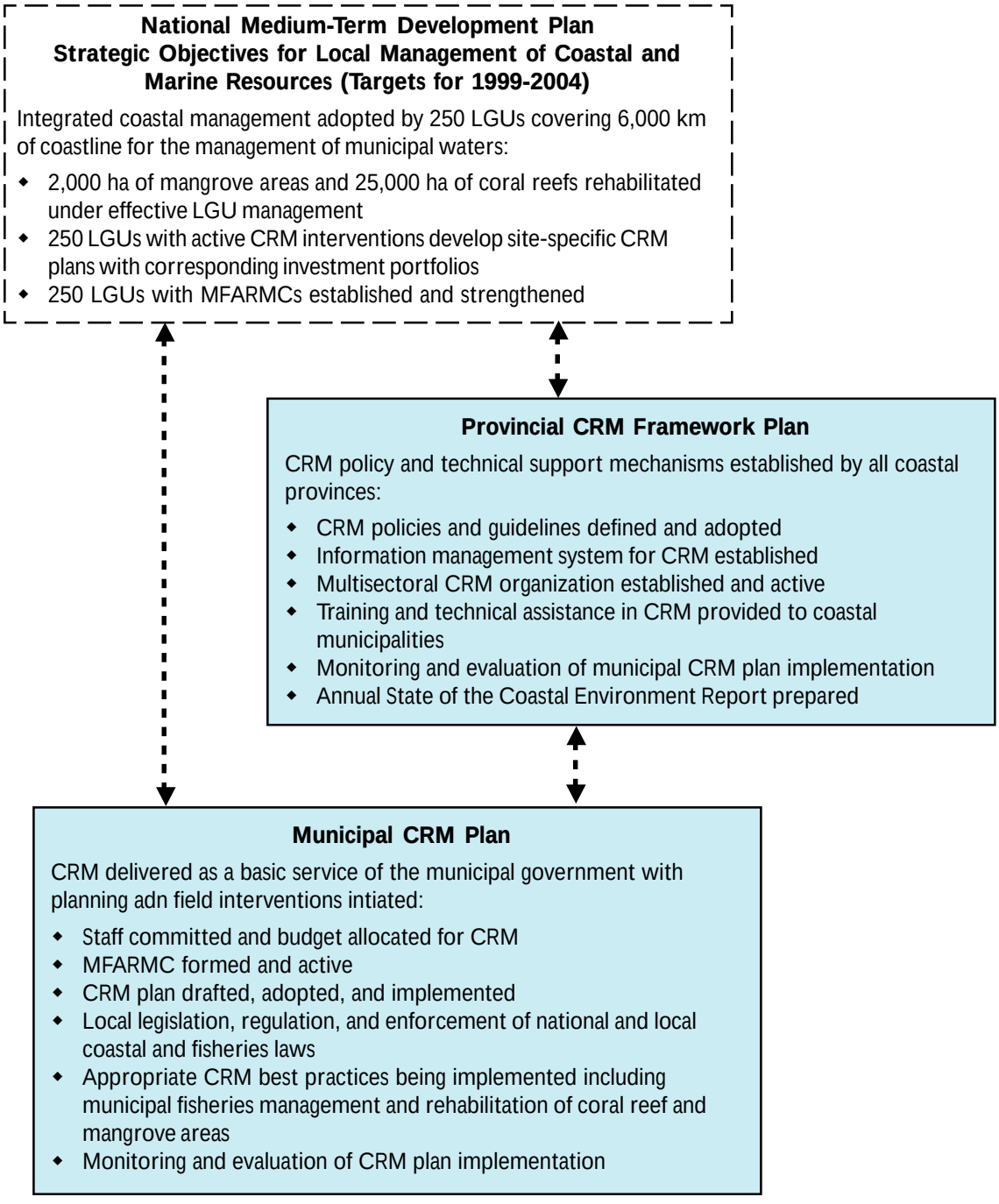


Figure 7. Aligning CRM plans and development plans at different levels of government.

LEGAL FRAMEWORK TO SUPPORT COASTAL RESOURCE MANAGEMENT PLANNING PROCESS

Key provisions of national laws and policies can be found for each phase of the CRM planning process as shown in Table 9. Together, these provisions summarize the legal basis for CRM as basic service of local government and for CRM planning. In Phase 1, LGUs are authorized to establish organizational units to service priority needs of the community such as the establishment of CRM offices or units of the municipality. LGUs must formulate comprehensive multisectoral development plans, such as CRM plans, as described in Phase 2, in a participatory process. A broad range of powers are devolved to LGUs to conduct activities described in Phase 3 from funding and implementing projects, legislation and regulation, law enforcement, and revenue generation. All projects and plans of the LGU must undergo monitoring and evaluation, as required in Phase 4, overseen by Local Development Councils. Information management needed in Phase 5 is enumerated as one of the basic services of local government. Lastly, the role of multisectoral and inter-LGU participation and resource sharing is articulated by specific provisions of national laws that encourage LGUs to establish co-management regimes which are of particular importance to the successful implementation of CRM plans and programs.

Table 9. Legal framework to support local level CRM planning process.

Phases and steps	National legal framework	Applications
PHASE 1. Issue identification and baseline assessment a. Program preparation	• RA 7160 Sec. 17(2) enumerates environmental management systems as a basic service of local government • RA 8550 Sec. 16 provides for the jurisdiction of municipal/city governments over municipal waters and responsibility for the management, conservation, development, and protection of all fish and fishery/ aquatic resources • RA 7160 Sec. 3 enables LGUs to establish organizational structures and operating mechanism to service priority needs of communities	• *Environmental management systems include the management of the coastal environment and resources* • *Municipalities and cities have the primary mandate to manage coastal resources and municipal waters* • *CRM is a basic service that must be provided by local government* • *Coastal LGUs may establish a CRM unit under the Environment and Natural Resource Office of the LGU or establish a separate CRM Office in order to carry out this mandate*

(continued)

Table 9. (continued)

Phases and steps	National legal framework	Applications
b. Secondary information gathering c. Field assessment, Participatory Coastal Resource Assessment (PCRA) and other research	• RA 7160 Sec. 17(b)2(i) enumerates extension and on-site research services and facilities related to fishery activities as a basic service • RA 8550 Sec. 123 provides for the delineation of municipal waters with full participation of LGUs with technical assistance from the National Mapping and Resource Information Agency (NAMRIA) and funding from BFAR	• *Existing data and information for planning should be obtained and compiled from all available sources* • *On-site research is necessary to document baseline conditions and evaluate program impacts* • *Mapping of municipal waters is a basic procedure for any CRM program. It should precede management interventions as stated. Municipalities and cities must agree on coastal terminal points and municipal water boundaries*
d. Database and profile development	• RA 7160 Sec. 17(2) enumerates information services as a basic service of local government	• *Information management is essential for planning sustainable coastal resource use* • *Database development should begin as early in the process as possible to organize information and data and facilitate analysis and evaluation of resource conditions and uses*
e. Prioritization of issues and analysis of causes	• RA 7160 Sec. 384 recognizes the *barangay* as the primary planning and implementing unit of government policies, plans, programs, projects, and activities in the community and serves as a forum for the views of the people	• *The planning mode begins at the barangay level and is enriched with community participation in the assessment of issues and opportunities*
PHASE 2. CRM plan preparation and adoption		
a. Establish management bodies	• RA 8550 Sec. 69-79 provides for establishment of Fisheries and Aquatic Resources Management Councils (FARMCs) • RA 7160 Sec. 3(f); 25-27; 33 provides for inter-LGU collaboration, partnership with POs and NGOs • RA 7160 Sec. 106-109 provides for the establishment of multisectoral development councils • RA 7160 Sec. 112 provides for the establishment of sectoral committees by local development councils for the purpose of planning	• *MFARMCs assist in CRM plan formulation; recommend enactment of fishery ordinances; and assist in the enforcement of fishery laws, rules, and regulations* • *Integrated FARMCs (IFARMCs) may be created between two or more municipalities or in bays and gulfs*

(continued)

Table 9. (continued)

Phases and steps	National legal framework	Applications
		• *Other types of management bodies or technical working groups may be formed by the LGU to assist in CRM plan preparation*
b. Define goals and objectives	• RA 7160 Sec. 3 provides that LGUs share with national government the responsibility in the management and maintenance of ecological balance within their territorial jursidction • RA 7160 Sec. 444, 455, 465 require LGUs to adopt adequate measures to safeguard and conserve land, mineral, marine, forest, and other resources • RA 8550 Sec. 2 establishes integrated coastal area management as a national strategy and reiterates the Constitutional provision to protect the rights of municipal fisherfolk in the preferential use of municipal waters • RA 7160 Sec. 106-109 provide for the formulation of comprehensive multisectoral development plans through local development councils starting with the local people • RA 8550 Sec. 16 provides that LGUs bordering bays, lakes, or gulfs manage fisheries resources in an integrated manner • RA 8435 provides for preparation of strategic agriculture and fisheries development zone plans	• *Protection and conservation of the coastal environment is the primary responsibility of LGUs* • *Formulation of a multi-year municipal CRM plan is needed to set forth goals, objectives, and strategies for protection and conservation of marine and coastal resources of the municipality* • *Inter-LGU cooperation is required to manage coastal resources in bays and gulfs* • *Multi-municipal CRM plans may be necessary to manage coastal resources in bays and gulfs* • *Formulation of a provincial CRM framework plan is needed to set forth policy directions for CRM in the province* • *A strategic agriculture and fisheries development zone plan is just one element of a comprehensive and integrated CRM plan*
c. Develop CRM strategies and action plan	• RA 8550 provides for inclusion of at least 15 percent of certain parts of municipal waters as fishery reserves; establishment of fishery refuges, sanctuaries, and closed seasons; mangrove reforestation and cutting prohibition; and participatory mechanisms • RA 7160 Sec. 17 enumerates solid waste disposal, environmental management, tourism facilities, community forestry projects, and extension and on-site research services facilities related to fisheries activities as basic services that LGUs should extend to its people	• *Strategies and actions may vary somewhat depending on issues prioritized and location and may include measures for regulation, strict protection, and sustainable use of coastal resources* • *Strategies and actions required to manage coastal resources generally require that all environmental management systems are included such as solid waste management, forestry protection, soil and water conservation, pollution*

(continued)

Table 9. (continued)

Phases and steps	National legal framework	Applications
		management, and other actions ◆ *Some strategies and actions may be identified outside the jurisdiction of the LGU and require cooperation between LGUs in achieving CRM goals and objectives in the plan*
PHASE 3. Action plan and project implementation a. CRM plan implementation	◆ RA 7160 Sec. 444 and 463 provide for the powers, duties, and functions of Local Chief Executives to implement all LGU programs and plans; enforce all laws and ordinances; exercise general supervision and control of all LGU programs; and ensure the delivery of basic services	◆ *CRM plans must have the support of all sectors; however, the leadership role of the Local Chief Executive in catalyzing CRM plan and program implementation is a critical success factor*
b. Legislation and regulation	◆ RA 7160 Sec. 447 and 468 provide for LGUs to enact ordinances and pass resolutions to protect the environment ◆ RA 8550 Sec. 16 directs the municipal/city government to enact a Unified Municipal Fisheries Ordinance ◆ RA 8550 provides for prohibitions on the extraction of specific coastal resources and regulations of fisheries and coastal resource use through the registry of municipal fisherfolk and municipal fishing vessels (less than 3 GT) by type of gear; granting of fishery privileges; zoning and regulation of municipal water use; and other regulatory mechanisms	◆ *Provincial government plays an important role in reviewing and harmonizing local legislation to enhance predictability, consistency, and formality* ◆ *Local ordinances may include regulatory and revenue generating mechanisms within the authority of the LGU*
c. Law enforcement	◆ RA 8550 provides for penalties for various forms of illegal fishing practices ◆ RA 8550 clarifies roles of FARMCs, fish wardens as enforcers	◆ *Enforcer may elect to prosecute offenses using either RA 8550 or local ordinance*
d. Revenue generation	◆ RA 7160 provides for revenue generating powers of LGUs through taxation and licensing of fishing and other coastal activities, granting of fishery privileges in municipal waters, share in national taxes (IRA), share in natural wealth, and securing grants or donations from local and foreign assistance agencies to municipalities	◆ *LGUs should explore all revenue-generating mechanisms provided for under the LGC* ◆ *Revenue-generating mechanisms for municipal water use may be regulated through licensing fees and can be used to fund CRM plans and programs*

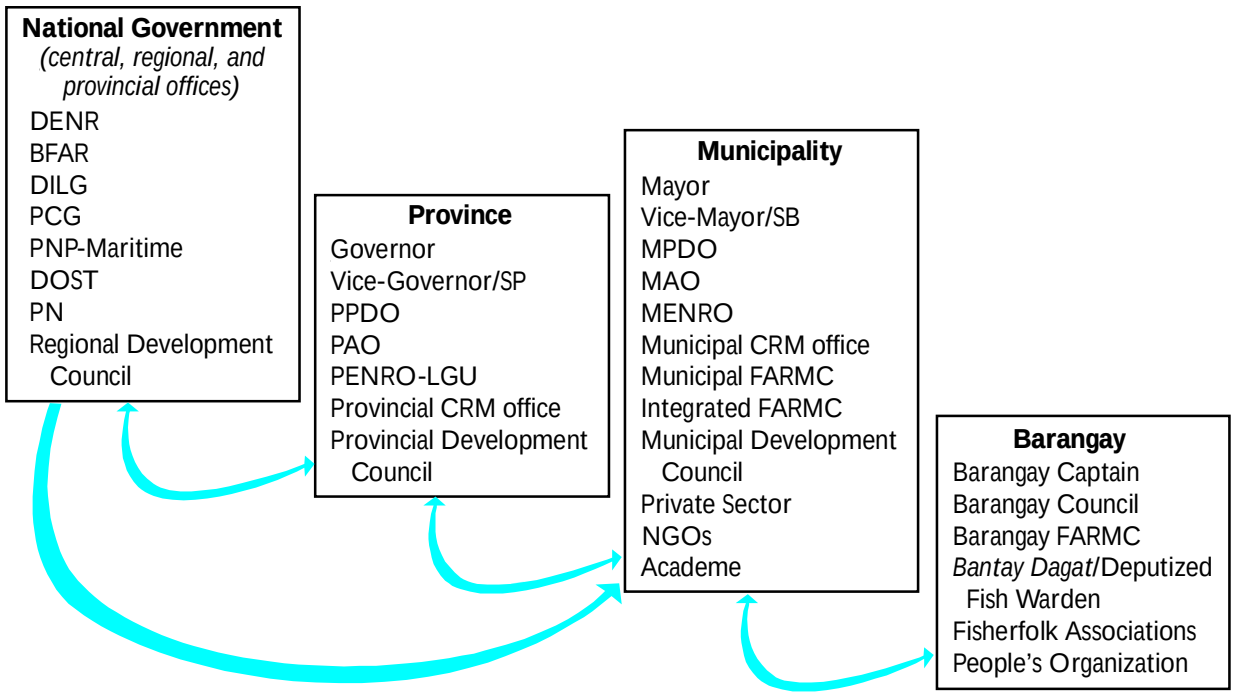
(continued)

Table 9. (continued)

Phases and steps	National legal framework	Applications
e. Annual program preparation and budgeting	• RA 7160 provides for local fiscal administration	• *Annual investment plans should include budget allocations for CRM* • *Sharing of capital investment (such as patrol boats) with contiguous LGUs is possible.*
PHASE 4. Monitoring and evaluation a. Monitoring and evaluation b. Refine management plan	• RA 7160 Sec. 109 provides for the functions of Local Development Councils, which include coordination, monitoring, and evaluation of the implementation of all development plans and projects.	• *Annual monitoring and evaluation is an essential component of any CRM plan and program and may include performance monitoring, management capacity assessments, and outcome evaluations*
PHASE 5. Information management, education and outreach a. Information management b. Information, education, and communication	• RA 7160 Sec. 17(2) enumerates information management as a basic service of local government • RA 7160 provides for extension and on-site research services and facilities related to agriculture and fishery activities, information services; and provision of support to municipal fisherfolk though appropriate technology and research, credit, production and marketing assistance and other services	• *Information management combined with education and outreach activities provides institutional memory needed to sustain interventions and investments in managing coastal resources and the environment*
Multisectoral and inter-LGU participation and resource sharing	• RA 7160 Sec. 3(f) provides that LGUs shall share with national government the responsibility in management and maintenance of ecological balance within their territorial jurisdiction • RA 7160, Sec. 2(c), 26, 27 require mandatory consultation with LGUs, NGOs, and other sectors by NGAs responsible for planning and implementing any projects or programs that may cause harm to the environment or affect the ecological balance and prior approval of the *Sanggunian* • RA 7160, Sec. 34-36 provide for LGU to actively invoke the participation of POs and NGOs in promoting ecological balance • RA 7160, Sec. 3(f); 25-27; 33 provide for grouping of LGUs to consolidate or coordinate their efforts, services, and resources for purposes commonly beneficial to them • RA 8550, Sec. 16 provides that LGUs bordering bays, lakes, and gulfs manage fisheries resources in an integrated manner	• *National legal framework provides for a "co-management" approach for coastal resource management by national government, local government, the community, and civil society*

KEY PLAYERS IN COASTAL MANAGEMENT

Municipal and city governments have an important role in coastal management because of their legal mandate to manage resources within municipal waters. The municipal CRM unit, including roles of *barangay* and provincial and national partners are depicted in Figure 8. National agencies, DENR and BFAR primarily, have key supporting and monitoring roles in the coastal management process. Regional Development Councils and Municipal Development Councils also have important roles to play as multisectoral planning bodies that include representatives from the private sector, NGOs, and academe. NGOs are involved in community-level implementation through contracting arrangements or their own projects funded externally. Academic and research institutions have important roles in baseline assessments, information management and analysis for planning and monitoring. Private sector stakeholders, including commercial fishing operators, tourism operators, and industries, form part of the coastal community and must participate in CRM planning.



BFAR - Bureau of Fisheries and Aquatic Resources
CRM - coastal resource management
DENR - Department of Environment and Natural Resources
DILG - Department of the Interior and Local Government
DOST - Department of Science and Technology
FARMC - Fisheries and Aquatic Resources Management Council
LGU - Local government unit
MAO - Municipal Agriculture Office
MENRO - Municipal Environment and Natural Resources Office
MPDO - Municipal Planning and Development Office
NGO - nongovernment organization
PAO - Provincial Agriculture Office
PCG - Philippine Coast Guard
PENRO - Provincial Environment and Natural Resources Office
PN - Philippine Navy
PNP - Philippine National Police
PPDO - Provincial Planning and Development Office
SB - *Sangguniang Bayan*
SP - *Sangguniang Panlalawigan*

Figure 8. Key players in coastal management.

The roles of key players are described in Table 10 and discussed further in *Guidebook 4: Involving Communities in Coastal Resource Management*, which includes sections on forming partnerships for CRM and mechanisms for involving the community.

Table 10. Specific roles of government and nongovernment groups in coastal management.

Local government units (Municipality and City)

- Provide overall facilitation and coordination for planning and implementation
- Develop a coastal environmental profile with maps for planning
- Conduct information, education, and communication and training activities for local oranizations
- Develop and adopt 5-year CRM plan
- Support CRM plan implementation through appropriate ordinances
- Incorporate appropriate CRM best practices in plan
- Implement CRM plans through annual investment plan and budget
- Enact comprehensive fisheries management ordinance
- Maintain a municipal coastal database to facilitate planning and implementation
- Support participatory coastal resource assessments for each *barangay*
- Provide budget and dedicated personnel for planning and implementation
- Identify and implement alternative or supplemental livelihood for coastal communities
- Support coastal law enforcement units as required
- Contract assistance through consultants and NGOs
- Support organization and mandate of municipal and *barangay* FARMCs
- Monitor field activities and selected biophysical and socioeconomic indicators
- Implement revenue generation mechanisms through licenses, fees and taxes
- Network and collaborate with local and international funding institutions for program/project implementation
- Conduct IEC campaigns related to sustainable use of coastal resources
- Conduct site-specific research
- Collaborate with province, other municipalities or cities and national agencies to develop multi-municipal CRM plans as required for special management areas

Local government units (Provincial)

- Develop and implement policy and planning framework for CRM in province
- Provide technical assistance to municipalities and cities for coastal management planning and implementation
- Monitor and evaluate all coastal management activities and results in province
- Establish and maintain a training staff to train LGUs and other stakeholders in CRM
- Assist coordination of law enforcement for multi-municipal areas
- Establish, maintain, and update an information management system and database
- Assist each municipality and city to establish and maintain a municipal coastal database
- Provide financial incentives for coastal management based on results of monitoring
- Assist the national government in developing and implementing policy and planning framework for CRM in the country

Community stakeholders and people's organizations

- Participate in all CRM planning sessions in all levels of local government (*barangay*/municipality/city/province)

(continued)

Table 10. (continued)

- Provide members to *barangay* and municipal FARMCs
- Participate in stakeholder management organizations
- Volunteer for coastal management implementation activities (i.e. law enforcement, fisheries monitoring, and sanctuary establishment and management, etc.)
- Provide local and traditional knowledge and experience in resource management
- Initiate IEC activities in the community
- Source funds for community projects

Department of Environment and Natural Resources

- Formulate, in coordination with BFAR, a national strategic framework for CRM
- Assist with management of resources and areas under the mandate of DENR (e.g. mangroves, water quality, foreshore management, quarrying, and protected areas)
- Provide material input assistance in specific projects under DENR's mandate
- Provide technical guidance to LGUs in coastal management planning and implementation
- Assist in training of LGUs and community stakeholders
- Identify and implement alternative or supplemental livelihood for coastal communities
- Coordinate with BFAR in the sustainable management of coastal and marine resources
- Monitor and evaluate progress in achieving goals and objectives for coastal and marine resources in the Medium Term Program Development Plan

Bureau of Fisheries and Aquatic Resources

- Formulate a national fisheries management plan as a component of a national strategic framework for CRM
- Assist with management of resources and areas under the mandate of BFAR (e.g. fisheries of all kinds, fishing techniques, stock assessment, and aquaculture)
- Provide material input assistance in specific projects under BFAR's mandate
- Provide technical guidance in coastal management planning and implementation
- Assist in training of LGUs and community stakeholders
- Assist in fishery enforcement
- Coordinate with DENR in the sustainable management of coastal and marine resources
- Monitor and evaluate progress in achieving goals and objectives for coastal and marine resources in the Medium Term Program Development Plan

Department of the Interior and Local Government

- Provide technical guidance and training to LGUs in enhancing the delivery of CRM as a basic service
- Provide operational coastal law enforcement units under the PNP Maritime Group
- Provide financial assistance in specific projects under DILG's mandate
- Monitor and evalute progress in achieving the goals and objectives for coastal and marine resources in the Medium Term Program Development Plan

Department of Transportation and Communication

- Formulate policies, plans, and regulations involving maritime transportation (MARINA)
- Development of ports and harbors (PPA)
- Assist in the implementation of laws in the high seas and waters of the Philippines; safeguard marine resources and the environment; prevent, mitigate, and control marine pollution (PCG)

(continued)

Table 10. (continued)

Department of Science and Technology

- Monitor aquatic and marine research and development projects
- Formulate strategies, policies, plans, programs, and projects for aquatic and marine science technology
- Generate external funds

Philippine Council for Aquatic and Marine Research and Development

- Coordinate, plan, monitor, and evaluate research development activities dealing with the country's aquatic resources
- Facilitate and program the allocation of government funds earmarked for fisheries and aquatic resources research and development, including coastal management initiatives of academic institutions
- Generate resource-based information for the management of the country's marine resources
- Act as the government lead agency in the implementation of the National Course on Integrated Coastal Management and the training program on ICM for LGUs
- Maintain the National Aquatic Resources Research and Development System and the PhilReefs, the information network on coral reefs and related ecosystems

Nongovernment organizations

- Provide assistance at the community and *barangay* level to organize FARMCs and other resource management organizations
- Provide technical services to LGUs for implementing community level interventions
- Provide information and education services at the community, municipal, and national levels
- Provide legal services for environmental and fisheries law enforcement
- Assist with monitoring of biophysical and socioeconomic indicators
- Provide a conduit for financial assistance to LGUs for coastal management

Academic institutions

- Assist in analyzing information for coastal environmental profiles
- Assist in designing and implementing a monitoring program for biophysical, socioeconomic and legal-institutional indicators in CRM for LGUs
- Assist in integrating existing data and information into ICM plans
- Assist in formulating CRM plans and packaging of project proposals
- Provide assistance in designing and maintaining a management information system and database for coastal management
- Assist in designing coastal management projects for multi-municipal management areas
- Assist in training of LGUs and communities
- Assist in designing IEC and community development programs and strategies for LGUs, NGOs, and POs

Donors (national and international)

- Provide financial assistance to national and local governments for CRM projects
- Provide financial assistance for building sustainability in CRM through technical assistance in program design, policy planning and implementation, training, education, monitoring, and other aspects of coastal management programs
- Assist to coordinate multisectoral collaboration and policy support for CRM
- Provide international experience in coastal management policy and implementation

COMMUNITY PARTICIPATION IN COASTAL RESOURCE MANAGEMENT

The Philippines has distinguished itself internationally for pioneering efforts in community-based CRM. The importance of involving resource users and residents in the coastal management planning and implementation process is well-documented. Coastal management programs will only succeed if the plans are appropriately designed for conditions in the community, focused on issues of high concern to the community, accepted and supported by a majority of community members, and achieve a high level of participation. Community participation in every phase of the process should be encouraged since community members have important contributions to make in the identification of issues important to them, collection of baseline information, and development and implementation of management strategies. Day-to-day decisions on the part of local residents in how they utilize the coastal resources will have a big impact on management success; convincing local residents of the importance of coastal management and their role in the process is a critical part of the program (Christie *et al.* 1994; White *et al.* 1994).

The LGU and NGO partners have the responsibility to identify key stakeholders and obtain their commitment to participate, help to organize the community so they have the capacity to participate, involve the community in the coastal planning process, and educate the community about their role in coastal management. Community awareness and involvement are achieved through:

- **Identifying Stakeholders and Forming Partnerships**: Key stakeholders and potential participants in CRM must be identified. Partnerships among the LGUs, NGOs, private sector groups including tour operators, commercial fisheries industry, and community groups can be formed and agreement on roles and responsibilities can be formalized through a memorandum of agreement (MOA).
- **Community organization and mobilization**: Stakeholders are more accessible and have more opportunities to be involved if they are organized. Organization of the community allows rapid integration into the planning process, as well as a forum for feedback and efficient resolution of issues. A community organizer should be assigned to the community to facilitate organization and capacity-building.
- **Community participation in the planning process**: Once community organization has been initiated, the community should be better prepared to participate in the planning process. There are a variety of participatory tools that can be used to encourage community involvement in each step of the planning process. One such tool is participatory coastal resource assessment.
- **Information, education, and communication**: To raise public awareness and to promote goals and objectives of coastal management, it is essential to have IEC initiatives that reach coastal residents throughout the planning process.

Each of the five phases of the coastal management process is discussed in the following chapters while emerging themes in national policy and multisectoral collaboration for effective local management of coastal resources are discussed in Chapter 8.

ALAN WHITE

Municipal CRM plans must include specific strategies for municipal fisheries management including registration and licensing of municipal fishers and boats, closed seasons, and establishment of marine protected areas.

ALAN WHITE

Coastal area land use zoning must include appropriate shoreline setbacks and buffer zones.

MAR GUIDOTE

Coastal law enforcement must be an integral part of a municipal or city CRM program.

chapter 3

Issue identification and baseline assessment — Phase 1

CRM planning as a basic service of local government must be based on sound information on the condition and use of coastal resources and prioritization of issues that need to be addressed. The first phase of the CRM planning process is issue identification and baseline assessment (Figure 9). Phase 1 can be divided into five steps: program preparation, secondary information gathering, field assessment, coastal environmental profile and database development, and prioritization of issues to be addressed by the plan. Activities and outputs for this phase and steps in the process, as well as the role of various sectors, are summarized in Table 7.

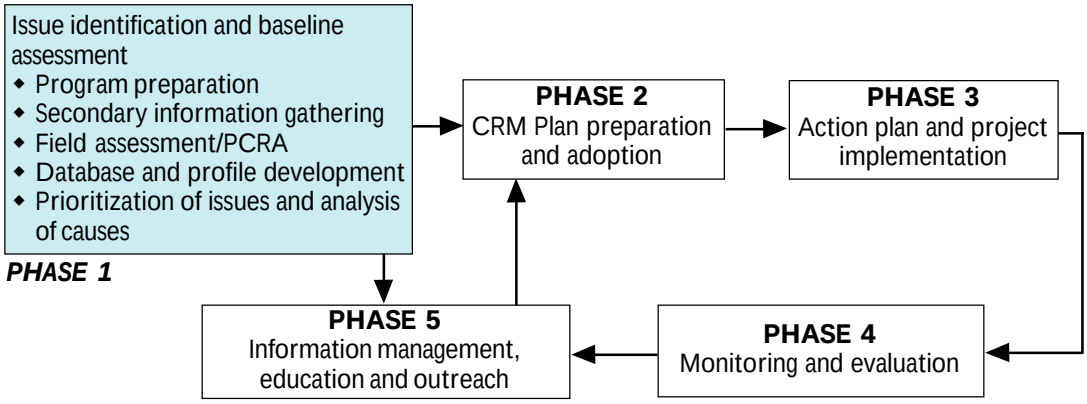


Figure 9. Key steps in issue identification and baseline assessment.

PROGRAM PREPARATION

The process of designing a successful integrated management program begins with securing funding for program development; getting commitments to participate from key stakeholders such as government officials, NGOs, and resource user groups; recruiting and training staff; identifying coastal planning and management boundaries; and developing a preliminary workplan.

Securing funding for program development. Dedicated funding and staff are required to deliver CRM as a basic service of local government. Startup funds are required to initiate activities in Phase 1 as well as regular budget allotments for program operations and maintenance. The municipality should identify and leverage all potential sources of funding and technical assistance support to assist in program development with counterpart funding from the LGU. Provincial government, NGAs, academic institutions, NGOs, private sector, and foreign funding institutions are all potential sources of funds and technical assistance that should be leveraged to support municipal CRM.

Securing commitment to participation in a planning process. Another element in the process of program preparation is identifying possible stakeholders who use or benefit from coastal resources and encouraging their participation. These stakeholders include local and national government officials, representatives of NGOs and resource user groups (e.g. fishers' cooperatives), academics, and residents. Getting agreement to participate requires providing potential participants detailed information about:

- the basic purposes of a coastal management program for a specific municipality, bay, or other jurisdiction;
- intended outcomes of such a program (including program beneficiaries);
- realistic estimates of the time and resource requirements for participants; and
- an indication of the short-term and long-term incentives to participate, such as opportunities for additional training and new skills, opportunities to participate in an endeavor that potentially has great community importance, and economic benefits from better managed resources.

Commitment to participate may be informal, but in some cases a more formal memoranda of agreement (MOA) may be appropriate if significant time or resource commitments are anticipated.

Recruiting staff. Recruiting program development staff is also an important element in the preparation process. Ideally, most staff would be seconded from the municipality, DENR, BFAR, and other agencies. Training in coastal management is necessary to ensure that staff are fully prepared for their responsibilities. Program preparation is therefore an opportunity for staff 'skill-building' that can contribute to long-term improvements in coastal management. Contracts with NGOs or other groups may be required to bring in key technical assistance or to provide trained community organizers to help facilitate the process.

Determining coastal management boundaries. Preliminary identification of relevant boundaries should occur as part of the initial preparation and should be included in the workplan. It is useful to distinguish among jurisdictional, planning, and management boundaries (Figure 10).

Initially, a jurisdictional boundary should be identified that represents the municipality's authority over land and waters. Coastal terminal points on land must be determined and validated before delineating municipal water boundaries. Agreement between adjacent municipalities is necessary to finalize coastal terminal points. Delineating municipal water boundaries should be conducted according to NAMRIA guidelines adopted as DENR Administrative Order 17, *series* 2001 to provide the jurisdictional boundary for municipal water use and enforcement (*Guidebook 2: Legal and Jurisdictional Framework for Coastal Management*).

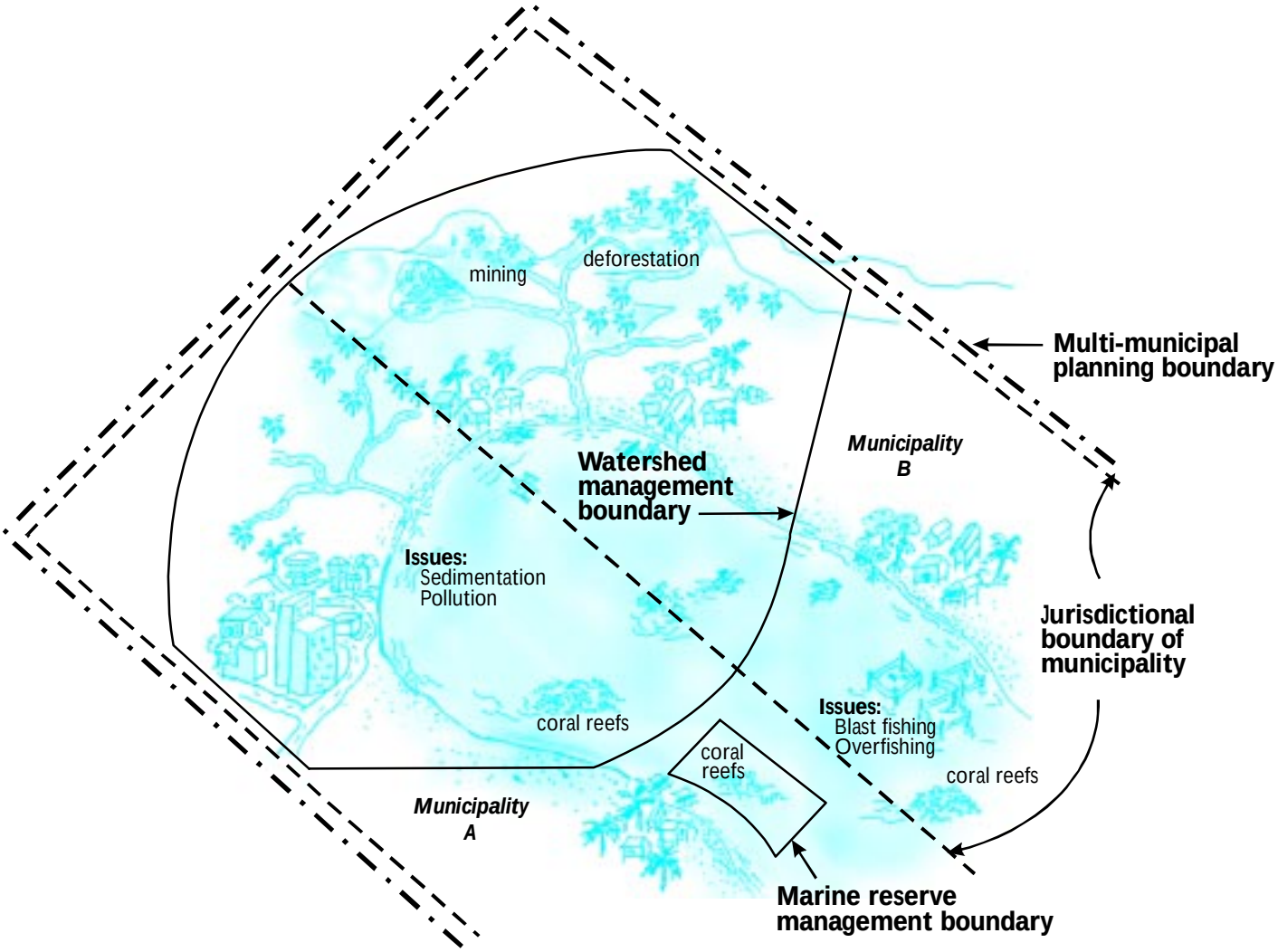


Figure 10. Jurisdictional, planning, and management boundaries.

Planning and management boundaries are usually based on specific issues or problems that are addressed later in the planning process (Figure 10). It is useful, however, to identify preliminary boundaries during program preparation. A planning boundary is more inclusive than a management boundary. For example, a coastal planning boundary for a municipality might extend both landward and seaward to the full extent of the municipality's jurisdiction. Or a planning boundary might be drawn on the basis of ecological considerations and might include an entire watershed and several municipalities. A planning boundary should be sufficiently inclusive to insure that important impact-generating uses and activities are included, but not so large as to dilute the program. Unlike a planning boundary, a management boundary denotes the area within which specific regulatory, developmental, or other management activities are designed to occur in order to reduce adverse impacts on coastal resources, reduce risks of hazards, or increase opportunities for optimal resource use. For example, management boundaries may denote a

watershed area where strategies may be focused on reduction of pollution into coastal areas, a marine reserve where strategies based on fishing restrictions apply, or special use zones designated throughout the municipal waters where different management strategies are employed. Inter-LGU collaboration will be required when issues in the coastal zone are attributed to human activities in the uplands or in areas outside the territorial jurisdiction of a given municipality. Planning and management boundaries should be developed and validated with community participation and input during the CRM plan preparation in Phase 3.

Developing a Workplan: A workplan is the primary product of this phase of the planning cycle. The workplan should outline a set of planning activities to be undertaken, the sequence of activities, and individual responsibility for each activity. While the workplan may be revised later, it should set forth as precisely as possible what planning activities will be undertaken and by whom. The workplan should also indicate budgets and schedule for each activity. Table 11 illustrates the organization of a typical workplan.

Table 11. Key elements of a workplan.

- Title
  - Introduction
  - Objectives
  - Overview of Tasks
    - Task 1: Prepare program
    - Task 2: Identify stakeholders
    - Task 3: Collect and analyze secondary information
    - Task 4: Conduct participatory coastal resource assessment
    - Task 5: Set up database
    - Task 6: Prioritize issues
    - Etc.
  - Staffing Needs
  - Schedule of Activities
  - Cost Estimate
  - Deliverables

SECONDARY INFORMATION GATHERING

Gathering information occurs throughout the planning process. Initially, the information gathering net should be cast broadly to discover what information already exists that may be relevant to the preparation of a CRM plan. One important type of information is the legal and jurisdictional basis for management: laws, ordinances, regulations, and plans that govern the land and water uses and activities that affect coastal conditions. Also important are existing and historic maps, particularly those that show the settlements, urban and agricultural activities, habitats, and important natural features. Government offices, libraries, and academic institutions are natural repositories for official documents, maps, and reports that may provide crucial information.

The search for documents and maps should extend beyond the usual official sources. There are sometimes academic or other 'unofficial' socioeconomic surveys, ecological surveys, previous plans, or analyses that may have been done by individuals or institutions in conjunction with community groups, NGOs, or user groups. There is no detailed methodology for gathering secondary information. It is mostly a matter of writing letters, making telephone calls, visiting offices and libraries, interviewing officials, teachers, scientists, and researchers. Municipalities may request the assistance of the province in making requests to NGAs, NGOs, academe, and donor-assisted programs for information and reports applicable to the province and municipalities. It is essential to keep detailed records of the sources of secondary information.

At this stage, the planning team should develop a base map upon which new information and management strategies can be mapped. Many provinces are developing capacity in geographic information systems (GIS) as an interpretive tool for planning. Where possible, base maps and other spatial data should be put in GIS to serve as an important starting point for planning, in the same manner as land use maps are developed. In this manner, additional information and data can be added to the base map throughout the planning and implementation process.

FIELD ASSESSMENT/PARTICIPATORY COASTAL RESOURCE ASSESSMENT

Coastal environmental profiles and subsequent management plans are based on assessment and compilation and analysis of a great deal of information about coastal resources, resource use activities and the characteristics of resource users. Some of this information will come from official maps and documents and from studies by experts. However a significant amount of information can and should come from coastal residents and, in particular, resource user groups such as fisherfolk.

Participatory Coastal Resource Assessment (PCRA). Participatory coastal resource assessment (PCRA) is an effective process for gathering information from local residents in a participatory manner that involves the community in data collection. PCRA uses a suite of techniques that are described in detail in the *Participatory Coastal Resource Assessment Handbook* (Walters *et al.* 1998) and also summarized in *Guidebook 4: Involving Communities in Coastal Management*. The type of information gathered includes resource use activities, demographic information, socioeconomic and cultural conditions, and resource conditions. The specific data gathering techniques, sources of information, and outputs associated with PCRA are summarized in Table 12 and include:

- Participant observation by community workers;
- Interviews with individuals and groups;
- Household surveys;
- Identifying and classifying resources and habitats;
- Mapping; and
- Technical analysis.

Table 12. Framework for using PCRA methods in the information gathering phase of CRM *(Walters et al. 1998)***.**

General project indicator type	General profile content heading	Specific outputs produced	PCRA methods employed[a]	Scientific disciplines considered	Possible collaborators and information sources[b]
Environmental/ Ecological	**Physical Setting**	Geophysical overview including land, sea floor, and coastal habitat classifications Overview of coastal forests, rivers, and watershed status Thematic and locator maps	Identifying and classifying physical elements of the coastal environment, drawing transects Individual and group mapping, drawing timelines, documenting historical trends Mapping	Geography, geology Geography, forestry, hydrology, agronomy, ethnogeography Cartography	DA, DENR DA, DENR, DPWH, universities, research institutions NAMRIA, other existing maps
	Climate	Descriptions and diagrams of seasons, rainfall, winds, and temperature	Drawing calendar diagrams	Climatology	PAGASA, DA, DENR
	Oceanography	Descriptions, diagrams, and maps of bathymetry, current/ circulation patterns, tidal flow, waves, water quality, eddies, runoff patterns	Mapping, drawing calendar diagrams, drawing timelines or trend diagrams, documenting historical trends	Oceanography	NAMRIA, PAGASA, MARINA, universities, research institutions
	Important Habitats Coral reefs (all descriptions focus on ecological factors influencing past, current, and potential economic productivity)	Descriptions, diagrams, and maps of coral reefs (or local equivalent), live coral cover, coral and fish diversity, cultured species (or potentials), gear uses, and resource issues	Identifying associated resources, mapping, documenting historical trends	Marine biology, ecology, zoology	DA, DENR, universities, research institutions
	Seagrass Beds	Descriptions, diagrams, and maps of seagrass beds and other soft-bottom habitats, diversity, fish/seaweed abundance, cultured species (or potentials)	Identifying associated resources, mapping, documenting historical trends	Phycology, marine biology, botany, ecology	DA, DENR, universities, research institutions
	Mangroves	Descriptions, diagrams, and maps of mangrove areas, old-growth areas, diversity, fish abundance, cultured species (or potentials)	Identifying associated resources, mapping, documenting historical trends	Botany, estuarine biology, ecology, forestry	DA, DENR, universities, research institutions
	Beaches	Length, width, level of disturbance, pollution, erosion	Group mapping, transect diagram, field assessment, trend diagrams	Shoreline and coastal geology	DA, DENR, universities, research institutions
	Estuaries	Fish catch trends, level of pollution, nutrient cycles	Group mapping, controlled fishing, trend or seasonal diagram	Marine and water quality analysis, limnology	DA, DENR, universities, research institutions

Table 12. (continued)

General project indicator type	General profile content heading	Specific outputs produced	PCRA methods employed[a]	Scientific disciplines considered	Possible collaborators and information sources[b]
Environmental/ Ecological (continued)	**Lagoons and Bays**	Fish catch trends, pollution, and contamination	Group interviews, mapping, trend diagrams	Oceanography, water quality sampling, current studies	DA, DENR, universities, research institutions
	Natural Resources (fish, invertebrates, plants, etc.)	Inventories and local classification systems	Identifying and classifying, drawing transects	Geography, ecology, taxonomy	DA, DENR, universities, research institutions, museums
Socio-economic/Institutional, Resource Users, and Issues	**Fisheries**	Descriptions, diagrams, and maps of production by species, gear, community, assessment of past, current, and potential productivity	Identifying species and local names, drawing calendar diagrams, mapping	Fishery science	DA, DENR, universities, research institutions
	Other Coastal Resource Users (e.g. tourism, industries, shipping, etc.)	Description, maps, diagrams of use/production systems, assessment of past, current, and potential productivity	Identifying uses and associated resources, drawing calendar diagrams, mapping	Natural resource economics, anthropology	DA, DENR, DTI, universities, research institutions
	Local Resource Users	Descriptions, diagrams of demography, livelihood, community organizations, past, present, and potential CRM projects, activities	Household surveys, documenting historical trends, drawing diagrams, mapping	Geography, anthropology, sociology, natural resource economics	DA, DENR, DTI, DSWD, universities, research institutions
	Past and Present CRM	Description, diagrams of LGUs, national agencies, and NGOs and their projects, activities, laws, regulations, etc.	Identifying involved entities, interviewing representatives, documenting historical trends, drawing Venn diagrams, mapping	Political science, geography, natural resource economics, history, anthropology, archaeology	RDCs, all involved government agencies
	Other Stakeholders	Descriptions of composition, local interests and roles in coastal resource use	Identifying other stakeholders, interviewing representatives, documenting historical trends, drawing diagrams, mapping	Political science, geography, natural resource economics	RDCs, all involved government agencies
	Management Issues and Alternatives for Development, Monitoring, and Mitigation	Descriptions of current constraints on sustainable CRM	Integrating information, identifying issues, interviewing representatives from all involved groups/sectors	All of the above	RDCs, all involved government agencies
	Recommendations	Description of recommended management interventions	Integrating information, eliciting, formulating, and validating recommendations	All of the above	RDCs, all involved government agencies

[a] All methods are accomplished through participant observation and interviews with local coastal resource users and/or group workshops.
[b] Possible collaborators and information sources listed are in addition to NGOs and local government agencies which should always be consulted first, including agriculture, planning and development, and environment and natural resources offices at the municipal and provincial levels. In many areas, a Regional Development Council (RDC) or its equivalent (e.g. PCSD in Palawan), will also be a good information source and collaborator in information gathering.

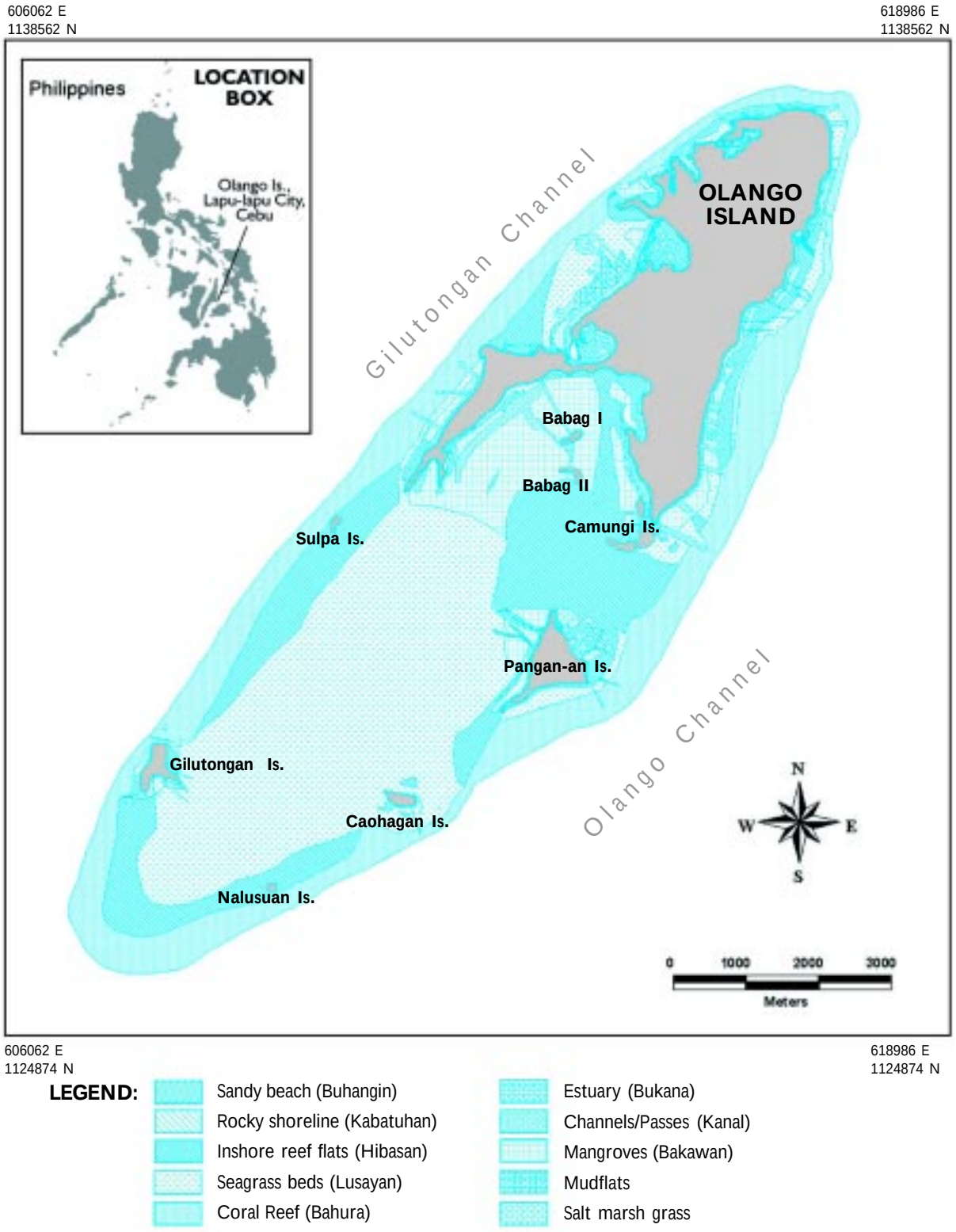


Figure 11. Example coastal resource habitat map generated using participatory coastal resource assessment for Olango Island.

Mapping is one of the most important PCRA activities. Fisherfolk can contribute enormously to understanding resource use activities by mapping the locations where specific types of fishing are conducted, their perceptions of fishing sites, spatial patterns of gear use, areas of fishing conflicts, as well as locations of reefs, mangroves, seagrass beds, and other resources. Such maps can provide a wealth of useful information about patterns of resource use difficult to obtain in any other fashion. A sample map is provided in Figure 11. Maps should be complete with geo-referencing, north arrow, scale, location box indicating where the site is, and a detailed legend.

Data and maps produced by PCRA can be validated by more rigorous scientific assessments conducted by academic institutions or NGAs. Combining local knowledge and scientific assessment provides a cost effective and more relevant and reliable database for planning.

DATABASE AND PROFILE DEVELOPMENT

The next step in the process includes the development of a coastal environmental profile for the municipality or bay and the establishment of a municipal database to store and process information. A profile includes detailed data on habitat distribution, resource conditions (water quality, extent and quality of reefs, mangroves and other habitats, fish stocks and other resources), demographic and socioeconomic conditions, and information on the existing legal and institutional framework for coastal management. Detailed maps should also be included that show the habitats, resources, and economic activities. The profile provides the context for management. It should be sufficiently detailed to provide the reader with a clear understanding of the environmental and social conditions at the site, why management is needed and how such management might improve coastal conditions. The profile should help answer two key questions:

- What are current resource conditions, patterns of resource use, and resource use problems and how are they changing over time?
- What problems or obstacles for coastal management are revealed?

The profile provides a summary of baseline conditions to which post-project changes can later be compared. An illustrative table of contents for a coastal environmental profile is provided in Table 13. Good examples of coastal profiles are *Rhythm of the Sea: Coastal Environmental Profile of San Vicente, Palawan* (Arquiza 1999) and *Coastal Environmental Profile of Northwestern Bohol, Philippines* (Green *et al.* 2000).

The information gathered during the secondary data collection and PCRA should be stored in a database that allows analysis and retrieval of information (Table 14). Maps and spatial data should be stored in GIS, if possible. The database and profile provide the foundation for the planning effort as shown in Figure 12.

Table 13. Table of contents of a coastal environmental profile.

Introduction
- Location
- Physiognomy (short description of the area)
- Historical background
- Summary of issues
- Objectives and scope

Physical Features (data by municipality with maps, tables, visuals)
- Land area
- Topography
- Hydrology
- Soil
- Land uses
- Climate

Natural resources (species, areas, condition, with tables, maps and other visuals)
- Mineral resources
- Coastal resources
- Mangrove
- Seagrass
- Coral reef
- Seaweed
- Fisheries
- Others (beaches, endangered species, etc.)
- Forest resources

Sociopolitical Setting
- Political / Administrative boundaries
- Demographics (Population size, density, growth rate; households; age and gender composition; urban and rural distribution; education; labor and/or employment; religion; ethnic groups; dialects)
- Health, sanitation, and medical care
- Settlements (type and ownership)
- Infrastructure (roads, communication, ports, cooperatives, etc.)

Economic Sector (economic activities and resource users)
- Capture fisheries (methods, number of fishers, catch per unit effort, catch per species per gear, historical trends in catch)
- Aquaculture (maps to depict fishpond areas by municipality; areas eligible for reversion; mariculture types and production levels; historical trends)
- Tourism (classification and location of existing and potential tourist areas; number of employees; revenues generated; description of environmental, social and Cultural impact)
- Industry (types of industry; location; number of employees per industry; revenues generated; description of environmental, social, and cultural impact)
- Others (forestry, agriculture, etc)

Institutional and Legal Framework
- Local government (provincial, municipal, *barangay*, and other)
- Nongovernment organizations involved in CRM
- Community organizations

Management Issues and Opportunities
- Environmental
- Political/Institutional
- Economic

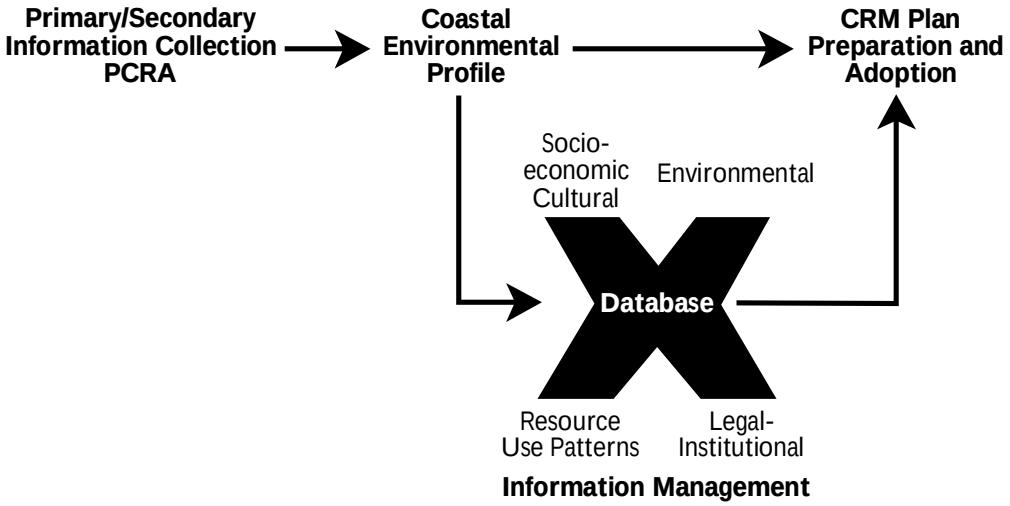


Figure 12. The coastal environmental profile and database support the planning cycle (adapted from White and Lopez 1991)***.***

Table 14. Types of databases.

Conventional database: A conventional database is a simple spreadsheet format that stores and presents data in columns and rows. Graphical and statistical tools can be utilized to analyze and present these data in summary form. The Municipal Coastal Database (MCD) is a conventional database system that summarizes environmental, socioeconomic, resource use, and governance indicators for CRM.

Geographic information system: GIS stores and presents data in a spatial context and is closely tied to a base map. Layers of data can be presented singly or together to show interactions among factors.

PRIORITIZATION OF ISSUES AND ANALYSIS OF CAUSES

Issues related to coastal resources and their management are identified during the baseline assessment, profile development, and initial discussions with the community. These issues probably cannot all be addressed at once and therefore need to be prioritized. Analyzing the causes of problems observed is a necessary step for the identification of potential solutions.

Key issues should be identified and prioritized with community stakeholders (e.g. residents, NGOs, user groups such as fishing cooperatives) since management strategies are more likely to be successful when there is a high degree of community consensus about the coastal issues and the causes of the observed problems. Community stakeholders are 'experts' on the problems they experience. Participatory approaches that offer opportunities for issue identification and prioritization are described in more detail in *Guidebook 4: Involving Communities in Coastal Management*. Workshops, community forums, and surveys can be helpful in identifying the priority issues and developing consensus among stakeholders that addressing these issues will provide the core of the program. It is useful to set priorities for action because planning and management resources are limited. A plan that is too comprehensive runs the risk of dissipating management resources and energy.

Organizing and setting priorities among issues is therefore one of the primary tasks. Typically, coastal resource problems are described as:

- specific resource use activities, such as cyanide fishing;
- conflicts over which uses of a sea or land site should have priority;
- organizational or management inadequacies such as poor enforcement of existing laws;
- risky behaviors such as building in flood hazard zones;
- negative externalities such as sewage discharge in nearshore waters; and
- negative outcomes such as depleted fisheries.

Issues should be stated and described in a way that facilitates problem analysis and priority setting. Most issues are very complex and may have many underlying causes. The next task is to identify the root and secondary causes of problems as shown in Figure 13. Getting agreement among all stakeholders (including community residents) about causes of problems helps in identifying strategic points of leverage where management interventions can reduce or mitigate natural processes or human activities. For example, with regard to destructive fishing practices, numerous strategies such as stricter enforcement, better community education, and poverty alleviation initiatives might alone or in combination reduce cyanide and blast fishing.

ROLES AND BENCHMARKS

At the end of the first phase of planning, the planning team should have achieved the benchmarks listed in Table 7 including:

- A workplan completed;
- Staff and budgets allocated;
- Coastal environmental profile completed based on secondary information and PCRA;
- Database development initiated; and
- Issues, causes, and potential interventions identified and prioritized through community planning workshops.

The roles of key players are outlined in Table 7 and further discussed in *Guidebook 4: Involving Communities in Coastal Management*.

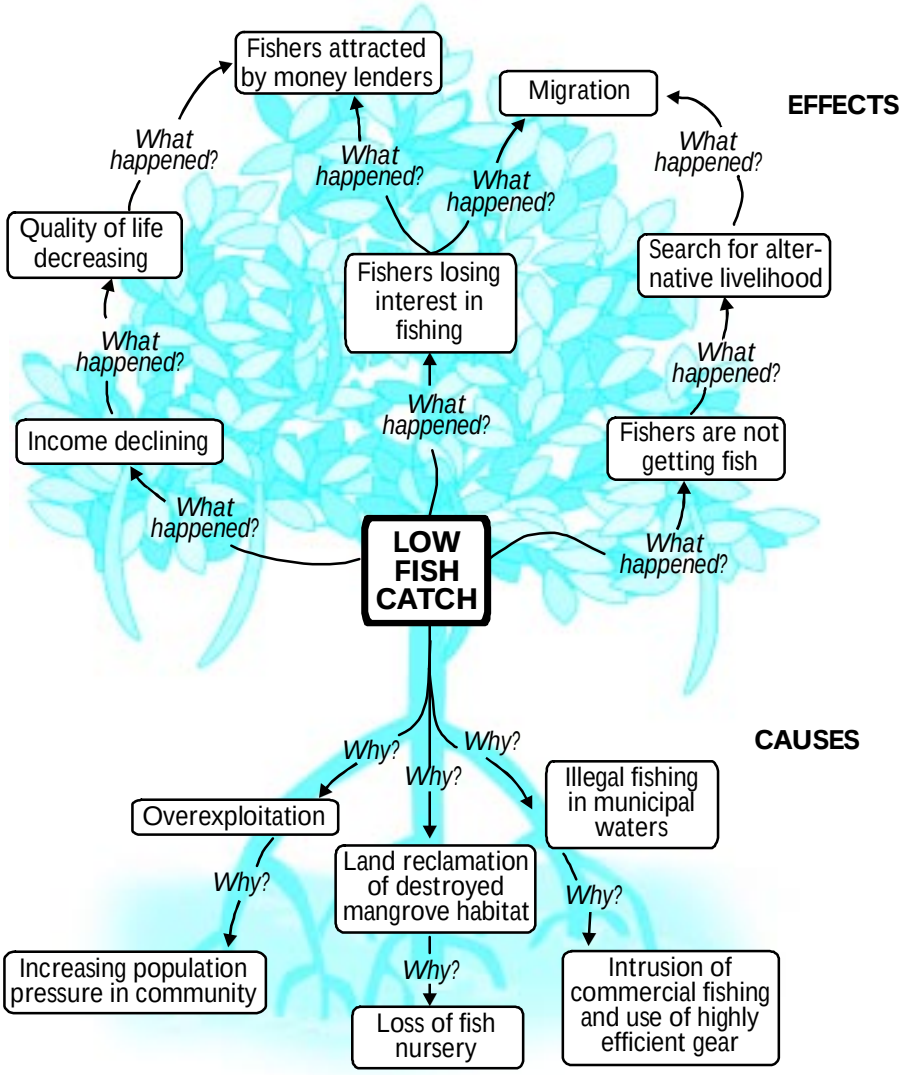


Figure 13. Identification of causes of low fish catch and effects (IIRR 1998)**.**

Participatory coastal resource assessment and mapping provide the baseline information needed for the coastal environmental profile. The profile provides the foundation for planning efforts.

chapter 4

Coastal resource management plan preparation and adoption — Phase 2

The completed coastal environmental profile and list of priority issues provide the foundation for CRM planning. With a clear picture of the key issues to be addressed by coastal management and the baseline conditions, the CRM planning process may proceed by establishing management bodies or working groups, identifying goals and objectives of the plan, and developing and adopting a CRM plan with explicit strategies and actions identified (Figure 14). Activities and outputs for this phase and steps in the process, as well as the roles of various sectors are summarized in Table 7.

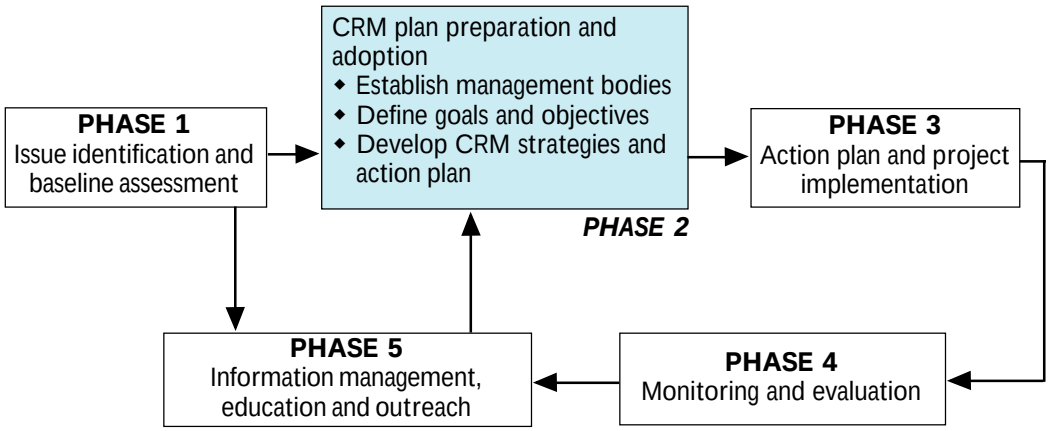


Figure 14. Key steps in CRM plan preparation and adoption.

ESTABLISH MANAGEMENT BODIES

Resource management bodies or working groups should be established to conduct and oversee the planning process and to act in an advisory capacity. These management bodies to be formed include formally mandated groups such as Fisheries and Aquatic Resources Management Councils (FARMCs) and informally organized or temporary bodies to facilitate the planning process, such as a technical working group (TWG). Other types of planning groups than are listed here may be set up, as needed. Community representation in the management bodies is essential.

Fisheries and Aquatic Resources Management Councils (FARMCs): As mandated by the 1998 Fisheries Code, FARMCs must be established at the municipal level to serve in an advisory capacity to the LGUs in the planning, implementation, and enforcement of fisheries laws and regulations. Table 15 shows the composition of the municipal FARMC (MFARMC). Two or more MFARMCs may form an Integrated FARMCs (IFARMCs) which are established at the

multi-municipal level for areas such as bays that require integrated management or at the provincial level to cover many municipalities. Municipal and *barangay* FARMCs help in the preparation of Fishery Development Plans that should be integrated with other CRM activities into an overall CRM plan.

Table 15. Composition of the Municipal/City Fisheries and Aquatic Resources Management Council.

One council is established for each city or municipality abutting a municipal fishing area. Each council is composed of the City/Municipal Planning Development Officer and the Chair of the Agriculture/ Fishery Committee of the local *Sangguniang Bayan/Panlungsod*, plus representatives from the DA, an accredited NGO, the private sector, and fisherfolk and women's groups.

Multisectoral Technical Working Group (TWG): A technical working group made up of LGU, NGO, and community representatives can be established and tasked to develop the CRM plan. After initial planning sessions in which stakeholders and issues are identified, the TWG is created to continue the community consultations and draft the CRM plan as shown in Figure 15. Often, members of the TWG are also members of FARMCs or Protected Area Management Board (PAMB).

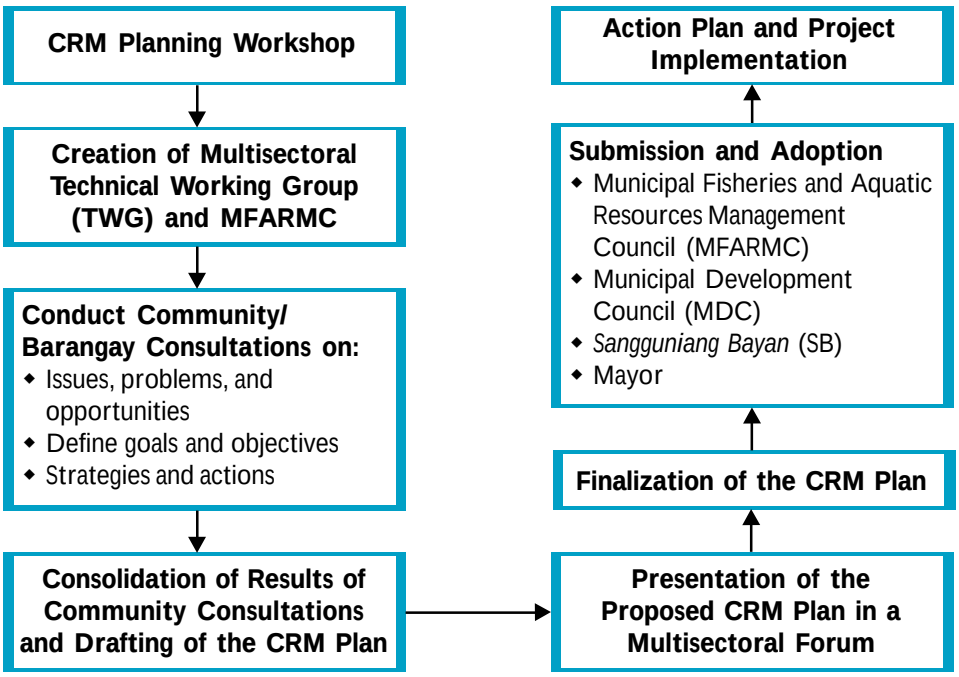


Figure 15. Steps in CRM plan preparation and adoption.

Protected Area Management Board (PAMB): In coastal areas proclaimed under NIPAS, such as National Marine Parks and National Protected Seascapes, a PAMB is established as a site-specific policy-making body. The PAMB is chaired by the DENR and is composed of representatives from

local government, NGOs or community organizations, and other government agencies involved in protected area management (Table 16). The formation and active involvement of MFARMCs is still effective in areas proclaimed under NIPAS. It is advisable that BFARMC and MFARMC members be represented in PAMBs involving the management of coastal resources. The PAMB is mandated to prepare and monitor implementation of the Integrated Protected Area Plan (IPAP).

While the PAMB has policy jurisdiction over the NIPAS area through the IPAP, municipal and city governments are still mandated to enforce all national laws and local ordinances within NIPAS areas. LGUs can enact ordinances and impose taxes that shall be effective throughout their territorial jurisdiction, including that of protected areas, because these functions are guaranteed by the Constitution. Furthermore, it is imperative that LGUs initiate or continue to pursue the preparation of CRM plans, zoning the use of municipal waters, legislative actions and enforcing ordinances for the sustainable use of coastal resources in NIPAS areas even if the PAMB is not yet formed or activated. After the PAMB is formed and IPAP drafted, municipal CRM plans serve as the primary input to and can be aligned to be consistent with the goals, objectives, and strategies of the IPAP.

Table 16. Composition of a Protected Area Management Board.

A PAMB is typically composed of several nominees from various LGUs, including one representative from the autonomous regional government, if applicable; the Provincial Development Officer; one representative from municipal government; one representative from each *barangay* covering the protected area; one representative from each tribal community, if applicable; and, at least three representatives from NGOs or local community organizations; and, if necessary, one representative from other departments or government agencies involved in protected area management.

DEFINE GOALS AND OBJECTIVES

The development of program goals and objectives is the next step of the planning process. Goals and measurable objectives are the targets for which policies, strategies, and actions are aimed (Table 17). Goal statements are usually a positive restatement of community issues. If destructive fishing practices are a priority issue for the community, a program goal statement might be: “Eliminate all destructive fishing practices within one year.” Ideal goal statements indicate both the change in behavior or change in resource conditions to be achieved and the time within which it is to be achieved. Goal statements are a way of mobilizing the community to develop a positive image of the coastal conditions they want to achieve. Clarity among community groups about goals—and about how success in achieving those goals is to be measured—can help focus the process of developing program strategies. Goal statements can be drafted by the planning team for review by community groups in workshops or forums, but it is often preferable to involve groups in the actual drafting of goals. Generally, the more inclusive the process is to formulate goals, the greater the community acceptance and legitimacy of the management effort.

Table 17. Definitions of key terms in the planning process.

Issues: Issues are problems that the community faces that affect the quality of life and environment. They may have many roots and immediate causes and may also have numerous effects. For example, destructive fishing practices damaging coral reefs is an **issue**; easy access to explosives and cyanide, lack of enforcement, and high profit margins for those using this method may be **immediate causes** while poverty and lack of alternatives may be **root causes**; reduction in fish catch and reduction in diving tourism may be **effects** of the problem.

Goals: Goals are general statements indicating a future long-term (10 to 25 years) vision that a plan or program will work toward**.** A goal of the management program may be to stop destructive fishing practices, rehabilitate damaged reefs, and reduce fishing effort to promote more sustainable fisheries.

Objectives: Objectives are specific measurable and realistic targets that should be met within the medium-term (1 to 5 years) timeframe of a plan. For example, an objective could be to "stop blast fishing in an area that includes the *barangay*'s marine sanctuary and a 1 km wide buffer zone within 6 months".

Policies: Policies are guiding statements that reflect the values and purpose of the management program and provide a framework for all actions. For example, a policy statement may be "Coastal management shall be conducted fairly and with participation of all stakeholders and shall employ actions that uphold the law, support sustainable use of resources, and are based on a precautionary approach".

Strategies: Strategies are management tools or approaches that will be employed to address the issue and meet the objectives. Strategies to address destructive fishing may include better enforcement of existing laws, delineation of strictly controlled water use zones, education campaigns about the effects of destructive fishing, and development of alternative livelihoods. Several strategies may be needed to address a single issue.

Actions: Actions are the particular steps that need to be completed to fully implement a single strategy and achieve an objective. Numerous actions may be required to implement the strategy of better enforcement of laws including holding a workshop of key enforcement agencies, establishment of *Bantay Dagat* units, securing funds for a new patrol boats, and scheduling regular patrols.

An objective is the desired result of the management process and should be expressed quantitatively and should be measurable in the project's lifetime. For example, if overfishing is a community resource issue, a desirable objective might be a "25 percent increase in the size and abundance of fish stock within a five-year period". In trying to identify preferred objectives, it may be useful to ask questions such as, "If our management program is successful, how will coastal conditions change?" "What would 'success' in coastal management look like?" Objectives should be tangible, specific, and measurable. They should also be realistic.

Identifying objectives is difficult for some people and groups. Some people tend to identify positive management steps, such as the passage of an ordinance or the establishment of a marine reserve as the desired objective. The passage of an ordinance or other achievement is an action; a necessary step toward the achievement of improved resource conditions, but not the achievement of the objective itself. Improved coastal resource conditions may require a long string of strategies and actions over an extended period of time before the desired objective is achieved.

DEVELOP COASTAL RESOURCE MANAGEMENT STRATEGIES AND ACTION PLAN

Once priority coastal issues have been identified and consensus has been reached about the goals and objectives of the management program, the next task is to identify and evaluate alternative management strategies for each issue and to combine those strategies into an action plan (Table 18). Participatory tools should be used to involve the community in identification of appropriate strategies (see *Guidebook 4: Involving Communities in Coastal Management*). How can fish stocks be improved? How can conflicts among fishers be reduced more effectively? What is the most effective means of reducing mangrove clearing? A fully-developed strategy and action plan includes both the specific management strategy or strategies selected to achieve the plan objectives, such as establishing a marine reserve or better enforcement, and the specific actions or steps that are needed to implement the strategies.

Generally, developing strategies to address coastal issues and compiling them into an overall plan involves several tasks:

- Identification of goals and objectives for each coastal issue;
- Identification of alternative strategies for addressing each objective;
- Explicit description of steps (actions) that would be needed to implement each strategy; and
- Evaluation of alternatives and selection of a preferred strategy or strategies.

A coastal management strategy is an approach or mechanism for mitigating, reducing, or eliminating a coastal problem. For example, preventing construction within a fixed shoreline setback of 40 m is an example of one strategy to help mitigate coastal erosion and promote public access to beaches. Generally, there are eight types of coastal management strategies as shown in Table 18.

The simultaneous use of multiple types of strategies is often required for effective management since no single strategy is likely to completely address a problem. Zoning municipal waters is one way to incorporate multiple strategies for protection and sustainable resource use (Figure 16). Multiple strategies may be needed to combat a complex problem like blast fishing. Several strategies such as improving enforcement of existing laws through the establishment of a local enforcement group, establishing a marine protected area with no-fishing zones and constant patrols, developing an education campaign directed at local fishers, and creating alternative livelihoods for blast fishers may all be needed to see significant reduction in blast fishing.

To determine the appropriateness of any one or a combination of strategies for any particular management problem requires more detailed analysis of the actions required to fully implement the strategy. For example, if a licensing system is proposed as a strategy to reduce fishing effort, the local government must complete several specific actions such as providing licenses as a regular service, enforcing licenses through spot checks and annual renewal, and creating a system that

Table 18. Types of coastal management strategies.

Strategy	Example
Spatial and Temporal Planning Manage by controlling areas where the types and intensity of uses can occur and times when uses can occur.	Delineation and mapping of municipal waters; land and water use zoning, marine sanctuary designations, shoreline setback areas, seasonal restrictions on fishing during spawning period.
Legislation, Regulation, and Enforcement Manage by prohibiting activities or regulating resource use to be consistent with standards and guidelines regarding amount of resource to be used, frequency of use, intensity of use, or type of use.	Registering and licensing municipal or fisherfolk and boats, prohibition of types of fishing gear, control of industrial discharge, control over location and types of land uses, etc.; regular patrols of shoreline and municipal water use.
Provision of Service or Facility Manage by direct government provision of some service or facility that will help improve resource conditions or resource use opportunities.	Infrastructure and facilities to control, minimize, and treat land- and sea-based sources of pollution; municipal waste treatment facility, septic system, solid waste management, resettling squatters, provision of patrol boats and equipment.
Research/Monitoring Manage by conducting research and monitoring on coastal or marine conditions, on specific resource use activities, or resource use opportunities for public and private use.	Baseline studies and environmental profiles, participatory coastal resource assessment, socioeconomic monitoring; feasibility studies for proposed projects; environmental impact assessments; fish stock and recruitment studies.
Incentives/Disincentives Manage by sound decision-making to encourage or discourage activities and behaviors through financial incentives or disincentives to promote compliance.	Higher fees for fishing licenses; small grants or loans to encourage alternative livelihood endeavors; higher penalties for non-compliance with national and local laws.
Information, Education, and Communication Manage by raising awareness and understanding of the need for coastal management, the importance of particular coastal issues, or the utility of specific management strategies.	Public hearings,orientation sessions, study tours, training and planning workshops, radio programs, newspaper articles, videos, TV spots, films, poster and essay contests, websites.
Enterprise Development Alternatives Manage by providing alternative opportunities through small-scale, environment-friendly economic development projects that can provide income and reduce pressure on fisheries and other resources.	Eco-tourism, small-scale mariculture projects, crafts that do not promote extraction of coastal or other natural resources.
Training/Technical Assistance Manage by increasing the capacity of those who assist in resource management through training and technical assistance or by training local residents to assist them in improving livelihood conditions.	CRM training for government workers, training for small-scale livelihood projects, training in community monitoring and enforcement.

Source: White (1997); Cicin-Sain and Knecht (1998); Kay and Alder (1999)

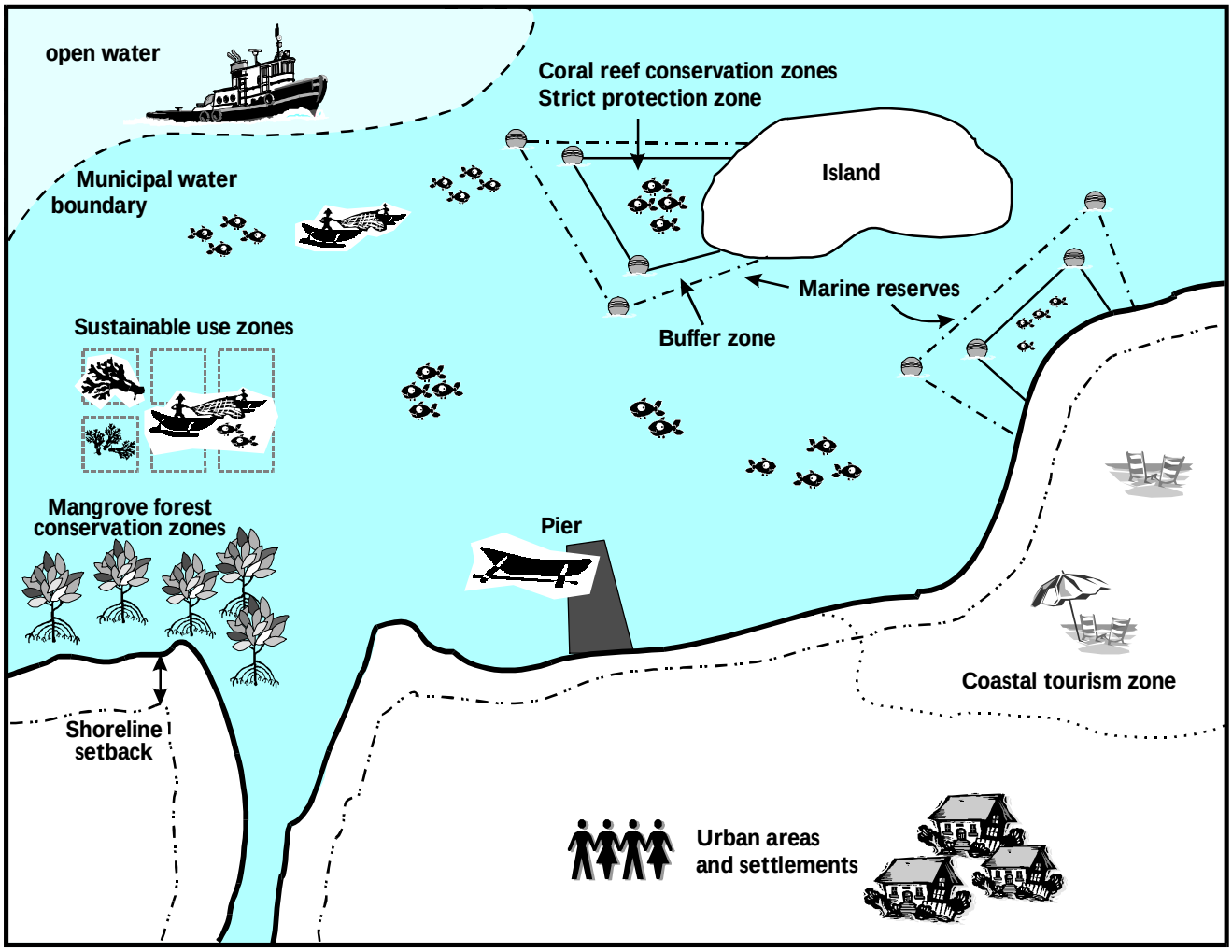


Figure 16. Illustrative zoning plan for the coastal zone and municipal waters (not to scale).

identifies spatial areas where they are allowed to fish with certain types of gear. Local legislation must be in place for the licensing system to be enforced and penalties must be established for non-compliance and collected regularly. The planning team should evaluate whether this strategy is feasible in terms of administrative requirements, costs to implement, and effectiveness in achieving the objective of reducing the level of fishing effort.

The next step in this process is to combine the strategies into an action plan or CRM plan. Contents for a CRM plan are summarized in Table 19. The community, through appropriate representation, should be involved in developing and reviewing the plan. The CRM plan summarizes all the strategies and actions and indicates:

- What is the goal or objective to be achieved?
- What is the specific strategy for achieving that goal?
- What is the expected output (what will be produced or changed)?
- What is the timeframe (over what period will this strategy be implemented)?
- Who is the lead agency (who is responsible for implementation)?

- Who are the participants (whose cooperation is needed to effectively carry out this action)? and
- What are the funding sources (who will pay for this strategy)?

The process for forming working groups, developing a CRM plan, and formally adopting the plan is shown in Figure 15. The CRM plan should first be presented to a multisectoral forum for review. When the plan is finalized, it is submitted to the appropriate councils or individuals (the FARMC, Development Council, *Sangguniang Bayan*, and Mayor) for approval and support. The CRM plan should also be supported by local ordinances and regulations drafted for that purpose during the implementation phase.

Table 19. CRM plan checklist.

A CRM plan for any area, *barangay*, municipality or city or multi-municipal area requires basic contents to make a good plan. The essential parts of a good plan include:

1. **Description of the area.** This can include geography, demography, important coastal resources and their condition, socioeconomic status of people, institutions and laws, and other relevant information for management. Use graphs and tables to present baseline data.
2. **Maps of different scales.** Include a map of the entire area and detailed maps of the coastal area with resource locations and use patterns, existing management interventions and other data.
3. **Management issues.** Priority issues must be clearly stated along with their contributing causes and factors. Trends in decline of resources can be used to illustrate issues of concern.
4. **Goals and objectives.** Management goals and objectives should be derived from the main issues. The goal is broad while each objective must be achievable and measurable within the 3 to 5-year life of the plan.
5. **Strategies and action.** One strategy and several actions with assigned responsibilities should address each major issue are the heart of the plan. A strategy is a well-conceived means to solve a problem. The actions are required activities to implement the strategy. Actions can be budgeted.
6. **Institutional and legal framework.** This section explains the framework that supports the plan, what institution is responsible, and how it is supported by the law.
7. **Timeline.** A schedule for implementation helps organize all responsible parties to implement the plan in a timely manner.
8. **Monitoring and evaluation.** Monitoring and evaluation must be included as a set of activities to provide feedback on plan implementation and impact on environment.

ROLES AND BENCHMARKS

The Multisectoral Technical Working (TWG) group has primary responsibility for developing the CRM plan but relies on government agencies, NGOs, and community workers to help in the process and to ensure community participation. Key benchmarks that should be accomplished are summarized in Table 7 and include:

- Establishment of FARMCs and Multisectoral Technical Working Group;
- Strategies and actions developed in consultation with the community; and
- Multi-year CRM plan drafted, finalized, and adopted.

chapter 5
Action plan and project implementation — Phase 3

Once the management groups have been formed, preferred strategies and required actions identified, and the CRM plan finalized and adopted, implementation can begin. In Phase 3, the CRM plan is implemented through projects and activities and is supported by legislation and regulations, enforcement, revenue generation, and annual investment in budget and staff on the part of the LGU (Figure 17). Activities and outputs for this phase and steps in the process as well as the role of various sectors are summarized in Table 7.

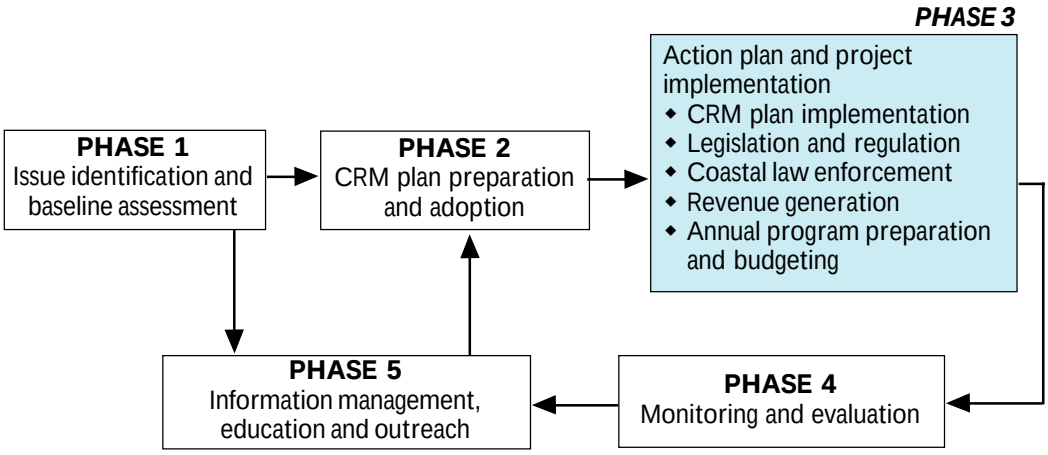
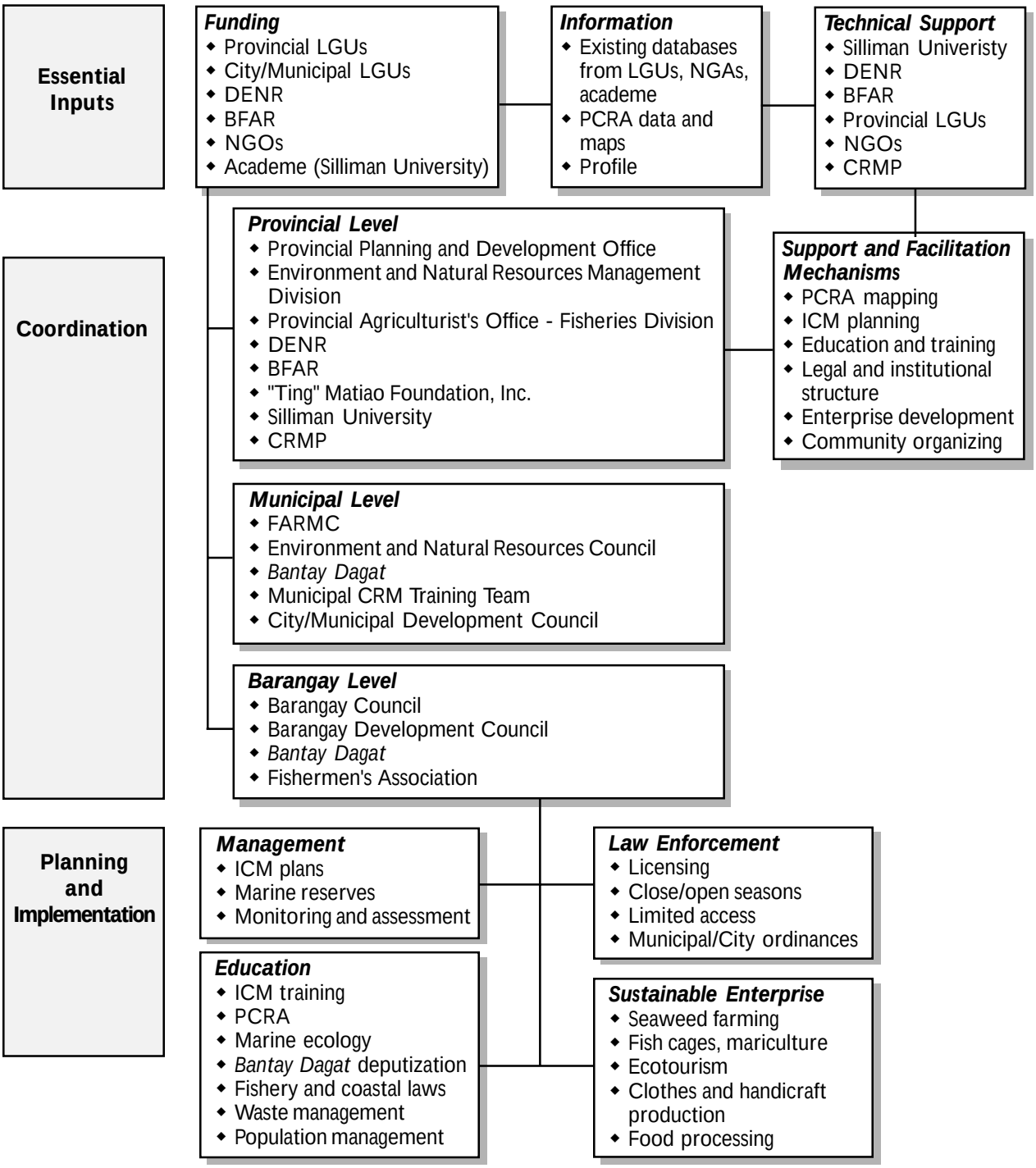


Figure 17. Key steps in action plan and project implementation.

COASTAL RESOURCE MANAGEMENT PLAN IMPLEMENTATION

The development of an action plan is the starting point for improving coastal resource conditions. Implementation is the set of actions by which plans and projects are carried out. All the activities identified in the action plan—adoption of ordinances, establishment of marine sanctuaries, enforcement of prohibitions of destructive fishing practices—must all be implemented correctly if program goals are to be achieved.

Coastal management programs are not self-executing. Implementation involves not just the daily planning, regulatory enforcement decisions and activities undertaken by government officials, but the decisions and activities of NGOs, resource user groups, and community residents. For effectiveness and legitimacy of the coastal management program, the government and nongovernment stakeholders must perform their assigned roles in carrying out the plan. Having a plan is not enough; follow through and commitment to fully implement the plan are also required. Figure 18 provides an overview of activities, coordination roles, and desired outcomes for CRM implementation in the province of Negros Oriental in the central Philippines.



Legend:

BFAR	Bureau of Fisheries and Aquatic Resources	ICM	Integrated Coastal Management
CRM	Coastal Resource Management	LGU	Local Government Unit
CRMP	Coastal Resource Management Project	NGA	National Government Agency
DENR	Department of Environment and Natural Resources	NGO	Nongovernment Organization
FARMC	Fisheries and Aquatic Resources Management Council	PCRA	Participatory Coastal Resource Assessment

Figure 18. Overview of institutional arrangements and implementation activities for CRM in the province of Negros Oriental *(Murphy* et al. *1999)*.

The quality and effectiveness of the implementation program are shaped by the legal authority to manage, adequate resources for management, staff skills and commitment, political support, ability to work with other agencies, and other factors (Table 20). Recognizing implementation problems and refining the plan to increase its effectiveness are part of the ongoing planning process. An overview of selected implementation activities is outlined below and discussed in detail in other guidebooks in this series.

Table 20. Requirements for successful implementation.

Theory and experience suggest that the quality and effectiveness of CRM implementation programs are shaped by several important factors:

Legal authority to manage. Management agencies may lack the legal authority to require individuals or other agencies to refrain from authorizing or engaging in activities that adversely affect coastal areas. Securing sufficient authority may require changes in laws or ordinances or executive directives.

Adequate and dedicated resources for management. Successful implementation requires trained, committed personnel and sufficient resources to operate boats and vehicles, hold training sessions, pay for outside expertise, and undertake activities outlined in the management plan.

Staff skill and commitment. Staff support, commitment, and skill are obvious ingredients in a successful implementation effort. It is particularly important that staff have both the requisite skills to make technical judgments and political skills to deal with the inevitable conflicts that arise in a regulatory program.

Key political support. Sustainable programs are those understood and supported by key political figures and agency representatives.

Coordination arrangements. Coping with complex coastal problems may require the concerted efforts of several agencies such as municipal authorities, DENR officials, and BFAR staff and establishing inter-agency networks and coordinative efforts with NGOs and resource user groups.

Community support: Community understanding and support for the plan is critical and can be gained through participatory processes to involve the community and to educate them about the benefits from implementing the plan.

LEGISLATION AND REGULATION

The LGU, including the *Sangguniang Bayan*, development councils, and mayor, should endorse and formally adopt the CRM plan. The LGU has an important role in the drafting of specific local ordinances that support specific implementation activities such as the establishment of marine reserves. These ordinances should be provided to the community for review before they are formally adopted.

LGUs have the power to license municipal fishers, limit certain gear, and prohibit destructive fishing practices, such as blast fishing. An example of a regulatory action that the LGU can implement is the registry of municipal fishers. Permits and licenses for use of municipal waters and coastal resources consistent with the CRM plan should be granted to appropriate users and carefully monitored.

Some types of regulatory activities require higher levels of expertise and analysis. For example, environmental impact statements (EIS) are required for both environmentally critical projects and projects located in environmentally critical areas. Twenty-two types of projects, including such activities as heavy industries, smelting plants, fishery projects, dams and golf courses, require the preparation of an EIS. Those requirements are also imposed on projects in national parks, watershed areas, aquifers, mangrove areas, coral reefs or any one of seven other types of areas. Successful implementation for the LGU may require insuring that EIS requirements are imposed, analyzing the quality of the EIS statements that are prepared for projects in the municipality and adopting measures to insure that appropriate strategies for mitigating important adverse impacts have been required. The implementation of environmental impact requirements in coastal areas is further discussed in *Guidebook 7: Managing Impacts of Development in the Coastal Zone*.

COASTAL LAW ENFORCEMENT

The LGU's responsibility does not stop with the drafting of ordinances; ordinances and regulations must be enforced to protect coastal resources. Effective coastal law enforcement requires actions such as patrolling, apprehension of violators and the imposition of fines, confiscation of gear or other sanctions. Enforcement of some activities, such as illegal fishing or encroachment of fishponds into areas not approved by DENR, require the active assistance of user groups, such as fishers, or community residents. In fact, municipal mayors, duly-elected *barangay* officials and officers of duly registered fisher associations may be legally deputized as fish wardens to assist local police in enforcement activities. (A useful compilation of laws and regulation related to coastal management can be found in *Guidebook 2: Legal and Jurisdictional Framework for Coastal Resource Management* while specific enforcement activities are discussed in *Guidebook 8: Coastal Law Enforcement*). The LGU should ensure that coastal law enforcement units such as *Bantay Dagat* are trained and operational. Inter-LGU and inter-agency collaboration may be needed to enforce laws across municipal boundaries or jurisdictions.

REVENUE GENERATION

Managing municipal waters for sustainable use and revenue generation requires regular investment by local government in the establishment and implementation of CRM as a basic service of local government. The LGU is ultimately responsible for generating revenue to support the continued implementation of the CRM plan. Taxes, fines, and fees collected from enterprise development, enforcement actions, and municipal water use are some examples of sustainable financing mechanisms. LGUs have seven sources of revenues as listed below. Several sources of funding may be needed to undertake the management responsibilities under the Local Government Code and the Fisheries Code.

Taxes, Fees, and Charges: Local governments may apply taxes, fees or other charges for use of municipal waters. Municipal water use plans must be developed identifying zones for strict protection (no-take), sustainable use (limited harvest), and multiple use zones and an appropriate

fee structure. Uses of coastal waters that may serve as source of revenues include: fishing, tourism, and mariculture. Some municipalities with marine sanctuaries that serve as diving destinations are charging entrance fees for tourists.

Just Share in the National Taxes: The Constitution provides that local governments are entitled to a fair share in national taxes. At present, local governments are entitled to 40 percent of internal revenue taxes (Section 284 of the LGC); the share for particular LGUs is based on applying a formula of 50 percent based on population, 25 percent on land area, and 25 percent equal sharing (Section 285 of LGC). The League of Municipalities of the Philippines has passed a resolution supporting an amendment to the Local Government Code that includes the area of municipal waters in the computation of the internal revenue allotment.

Equitable Share in the National Wealth: The LGC (Article 386) defines "national wealth" as all natural resources within Philippine jurisdiction and defines the local government share. The LGU is also entitled to 40 percent of the gross collection by the national government in fishery charges from the preceding fiscal year.

Grants and Donations: The LGC (Section 23) states that the local chief executive may, upon authority of the *Sanggunian*, negotiate and secure grants or donations in support of basic services without securing approval or clearance of departments, agencies, or offices of the national government. Grants may be obtained from local or foreign sources to support conservation projects and enforcement of fishery laws in municipal waters.

Domestic Loans: The LGC (Section 297) authorizes local government to contract loans, credits, and other forms of indebtedness to finance infrastructure facilities and capital investment projects such as those supporting coastal management.

Credit-Financing Schemes: The LGC (Section 299) authorizes municipalities to issue bonds, debentures, securities, collaterals, notes, and other obligations to finance self-liquidating, income-producing development or livelihood projects such as those that would support CRM; these projects must be incorporated into the municipal development plan and public investment program. Section 302 of the LGC permits municipalities to enter into contracts with prequalified contractors for the financing, construction, and maintenance of infrastructure projects such as those needed for effective management of coastal resources.

Income Derived from Investments, Privatized and Development Enterprises, and Inter-Local Government Cooperation: Local governments may incorporate private development enterprises such as those created to assume projects and programs on the management of coastal resources. Local governments may also, through appropriate ordinances, consolidate or coordinate their services or resources and undertake joint projects on coastal resource management and derive income from these efforts.

ANNUAL PROGRAM PREPARATION AND BUDGETING

Annual and appropriate levels of investment are needed to sustain local CRM plans and programs. Appropriate levels of investment for municipal or city CRM programs estimated in 2000 (Ablong et al. 2000) may range from PhP1.8 million in startup costs and PhP880,000 in recurring annual costs. All forms of revenue generation available to LGUs may need to be employed to fund an LGU's CRM plans and programs.

In order to sustain efforts in implementing CRM, it is advisable to establish and fund a municipal or city CRM unit or office with dedicated and trained staff, equipment, transportation, and operating expenses from the General Fund Budget of the LGU. Additional funding for specific CRM projects should also be appropriated from the 20% Local Development Fund for Human Ecology and Security.

Budget requirements identified by the LGU may be obtained from a variety of sources. There is often, sufficient external funding sources available if the municipal or city can channel these funds towards specific needs identified in their CRM plans and programs. During annual program preparation and budgeting, the LGU should conduct a strategic planning workshop with all partners including NGAs, NGOs, academic institutions, and private sector to articulate CRM program directions and funding requirements.

ROLES AND BENCHMARKS

While the details of implementation responsibility will be set forth in the strategy action plan, generally local government authorities are likely to be primarily responsible for carrying out the plan and achieving the benchmarks of this phase of planning. However, NGOs, resource users, POs, and other technical assistance groups also have critical roles and responsibilities in implementation as described in Table 7. Specific benchmarks will differ depending on the details of the action plan but may include:

- CRM projects under implementation;
- Local legislation and regulations drafted and adopted;
- Coastal law enforcement units trained and operational;
- Revenue-generating mechanisms established;
- Annual budget allocated; and
- Municipal CRM office established and staffed.

ALAN WHITE

Approving municipal ordinances that protect the coastal environment is an important strategy in CRM plans.

MIKE ROSS

A public hearing with the island community to discuss the municipal ordinance to approve the Gilutongan Marine Sanctuary (Olango), facilitated by the LGU and DENR.

chapter 6
Monitoring and evaluation — Phase 4

Monitoring and evaluation is the learning and adjustment phase of the CRM planning cycle. Monitoring and evaluation provides the only rational basis to assess the effectiveness of program strategies and to refine or revise a CRM plan (Figure 19). Monitoring and evaluation can also serve as an intervention in itself when participatory methods are employed and when evaluation results are widely publicized through education and outreach programs. Activities and outputs for this phase and steps in the process as well as the role of various sectors are summarized in Table 7.

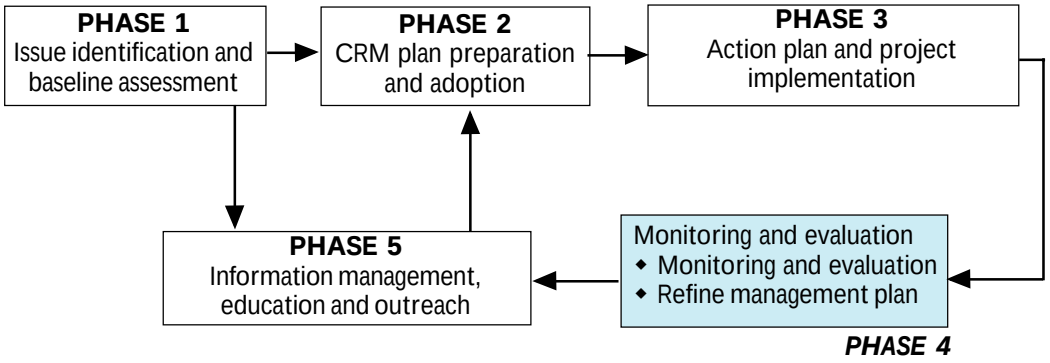


Figure 19. Key steps in monitoring and evaluation.

CRM as a basic service of local government involves monitoring and evaluation of both governance processes and systems as well as social, economic, and ecological impacts. Annual assessments of CRM programs are required to determine the quality and impacts of basic service delivery by local government. Monitoring and evaluation are undertaken to assess program development, insure activities are implemented and planned, measure the effect of the program on resource conditions, identify strengths and weaknesses of the program, and diagnose problems that may require refinement in program strategies or other changes. The importance of baseline assessment conducted in Phase 1 of the CRM process becomes evident when monitoring the impact of CRM initiatives and socio-environmental conditions before and after CRM plan implementation.

MONITORING

CRM plans should include monitoring programs that will track changes in key administrative and socio-environmental variables. Administrative monitoring systems are designed to insure that planned activities are occurring as designed and to detect emerging administrative problems. Socio-environmental monitoring is designed to track patterns of resource use and changes in resource conditions. Both administrative and socio-environmental monitoring rely on empirical indicators of administrative and socio-environmental 'health' much as height, weight, blood pressure, and body temperature are used as indicators of an individual's health. Monitoring baseline conditions before the implementation of CRM activities is critical for evaluating changes over time. Developing a monitoring system usually involves:

- Identifying what information about program activities or coastal conditions is needed, who needs it, and how it will be used;
- Identifing specific indicators that will measure effects of program activities or changes in environmental conditions;
- Determining who inside or outside the LGU will generate the monitoring information;
- Developing procedures for collecting, storing, retrieving, and analyzing monitoring data;
- Collecting baseline information and conducting pilot studies to evaluate the usefulness of variables selected for monitoring and sample size needed; and
- Disseminating the results of monitoring to project beneficiaries and the public at large.

Monitoring administrative practices, such as annual budget allocated for CRM, number of fishing licenses issued, and the value of fines from fishing violations collected, is central to insuring the consistency between planned activities and actual field experience in implementation. Monitoring these variables is essential in determining whether the plan is being implemented as designed or whether changes in implementation practices should be made.

The second type of monitoring system focuses on socio-environmental conditions and includes social, economic, governance, and biophysical indicators (Table 21). Monitoring socio-environmental conditions can help determine both the status of community and resource conditions and the impacts of the program on these conditions. Ideally, socio-environmental conditions would be surveyed prior to program implementation so there will be a baseline from which changes can be observed. To what extent have fish stocks increased? To what extent has household income increased? How has the incidence of destructive fishing practices changed? Monitoring socio-environmental conditions can be done by local government; however, assistance should be sought from NGAs, NGOs, academe, and community residents (Uychiaoco *et al*. 2001).

Table 21. Different types of socio-environmental indicators.

Category	Type of indicator	Indicator examples
Ecological	Water quality	Biological oxygen demand; total suspended solids and visibility, fecal coliform; toxic metal concentrations
	Coral reef	Percent live coral cover; km^2 of fully protected reefs; density of reef fish; species diversity
	Mangrove	Total area of primary/secondary stands; km^2 of fully protected forests
	Seagrass	Density of live seagrass; km^2 of fully protected seagrass beds
	Fish populations	Standing stocks (abundance and size distribution of key species), species diversity
	Upland forest	Percent cover of forests in key watersheds along coastline; km^2 of fully protected forests
Economic	Fishery production	Catch per unit effort; fish yield per km^2
	Income	Individual / household average income
	Ownership of assets	Number of fishing boat/gear per household; land holdings
	Poverty	Number of households per village above/below poverty line
	Economic improvement	Change in income levels
Social	Nutritional status	Weight for age; weight for height; height for age
	Health	Infant mortality rate; major causes of death
	Education	Literacy rate; average years of formal schooling
	Gender equality	Proportion of women in formal education; male-female wage differences; male-female ratio in cooperative membership
	Rural poverty	Landlessness; rural employment rate; seasonal migration rate
	Standard of living	Access to potable water; household sanitation
Governance	Access	Access to capital; land tenure; access to legal advocacy; control over resources
	Leadership	Number of local leaders
	Decision-making	Representation in political bodies
	Social control	Extent of support for local authority
	Equity	Fair distribution of benefits
	Gender responsibilities	Division of labor by gender
		Family benefits
		Intra-household distribution of benefits

A monitoring program should be developed to track both processes and results (Table 22). Process indicators are used to monitor the governance aspects of CRM plan implementation including how planned activities are progressing, how social processes (such as community organization) are proceeding, and whether there was adequate public participation by all stakeholders in CRM planning. Results indicators are used to monitor the outcome or impacts of these processes on behavior change and socioeconomic and biophysical conditions. Many monitoring programs are designed to measure only inputs. While it is important to keep track of the number of staff trained or workshops conducted, these measures of input provide no information about the effectiveness or impacts of the programs. Results indicators are needed to measure the impact of the program.

Table 22. Examples of process and results indicators for monitoring CRM programs and plans.

Process indicators		Results indicators	
CRM plan formulation			
• CRM staff and annual budget allocated • Training conducted in PCRA, CRM planning • MFARMC organized and trained • Technical Working Group organized and trained • Planning workshops held • Public hearings held • Education and outreach campaigns conducted	• Coastal profile completed • Database established and updated • Issues prioritized • *Barangay* CRM plans reviewed • CRM plan drafted	• MFARMC active in CRM policy formation and implementation • CRM plan adopted • Municipal legislation passed in support of CRM plan • Management strategies and actions being implemented • Community supportive of CRM plan and interventions	• Fishing pressure reduced • Illegal fishing and destructive practices stopped • Critical coastal habitats protected • Shoreline development controlled • Household income increased
Marine sanctuary establishment			
• Training conducted on PCRA • Community organizing conducted	• Coastal resource areas mapped by communities • Community organized	• Community support for marine sanctuary • Marine sanctuary established and adopted by municipal ordinance	• Increase in living coral cover and fish abundance in marine sanctuary • Improved fish catch by community • Increased revenues generated from fees collected from tourists using marine sanctuary
Coastal law enforcement			
• Training in coastal law enforcement conducted • Budget allocated for coastal law enforcement	• Fish wardens deputized • Local police trained • Coastal law enforcement units organized • Patrol boats and other assets provided	• Coastal law enforcement units conducting regular patrols and making arrests	• Decrease in illegal activities in municipal waters • Increase in municipal fish catch per unit effort
Inputs →	**Outputs** →	**Outcomes** →	**Impacts**

Monitoring programs may employ a variety of techniques to gather the required information and data. Participatory methods employ trained community members to collect and analyze data on coastal resource uses and condition. Scientific surveys employ researchers in specialized fields of marine biology, social sciences, and economics to collect and analyze data on biophysical and socioeconomic indicators. Surveys or focus group discussions may be employed to assess attitudes and perceptions for behavioral indicators. A combination of monitoring methods may be employed by a multidisciplinary monitoring team.

Some of the monitoring data required by an LGU may already be collected by other organizations and institutions. Academic institutions, NGAs, and NGOs are frequently engaged in studying and monitoring coastal communities and coastal resource conditions. BFAR and DENR conduct underwater baseline assessments. NSO, DILG, and NEDA compile information and statistics about demography and local governance. LGUs should be persistent in acquiring data and information that is collected within their jurisdiction by outside organizations. LGUs should also direct assisting organizations in the conduct of priority studies identified in the CRM plan. Municipalities, cities, and provinces should require submission of hard copy as well as electronic files of reports, studies, and data collected by assisting organizations, NGAs, and donor-funded projects. The provincial government should serve as the information management node, consolidating, analyzing and managing these data and information for widespread use within the province and to use these data to attract external investment and funding.

EVALUATION

Evaluations are conducted to assess the effectiveness of new program strategies, diagnose implementation problems, make adjustments in strategies, make decisions about program management, termination, or replication and for a host of other purposes. Given the variety of purposes for which evaluations are conducted, the different types of programs which are assessed and the variable criteria used for making judgments about effectiveness, it is not surprising that there are more than 50 different types of evaluation (Patton 1996). However, it is possible to identify and apply several basic approaches useful in the evaluation of coastal management programs (Lowry *et al.* 1999a, 1999b) at the local level. A combination of three approaches may be needed to evaluate CRM projects, programs, and plans at the local level: performance evaluations, management capacity assessments, and outcome evaluations (Table 23). Evaluation of CRM programs and plans must be conducted on a regular, preferably annual, basis.

Performance evaluations are designed largely to determine the quality of implementation of specific projects and the degree to which the project goals and objectives are achieved (Lowry *et al.* 1999). The project design is used as a basis for evaluation and to determine if the original goals and objectives of the project were met, delivered on time, and within budget. Performance evaluations may be used to assess the degree to which specific CRM projects, funded by the local government's Annual Investment Plan or external funding sources, have met defined goals and objectives. The results of a performance evaluation can justify continued funding, serve to refocus goals and objectives, or identify the need to discontinue the project. Performance evaluations may also be used to assess the work of subcontractors, consultants, and NGOs employed by the municipality for the conduct of specific CRM-related projects.

Management capacity assessments are designed to evaluate program or plan implementation, policy framework, and supporting institutional structures against a set of standards. These standards may be legal standards, widely-accepted "best" practices, or international standards.

Table 23. Major types of evaluation approaches for CRM programs and plans (Olsen *et al*. 1999)**.**

Evaluation type	Primary purpose	Illustrative examples
Performace evaluation	• Determine quality of the execution of a project or program and the degree to which the terms of reference and budget commitments were met • Focus on accountability and quality control	• Evaluate job performance of staff • Determine if consultant or subcontractor met terms and deliverables specified in contract
Management capacity assessment	• Assess the adequacy of management structures and governance processes as these apply to generally accepted standards and experience • Focus on institutional capacity and support mechanisms	• Assess the capacity of municipal staff, programs, and policies in CRM • Assess progress of municipality in CRM plan implementation • Assess environmental management systems for ISO certification
Outcome evaluation	• Evaluate impacts of a program or project on coastal resource and socioeconomic conditions • Focus on measured impacts on people and the environment	• Measure biophysical changes in marine sanctuary against baseline study • Measure socioeconomic changes in community compared to pre-project conditions

Management capacity assessments focus on evaluating processes, management structures, policy tools, management options and strategies, regulatory mechanisms and policy enforcement, and human and institutional capacity for CRM.

Outcome evaluations assess the socioeconomic or environmental impacts of a coastal management program. Changes biophysical conditions such as the percentage living coral cover and fish abundance, or socioeconomic conditions such as household income levels are monitored and evaluated against pre-project baseline conditions. Outcome evaluations generally require more rigorous scientific methods and design in order to distinguish between the outcome of a project's interventions and other variables that may contribute to the measured outcome.

Evaluation may be conducted as a self-assessment or require assessment by external evaluators. In a self-assessment, a municipal or multisectoral team is assembled to evaluate various aspects of CRM implementation (Table 24). Each team member can be assigned a different area of responsibility. The technical working group used in the formulation of the CRM plan can double as a self-assessment body.

Monitoring and evaluation of local CRM policies, plans, and programs is one of the most important aspects of coastal management. To enhance the effectiveness of monitoring and evaluation, a framework should be developed that carefully distinguishes between the types of indicators, evaluation approach, and the focus of the monitoring and evaluation (Figure 20). Monitoring and evaluation is used to make informed decisions about revising policies, plans, institutional mechanisms, and strategies.

Table 24. Illustrative composition and areas of responsibility of a municipal CRM monitoring and evaluation team.

Office/Organization	Areas of Responsibility
Mayor/Vice Mayor	Chairs municipal CRM evaluation team
SB Member	Evaluates municipal legislative and policy agenda relative to national framework
Municipal Planning Development Office	Evaluates consistency of municipal CRM plan with other municipal and provincial plans
Municipal Agriculture Office	Evaluates activity and capacity of MFARMC and other resource management organizations in the municipality; monitors and evaluates fisheries production
Municipal Environment and Natural Resources Office	Assesses environmental impacts of shoreline development, pollution, water quality
MFARMC	Evaluates level of implementation of CRM plan and related policies and local legislation; evaluates community organization and support for CRM
Bantay Dagat	Assesses effectiveness of local patrol efforts
Local PNP	Evaluates capacity of local staff and operational assets for coastal law enforcement
Local NGO	Evaluates community organization and support for CRM, monitors and evaluates socioeconomic conditions in coastal communities
Academe	Monitors and evaluates biophysical conditions of coral reefs, fisheries, seagrass beds, and mangrove areas
Private Sector	Conducts cost-benefit analyses and financial reviews of municipal CRM program
Provincial Planning Development Office	Assists in information management and analysis
Provincial Agriculture Office	Assists in monitoring and evaluation of environment-friendly livelihood alternatives
PENRO-LGU	Assists in evaluating environmental impacts from activities outside the municipality's territorial jurisdiction
DENR	Monitors and evaluates shoreline development impacts; water quality assessment; compliance of industries and private sector with the Environment Impact Statement (EIS) system; and community-based forest management agreements for mangrove areas
BFAR	Monitors and evaluates fisheries health, MFARMCs, and management measures
DILG	Monitors and evaluates institutional capacity of municipality and *barangay* for CRM including fiscal responsibility, revenue generation, and other governance indicators

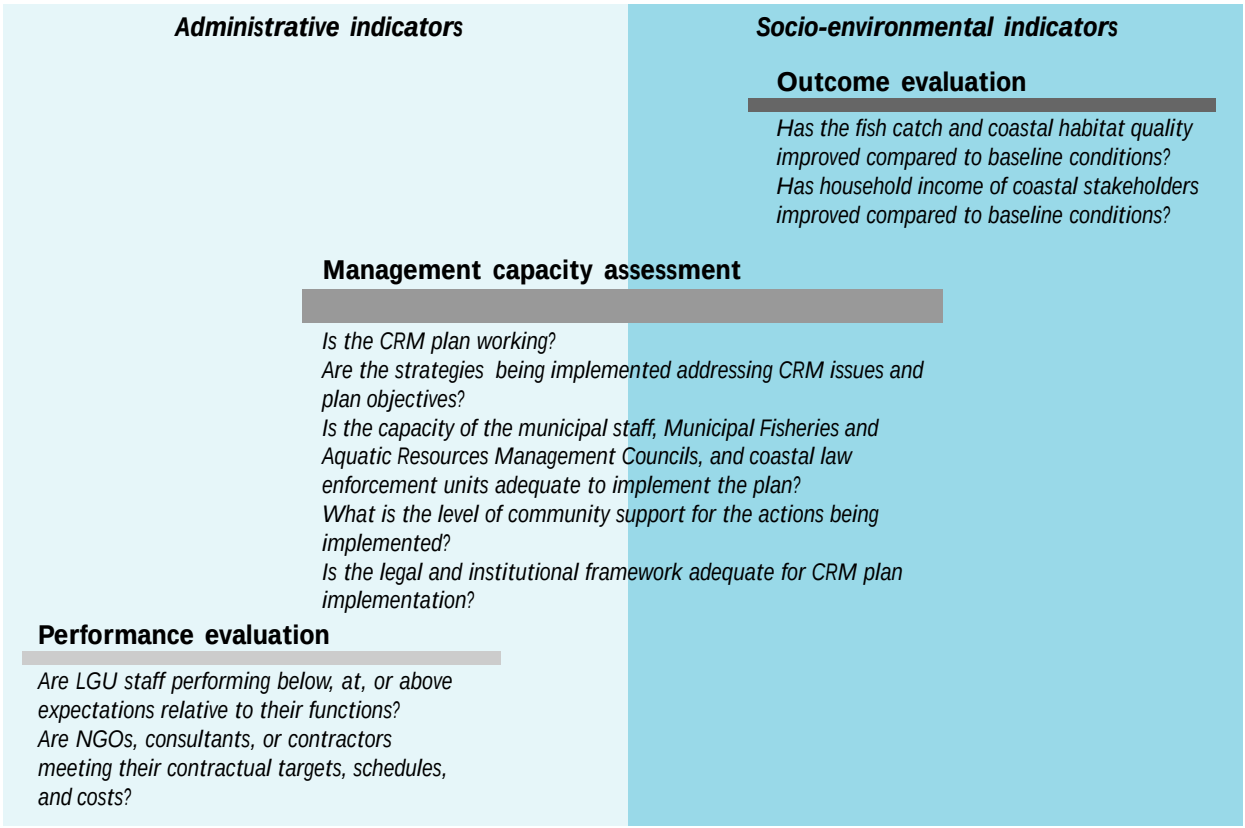


Figure 20. Monitoring and evaluation framework for CRM.

REFINING THE MANAGEMENT PLAN

Monitoring and evaluation provides the basis for refining the CRM plan. CRM plans are not static documents and CRM programs should be flexible and adaptive. Goals and strategies often have to be refined or adapted to meet changing circumstances or when better information or a new understanding of the coastal issues has been gained. Insights into the viability or utility of management strategies or better knowledge about the agencies or individuals responsible for implementation can also lead to program changes. The plan may require refinements and adaptations to incorporate community feedback and improve its support and credibility within the community. This feedback loop was illustrated in Figure 2.

An annual self-assessment and evaluation of the CRM plan is recommended using the monitoring and evaluation framework described in Figure 21 to enable planners and implementers to make necessary adjustments in implementation strategies (Table 25). Performance evaluations, management capacity assessments, and outcome evaluations may all form part of the annual review. Administrative and socio-environmental indicators provide the data and information needed in the assessment. The municipal CRM evaluation team should be

Table 25. Illustrative evaluation questions based on contents of a typical CRM plan.

Contents of CRM plan	Illustrative evaluation questions
Description of area	Is relevant and adequate information used to describe the coastal zone and municipal waters? Are municipal and *barangay* profiles complete? Does the baseline assessment provide adequate data for monitoring and evaluation?
Maps	Are spatial data presented on maps? Are municipal water boundaries, marine sanctuaries, and other use zones accurately delineated with coordinates and displayed clearly in a map? Are coastal resource uses and conditions detailed?
Management issues	Are the issues clearly articulated? Is the process used to identify and prioritize the issues described?
Goals and objectives	To what extent do the goals reflect the issues that have been identified? Is the purpose of the plan understood by those who are likely to be affected?
Strategies and actions	Is the basis upon which the management strategies and actions were designed validated? How have the strategies been revised over time? What is the impact on groups or individuals? Are there measurable socio-environmental impacts resulting as a result of CRM plan implementation? Are biophysical conditions improving compared to baseline conditions?
Institutional and legal framework	Is the MFARMC formed and active? Have adequate numbers of trained LGU staff been assigned to a municipal CRM unit? What is the quality of work, on time and in accordance with terms of reference; performed by consultants or assisting organizations tasked to assist the LGU in plan implementation? Do implementation activities balance regulatory and non-regulatory actions? Have local ordinances necessary for plan implementation been drafted and passed? Are registry and licensing systems for fisherfolk institutionalized?
Timeline	Are planned interventions and actions being implemented as scheduled? What delays and why have delays been experienced?
Monitoring and evaluation	Is the monitoring and evaluation system functional? Is there a functional information management system?

organized with sufficient time to enable completion of the evaluation before annual programming and budgeting is initiated each year.

Information about the effectiveness of planned activities will come from the administrative monitoring, socio-environmental monitoring, and evaluation studies. The challenge for planners and the communities with which they work is to recognize that the plan adaptation and refinement is a 'normal' activity that occurs because of experience and new information.

ROLES AND BENCHMARKS

Monitoring and evaluation of local government policies, programs, and projects is a critical phase in the CRM process. LGUs should conduct, at a minimum, annual monitoring and evaluation employing a combination of evaluation approaches. Municipalities and cities should seek the assistance of the province and other partners from NGAs, NGOs, and academe in conducting monitoring and evaluation.

Key benchmarks that should be accomplished on an annual basis are summarized in Table 7 and include:

- Performance evaluations of LGU staff, projects, programs, consultants, and subcontractors involved in CRM;
- Management capacity assessment of institutional capacity and CRM policy and plan implementation;
- Baseline assessment and annual monitoring and evaluation of environmental and socioeconomic indicators for marine sanctuaries, mangrove management areas, and fisheries production;
- Municipal Coastal Database updated and submitted to the province;
- Annual Monitoring and Evaluation Report prepared;
- Revisions to CRM plan made; and
- Results of monitoring and evaluation used in annual program preparation and budgeting.

The Municipal Coasal Database (MCD) is an information management, planning, and monitoring and evaluation tool for use by coastal municipalities and cities. Provincial governments can also use the MCD to consolidate information on CRM at the provincial level. Provincial governments also play an important role in CRM by assisting municipalities and cities with their data management needs.

Monitoring and evaluation should include periodic biophysical and socioeconomic assessments to measure changes resulting from the implementation of local CRM plans and programs.

chapter 7

Information management, education and outreach — Phase 5

CRM programs and plans must be supported by an information management system and education and outreach activities. This fifth phase of the process (Figure 21) should be initiated and carried out throughout the CRM planning and implementation process but becomes even more important as the program develops. Information management is needed to consolidate, store, and readily retrieve information vital for planning and monitoring and evaluation. Sound information is necessary for developing effective education and outreach activities to inform, strengthen, and enable a broad support base for local CRM programs. Activities and outputs for this phase and steps in the process as well as the role of various sectors are summarized in Table 7.

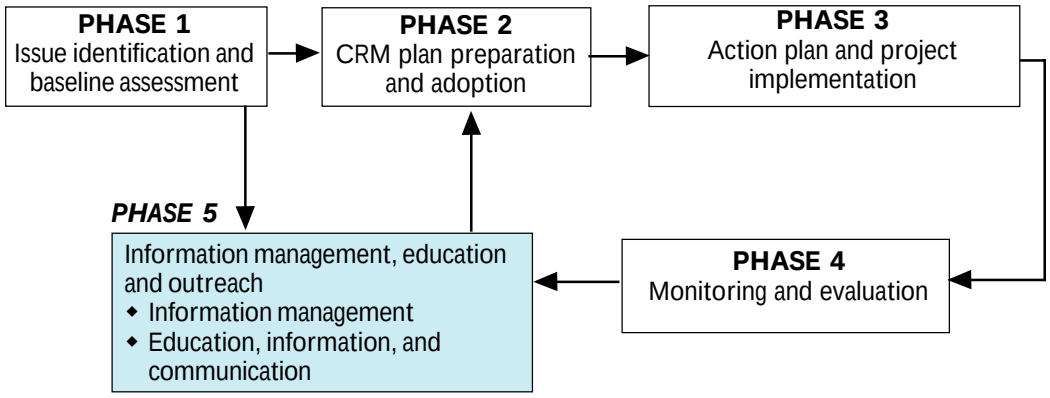


Figure 21. Key steps in information management, education and outreach

INFORMATION MANAGEMENT

The use of strategic information and data are essential in developing and implementing CRM plans at the local level. Information management is one of the primary responsibilities of LGUs.

Primary and secondary information and data are gathered throughout the CRM process; from baseline data collection and participatory coastal resource assessment to later monitoring of the success of implementation activities and other research studies. This information and data need to be managed in a database that is complete and in a format that facilitates information retrieval and data analysis.

The Municipal Coastal Database (MCD) is one data management system that summarizes environment, socioeconomic, resource use, and governance indicators of coastal management (Table 26). The overall purpose of the Municipal Coastal Database is to:

- Provide a common framework for LGU planning and monitoring and evaluation that can be used by the LGU to monitor the status and evaluate the success of CRM-related interventions;
- Identify the current status of CRM-related activities, including any information gaps;
- Facilitate the collection of information for use in CRM planning by LGUs and assisting organizations and projects; and
- Provide a venue for LGU leaders and community groups to report to each other their accomplishments and identify CRM concerns that they could commit to address together.

The MCD provides a useful and "user-friendly" means of evaluating CRM implementation based on "indicators" of key ingredients of successful and sustainable CRM programs. These main types of indicators are summarized below and some examples on input parameters are shown in Table 26:

- Annual budget for CRM allocated by LGUs;
- Resource management organizations formed and active; and
- CRM best practices (interventions) being implemented.

Trends in enforcement, budget, number of marine sanctuaries, and other indicators can be monitored over time to show progress. The MCD can be used by LGUs as a guide to implement CRM programs and to report on progress made in managing municipal waters. It can also be used by partnering organizations and projects to plan and monitor and evaluate technical assistance and training in CRM provided to an LGU. The MCD and its reporting functions can serve as a tool for communicating the initiatives and progress of the municipality in CRM to concerned organizations and stakeholders. The MCD is an evolving and dynamic database whose contents and objectives will change over time as coastal management progresses. Ultimately, MCD or a similar system will help to institutionalize coastal management in the Philippines

In addition to the data requirements in the MCD, other types of data from other sources and databases may be available or needed to augment the MCD for coastal management needs of the municipality or province.

Table 26. Some example inputs for the Municipal Coastal Database.

Province: _____ **Municipality:** _____

General Information : (length of municipal shoreline, area of municipal waters, total population, number of *barangays*, number of coastal *barangays*, population of coastal *barangays*)

LGU Budget:

Report Year	Total LGU Budget	CRM Budget	No. of CRM Staff

Coastal Resource Management Organizations:

Organizations (FARMCs, *Bantay Dagat*, etc)	Year Initiated	Ordinance	Report Year	Activity Level (inactive, fairly active, active)

CRM Planning:

Report Year	Coastal Resource Assessment Completed	Coastal Environmental Profile Completed	CRM Plan Prepared	CRM Plan Adopted

Coastal Law and Enforcement:

Report Year	CRM Ordinances Adopted	Deputized *Bantay Dagat* members	No. of Operational Patrol Boats	No. of Apprehensions and Convictions

Coastal Resource Status:

Report Year	Coral Reef Area and Condition	Seagrass Area and Condition	Mangrove Area and Condition	Data Sources

Report Year	Average Fish Catch (kg/person/mo)	No. of Registered Fishers	No. of Registered Municipal Boats	No. of Commercial Fishing Vessels

Best CRM Practices Implemented:

Report Year	No. and Area of Marine Sanctuaries Established	No. and Area of Mangrove CBFMA Affirmed	No. of Environment-Friendly Enterprises	No. of CRM Training Activites

Information management is needed at all levels of government to support coastal management from municipal to national levels. Municipalities serve as the basic unit of information management. Provincial LGUs and regional and NGA offices serve as information management nodes consolidating data for each successive level of government (Figure 22).

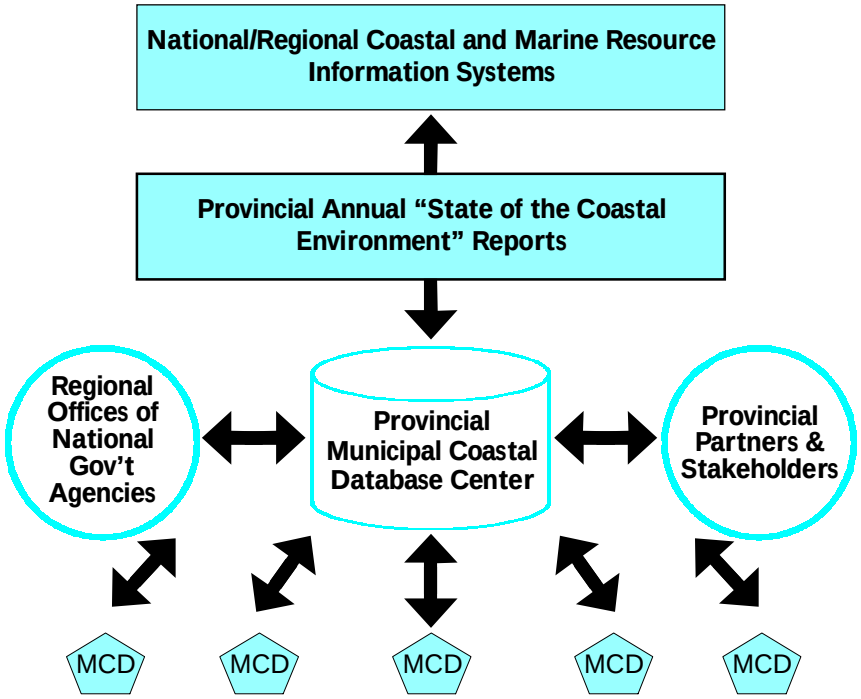


Figure 22. Information flow and management between local and national levels.

Municipalities must collect, analyze, and manage information and data at a municipal government level for use in planning, monitoring, evaluation, and reporting. Municipal information and data stored in a Municipal Coastal and Management System must be systematically provided to the province. Provinces should assist municipalities in data collection, analysis, management, and annual reporting.

Provinces serve as an information node consolidating, analyzing, and managing data provided by the municipality and other sources. Provincial governments may also be involved in primary and secondary data collection. Annual provincial reports on the status of CRM would provide feedback to municipalities as well as serve to prioritize initiatives and efforts of the province in technical assistance and training for coastal management.

Regional offices of NGAs serve as both information and data sources to municipalities and provinces as well as information management nodes for the national government. Baseline assessments, monitoring studies, and other types of primary data collection activities conducted by

regional offices of NGAs should be provided to provincial information management nodes and to the respective municipalities from which the studies were performed. Regional offices of NGAs can use annual provincial CRM status reports to prioritize technical assistance and training for coastal management needed by LGUs in the region.

EDUCATION AND OUTREACH

The success and sustainability of CRM programs can be attributed to a large degree on the effectiveness of education and outreach programs. Regular and appropriate investments in human resource development are needed for local government staff in order to deliver CRM as a basic service. Training and skills development for community groups and NGOs are needed to provide for an empowered local core group that can be tapped throughout the CRM process. Raising public awareness about CRM is critical to change behavior and mainstream CRM efforts. Coastal municipalities and cities must invest in human resource development for key staff that form a CRM unit of the local government. With the wide range of skills needed for successful CRM planning and implementation, however, multisectoral collaboration and partnerships are vital for servicing the technical needs of local government. Provincial government, national government agencies, and NGOs can provide invaluable technical assistance to municipalities and cities. Human resource development needs for CRM include:

- Management and administration
- Planning, problem-solving, and decision-making
- Participatory methods, facilitation, and conflict resolution
- Social mobilization and marketing
- Proposal preparation and feasibility studies
- Environmental impact assessment
- Coral reef ecology and management techniques
- Mangrove forest ecology and management techniques
- Legal and policy review and development
- Computer skills including database management

Outreach programs must be carefully planned, funded, and sustained throughout the CRM process. Combining education with outreach programs or information, education, and communication (IEC) covers the broader field of environmental education which has been defined as "the process of developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, skills, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones" (UNESCO 1978 in NAAEE 1996). As defined, the conceptual framework for IEC encompasses three key elements—environmental literacy, environmental ethics, and environmental advocacy (Table 27).

Table 27. Definition of information, education, and communication concepts.

Environmental Literacy: An environmentally literate person understands the basic principles of ecology and the impact of humans on the environment. This awareness is essential for effecting behavioral or social change in regard to people's relationship with the environment around them.

Environmental Ethics: Environmental ethics are values and attitudes toward the environment that shape and reinforce people's individual behaviors and collective impacts in a manner that promotes sustainable management and use of resources.

Environmental Advocacy: Environmental advocacy occurs when awareness has reached a critical point where individuals, agencies, or organizations become moved to support or defend an environmental issue.

IEC is a process through which information is imparted to the public to increase their awareness, understanding, and appreciation of the coastal environment and its importance. This process is designed to create an environment conducive to the transformation of social norms, a crucial step toward changing individual behavior in favor of the objectives of CRM. Only when "environment-friendly" behavior and practices have assumed normative dimensions throughout society can resource use and management be truly sustainable. IEC is focused on building a constituency for CRM, a critical mass of at least 10-30 percent of the population who are environmentally literate, imbued with environmental ethics, shared responsibilities, and shared actions (Flor and Smith 1997). The convergence of environmental literacy, ethics, and action provides the basis for building CRM to a critical mass (Figure 23) that will expand through self-reinforcing mechanisms.

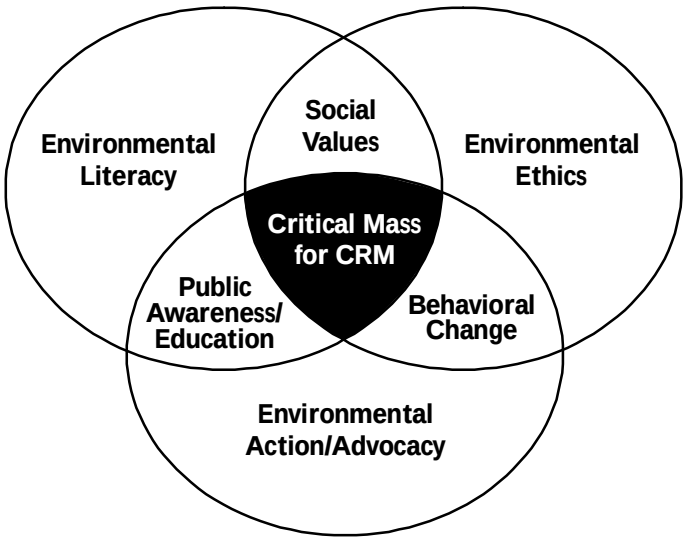


Figure 23. Information, education, and communication conceptual framework to achieve critical mass of CRM.

IEC approaches and strategies are varied and range from top-down social marketing strategies to bottom-up social mobilization methods. The following approaches may be used singly or in combination to implement IEC for CRM: social marketing, social mobilization, development and program support communication, and institutionalization/advocacy. To promote sustained behavioral change, however, it is recommended that an integrated use of these approaches be employed.

Social Marketing. The term "social marketing" was first introduced in 1971 to describe the use of marketing principles and techniques to advance a social cause, idea, or behavior (Kotler and Roberto 1989). Since then, the term has come to mean "a social-change management technology involving the design, implementation, and control of programs aimed at increasing the acceptability of a social idea or practice in one or more groups of target adopters" (Kotler and Roberto 1989). Social marketing utilizes concepts of market segmentation, consumer research, and product concept development and testing. Overall, the social marketing approach is very systematic and planned, with all stages of the program clearly mapped out with objectives and behavioral targets. Among the more effective tools used in social marketing are advertising and public relations, promotions and publicity via mass media, special events, celebrity endorsements, testimonials, and advocacy campaigns.

Social and Community Mobilization. Social mobilization has been defined as "the process of bringing together all feasible and practical inter-sectoral social allies to raise people's awareness of and demand for a particular development program, to assist in the delivery of resources and services and to strengthen community participation for sustainability and self-reliance" (McKee 1992). This approach focuses on collective action and uses public participation processes and techniques to bring about consensus and to inform and educate the public about CRM. The use of participatory techniques reinforces people's awareness, knowledge, ability, and motivation to make decisions about their future. Common participatory tools include workshops, public meetings, study tours, advocacy campaigns, committees, community patrols, citizen watchdog groups, school programs and special projects involving the community or various sectors of society.

Development and Program Support Communication. This approach involves the development, production, and dissemination of IEC materials for use in the local CRM process where communication is viewed as supportive to the technical activities of an organization or project. The goal of this effort is to provide the community the necessary information materials to increase their knowledge and appreciation of coastal and marine environments, basic ecological principles, the various threats to the environment, and what community members can do to help promote CRM. Materials commonly produced to enhance awareness include posters, short publications, newsletters, comic books, leaflets, radio and television plugs/infomercials, and radio dramas. Reference materials on CRM such as coastal environment profiles, case studies and success stories, information on basic ecological principles and coastal ecosystems as well as information on specific CRM interventions such as marine sanctuaries, coastal zoning, CRM

planning, guidelines on foreshore development, etc. are invaluable in the development and formulation of CRM programs.

Institutionalization and Advocacy. Advocacy has been defined as "putting a problem on the agenda, providing a solution to that problem and building support for acting on both the problem and the solution" (AED n.d.). Advocacy consists of different strategies aimed at influencing decision-making at the organizational, national, provincial, and municipal levels and can include lobbying, social marketing, public education activities, community organizing, media campaigns, signature campaigns and other such "techniques".

Institutionalization on the other hand, directly addresses the need for ensuring the sustainability of the CRM process. Using the approaches just described, an IEC program on CRM can, in a deliberate manner, push for the adoption by social, economic, and political institutions of the principles and systems that will ensure the continuous, long-term implementation of CRM. Such institutions would then employ any of the approaches mentioned above to ensure the prioritization of CRM in the national and local agenda. IEC activities should take into account a number of factors and considerations (Table 28). In planning and implementing IEC activities, target groups must be clearly identified and linked with appropriate communication strategies. Specific examples of IEC programs and activities employing these four major approaches are detailed in *Guidebook 4: Involving Communities in Coastal Management*.

Table 28. IEC program planning questions and considerations.

Identify stakeholders and behaviors. All possible key players, stakeholders, interest groups must be identified to achieve sustainable resource use and management in the area. Specific environment-unfriendly behaviors as well as environment-friendly behaviors of different stakeholders and interest groups must be identified and targeted in an IEC program.

Identify intended outcomes. The desired impact of the program must be defined in order to develop appropriate strategies. What do people have to understand and believe in order to change their destructive or unfriendly fishing/extractive practices? What are the desired behavior results relative to specific CRM policies and best practices? What will motivate key players and interest groups to adopt desired CRM policies and practices?

Identify obstacles and barriers. Barriers may be internal to the individual such as lack of knowledge or skills, or external, as in structural and systemic constraints. The range of possible internal and external barriers must be identified to achieve widespread acceptance and practice of CRM.

Identify benefits: What do people see as the consequences of adopting CRM-friendly behaviors and practices and dropping environment-unfriendly ones? What are their attitudes towards specific CRM policies and practices? The more one believes performing the behavior will lead to positive consequences, the more favorable one's attitudes become.

Desired behavior changes fail to occur because a person (a) does not have adequate knowledge or skill, (b) there are too many unpleasant consequences or barriers related to the behavior; (c) the behavior has insufficient positive consequences; or (d) unfriendly behaviors have a much greater payoff than friendly ones. In promoting any form of sustainable behavior, barriers and benefits to engaging in the desired behavior must first be identified. Such barriers whether internal or external, may vary for different individuals (GreenCOM 1996).

(continued)

Table 28. (continued)

Identify problems being addressed: Where possible, establish what specific problem the IEC program will help address. Why this problem and not others? How can IEC contribute to the solution of this problem?

Establish audience. What are the relationships of the target audience to the environmental problem? How do they significantly contribute to the environmental problem's solution? Why should they, and not others receive the IEC program's attention?

Define benchmarks. What knowledge and attitudes must the target groups have in order to effectively contribute to CRM goals and objectives? What information can be gathered about the audiences' beliefs, customs regarding marine and coastal environments, perceptions of self-efficacy, willingness to shift from fishing, adopting alternative livelihoods?

Promote changes in social norms: IEC programs can be designed to use the power of social pressure to help change behaviors and promote CRM-oriented norms. Using media and social organizations for agenda-setting; publicly promoting CRM models, success stories, and case studies; as well as building commitments into the IEC program are ways of affirming and "legitimizing" CRM in the public consciousness. The use of large peer groups such as NGO and PO coalitions, and the League of Municipalities to serve as pressure points among themselves is also an effective IEC strategy.

MAINSTREAMING COASTAL RESOURCE MANAGEMENT

Mainstreaming CRM issues and problems in the country's national and local social agenda is the desired policy and behavioral outcome of agenda setting. Historically, CRM as a sustainable development strategy has ranked low in the priorities of national and local governments, so efforts must be undertaken to move it quickly onto the national and local agenda. From a policy perspective, agenda setting is one of the most important aspects of CRM-IEC (Smith *et al.* 1999). Efforts to incorporate CRM perspectives, policies, and processes in the country's national development framework would result in the sustainability of CRM as a strategy for resource use and development. No amount of community-based CRM programs will reach the threshold of sustainability without the convergence of national policies and local initiatives.

Mainstreaming may include the following:

- Finding an "authentic voice" and advocate for CRM (individual and collective);
- Extensive use of mass media;
- Adaptation/framing of CRM messages against the context of national government programs (e.g. food security and poverty alleviation programs);
- Careful packaging of CRM as a mainstream cause and not an activist cause;

May is "Month of the Ocean" in the Philippines. Information, education, and communication programs should be designed to promote protection and sustainable use of coastal resources in May and throughout the year.

- Conduct of strategic IEC activities that creatively integrate the four communication approaches;
- Cultivation of alliances and synergy/partnerships with strategic sectors and social organizations;
- Inclusion of the general public as a base of support for CRM initiatives; and
- Leveraging of project resources and counterpart schemes.

As an important component of CRM, IEC must be a continuing process throughout the CRM planning and implementation process cycle. It is ideally a transformative and normative process built around those activities designed to help create an environment conducive to acceptance of CRM objectives and adoption of best practices. It can be used to help people become aware of the consequences of their actions, take ownership of management interventions, or assume responsibility for living within the bounds of natural resource use and development constraints.

ROLES AND BENCHMARKS

In Phase 5, the institutional memory and sustainability of CRM interventions at the community and local government levels are strengthened and maintained to withstand changes in political leadership. Municipalities and cities must take a lead role in acquiring and managing information that is needed throughout the cyclical CRM process.

Provinces play a crucial role as a consolidation point for information on coastal resources. Each province should establish a provincial coastal database to consolidate the MCDs from each municipality as well as other information and data on natural resources and the environment. NGAs should support provincial databases by providing relevant data and training. Conversely, provinces should provide data to NGAs that can be used to plan and program CRM technical and financial assistance to LGUs and report on national goals and objectives in the Medium-Term Development Plan.

Armed with sound information, LGUs together with NGAs, NGOs, academe, and private sector must be enlisted to support effective education and outreach programs throughout all phases of the CRM process and to reach out to stakeholders affected by CRM plans and programs.

Key benchmarks that should be accomplished on an annual basis are summarized in Table 7 and include:

- Annual update of the MCD for each coastal municipality;
- Annual update of provincial and national coastal databases; and
- Ongoing education and outreach programs.

chapter 8
Emerging themes for effective local management

Coastal management is evolving in the Philippines and, as such, is a dynamic and changing process. Fortunately, new paradigms are emerging in response to the growing awareness of the serious degradation of coastal and marine resources in the Philippines as well as globally (Table 29). Government and other programs are shifting emphasis from fisheries development to coastal management. With the recognition that effective management develops from a participatory process involving coastal stakeholders and day-to-day resource users, the Philippine government has devolved the responsibility for managing coastal resources to the lowest level of government. The LGU now has primary responsibility for managing coastal resources at the local level in partnership with coastal communities, civil society, and national government. Herein lies the opportunity to transform these and other new paradigms in coastal management to the successful recovery of Philippine seas. Failure to act will create a crisis in food security and economic and environmental health in coastal communities.

Table 29. New paradigms for coastal management in the Philippines (Courtney and White 2000)**.**

- Shift in emphasis to coastal protection and management and away from fisheries development, exploitation, and optimum production;
- Devolution of responsibility and mandate for managing municipal waters to local government;
- Redefining roles of NGAs toward assisting local government with coastal management;
- Establishing multisectoral and inter-LGU agreements to solve complex problems associated with coastal management;
- Broadening the base of local and national support to sustain community-based coastal resource management; and
- Mainstreaming coastal management in the national agenda.

Coastal management approaches may change as human resource capacity is increased, experience is gained, public awareness is raised, and CRM becomes institutionalized in LGUs. The lessons learned and emerging themes that have come out of the experience of coastal management practitioners in the country should be applied to current and future efforts. Sustainable and effective coastal management by local governments requires a commitment on the part of LGUs to provide CRM as a basic service, as discussed in previous chapters, but it also requires external support in the form of an integrated national policy agenda, increased investment and revenue generation, enhanced inter-LGU and multisectoral collaboration, and mechanisms to reward sustained efforts in CRM.

NATIONAL POLICY FRAMEWORK IN SUPPORT OF LOCAL COASTAL RESOURCE MANAGEMENT

The national policy framework for coastal management in the Philippines is still weak, although many laws are in place. Devolution of coastal management to the local government is a new paradigm that is still being tested. So far, in the Philippines, this mandate is still largely unfunded and unfulfilled. The financial and technical needs of local government to deliver CRM must be prioritized in the national agenda.

At the 1999 League of Municipalities Conference of Coastal Municipalities, attended by over 700 (90 percent) of coastal mayors in the country, a resolution was passed articulating a 15-point national CRM agenda for coastal management (Table 30). This 15-point agenda highlights national policy actions needed to expedite the delivery of CRM as a basic service of local government.

An improved legal and policy framework to support local CRM requires (Courtney and White 2000):

- Implementation of the Joint Memorandum Order between the two national agencies with most responsibility for coastal resources (DENR and DA-BFAR) that clarifies their roles and responsibilities and improves their working relationship to support local governments in coastal management;
- Coastal management must become institutionalized in the DENR as a functioning unit that provides policy and information support in the field;
- A vision for the basis and need for coastal management should be accepted at the national level by all relevant agencies;
- Key national policies on fisheries management, local government authority and revenue generation in coastal areas be harmonized for consistency; and
- Large donor projects accept national and local policies and experiences and coordinate their projects to complement each other.

INVESTMENT AND REVENUE GENERATION TO SUSTAIN BENEFITS FROM COASTAL RESOURCES

Historically, coastal resources in the Philippines have been exploited at little or no cost to the resource user. Coastal resources have been consistently and grossly undervalued in terms of their importance to food security, economic development, shoreline protection, and pollution treatment. Fees for fishpond lease agreements or fishing licenses are nominal or nonexistent. Coastal waters absorb and disperse pollutants from domestic and industrial wastes at virtually no cost to the polluter. Fines for violators of coastal laws intended to protect the public good are minor if assessed at all. As a result, substantial benefits derived from coastal resources are being lost annually as the Philippine coastal environment is becoming severely degraded.

Investment in management is needed to restore and sustain the substantial direct and indirect benefits derived from coastal resources. Although detailed valuation studies of coastal resources

Table 30. Coastal management agenda from the 1999 Conference of Coastal Municipalities.

RESOLUTION NO. 01, Series of 1999
Conference of Coastal Municipalities

A RESOLUTION CALLING FOR THE ENACTMENT/IMPLEMENTATION OF MEASURES EMPOWERING THE LOCAL GOVERNMENT UNITS FOR INTEGRATED COASTAL MANAGEMENT

WHEREAS, the League of Municipalities of the Philippines (LMP), a league of local government units (LGUs) created under the Local Government Code of 1991 (LGC), has served as a venue for member municipalities to articulate, ventilate and crystallize issues affecting municipal government administration and secure through proper and legal means solutions to these issues;

WHEREAS, 832 (54%) of the 1,527 member municipalities of the LMP are classified as coastal municipalties;

WHEREAS, recent studies indicate that such coastal municipalities are among the poorest of the poor municipalities of the Philippines;

WHEREAS, there is a need to develop a general program for coastal municipalities that will address, among others, the following issues: coastal resource management for food security; poverty eradication in coastal municipalities; jurisdictional issues in municipal waters; coastal law enforcement; and financing mechanisms for managing coastal resources;

WHEREAS, the government is now confronted with the serious problem of depletion of marine resources;

WHEREAS, infrastructure and facilities for an efficient and effective implementation of coastal management are seriously lacking;

WHEREAS, coastal LGUs generally do not have sufficient funds to implement their municipal coastal management and development plan;

NOW THEREFORE BE IT RESOLVED AS IT IS HEREBY RESOLVED THAT:

1) The League of Municipalities of the Philippines through its President Mayor Jinggoy Estrada be urged to request His Excellency President Joseph Ejercito Estrada to direct the proper agency to finally establish water boundaries of coastal municipalities within the soonest possible time;
2) The Congress be urged to amend the LGC to include "municipal waters" for purposes of IRA computation so as to increase the LGUs' resources to fund programs/projects for the development/preservation of marine resources;
3) His Excellency President Joseph Ejercito Estrada be urged to certify a bill as urgent to Congress calling for the amendment of the LGC to enhance enforcement of existing fisheries laws and to create a special Task Force to be headed by the local chief executive to monitor the implementation of the same;
4) The Congress be urged to review existing laws, policies and programs on coastal resource management with the end in view of according more powers to local governments and ensuring integration for national development; henceforth,
    a) Coastal LGUs be urged to establish monitoring, control and surveillance mechanisms to come up with strategies for the effective enforcement of the country's fisheries law;
    b) Coastal LGUs be urged to formulate a comprehensive and sustainable municipal coastal resource management development plan;
    c) Coastal LGUs be urged to organize their municipal/*barangay* coastal resource management councils;
    d) Coastal LGUs be urged to source funds from local/national funding agencies in relation to the municipal coastal resource management development action plan that may be formulated;

(continued)

Table 30. (continued)

e) Coastal LGUs be urged to strictly implement ordinances imposing taxes/fees involving marine products;

f) Coastal LGUs' legislative bodies be encouraged to pass more ordinances that will aim to increase coastal resource management finances.

5) Congress be urged to ensure the passage of the bill localizing the Philippine National Police so as to ensure effective implementation of the country's fisheries laws;

6) His Excellency, President Joseph Ejercito Estrada be requested to direct the concerned national agency to issue the corresponding Fisheries Administrative Order (FAO) of RA 8550;

7) His Excellency President Joseph Estrada be urged,

- to facilitate the delineation of functions of various national government agencies (DENR, DILG, DA, among others), public corporations (Laguna Lake Development Authority, Philippine Ports Authority, among others), and the local government with respect to coastal resource management;
- to direct the Department of Justice to adopt measures that would strengthen enforcement and prosecution mechanisms;
- to fill up vacant courts for speedy disposition of cases.

8) His Excellency President Joseph Estrada be urged to provide augmentation funds for coastal resource management programs and projects and release the same directly to local governments;

9) His Excellency President Joseph Estrada be urged to certify as urgent a bill giving to local governments a portion of the revenues raised and collected by the Philippine Ports Authority;

10) His Excellency President Joseph Estrada appropriate the necessary funds for the purchase and maintenance of at least two patrol boats for every municipality;

11) The LMP be urged to identify the different private and government agencies that may provide grants/funding sources for coastal resource management;

12) The proper government agency be urged to promulgate the necessary rules and regulations to ensure that local government units (LGUs) are oriented with their powers and responsibilities under the LGC with respect to the collection of fees/taxes and other regulatory revenues over coastal resources;

13) Coastal LGUs be urged to source funds from local/national funding agencies in relation to the municipal coastal resource management development action plan that may be formulated;

14) The proper government agency be urged to implement an information and/or education campaign where seminars/conferences shall be conducted to:

a) equip the LGUs with skills to resort to alternative livelihood programs;

b) orient the LGUs with the different coastal resource management financing schemes;

c) enlighten participants with the need to preserve the country's coastal resources.

15) Congress be urged to enact a law creating a Department of Fisheries and Aquatic Resources.

Adopted.
May 28, 1999, City of Manila, Philippines.

would enhance cost-benefit analyses for use by decision-makers, enough data exist to show that a relatively small investment in CRM is needed to restore benefits derived from coastal resources. Once coastal resources values are restored, revenues can be generated from all manner of coastal resource uses.

Cost-benefit analyses for any project located in the coastal zone must incorporate both direct and indirect benefits derived from coastal resources. LGUs make daily decisions that affect the health of and benefits derived from coastal resources. Construction along the shoreline is allowed without appropriate setbacks causing shoreline erosion and impacts to nearshore habitats. These impacts result in property loss and substantial costs to the government as well as coastal stakeholders. Reclamation projects are allowed to proceed without clear demonstration of the need for these projects nor any consideration of the social and environmental costs to coastal stakeholders. Cost-benefit analyses for major infrastructure projects in the coastal zone must compare the benefits of such a project to the losses, both direct and indirect, that will occur in the coastal zone, if the project is approved.

Substantial economic benefits can be derived from coastal resources if managed properly and for sustainable use. With investment in management, these benefits can be sustained and revenues generated to offset management costs.

COASTAL RESOURCE MANAGEMENT CERTIFICATION TO SUSTAIN LOCAL GOVERNMENT UNIT EFFORTS

The concept of certifying municipal CRM plans and programs to benchmark LGU performance is new. CRM certification (CRMC) is being developed and tested by the DENR's CRMP to assist coastal municipalities achieve commitments articulated in the *League of Municipalities of the Philippines Resolution No. 01, Series of 1999* (Table 30) as well as national goals and objectives for coastal and marine resources in the Medium-Term Development Plan of the Philippines (Figure 7).

Patterned after international standards for organizational and environmental management systems (ISO 9000 and ISO 14000), certification is a voluntary process in which an independent third party provides a written certificate showing that a product, method, or service satisfies certain predetermined requirements, or criteria. Certification has been used largely by various industries (e.g. manufacturing, processing, tourism) to improve efficiency in operations and to achieve voluntary compliance with environmental laws through the establishment of environmental management systems. Firms that have been "ISO-certified" enjoy competitive advantages and improved public image over non-certified firms. International certification standards and procedures for establishing environmental management systems have been adopted in the Philippines under Philippine National Standard 1701 (PNS 1701), Environmental management systems – Specification with guidance for use.

CRMC provides a framework for benchmarking LGU performance in the delivery of CRM as a basic service as well as a roadmap for planning future directions and initiatives. Certification criteria have been developed based on the LGU's CRM mandate and internationally recognized best practices in CRM (Table 31). These criteria are used to benchmark LGU performance at three levels of certification—Beginning, Intermediate, and Advanced (Table 32). The results of

Table 31. CRM best practices.

- Fisheries and coastal management ordinances implemented
- Law enforcement units operational
- Marine sanctuaries functional
- Environment-friendly enterprises established
- Mangroves under community-based forest management agreements or other measures
- Municipal water boundaries enforced
- Restrictions on foreshore development enforced
- Solid waste management
- Port and harbor management
- Soil and water conservation practices implemented
- Coastal recreation and tourism activities
- Other habitat protective measures and open access restrictions in place
  - Resource use or restricted zones implemented
  - Licenses for resource uses required
  - Transport of selected fish and fishery products regulated
  - Guidelines for shoreline development issued and enforced
  - Economic incentives used for compliance and revenue generation

annual monitoring and evaluation of municipal CRM plans and programs are reviewed against the criteria established for each level and "certified" by an "independent" multisectoral committee. CRMC is voluntary and should be initiated by the municipality. CRM Certification should be maintained annually through monitoring and evaluation with the goal of achieving higher levels of certification over time.

As with international certification protocols, there are a variety of benefits that may accrue to municipalities with certified CRM plans and programs (Table 33). CRMC can serve as a roadmap for the sustainable development programs of LGUs. CRMC provides a systematic monitoring system for the Medium-Term Program Development Plan goals and objectives for coastal and marine resources, which targets *250 LGUs along 6,000 km of shoreline adopting integrated coastal management for the improved management of municipal waters by the year 2004* (Figure 7). Finally, CRMC provides a framework for prioritizing investments of local and national government as well as foreign funding institutions.

While the organizational structure for implementing CRMC is still evolving, an emerging theme is to have a roll-up system that can be elevated from provincial to regional and national levels. This may be accomplished by having parallel committees at provincial, regional, and national levels. A Provincial CRMC TWG, chaired by the province and composed of a multisectoral body including representatives from DENR, DILG, BFAR, NGOs, and academe, would be responsible for review and field validation of a municipality's annual M&E of CRM plans and programs. The Provincial CRMC TWG would then endorse the certification of a municipality to a National/Regional CRMC Committee chaired by DENR for review and issuance of the certificate. Recognition and incentive programs established at provincial, regional, and national levels for municipalities that have been certified are essential to sustain CRM initiatives and to promote the achievement of higher levels of CRM by LGUs.

Table 32. CRM Certification criteria and levels for local government.

Levels of accomplishment in CRM	Level I: BEGINNING: Acceptance of CRM as a basic service of municipal or city government with planning and field interventions initiated *(1 to 3 years)*	Level II: INTERMEDIATE: Implementation of CRM plans underway with effective integration to local governance *(3 to 5 years)*	Level III: ADVANCED: Sustained long-term implementation of CRM with monitoring, measured results, and positive returns *(5 years or more)*
Guiding indicators and results	◆ Commitment to CRM as a basic service known ◆ Budget allocated ◆ FARMC or other organization formed ◆ CRM plan drafted ◆ Best CRM practices planned and initiated	◆ CRM plan finalized and adopted ◆ Municipal ordinance supports CRM plan ◆ At least two appropriate best CRM practices implemented with measured success ◆ Coastal law enforcement effective ◆ FARMCs active and effective	◆ Biophysical improvement measured ◆ Socio-economic benefits accrue to coastal residents ◆ Positive perception of CRM interventions among stakeholders ◆ Illegal acts stopped
Benchmarks leading to indicators and results	◆ Background information for CRM consolidated and analyzed ◆ Issues identified and prioritized ◆ Coastal environmental profile complete with maps and baseline data ◆ Biophysical and socioeconomic monitoring system designed	◆ Inter-LGU, LGU-NGA, LGU-private collaboration operational ◆ CRM plan includes best CRM practices, zoning scheme, shoreline management, financial options, monitoring, responsible entities and schedule ◆ Information management system initiated ◆ Monitoring started ◆ Multisectoral technical working group meets	◆ CRM plan implementation fully supported by LGU and collaborators for more than 5 years ◆ Information system functional to educate and update CRM plan ◆ Monitoring and evaluation used to inform information system ◆ Revenue generation mechanisms functional
Supporting processes and activities	◆ Baseline assessment undertaken through Participatory Coastal Resource Assessment (PCRA) and scientific surveys ◆ Mapping done ◆ CRM training implemented ◆ Community planning workshop undertaken	◆ Community planning workshops undertaken ◆ Special trainings done ◆ Resource assessment updated and refined ◆ CRM status reports produced	◆ CRM plan reviewed and revised annually ◆ Training provided as required ◆ Planning workshops continue as needed ◆ CRM status reports continued ◆ Technical assistance provided to enhance CRM as required
Criteria for decision on CRM certification	All guiding indicators in place with evidence for benchmarks and supporting processes in written form (profile, maps, plan, training certificates, ordinances), updated municipal coastal database and through field observation	All guiding indicators in place with appropriate benchmarks done and supported by field observation of CRM best practices being implemented. Monitoring reports show results.	All guiding indicators in place with verifying evidence to show measured results from CRM at the field level.

Table 33. Benefits of CRM Certification.

- Serves as a catalyst and tool for planning and monitoring LGU investments in CRM to restore and sustain benefits derived from coastal resources
- Serves as a vehicle for social mobilization in support of LGU initiatives in CRM
- Serves as a basis for provincial LGU incentive or funding support program for municipal CRM
- Provides public recognition of exemplary performance of LGUs
- Provides a framework for national government and foreign funding institutions to prioritize "certified" LGUs for financial and technical assistance
- Provides systematic monitoring system for Medium-Term Development Plan goals and objectives for coastal and marine resources
- Establishes an institutional memory for CRM beyond political term limits
- Forges a stronger partnership between NGAs and LGUs
- Strengthens local coastal law enforcement
- Uses information to boost compliance
- Encourages self-policing
- Harmonizes a patchwork of regulatory requirements
- Encourages a common sense approach for solving common problems
- Allows for creative permitting which could boost local revenue generation efforts

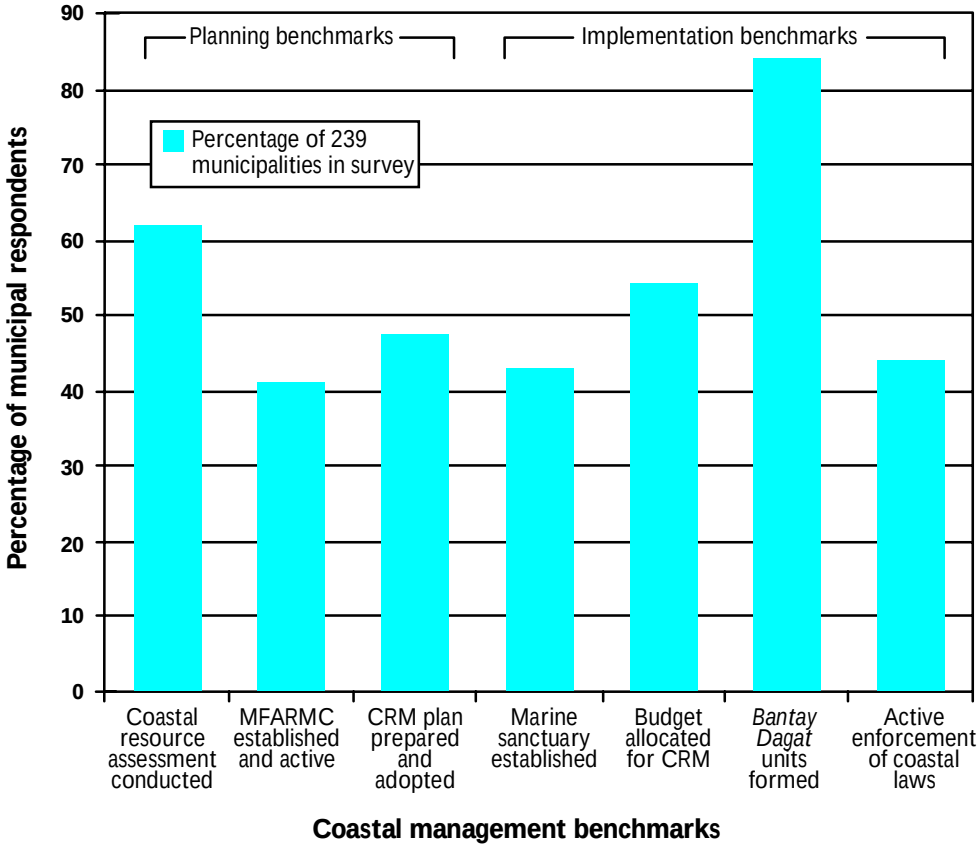
Source: Courtney and White (2000).

With 832 coastal municipalities in the Philippines, a system of certifying CRM programs of LGUs would provide a way to establish standardized modes of implementation and quality services. A 1999 survey of coastal mayors revealed that quite a few coastal municipalities have made progress on achieving CRM planning or implementation benchmarks (Figure 24), although only 5 percent report benchmarks for the complete CRM process.

MULTISECTORAL AND INTER-LGU COLLABORATION

A key lesson learned from various coastal management projects is that it is difficult to plan and implement coastal management programs without a multisectoral and inter-LGU approach. Complex issues can only be addressed in a meaningful way through partnerships and good collaboration. Inter-LGU agreements should be established for bay and watershed management, coastal law enforcement, cost-sharing, and policy harmonization. Provincial CRM offices and resource centers should be set up to support IEC strategies at the provincial and municipal level.

LGUs may, through appropriate ordinances, group themselves, consolidate, or coordinate their services and resources for the purposes commonly beneficial to them (Section 33 of the LGC). In support of such undertakings, the LGU may, upon approval of the *Sanggunian* after a public hearing, contribute funds, real estate, and equipment or assign personnel as agreed upon in a Memorandum of Agreement. Participating/contracting municipalities may undertake joint CRM or ICM projects together. Collaboration and partnership between LGUs and other sectors should be a standard mode of operation to solve complex problems that span geopolitical boundaries.



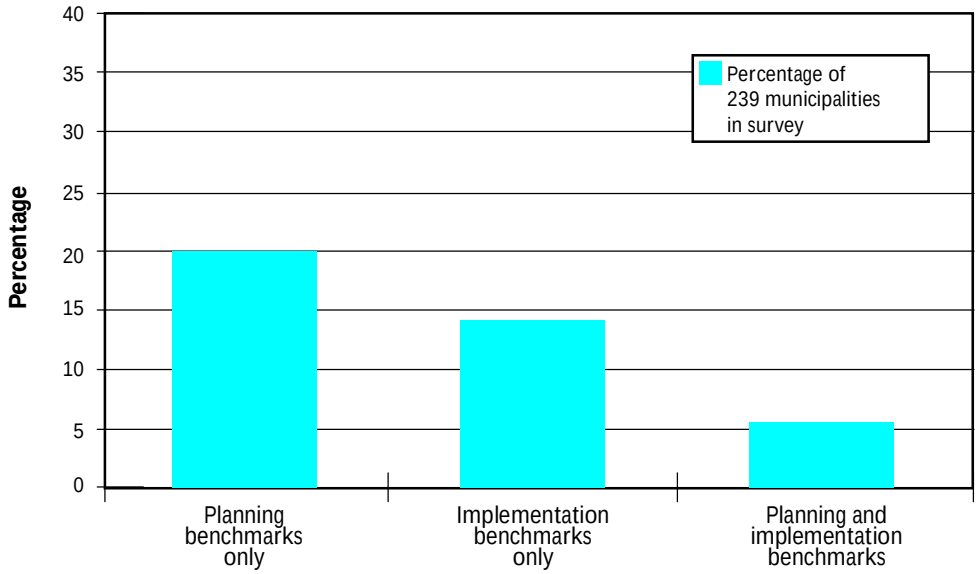


Figure 24. Percentage of municipalities with CRM benchmarks based on the 1999 survey of coastal municipalities *(CRMP 1999)*.

Table 34. Lessons learned and emerging directions in coastal management in the Philippines.

- Baseline information is a prerequisite to plan for CRM and to do comparative analyses of "with" and "without" project scenarios.
- Quality technical expertise is a key determinant of success.
- Participation at all levels is a prerequisite to the effective implementation of CRM plans.
- The sustainability of CRM interventions cannot be determined without sufficient time for field testing.
- An integrated planning process is essential to bring together the divergent efforts of various government, nongovernment, and other organizations involved in management.
- Real and practical results at the field level, such as improved income from fish catch, other resource use, or alternatives such as tourism, are a critical sustaining force at the community level.
- Even community-based management that appears relatively successful and autonomous requires continuing support and mentoring from government, NGOs, and the private sector.
- Political will is always required to start and sustain successful CRM programs.

Source: Courtney and White (2000).

SUSTAINABILITY OF COASTAL MANAGEMENT EFFORTS

Numerous coastal projects have been initiated in the Philippines and lessons have been learned about what works and what does not. Table 34 describes some lessons learned and emerging directions in CRM in the Philippines. One theme that is changing past models and is reflected in the coastal management framework described in this guidebook is the important role of provincial, municipal, and city governments in leading and sustaining CRM. While the LGU has a key role, participation at all levels is required for effective management; the resource users need to be involved in the planning and implementation of best CRM practices. An integrated and multisectoral approach to planning that brings together all key stakeholders, including local communities and resource users, is essential.

Good baseline information, in the form of a coastal environmental profile, is a key ingredient. The need to plan for and measure results in coastal management efforts is critical. Without indicators of success that translate into economic gains and improvements in environmental quality, governments and communities will not invest in coastal management. Good baseline information and an established program of monitoring and evaluation of project effects provide that analysis.

Finally, public awareness of the problems with coastal resources and the best management solutions is needed to support CRM efforts. A strong IEC program is a necessary ingredient to change attitudes and values in support of CRM. Political will on the part of the LGU is required to start and sustain the process; this dedication to finding solutions to coastal management issues needs to be apparent throughout the government so that CRM efforts are not just dependent on a few individuals. If CRM becomes institutionalized in the LGU as a basic service and integrated into the consciousness of the coastal residents, the coastal environments will continue to sustain Philippine communities.

References

Ablong, W., R. de Leon, C. Fontelo and R. Montebon, 2000. Estimating the incremental cost of CRM as a basic service of local government units in the Philippines, 7th Program and Policy Advocacy Group Forum, Silliman University, October 2000, Cebu City.

AED (Academy for Educational Development) n.d. An introduction to advocacy training guide. Support for Analysis and Research in Africa (SARA); Health and Human Resources in Africa; USAID Africa Bureau, Office of Sustainable Development. 129 p.

Arquiza, Y.D. 1999. Rhythm of the sea: Coastal environmental profile of San Vicente, Palawan. Coastal Resource Management Project, Cebu City, Philippines. 131 p.

Cesar, H. 1996. The economic value of Indonesian coral reefs. Environment Division, World Bank. 9 p.

Christie, P., A.T. White and D. Buhat. 1994. Issues and applications: Community-based coral reef management on San Salvador Island, the Philippines. Society and Natural Resources 7:103-117.

Cicin-Sain, B. and R.W. Knecht. 1998. Integrated coastal and ocean management concepts and practices. Island Press, Washington, D.C. 517 p.

Courtney, C.A., J.A. Atchue III, M. Carreon, A.T. White, R.P. Smith, E. Deguit, R. Sievert and R. Navarro. 1999a. Coastal resource management for food security. Coastal Resource Management Project and The Bookmark, Inc., Philippines.

Courtney, C.A., A.T. White, and E. Anglo. 1999. Coastal resource management in the Philippines: Lessons and directions for sustainability. Asian Development Bank, Manila, Philippines. 75 p.

Courtney, C.A. and A.T. White. 2000. Integrated coastal management in the Philippines: Testing new paradigms. Coastal Management 28:39-53

CRMP (Coastal Resource Management Project). 1999. Survey of coastal mayors, National Convention of the League of Municipalities of the Philippines, Manila, Coastal Resource Management Project (CRMP), Department of Environment and Natural Resources, United States Agency for International Development, AID contract no. 492-04440-C-00-6028-00.

CRMP (Coastal Resource Management Project). 2000. Municipal coastal database 2000 version 2.0. CRMP Document No. 18-CRM/2000, Cebu City, Philippines. 68 p.

CRMP (Coastal Resource Management Project) and MBL-Trends, Inc. 2000. Project *Karagatan*, survey on knowledge, attitudes and practices (KAP) of key CRM target groups, a management summary, Manila, Philippines.

Flor, A. and R.P. Smith. 1997. Transformation communication networks: a normative approach to environmental education. Tambuli: A publication for coastal management practitioners, November 1997. Coastal Resource Management Project. Cebu City, Philippines.

Gomez, E.D., P.M. Alino, H.T. Yap and W.Y. Licuanan. 1994. A review of the status of Philippine reefs. Marine Pollution Bulletin 29(1-3):62-68.

Green, S.J., R.P. Monreal, A.T. White and T.G. Bayer. 2000. Coastal environmental profile of northwestern Bohol, Philippines. Coastal Resource Management Proejct, Cebu City, Philippines. 113 p.

GreenCom Project in the Philippines. 1996. Results of formative research conducted in support of pilot environmental communication campaigns. Cebu City, Philippines.

IIRR (International Institute for Rural Reconstruction). 1998. Participatory methods in community-based coastal resource management. 3 Vols. International Institute for Rural Reconstruction, Silang, Cavite, Philippines.

Kay, R. and J. Alder. 1999. Coastal planning and management. E & FM Spon of Routledge, London. 375 p.

Kotler, R. and E.L. Roberto. 1989. Social marketing, strategies for changing public behavior. The Free Press New York, USA. 401 p.

Lowry, K., S.O. Olsen, J. Tobey. 1999a. Donor evaluations or ICM initiatives: what can be learned form them? Ocean and coastal management 42:767-789.

Lowry, K., S.O. Olsen, and J. Tobey. 1999b. A manual for assessing progress in coastal management. Coastal Management Report No. 2211, University of Rhode Island. 56 p.

McKee, N. 1992. Social mobilization and social marketing: Lessons for communicators. Southbound, Penang, Malaysia. 204 p.

Murphy, J.M., W.E. Ablong and A.T. White. 1999. Integrated coastal management in Negros Oriental: Building on experience. Tambuli (May, No. 5): 1-9.

NAAEE. 1996. Environmental education materials: Guidelines for excellence. North American Association for Environmental Education, Troy, Ohio, 23 p.

Olsen, S., D. Sadacharan, J.I. Samarakoon, A.T. White, H.J.M. Wickremeratne and M.S. Wijeratne, Editors. 1992. Coastal 2000: Recommendations for a resource management strategy for Sri Lanka's coastal region. Vols. I and II. CRC Tech. Rep. No. 2033. Coast Conservation Department, Coastal Resources Management Project, Sri Lanka and Coastal Resources Center, The University of Rhode Island.

Parras, D.A., M.F. Portigo, and A. T. White. 1998. Coastal resource management in Olango Island: challenges and opportunities. Tambuli (August, No. 4): 1-9.

Patton, M.Q. 1996. Utilization-focused evaluation. Sage Publications, Newbury Park.

Smith, R.P., C.A. Courtney and M.Y. Grieser. 1999. Into the mainstream: promoting coastal resource management in the Philippines national agenda. Paper presented at the North American Association for Environmental Education Conference, Cincinnati, Ohio. 29 August 1999.

UNESCO. 1978. Tbilisi Declaration.

Uychiaoco, A.J., S.J. Green, M.T. dela Cruz, P.A. Gaite, H.O Arceo, P.M. Aliño and A.T. White. 2001. Coral reef monitoring for management. University of the Philippines Marine Science Institute, United Nations Development Programme Global Environment Facility-Small Grants Program, Guiuan Development Foundation, Inc., Voluntary Service Overseas, University of the Philippines Center for Integrative and Development Studies, Coastal Resoruce Management Project, and Fisheries Resource Management Project, Cebu, Philippines. 110 p.

Walters, J. J. Maragos, S. Siar and A. White. 1998. Participatory Community Resource Assessment: A handbook for community workers and coastal resource managers. Coastal Resource Management Project and Silliman University, Cebu City, Philippines.

White, A.T. and N. Lopez. 1991. Coastal resources management planning and implementation for the Fishery Sector Program of the Philippines, p. 762-775. *In* Proceedings of the 7th Symposium on Coastal and Ocean Management. Long Beach. 8-12 July 1991.

White, A.T., L.Z. Hale, Y. Renard and L.Cortesi, Editors. 1994. Collaborative and community-based management of coral reefs. Kumarian Press, Hartford, Connecticut. 130 p.

White, A. 1997. Planning for integrated coastal management: What are the steps? Tambuli: A publication for coastal management practitioners. Coastal Resource Management Project, Cebu City, Philippines.

White, A.T. and A. Cruz-Trinidad. 1998. The values of Philippine coastal resources: Why protection and management are critical. Coastal Resource Management Project, Cebu City, Philippines. 96 p.

WRI (World Resources Institute). 2000. Reefs at risk project maps. World Resources Institute and the World Conservation Monitoring Centre.

Planning at all levels of local government including barangay, *municipal, city, and provincial, is essential in guiding regular and appropriate investments in coastal resource management. Planning is a way of organizing the attention, resources and energy of government agencies, resource user groups, NGOs, and others on the coastal issues that matter most to the community.*

This guidebook was produced by:

Department of Environment and Natural Resources

Department of the Interior and Local Government

Department of Agriculture - Bureau of Fisheries and Aquatic Resources

Local Government Units, Nongovernment Organizations, and other Assisting Organizations

through the Coastal Resource Management Project, a technical assistance project supported by the United States Agency for International Development.

Technical support and management is provided by:

Tetra Tech EM Inc.

The Coastal Resource Management Project, 5/F Cebu International Finance Corporation Towers
J. Luna Ave. cor. J.L. Briones St., North Reclamation Area 6000 Cebu City, Philippines
Tels.: (63-32) 232-1821 to 22, 412-0487 to 89 Fax: (63-32) 232-1825 Hotline: 1-800-1888-1823
E-mail: crmp@oneocean.org or crmhot@mozcom.com Website: www.oneocean.org