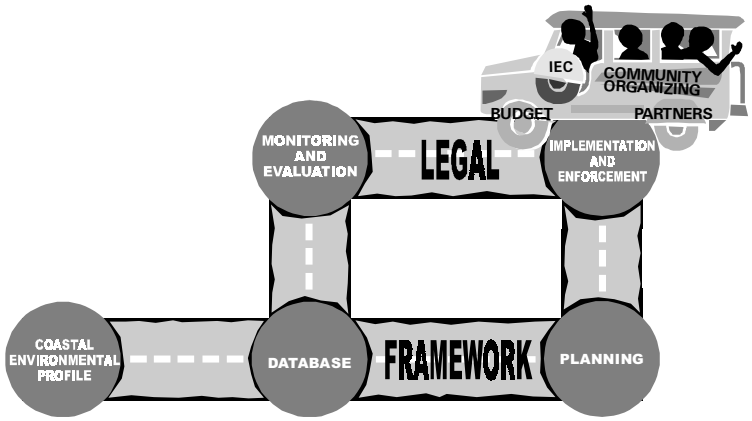
THE CRM PROCESS

CRM Implementation and Enforcement

Mangrove Management



Community-based mangrove management is a process designed to assure equitable involvement and participation of community members in the use and management of mangroves. It is, in a nutshell, a CRM program focused on achieving sustainable use and management of mangroves. In the Philippines, community-based mangrove management is a major program of the Department of Environment and Natural Resources' (DENR) Community-Based Forest Management (CBFM), a program for people's organizations (POs) to help ensure the protection of existing mangrove stands through sustainable utilization.

Mangroves are a unique life-support system of coastal ecosystems that provide many services to coastal communities:

1. Serve as nursery for fry and juvenile fishes
2. Serve as feeding ground for adult fish
3. Protect shoreline from strong winds and waves
4. Check soil erosion that may damage sea grass and corals
5. Serve as a sanctuary for wildlife
6. Provide opportunities for ecotourism industry

Regrettably, the Philippines' "Blue Revolution", which started in 1974, converted more than 200,000 hectares of mangroves to fishpond. There was no analysis of the potential losses that might occur as a result of the destruction of the mangrove forests, nor was there an analysis of the appropriate economic rent for such areas. The result: the rapid depletion of mangrove resources. From 450,000 hectares in the early 1920s, the country's total mangrove area shrank to less than 150,000 hectares today. A new upsurge in the development of illegal fishponds threatens the remaining mangrove areas. In addition, increased population pressure in coastal areas is resulting in the illegal construction of houses and other structures, and consequently the destruction of mangrove forests. Without the implementation of CBFM, it is quite possible that, within 70 years, all of the remaining mangrove habitats will be lost, having been converted to fishponds and other uses.

Community-based mangrove management is undertaken for the following purposes:

1. To improve the mangrove forest in areas previously cleared for other purposes
2. To enhance habitat of ecologically and socio-economically important marine organisms that are biologically dependent on the mangrove ecosystem
3. To ensure sustainable harvest of mangrove trees

4. In the long term, to provide supplemental income from marine products for coastal communities through mangrove-friendly aquaculture (MFA)
5. To ensure tenurial rights, access and management control of the community over the mangrove resource.

Under the CBFM, POs are given the preferential privilege to manage a mangrove area. CBFM Agreements are covered by a 25-year contract, which may be renewed for another 25 years.

Like any community-based resource management process, CBFM for mangroves follows a cycle of planning, implementation, monitoring and evaluation and focuses heavily on people participation. It is essential that the community is given some basic working knowledge on mangrove ecosystem dynamics and that local tenure/utilization issues related to mangroves are identified and understood. The participation of the local government is also crucial to ensure the sustainability of the project.

Areas that qualify for CBFM include timberland (natural stand, plantation, plantable areas or a combination of any of these) and abandoned areas under a fishpond lease agreement (FLA), provided these have been reverted to timberland. A mangrove within a protected area can also be placed under CBFM, as long as the area is within a multiple use zone, sustainable use zone or buffer zone and endorsed by the Protected Area Management Board (PAMB).

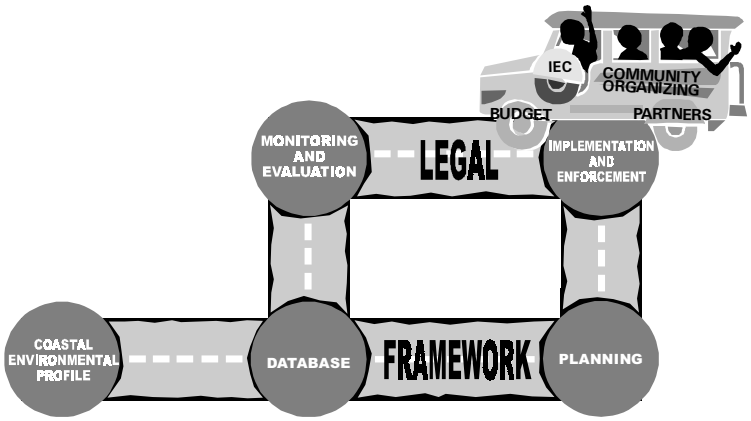
To qualify for CBFM, a PO, which must be registered with the Securities and Exchange Commission (SEC) or the Department of Labor and Employment (DOLE) and have at least 10 members, submits a request to the DENR to identify the mangrove area. It then submits to the DENR a resolution signifying interest in CBFM. This resolution must have the endorsement of the Barangay Captain and Mayor. The PO is also required to formulate, with help from DENR and the LGU, a Community Resources Management Framework (CRMF) for the CBFM area.

Planted mangroves under a CBFMA can be harvested as long as replanting is done after each harvest to ensure that the productivity and protection value of the area are sustained.

THE CRM PROCESS

CRM Implementation and Enforcement

Alternative Economic Development for Coastal Communities



Alternative economic development in CRM is a management option designed to reduce human pressure on coastal resources. It can be classified under four broad categories: industrial siting, water resource development, coastal recreation and tourism, and enterprise development. In the context of enterprise development, it is often referred to as "sustainable livelihood," which is defined as "a balance between economic efficiency, ecological integrity, and human well-being, including equity considerations, … derived from people's capacity to access options and resources and use them to make a living in such a way as not to foreclose options for others to make a living, either now or in the future" (N. Singh).

Economic development projects often exact a heavy toll on the coastal environment – the disruption of natural patterns of surface-water flow and tidal inundation, pollution, depletion of resources, and destruction of natural habitats are just some of its well-documented impacts. CRM does not mean, however, that economic development should stop. In many cases, in fact, the success of a CRM program is dependent on a carefully planned and managed economic development program which reduces human impact on the environment. Often, CRM requires resource users to withdraw from using a particular resource to conserve that resource or allow time for regeneration and ultimately greater and more sustainable yields. For those to whom the resource in question appears to be the only source of living available, short-term needs will always come before the promise of long-term gains – unless alternative economic opportunities become available.

The following guidelines must be considered when weighing alternatives for economic development:

1. **Enterprise development** (for municipal resource users/fishers)
   The choice of enterprise projects will depend on the needs of the community and the characteristics of the coastal environment. The cost:benefit ratio of an economic development project may be weighed according to its advantages, disadvantages and requirements. A promising field in those rural areas characterized by highly degraded coastal resources is the development and provision of alternative livelihood systems designed to provide the "grace period" within which to initiate conservation and resource rehabilitation. When improved, the natural resource base (e.g., mangrove lagoon, barrier reef) can be used to support a sustainable system of resource utilization.
   Mariculture, i.e., marine fish farming, is one enterprise project that is to start up in the coastal environment. It requires a relatively low capital investment and low technology input,

payback period is relatively short, and properly managed, the project has a relatively low impact on the environment, and sometimes even helps enhance the environment. Also, lack of access to arable land means agriculture is not an option for most fishers.

2. **Industrial siting**
   a. Environment Impact Assessment (EIA) must be undertaken to determine potential impacts on the coastal environment.
   b. The chosen site should contain the fewest sensitive or valuable habitats or living resources. Factories/plants with high pollution discharge should not be located along the coast.
   c. If heavy industry is going to be sited at the coast, it should be concentrated at one particular area rather than being spread out along the coastline. This way, less of the coast is disturbed, and cooperative efforts between industries, and with government, can address water pollution problems.
   d. The industrial site should provide a wide buffer of natural land along the shoreline, except where water access requires piers and roads.
   e. Before construction, attention should be paid to the natural patterns of surface-water flow and tidal inundation. The disruption of these flows should be minimized.
   f. Industries producing quantities of waste should be aware of the available variety of ways to control nearshore pollution.
   g. Heated water should be cooled before being discharged into coastal waters.
   h. Industries prone to accidental spillage of toxic materials should have realistic contingency plans, equipment, and trained personnel for spill containment and cleanup.
3. **Water resource development**
   Special attention should be paid to the downstream effects in the coastal and nearshore marine environment.
   a. Boundaries of the coastal and marine areas should specifically include the zone influenced by fresh water, by river-borne pollutants, and terrestrial sediment run-off.
   b. Present and future socio-economic importance of coastal and marine resources, the degree to which they can sustain probable impacts caused by inland sources, and their present status must be considered.
   c. Baseline studies must be carried out within this zone, including resource surveys, status assessments, and descriptions of the physical environment and the processes which shape it.
   d. A monitoring program of important water inputs influencing the zone must be implemented.
   e. Threshold levels required to maintain the coastal/marine resources and processes identified above should be established.
   f. The source and upstream location of harmful inputs entering the coastal area should be identified.
   g. Whenever possible, impacts of downstream sedimentation should be considered.
   h. Systematic procedures to evaluate coastal implications of proposed water development and other activities in the catchment area should be established.
   i. Where important inputs may be altered by water development projects and pose a threat to the threshold limits of coastal resources, appropriate modifications in the design phase should be made.
4. **Coastal recreation and tourism**
   The following guidelines are important in preventing or minimizing potential problems caused by tourism development:
   a. Coastal tourism development should be conceived within the framework of national, regional, and local socioeconomic development plans which assure proper integration of environmental objectives in development strategies. In particular, coastal tourism development should be approached within a national strategy for coastal area development and management, which will identify the zones most suitable for tourism.

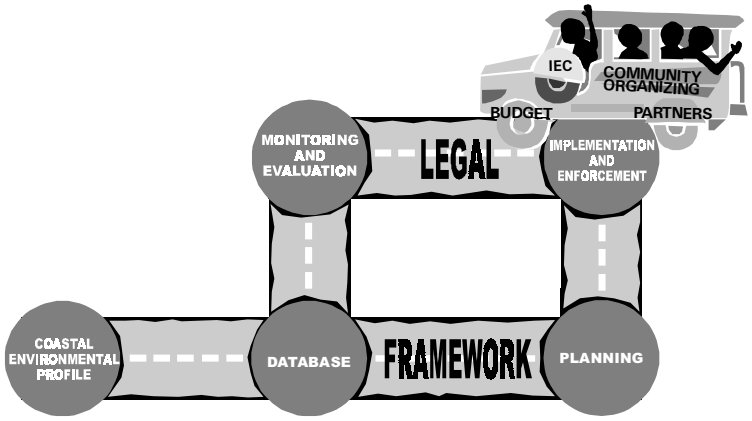
b. Coastal areas reserved for tourism development should be covered by zoning plans which take into account the natural geographic and socioeconomic condition of the area. To achieve optimal exploitation of tourist resources, an inventory should first be conducted in the region of the proposed site(s) to include the physical environment; the man-made environment; the socio-cultural environment; and the existence of endemic or temporary communicable diseases.
c. The "carrying capacity" of the area should be defined for the purpose of determining the total population the tourism area can sustain without over-burdening existing infrastructure and causing degradation of the natural resources.
d. Clearing, where required, should be controlled to ensure minimal impact on the natural coastal ecosystems.
e. Means of access must be properly designed to take into account minimization of traffic congestion, noise, solid and liquid waste pollution, and other impacts on the surrounding areas.
f. The development of accommodation facilities should be concentrated, leaving as much of the natural resource in an as undisturbed a state as possible. The scale, size, and type of infrastructure should be appropriate. Structures must be set back at least 60 meters from the high water mark, but greater set-back distances, e.g. 100-300 meters, are preferred.
g. Construction of shoreline structures such as sea walls, jetties or other physical structures in the water should be minimized as these structures cause erosion and destruction of coastal habitats.
h. Allowances must be made for adequate waste disposal measures. Where possible, waste disposal should use existing municipal or regional collection and disposal of waste systems. Liquid waste should not be discharged onto beaches, coral reefs, or other sensitive areas.

(Some parts of this section were adapted from Coasts. Coastal Publication No. 2, Renewable Resources Information Series. S.C. Snedaker, C.G. Getter,Research Planning Institute Inc. in cooperation with National Park Service-United States Department of Interior and United States Agency for International Development)

THE CRM PROCESS

CRM Implementation and Enforcement

Revenue Generation for Water Use Zones and Other Financing Mechanisms for CRM



Revenue generation from municipal water use zones refers to the strategies and activities employed by local government to derive economic benefits from the sustainable use of the various zones delineated within municipal waters. An administrative function or a function of market demand, it is one mechanism that the LGU can tap to finance CRM activities. A combination of other revenue-generating mechanisms are also discussed below.

The generation of revenues serves the following purposes:

1. To set tangible and easily measurable values on municipal water use zones and the resources found in the coastal zone
2. To provide the community with an obvious economic incentive to protect and manage their coastal waters and resources
3. To regulate and limit the extraction of resources
4. To generate funds for the continued implementation of CRM

The financing mechanisms available to LGUs for coastal resource management include:

1. Internal Revenue Allotment – Section 6, Article VI of the Philippine Constitution provides that local governments shall be entitled to a just share in national taxes. At present, local governments are entitled to 40% of internal revenue taxes (Section 284 of the Local Government Code). Of the current 40%, all provinces and all cities are entitled to 23% each; all municipalities, 34%, and all barangays, 20%. For particular local government units, the sharing is determined by applying this formula: 50% based on population, 25% on land area, and 25% on equal sharing (Section 285 of the Local Government Code).
2. Share in Fishery Charges – Local government units shall, in addition to the internal revenue allotment, have a share of 40% of the gross collection derived by the national government from the preceding fiscal year from fishery charges (Section 290 and 291 of the Local Government Code).
3. Grants and Donations – Section 23 of the Local Government Code states that the "local chief executive may, upon authority of the Sanggunian, negotiate and secure financial grants or donations in kind, in support of the basic services or facilities enumerated under Section 17 hereof, from local and foreign assistance agencies without necessity of securing clearance or approval therefor from any department, agency, or office of the national government or from any higher local government unit." Grants may be sourced from local and foreign sources to

support water resource utilization and conservation projects and enforcement of fishery laws in municipal waters including the conservation of mangroves (Section 17b21 of the Local Government Code). Sources of these funds are, however, only recently being developed and are not available to all LGUs.

4. Domestic Loans – Section 297 of the Local Government Code provides that a local government unit may contract loans, credits, and other forms of indebtedness with any government or domestic private bank and other lending institution to finance the construction, installation, improvement, expansion, operation or maintenance of public facilities, infrastructure facilities, and the implementation of other capital investment projects. Thus, domestic loans may be contracted by municipalities for infrastructure facilities and capital investment project necessary in the management of coastal resources.
5. Credit Financing Schemes –
   a. Bond Flotation. Section 299 of the Local Government Code authorizes municipalities to issue bonds, debentures, securities, collateral, notes and other obligations to finance self-liquidating, income-producing development or livelihood projects pursuant to the priorities established in the approved local development plan or the public investment program. LGUs may avail of this scheme to finance self-liquidating, income-producing development or livelihood projects on CRM. These projects must be incorporated in the municipal development plan and public investment program.
   b. Public Infrastructure Projects by the Private Sector. Section 302 of the Local Government Code permits municipalities to enter into contracts with any duly prequalified individual contractor, for the financing, construction, operation and maintenance of any financially viable infrastructure facilities, under the build-operate-transfer agreement including infrastructure facilities needed for the effective management of coastal resources.

6. Income from Development Enterprises and Inter-LGU Cooperation –
   a. Development Enterprises. Local governments may incorporate development enterprises. These corporations (where income from investments may be derived) may be created to assume projects and programs on the management of coastal resources. These enterprises may be referred to as quasi-municipal corporation or those corporations created by local governments for a specific governmental or proprietary purpose. Even if there is no law specifically authorizing local governments to incorporate enterprises, local governments may still do so pursuant to their broad revenue-raising powers.
   b. Inter-LGU Cooperation. LGUs may, through appropriate ordinances, group themselves, consolidate or coordinate their efforts, services and resources for purposes commonly beneficial to them (Section 33 of the Local Government Code). In support of such undertakings, the LGUs involved may, upon approval by the Sanggunian concerned after a public hearing conducted for the purpose, contribute funds, real estate, equipment, and other kinds of property and appoint or assign personnel under such terms and conditions as may be agreed upon by the participating local units through Memoranda of Agreement. Income may be derived from such undertakings. Participating or contracting municipalities may undertake joint projects on CRM and derive income from such projects.

      Such undertakings may be recognized by the State or the President, which may legally entitle LGUs to some form of national support. In the case of Metro Naga Development Council, an executive order was issued by then President Fidel Ramos recognizing the Council. As a consequence of this recognition, national funds were transferred to finance the Council's projects. From a quasi-municipal corporation, Metro Naga was transformed to a quasi-corporation (created by the State to perform a governmental purpose).

7. Revenue Generation from Water Use Zones — Local governments may apply taxes, fees or other charges for the use of municipal waters. These include:

a. Fees for registration of municipal fishers
b. Fees for license to fish
c. Fees for license to operate municipal fishing boats
d. Fees for license for municipal fishing gears
e. Fees for the management, utilization and exploitation of coastal resources, including marine sanctuary entrance fees, dive fees, etc.
f. Fines imposed on violators of fisheries and related laws
g. Fishery charges such as rentals for mariculture.
h. Taxes on income derived from sustainable use of resources in the multiple use zones.

As in land use zones, municipal water use plans must be developed identifying zones for strict protection (no take zones), sustainable use (limited harvest), and multiple use zones. An appropriate system of taxes, fees, and other charges must be developed depending on the use designated for each zone. The Philippine Fisheries Code of 1998 provides that fees for fishery activity in municipal waters should be determined by the LGU in consultation with the Fisheries and Aquatic Resources Management Councils (FARMCs). Primary uses of municipal waters that may serve as a source of revenue for CRM programs of the LGU may include fishing, mariculture and tourism. The FARMCs may also recommend the appropriate license fees to be imposed.

Few LGUs currently apply taxes, fees or other charges to the use of municipal waters. This is due to the lack of an established CRM plan that zones municipal water use and a tax or fee structure that can apply the relevant economic rent. Generally, the computation of fees is based on the cost of administering the procedure and the cost of conducting surveillance to ensure compliance. Taxes are computed according to the formula prescribed by the Local Government Code. Subsistence fishers (those earning P50,000 and below or the poverty line defined by the National and Economic Development Authority (NEDA), whichever is higher) are tax-exempt.

Rentals should be computed based not only on the socio-political context in which the fishery is operating but also on the total rent generated and the profitability of the fishery. In considering the relative proportion of rent which accrues to the LGU and that which is retained by operators of fishery as profit, an important consideration is to ensure that the fishery remains sufficiently profitable for the operators to encourage reinvestment of profits when required.

Admittedly, it is not easy to assign a measurable, monetary value to a particular resource, product or activity. This is because the "value" of natural resources includes not only the market goods they produce, but also the services and benefits they provide, which are often difficult to measure economically. There are, however, some resource valuation techniques that planners can use to determine how much fees, taxes or rentals should be charged for the use of coastal resources. The most important of these techniques are described below:

1. Conventional or direct valuation methods – these are used when changes in production or productive capacity of a certain good or service can be measured. Here, WTP is taken to equal market price. Surrogate prices and opportunity costs are used in lieu of market prices when non-competitive markets exist.
2. Indirect or hedonic market methods – these involve estimation of environmental functions and indirect economic goods using surrogate prices and construction of hypothetical markets. This technique is often called surrogate price technique because the price of market commodities is "borrowed."
3. Contingent valuation or methods using surveys to determine potential expenditures or WTP – these determine WTP or willingness-to-accept of individuals for certain environmental goods/services which are not priced. These techniques are also categorized under "constructed or hypothetical" markets, because questions posed regarding some environmental attributes presume that such a market exists.

The annual revenues of coastal resources in a hypothetical bay and the associated costs of management are shown in the table below. The amounts assume a healthy, natural system without major destruction or polluting influences.. The analysis also assumes that all revenues are derived from "management", which means that without management, revenues would be significantly less or zero. In reality, management is not responsible for all revenues but only an incremental portion dependent on management efforts that prevent degradation and destruction. But this assumption does not make a large difference in the result since without any management, revenues will eventually approach zero.

Annual revenues (values) of coastal resources in a hypothetical bay* and the associated costs of management.

ANNUAL REVENUES		
Resources	**Area** (km^2)	**Potential annual revenue**** (in US$)
Coral reefs	5	250,000
Fisheries		90,000
Tourism		75,000
Shoreline protection		60,000
Biodiversity		25,000
Mangrove forest	1	120,000
Fisheries		50,000
Wood		10,000
Shoreline protection and other contributions***		60,000
Open-water fisheries not dependent on either reefs or mangroves	10	10,000
Total		**380,000** (P15.2 million)
ANNUAL COST OF MANAGEMENT		
Staff for community level work (2 persons)		9,000
Training		5,000
Sanctuary maintenance		6,000
Patrol boat and operation		10,000
Information dissemination		2,000
Other		2,000
Total		**US$34,000** (P1.36 million[a])

[a]US$1 = 40 pesos in 1998

*Assumes a healthy, natural system without major destructive or polluting influences as shown in Figure 6.1.

**This analysis assumes that all revenues are derived from "management" which means that without management revenues would be significantly less or zero. In reality, management is not responsible for all revenues but only an incremental portion dependent on management efforts that prevent degradation and destruction. But this assumption does not make a large difference in the result since without any management, revenues will eventually approach zero.

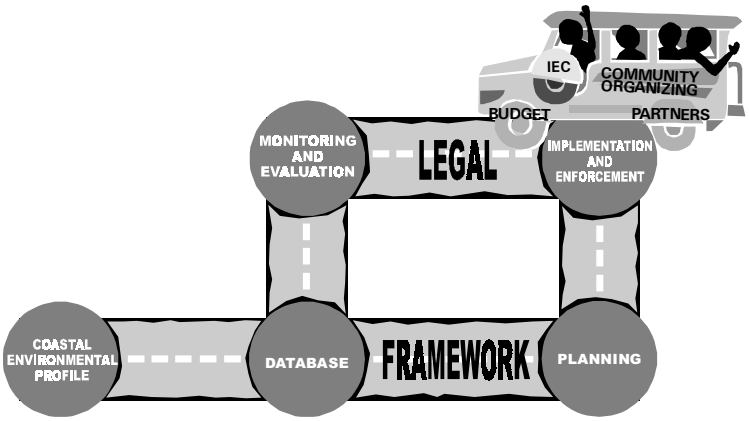
***This figure is a small portion of the estimates by Costanza et al.[35] for shoreline protection, recreation and habitat which has not been estimated for Philippine mangroves.

Source: The Values of Philippine Coastal Resources: Why Protection and Management are Critical. A.T. White and A.C. Trinidad

THE CRM PROCESS

CRM Implementation and Enforcement

Coastal Law Enforcement



The enforcement of laws protecting coastal resources and waters refers mainly to regulation strategies and activities undertaken to ensure that coastal resources and waters are protected and the boundaries of municipal waters are applied as prescribed by law.

To regulate fishing and prevent overfishing, access to fishery resources must be regulated. In the order of priorities prescribed by law, municipal fishers are given the exclusive right to fish in the 0-10 km zone, and preferential if not the exclusive right to fish within 10.1-15 km from the shore in the waters of the municipality where they reside. To protect the right of these fishers, it is important for municipal LGUs to have the capability of enforcing, and to consistently enforce, its municipal water boundaries and protect its coastal resources.

There are several agencies responsible for coastal law enforcement. These are:

1. Philippine National Police-Maritime Command – a maritime police unit within the Philippine National Police which has the authority to perform all police functions "over Philippine territorial waters and rivers, coastal areas from the shoreline to one mile inland to include ports and harbors and small islands of two miles in length or diameter with less than 1,000 population."
2. Philippine Coast Guard – a civilian agency under the Department of Transportation and Communication mandated to promote safety at sea, assist in the implementation of laws in the high seas and waters under Philippine jurisdiction, safeguard marine resources and environment, and enforce pollution laws. The Philippine Coast Guard is also mandated to enforce coastal and fisheries law under the Philippine Fisheries Code.
3. Department of Agriculture-Bureau of Fisheries and Aquatic Resources – mandated to "enforce all laws, formulate and enforce all rules and regulations governing the conservation and management of fishery resources, except in municipal waters, and to settle conflicts of resource use and allocation in consultation with the NFARMC, LGUs and local FARMCs."
4. Department of Environment and Natural Resources – exercises jurisdiction over protected areas and has the authority to enforce relevant laws in these areas.
5. Philippine Navy – a major unit of the Department of National Defense mandated to promote maritime security as an armed force as well as assist in the enforcement of fishery laws and laws in the high seas and waters under Philippine jurisdiction.
6. Bantay Dagat – a citizens' sea patrol organized to deputized by LGUs to monitor fishing activities and enforce coastal laws within their municipal waters. The Bantay Dagat's

authority to apprehend violators without prior consent or knowledge of the Philippine Coast Guard is based on a provision on citizen's arrest under the Rules on Criminal Procedure.

Boundaries of the municipal waters should be delineated by municipal ordinance according to the definition provided by the Philippine Fisheries Code of 1998:

"Municipal waters include not only streams, lakes, inland bodies of water and tidal waters within the municipality which are not included within the protected areas defined under Republic Act No. 7586 (The NIPAS Law), public forest, timber lands, forest reserves or fishery reserves, but also marine waters included between two (2) 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 fifteen (15) kilometers from such coastline. Where two (2) municipalities are so situated on opposite shores that there is less than thirty (30) kilometers of marine waters between them, the third line shall be equally distant from opposite shores of the respective municipalities."

If the LGU does not have the expertise to determine the exact coordinates bordering its municipal waters, it can seek assistance from the Department of Environment and Natural Resources (DENR), National Mapping and Resource Information Authority (NAMRIA), Philippine Coast Guard, Philippine Navy, private companies engaged in survey and mapping services, or universities.

The Fisheries Code also states that the "municipal/city government, in consultation with the FARMC, shall be responsible for the management, conservation, development, protection, utilization, and disposition of all fish and fishery/aquatic resources within their respective municipal waters." To accomplish this task, the "municipal/city government may, in consultation with the FARMC, enact appropriate ordinances… in accordance with the National Fisheries Policy." Such ordinances should be reviewed by the Sangguniang Panlalawigan of the province which has jurisdiction over the municipality or city.

Ordinances enacted by the municipal/city council should be enforced by the LGUs in the municipality/city with jurisdiction over the waters covered by such ordinances. It is the responsibility of the LGU to establish functional mechanisms, such as the Bantay Dagat, for law enforcement.

In the case of bays which straddle several municipalities, cities or provinces, however, management should be undertaken in an integrated manner and should not be based on political subdivision of municipal waters. This will facilitate the management of these bays as single resource systems. The Fisheries Code states that "LGUs which share or border such resources may group themselves and coordinate with each other to achieve the objectives of integrated fishery resource management."

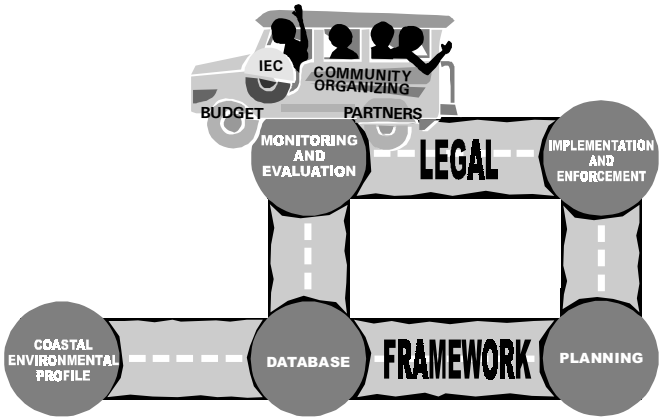
All fishery-related activities in municipal waters should be utilized by municipal fishers who are listed in the registry of municipal fisherfolk of the municipality with jurisdiction over such waters. Through the enactment of an ordinance, however, the municipal or city government may authorize and permit small and medium commercial fishing vessels to operate within the 10.1-15 km area from the shoreline in municipal waters, on the following conditions:

1. no commercial fishing in municipal waters less than 7 fathoms deep as certified by an appropriate agency
2. fishing activities utilizing methods and gears that are determined to be consistent with national policies set by the Department of Agriculture
3. prior consultation, through public hearing, with the M/CFARMC has been conducted
4. applicant vessel as well as the shipowner, employer, captain and crew have been certified by the appropriate agency as not having violated the Fisheries Code, environmental laws and related laws

Such authorization or permit cannot be granted for fishing in bays determined to be in an environmentally critical condition and during a closed season.

Boundary disputes between coastal municipalities should be resolved at the provincial level by the Sangguniang Panlalawigan; the decision of the Sangguniang Panlalawigan may be elevated to the Regional Trial Court.

THE CRM PROCESS
Monitoring and Evaluation
Overview



Monitoring is a surveillance system, used by those responsible for a project, to see that everything goes as nearly as possible according to plan, and that resources are not wasted. For CRM purposes, this system provides necessary information about the coastal systems, socio-economic and legal environment in the management area to determine the progress and success of, and identify potential gaps in, CRM plan implementation. The goal for a monitoring program is to detect, with some assurance of reliability, whether significant, environmental, social or economic changes have occurred after intervention.

Basic performance measurement data provided by the monitoring process does not tell CRM planners and implementors why certain results are being achieved or not. To get this information, which is often crucial for decision-making, evaluations must be conducted so that assumptions, cause-and-effect linkages in the CRM program and the emergence of new constraints can be tested. Evaluation involves the review of past conditions prior to plan implementation, assessment of the current situation during implementation and making recommendations to influence future scenarios based on actual experience and conditions. All evaluation studies seek to assess program performance, although they differ markedly in the evaluative criteria used. Two basic types of evaluation can be distinguished: one type focuses on policy-making processes (such as the number of permits issued) and the other type focuses on the eventual outcomes (such as improvement in water quality). Of course, the evaluation may measure both processes and outcomes.

Monitoring and evaluation provide the following:
1. valuable information on program performance
2. analysis of the factors affecting success or failure
3. evaluation of the relevance of concepts, models or assumptions
4. management tool to improve implementors' efficiency and effectiveness
5. an educational process for implementors' self-awareness and understanding of the development process
6. a review process for the revision of the CRM plan

CRM monitoring and evaluation consider implementation at three levels:
1. Operation and performance – the execution of the CRM plan
2. Effects – the outcome of projects and other activities
3. Impacts – the influence on community development

Monitoring is accomplished based on the following basic outline:
1. Identification of expected performance
2. Assessment and/or measurement of the actual performance of the program
3. Establishment of performance variances (e.g. shortcomings or excesses)
4. Procedure for communicating variances that exceed pre-established limits to the appropriate management or enforcing and implementing authorities

Evaluation requires that the following conditions are met before the implementation of the CRM program:
1. an adequate post-implementation time period to allow the program to reach maturity
2. the creation of a set of indicators for measuring performance

A monitoring and evaluation plan must be developed and included in the overall CRM plan. The first step in developing such plan is to seek appropriate indicators for the CRM program's particular objectives. The following guidelines may be used for choosing indicators:
1. Indicators must measure results.
2. Direct indicators should be used whenever possible. Proxy indicators may however be used when it is not practical to gather data for a direct indicator on a regular and timely basis, or when the proxy indicator is a more reliable and valid indicator than an available but flawed direct measure.
3. The indicator should be defined in precise and objective terms so it is easily understood by a wide audience and is not open to varying interpretations.
4. An indicator should measure only one phenomenon so it can be clearly understood and useful for decision-makers.
5. In most cases, quantitative indicators are preferred for performance monitoring, but sometimes, qualitative indicators are acceptable or even preferred.
6. Indicators should be disaggregated whenever disaggregated information is necessary to track an adjust project performance.
7. Indicators should be identified for which data are regularly available and/or permit cost-effective collection.
8. The data should be understandable by its target audience, and it should be possible to establish criteria to distinguish acceptable from unacceptable progress.

A monitoring and evaluation plan may be implemented as follows:
1. Encourage everyone to participate. Use active rather than passive, practical rather than theoretical methods. Begin with an activity which is of interest to all. Use small groups. Provide meaningful data and information. Facilitate access to more information. Conscientize the group. Engage effective group organizers, leaders, teachers and facilitators.
2. Collect baseline information on the situation in the coastal area before the project starts. The baseline measure establishes the reference point for the start of the plan implementation period. In some cases, planners may have to go back several years to correctly portray the context in which progress will be made.
3. Build on participatory experience.
4. Initiate participatory monitoring and evaluation with a trained field worker for eventual turnover to project implementors. The field worker must exchange ideas and information with group members about the elements of the monitoring and evaluation system, how this can be done, who should be responsible for each part, to whom data might be available, how the data will be used, where the system will be physically based, and when to begin and end the process.
5. Use various tools for collecting information. The main sources of information should be identified and data extracted through surveys, visual checking, accurate measurements, discussion and meetings, questionnaire.
6. Record information on what was agreed and what was done. To be useful, records should be short but informative, and may take the form of minutes of meetings, activities record,

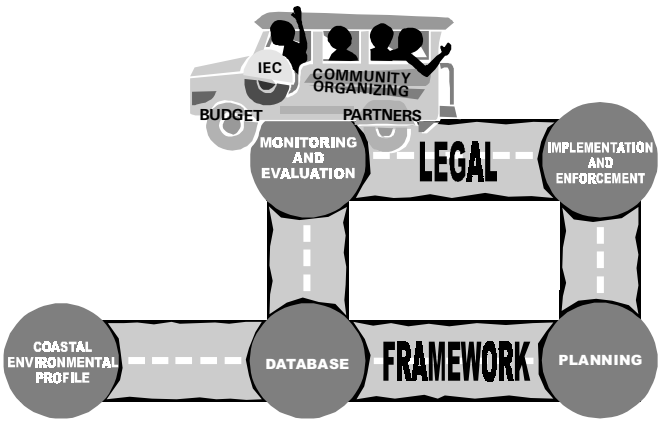
personal diaries, survey forms, accounts, financial reports, timesheets, back-to-office report, summary tables.

7. Record all monitoring data in a database, such as the Municipal Coastal Database (see *Database – Municipal Coastal Database*), to help in evaluation and reporting.
8. Prepare reports for implementors' and external use using the following guidelines:

a. Group members are the rightful owners and primary users of the data
b. Group members may need help at first in the preparation of reports
c. Type of presentation will depend on intended users; for the group, simple tables and schematic presentations may be the most useful
d. Use of a series of charts, graphs, numbers or pictures may be needed to show trends over time.

9. Measure program performance against the specific targets identified in the plan for each measurement interval (typically one year) of the program.

THE CRM PROCESS
Monitoring and Evaluation
CRM Plan Review and Revision



The review and revision of a CRM plan is a specific activity under the monitoring and evaluation phase of the CRM process. Plan review is an analytical activity that scrutinizes whether the program and projects embodied in the plan delivered the expected outcomes, both effects and impacts. It makes use of the information generated in monitoring by comparing the information obtained during and after plan implementation with the baseline data. It essentially answers the question: Is what was expected to happen happening?

Reviewing the plan is essential after a year or so of implementation. It helps the implementor see if the programs, projects and strategies embodied in the plan are still relevant and applicable and can still address the issues and problems in the area. It also helps the implementor determine if there is a need to revise the plan to meet the current needs of the locality.

Listed below are some guidelines for revising and reviewing CRM plans:

1. Encourage the participation of the coastal community (stakeholders) in the review and revision of the plan.
   - Use active rather than passive, and practical rather than theoretical methods. Involve all stakeholders and assign tasks which ensure that everyone is given the opportunity to take part in the process.
   - Begin with an activity which is of interest to all
   - Use small groups for focus discussions
   - Provide meaningful data and information
   - Facilitate access to additional information
2. Baseline information on the coastal area is needed to compare what the situation was before the implementation of the plan and how it has developed since the plan was implemented.
3. Build on participatory experience to meet the groups' needs, monitoring and evaluating the relevance, efficiency, effectiveness and impact of their inputs and activities.
4. Different tools and methodologies can be used in reviewing the plan. These include:
   - surveys
   - visual checking
   - accurate measurements
   - discussions and meetings
   - questionnaire

5. A technical working group, composed of representatives of major stakeholders, can be formed to conduct community consultations to ensure that suggestions and insights of the people are properly addressed. The working group shall prepare the revised plan and submit to the Local Chief Executive, Local Development Council and Local Legislative Council for appropriate action.