



The Philippine archipelago is endowed with ecologically diverse and economically important coastal resources such as mangroves, estuarine areas, and coral reefs, among others. Managed properly, these resources can benefit the Philippine economy in a sustained way.

## 2.1 CRM ISSUES

Mangrove forests and their associated flora and fauna export nutrients that support part of the food chain; they are also important breeding and nursery grounds for many species of fish and shrimps. Estuarine areas and seagrass beds are important nursery and grazing grounds for many species of aquatic organisms that are both ecologically and economically important. The country's coral reefs, which cover approximately 27,000 square kilometers (sq km) and nurture about 488 different coral species, account for about 30% of the country's total fish production (ADB 1993). More importantly, the reefs serve as an important resource base for sustained food production: a healthy coral reef ecosystem can produce an estimated 20 tons or more of fish and other edible marine products per sq km per year. The sustainable catch from a good reef over 10 years is about 200 tons, while a destroyed reef will yield only about 72 tons over the same period (White and Savina 1987; White 1987; White 1989). Moreover, in many coastal areas, the coral reefs, beaches, and clear waters support a growing tourism industry that provide livelihood to many coastal dwellers.

Today, our shallow shelf areas, which encompass a total of 18.4 million hectares (ha), support a fishing industry that accounts for about 4.3 % of the country's Gross National Product (GNP) and provides employment to more than one million people (BFAR 1991). Fish and other marine products supply up to 70% of the total animal protein intake and 30% of the total protein intake of Filipinos. Clearly, maintaining fisheries productivity is vital to the country's food security. Projections indicate that even at a slower rate of population growth, the country will have to produce an additional 719,000 tons of fish by the year 2010 in order to support a per capita consumption equal to the 1994 level (Bernacsek 1996).

From both the economic and environmental standpoints, it is obvious that coastal resources are important assets that should be managed properly by the LGUs and their communities. Chapter 28 of the UN's Agenda 21 (Local Authorities) highlights the vital role of the LGUs in educating the public and mobilizing people to help in the effort towards the sustainable development of the coastal zone. The LGC likewise emphasizes this role, saying that LGUs share with the national government the responsibility in the management and maintenance of the ecological balance within their respective jurisdictions. After all, among government units, it is the LGU that is closest to the people and has the authority to shape and reshape policies on resource utilization.

It is therefore essential for LGUs to address, using holistic and best practices available, CRM issues that are increasingly being experienced in coastal areas at present. These include:

- ◆ **Declining fisheries productivity due to overharvesting and loss of habitats.** Per capita consumption of fish





has declined from 37 kilograms in 1990 to 28.5 kg in 1994, a trend attributed to the diminishing supply of fish. Although the country's current fish production of 2.69 million tons represents a 17% incremental growth since 1984, a large part of this has been attained at the expense of sustained yield levels as shown by the steady decline in the contribution of municipal fisheries to total fisheries output. The decline in catch rates has not been arrested despite the fact that, under the LGC, municipal waters have been expanded to include marine waters within a distance of 15 km from the shorelines. While there are many reasons for such decline, the open access nature of resource exploitation is considered to be a primary cause. Over the last ten years, even as catch rates diminished, the open access nature of fisheries caused a doubling of fishing effort, a situation exacerbated by the employment of more efficient, but often irresponsible and destructive, fishing methods.

- ◆ **Rapid population growth and migration to coastal areas.** The coastal areas are under increasing pressure from rapid population growth (2.4% per annum (PCSD)) and the consequent concentration of development activities in the coastal strip. With almost 60 % of the population living within coastal areas — that is, in 815 coastal and municipalities and 25 cities (ADB 1993; Tan 1993) — the marine environment has been increasingly threatened by pollution, reclamation and conversion of fragile habitats, and unsustainable consumption practices.
- ◆ **Increasing environmental damage.** Overfishing, the use of destructive fishing practices, and habitat conversion have resulted in the alarming degradation of coastal areas. With more than 70% of mangrove forests already converted for aquaculture, reclaimed for other land uses, or logged over, only about 150,000 ha of the original mangrove cover of 450,000 ha in 1918 remain (DENR 1988); of these, only 6 % are in excellent condition (Tan 1993). Coral reefs have been severely reduced — over 70 % have reportedly been damaged and only 5 % of the remaining reefs are in excellent condition (Gomez *et al*, 1994). Other benthic habitats are being destroyed or altered by siltation from denuded upland forests where loose topsoil is washed down to the coasts by rainwater or through river systems, which also carry significant amounts of pollutants from industrial and domestic sources. In particular, pollution from point sources, which in many areas is associated with the outflow of untreated domestic sewage, causes seawater quality to deteriorate and over time may adversely affect seafood quality and, directly or indirectly, human health as well. This alarming situation is manifested by the increasing frequency of the red tide in a growing number of semi-enclosed bays.

***Low level of awareness of the real causes of environmental problems and the effective approaches to institutionalizing sustainable use practices.*** Public awareness of environmental problems, their real causes and



solutions remains low in many areas. Moreover, the interrelationships between upland and coastal ecosystems are not sufficiently considered in development planning. While the devolution of primary resource management functions to local governments is considered to be a milestone for the application of community-based management regimes, most of the coastal communities remain institutionally deficient in the area of CRM, and political will to institute reforms is weak. Many institutional issues are thus associated with ineffective policy and jurisdictional capacity at the local level and, in general, with poor enforcement of fishery and environmental laws.

**Widespread poverty in the coastal areas.** Most fisher families are counted among the poorest of the poor. Lacking alternative sources of income, skills and capital, these families have made fisheries their ‘livelihood of last resort’. This situation, combined with the declining productivity of coastal waters, has made it more difficult for LGUs to change the open access regime in coastal fisheries.

Clearly, policy and strategy reforms are critically needed to address the many CRM problems LGUs are facing. Those activities that make these reforms possible constitute the basic elements of CRM.

CRM — also referred to in various quarters as ‘coastal management’, ‘coastal zone management’, ‘coastal area management’, and ‘integrated coastal management’ — has been practiced in the Philippines for nearly two decades. Attempts to arrest declining fish yields, the loss of mangrove forests, and the degradation of coral reefs have been made, both on a small and focused level and on a macro and integrated scale. White and Lopez (1991) give us this broad definition of the concept:

*“Integrated coastal management (ICM) comprises those activities that achieve sustainable use and management of economically and ecologically valuable resources in the coastal areas which consider interaction among and within resource systems as well as those of humans and their environment.”*

In specific terms, CRM may be defined as the process of planning, implementing and monitoring sustainable use of coastal resources through participation, collective action and sound decision-making. The CRM plan is formulated through a multi-sectoral and interdisciplinary consultative process aimed at identifying and prioritizing resource management issues, fostering consensus, and generating support for the CRM program. The draft plan is then reinforced by ecological studies and investigations that define the cause-and-effect relationship of identified issues,

## 2.2 CRM PROCESSES AND FEATURES



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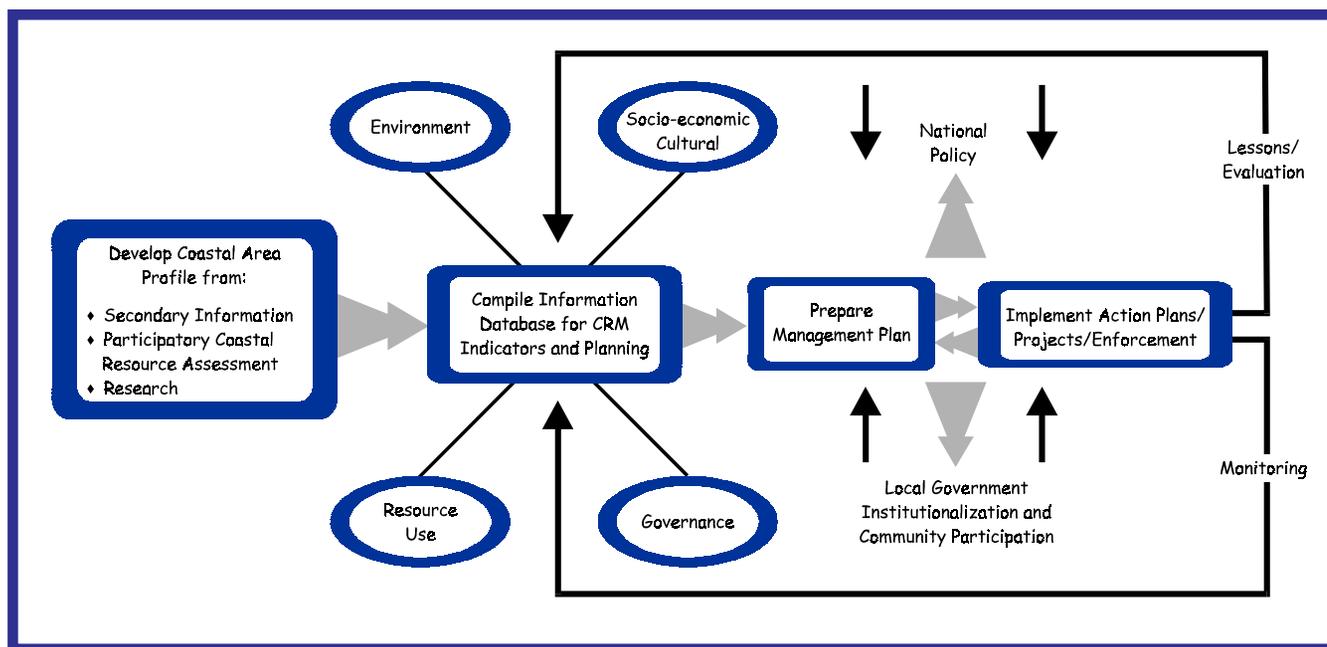
## Background on Coastal Resource Management



spell out strategic interventions, identify responsibilities for implementation, and provide scientific explanations of the CRM actions undertaken (Figure 2-1). In all these, the participation of the community in decision-making is deemed essential.

CRM offers a number of advantages over traditional forms of development planning. *The International Workshop on Integrated Coastal Management in Tropical Developing Countries* (IWICM 1996) cited four such advantages:

**FIGURE 2-1.**  
**PARTICIPATORY PLANNING AND**  
**IMPLEMENTATION PROCESS**  
(White and Lopez 1991).



- ◆ CRM promotes understanding of the natural resource systems which are unique to the coastal areas and their sustainability within the context of a wide variety of human activities.
- ◆ It optimizes the multiple use of coastal resource systems through the integration of ecological, social, and



economic information.

- ◆ It promotes interdisciplinary approaches and intersectoral cooperation and coordination to address complex development issues and formulate integrated strategies for the expansion and diversification of economic activities.
- ◆ It helps governments to improve the efficiency and effectivity of capital investment and natural and human resources in achieving economic, social, and environmental objectives as well as in meeting international obligations concerning the coastal and marine environment.

Efforts in coastal management in the Philippines date as far back as the early 1970s when several projects involving the establishment and management of marine sanctuaries were implemented in the Visayas through Silliman University. Over a span of more than two decades, integrated CRM evolved from the application of various resource management models, namely centralized, community-based, and collaborative coastal management (Christie and White, 1997). While many of the coastal management projects so far implemented were driven by donor agency funds, the application of participatory approaches and involvement of NGAs has contributed significantly to community empowerment on resource management.

The coastal resource issues being addressed today are basically the same issues that triggered management interventions years ago. Significant gains have been documented in some aspects of resource management and these have essentially enabled some fisheries in certain areas to recuperate. Other issues, however, particularly those associated with changing the open access regime in coastal fisheries, remain largely intractable in the light of pervasive poverty in coastal areas. The devolution of primary national government responsibilities in 1991 has reinforced community-based coastal management on the one hand, but has created institutional vacuums as well.

What is evident is that awareness of CRM's importance has been developed over a broad multi-sectoral base, and CRM is gaining a foothold in an increasing number of localities. Substantial work still has to be undertaken, chiefly in the area of capability-building and developing more effective interdisciplinary approaches to coastal resource research and management. Nonetheless, successful examples of CRM programs are demonstrating both economic and environmental benefits in site-specific areas and projects. These include:

### 2.3 CRM EXPERIENCE IN THE PHILIPPINES: LESSONS LEARNED



## Background on Coastal Resource Management



### 1. THE CENTRAL VISAYAS REGIONAL PROJECT (CVRP) I

The CVRP was a pilot project in integrated community-based rural development. One of its components was watershed management, including nearshore fisheries development, which implemented a coastal resource management program in the provinces of Negros Oriental, Cebu, Bohol, and Siquijor from 1984 to 1992. The interventions included mangrove reforestation, coral reef protection and marine sanctuary establishment, artificial reef (AR) and fish aggregating device (FAD) installation, and mariculture. The Silliman University Marine Laboratory (SUMML) assessed the project from 1995 to 1996 to determine the status of the project's interventions and their impact on the ecosystem and the community.

### 2. THE LINGAYEN GULF COASTAL AREA MANAGEMENT PROGRAM (LGCAMP)

This program started in 1986 under the ASEAN CRMP which received funding support from USAID and member governments of the ASEAN. Comprehensive resource and ecological assessments were undertaken in the gulf for three years, after which a coastal area management plan was evolved. The implementation of the Lingayen Gulf Coastal Area Management Plan (LGCAMP) is presently being managed and coordinated by a Technical Secretariat created within the regional office of the National Economic and Development Authority (NEDA). The LGCAMP is composed of 20 projects grouped under 8 programs covering, among others, fisheries management, rehabilitation of critical habitats, coastal zonation, and alternative livelihood development. In 1993, Lingayen Gulf was declared as an environmentally critical area through Proclamation 156. The Lingayen Gulf Coastal Area Management Commission (LGCAMC) was later created to coordinate the management of the area.

### 3. THE FISHERIES SECTOR PROGRAM (FSP)

The largest, and perhaps the most comprehensive, CRM program ever to be launched in the country is the Department of Agriculture's (DA) FSP. Implemented from 1990 to 1996 under a US \$180 million funding from the Asian Development Bank (ADB) and Overseas Economic Cooperation Fund (OECF) of Japan, the FSP was a policy-based program loan with CRM as the centerpiece program in 12 priority bays. With its multi-sectoral and multidisciplinary



design, the FSP was implemented by a huge network of institutions that included 6 NGAs, 9 regional offices of the DA, 8 research institutions, 11 NGOs, and at least 3 banking institutions, all supervised by a program management office.

The FSP's objectives were:

- ◆ Regeneration of coastal resources, rehabilitation of the coastal environment, and the alleviation of poverty among municipal fishermen through the diversification of their sources of livelihood
- ◆ Intensification of aquaculture productivity within ecological limits
- ◆ Inducement of commercial fishing away from overfished nearshore waters and into the EEZ

By and large, the FSP's policy reforms have succeeded in reshaping the current policy directions of government in the management of fishery resources. This is clearly manifested in BFAR's Medium Term Fisheries Development and Management Plan where the same policy framework has been adopted. It is particularly interesting to note that the passage of the LGC has actually reinforced these same policy directions and now constitute the foundation for legislative reforms at the local level.

The implementation of these policies into more concrete strategies has been carried out under the FSP through a package of interventions:

- ◆ Establishment of 22 fish sanctuaries
- ◆ Organization of more than 1,000 fishermen associations to prepare them for core group resource management
- ◆ Conduct of rapid resource assessments and resource and ecological studies that became the basis for determining sustainable catch levels
- ◆ Redirection of research and extension work towards CRM;
- ◆ Enactment of municipal fishery ordinances in most of the municipalities covered by the program

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- ◆ Establishment of a credit seed fund for alternative livelihood of organized municipal fisherfolk
- ◆ Rehabilitation of mangrove swamp in 6,000 ha of degraded coastal forests
- ◆ Strengthening of fishery law enforcement mechanisms and capabilities

A detailed review of the accomplishments and impacts of the FSP conducted by PRIMEX in 1996 brought to fore some valuable lessons from the program's implementation which have significant bearing on the establishment of a tangible and stronger jurisdictional framework for CRM.

Despite having initiated valuable policy reforms and raised CRM awareness and support over a wide area, the FSP has not completed the institutionalization of sustainable resource-use practices in its bay areas. Moreover, LGU commitments to pursue CRM based on strategies that the program initiated remains weak, specially after funding support was withdrawn. While increases in the average catch of municipal fishermen have been noted in many areas, the issue of fishing effort reduction remains intractable and the open access regime persists in the bay areas. The legislative mechanisms to correct the situation likewise remain largely weak.

#### 4. OTHER CRM AND CRM-ASSOCIATED PROJECTS

Starting 1993, numerous CRM and CRM-associated projects have been initiated in many parts of the country by a host of institutions. These include:

- ◆ DA-BFAR's Medium Term Fisheries Development and Management Plan
- ◆ Coastal Environment Program (CEP) of the DENR, which is involved in resource assessment; community organizing; mangrove reforestation; Information, Education, and Communication (IEC) campaigns; alternative livelihood; and the establishment of protected seascapes.
- ◆ National Aquatic Resources Research and Development Systems (NARRDS, 1993 to 1998) of the Philippine Council for Aquatic and Marine Research and Development (PCAMRD) which focuses on CRM and several CRM-related projects that have been implemented by the agency. A notable sub-project is the development of a CRM training module for LGUs.
- ◆ The University of the Philippines Marine Science Institute (UP-MSI) community-based CRM program in Bolinao, Pangasinan. Using its vast experience and data bank on the state of the marine resources of the



municipality, UP-MSI has succeeded in focusing community attention on the various resource management issues in the coastal area of Bolinao. This was culminated in the recent disapproval of the establishment of a cement factory in the area.

In addition, many LGUs are in the process of instituting marine resource rehabilitation projects, the most common of which is the establishment of artificial reefs and fish sanctuaries within their respective territorial waters.

These various efforts are viewed as a positive development towards a broader sustainable coastal management. However, the seemingly unisectoral approaches applied in these various projects suggest that integrated planning mechanisms are flawed and that a jurisdictional framework to streamline and strengthen inter-agency collaboration is necessary to maximize investments in CRM.

### 5. MAJOR LESSONS LEARNED FROM CRM PROGRAMS

Significant experiences and lessons have been generated from the successes and failures of past CRM programs in the Philippines. Because the same problems in sustainable management of coastal resources confront LGUs at present, these lessons serve as valuable considerations in developing CRM programs at the local level and in sustaining the management regimes that are to be introduced.



# 2

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### Box 2-1. MAJOR LESSONS LEARNED FROM CRM PROGRAMS

- ◆ Baseline information is a prerequisite to plan for CRM and to do comparative analyses of 'with' and 'without' project scenarios.
- ◆ CRM plans which build on good information included in environmental profiles that evolve with the planning process are more likely to succeed.
- ◆ Quality technical expertise is a key determinant of overall success.
- ◆ The sustainability of CRM interventions is essential for success but cannot always be determined without testing in the actual situation.
- ◆ An integrated planning process can bring together the divergent efforts of different government and non-government organizations involved in management.
- ◆ Participation at all levels is a prerequisite to the acceptance and implementation of a CRM plan.
- ◆ Real and practical results at the field level such as improved income or fish catch is one certain sustaining force for CRM at the community level.
- ◆ The sustainability of CRM requires continuing support from government, NGOs and the private sector.
- ◆ Political will must always be harnessed to start and to sustain projects.