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COASTAL MANAGEMENT IN ASIA: ARE DONOR-ASSISTED PROGRAMS SUSTAINABLE AND BENEFICIAL?[1]

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INTRODUCTION

Most human endeavors depend on a stable and sustainable base of natural resources. Marine and coastal environments harbor such resources. Thus, there is value in maintaining these environments in a state capable of supporting sustainable development, which "allows the present generation to enjoy economic growth and improved standards of living without compromising the ability of future generations to fulfill their economic needs and aspirations" (WCED 1987). To address this gap, this paper explores attempts to achieve sustainability in the use of coastal resources through several donor-assisted programs and projects in Asia. Several case studies are presented for analysis. One such program, in the Philippines, is developing plans and activities for "six learning areas." The other case study, of Sri Lanka, summarizes the national coastal zone management program of the last fifteen years. Tangible benefits and sustainability of these key donor-assisted programs are explored and the meaning of sustainable development in relation to coastal management programs is addressed.

STATUS OF RESOURCES AND MANAGEMENT

Southeast Asia is endowed with one of the world's most diverse and biologically productive marine environments (Polunin 1983; Morgan and Valencia 1983). The region is the center of the biogeographical area known as the lndo-west Pacific or the East Asian Seas. Most of the marine species in the Pacific Ocean, and to a large extent those found in the Indian Ocean, originated in this area. The region's diversity is associated with high primary productivity and high fishery yields. Indeed, the extensive tropical coastal ecosystems of coral reefs, dense mangrove forests, estuaries, and upwelling areas are capable of producing at least ten times as much organic matter per unit area per year as offshore waters (Whittaker 1975; Weidenbach et al 1983; White 1985a; McGinn 1998).

The list of marine products is long and the economic value large. Fish comprise the most apparent and economically valuable contribution of the seas and inshore reef and mangrove areas. In addition, shells, seaweeds, crustaceans, and echinoderms contribute to both local and national economies. Aside from direct products and use of ecosystems such as beaches and coral reefs for tourism, clean near-shore waters are essential for almost all natural productivity and human use. Thus, one of the largest resources associated with the coastal areas in the region are the relatively unpolluted waters (Morgan and Valencia 1983; White et al 1997).

The high ecological value of these coastal areas provides part of the explanation for the fact that over 70 percent of the population of Southeast Asia lives within fifty kilometers of the coast (Chua and White 1989). Furthermore, a large portion of this population is either directly or indirectly dependent on the ocean and coastal systems for livelihood and food. More than 60 percent of the animal protein consumed is derived from the sea, and about 10 percent of the total fish catch comes from coral reef areas (White 1987). On some small islands, up to 70 percent of the food and income for the population can be derived from the near-shore marine habitats (White and Savina 1987). Because of this reliance, management and protection of these resources are of growing concern among all countries in the region as dependencies become more crucial in times of increasing poverty among coastal communities (Chua and White 1989; Christie and White 1997).

Unfortunately, as in many parts of the world, the historical balance between resource production and human use has changed dramatically in the last twenty years. In much of Asia, grow-

ing populations and the related pressures to exploit natural resources are causing fish catches to decline, changes in composition of the catch, increasing use of destructive fishing methods, systematic destruction of vulnerable habitats such as mangrove forests, coral reefs, and seagrass beds, and increased conflicts of interest among coastal communities both among themselves and with national governments (Chua and White 1989; Gomez et al 1994; Silvestre and Pauly 1997; Nickerson 1998). Coastal development of industry, oil installations, mining sites, urban areas, tourism, agriculture, and aquaculture all require coastal land, water, and access to a beach or marine waters. Such developments also require adequate planning and consideration of environmental impacts, which are usually not taken into account.

SUSTAINABLE DEVELOPMENT AND COASTAL RESOURCE MANAGEMENT

Recent debate has refined the definition so that the current consensus is that sustainability "constitutes institutional and structural economic changes which allow for current improvement in societal welfare without foreclosing options for similar development for future generations" (Fallon and Chua 1990). Unfortunately, even this effort at practical definition provides little in the way of operational guidance but at least highlights the importance of intra-generational concerns in resource use.

For the benefit of coastal resource management, however, there is much specific research being conducted to supply information relevant to the sustainable use of a particular resource such as mangrove forests or coastal land for aquaculture. Coral reef fisheries, for example, have been sufficiently studied so that fish yields around coral reefs under particular environmental conditions and fishing effort can be predicted and set as objectives for management. Such information can lead to sustainable use of a reef fishery when applied correctly. Indeed, there are site-specific examples of sustainable use of a fishery resource that have benefited from fishery-related research and application (Alcala and Russ 1990; Nickerson 1998). Nevertheless, such successes constitute neither comprehensive programs nor examples of sustainable development, both of which are larger and more complicated problems (White et al 1997).

The widespread phenomena of over fishing is less a problem of poor law enforcement than one related to open-access fishing regimes, stagnant or declining economies, poverty, and a lack of alternative sources of income. Thus, some fisheries researchers suggest that narrowly defined problems are unlikely to beget solutions to over fishing. This realization indicates that appropriate solutions include a more holistic and integrated approach to resource and fisheries management than simply dealing with one site-specific fishery without considering the site's social, economic, cultural, and other environmental aspects. Based on increasing failures in the management of fisheries, as an example, a strong argument can be made for integrated and multidisciplinary management of the resource. This assertion can be carried even further when an assortment of related resources, such as those in a typical coastal zone in Asia, is the basis of management and sustainable use (or development) in question (Tobin and White 1992).

Drawing on poor fisheries management as an issue, the relative lack of successful policies for management in Asia indicates a focus on the relief of symptoms rather than addressing underlying causes (Silvestre and Pauly 1997). For example, banning the use of poisons to capture aquarium fish has been almost pointless in the Philippines and Indonesia (Barber and Pratt 1997). The practice continues unabated. In contrast, a potentially successful and sustainable program to stop the use of poisons might include a community development program, ongoing education, alterna-

tive sources of income and training for use of methods not dependent on poisons as has been orchestrated and documented in one community in Luzon, Philippines (Pajaro 1994). Such a program also requires supportive national laws and policies as well as their effective enforcement. Fisheries research and the resulting policy recommendations rarely go beyond the finding that it is bad to use poisons when capturing aquarium fish and possibly setting catch limits for certain species or fish communities. This is ironic given the complex array of factors which have created this situation in the first place.

Thus, even though specific research and policy formulation is needed, it must be integrated with a broad perspective on the overall problem of resource management. This broader approach is often referred to as "integrated coastal management" (ICM) or "coastal resource management" (CRM), which "comprises those activities which achieve sustainable use and management of the economically and ecologically valuable resources in coastal areas and which are considerate of interactions among and within resource systems and those of humans and their environment (White and Lopez 1991). Although this definition makes intuitive sense, there are still few tested examples of sustainable use of coastal resources and areas (Christie and White 1997). The few large, long-term coastal management efforts in Asia are mostly donor supported with local government counterpart. Several key programs supported by the United States and several other sources are analyzed below as case studies in ICM.

PAST PROGRAMS IN COASTAL MANAGEMENT

ASEAN-US Coastal Resources Management Project

In 1986, this project engaged in a variety of activities in the six ASEAN nations (now there are nine members) to promote coastal management through improved information flow and the design of site specific plans for one site in each country. The coastal resource management plans, although particular to each project site and government, had many similarities. The action plans typically covered the main coastal resource management issues of water quality control, fishery management, aquaculture management, mangrove and coastal forest zonation and management, land-use zonation, community mobilization, economic alternatives and tourism management (Chua and Scura 1992).

The planning processes undertaken in each country had a general format, which the project provided. Nevertheless, the processes diverged. One approach encouraged participation by people and organizations at the local level, where implementation would occur. This approach contrasts with a more active role for the national government in the planning process that provided fewer opportunities for public participation. Experience indicates, except possibly in Singapore and Brunei Darussalam, the importance of local participation as a variable that affects the long-term success of CRM where population pressures are high and the people are directly dependent on the resource base for their livelihoods.

The ASEAN-US project, so named because of its support from the United States Agency for International Development (USAID), completed management plans for sites in six countries in 1992, its last year of operation. The process was heavily weighed with research at the sites to develop an environmental profile based primarily on secondary information. The research process, although providing much useful baseline data for monitoring of eventual management results and for plan design, did not sufficiently involve local participation at the selected sites. All the research

activities generated interest and raised public awareness in certain instances, but it did not lead directly to management results, involvement of stakeholders, or plans that were tested in demonstration projects. Thus, interest at the sites has waned since the research began in 1987. In some areas, such as in Thailand and Malaysia, the local communities have all but forgotten there was a CRM planning effort for their bay or island. In contrast, the Government of Brunei has been proactive in supporting and implementing portions of the plan. This has worked well in this small and centralized country where the government could afford to continue activities.

Other Initiatives in Thailand and Sri Lanka

In 1986, again with support from USAID, separate efforts started in Sri Lanka and Thailand to assist with national policy formulation for coastal resources management. In Sri Lanka the thrust was to support the Coast Conservation Department to develop and begin implementation of a Coastal Zone Management Plan (CZMP) and to develop national strategies to address the increasing degradation of the country's coastal areas and resources. The program has completed the CZMP, which is now being implemented. The program has also compiled a long-term strategy, Coastal 2000: A Resource Management Strategy for Sri Lanka's Coastal Region, which is far-reaching and multidisciplinary in its overall approach. Key government officials have endorsed this strategy, and it is being used as a guide for action through this decade.

Thailand's Coastal Resource Management Project supported by USAID through the University of Rhode Island had a three-pronged approach: a national effort to integrate and enhance the Office of the National Environment Board's quest to develop and implement an integrated national CRM program; a provincial-level pilot project to test policy and implementation concepts; and, an effort to develop and test strategies for the management of marine parks. The pilot project was implemented around the resort island of Phuket. The project successfully engaged several communities in improving the management of their beaches, coral reefs, land use, and water quality in areas where tourism was expanding rapidly. Results were achieved through ongoing education, research, and community involvement efforts mostly orchestrated through a local project office. A major outcome of the overall program was the Thai government's acceptance of a national strategy for the management of coral reefs, parts of which are currently being implemented (Lemay et al 1991; Hale and Lemay 1994).

National Marine Parks in Malaysia and Indonesia

Marine parks are often included within the larger framework of schemes for coastal management. Marine parks usually have a specific role within coastal management, linked to ownership, and refer to specifically designated pieces of coastal marine space. Such parks require detailed planning and management within ICM or CRM programs or regions of coastlines (White 1988; Clark 1996; Agardy 1997). Until recently most coastal management efforts in Malaysia and Indonesia could be described as variations on planning for and implementation of marine parks.

Marine parks tend to have well-defined boundaries and objectives for management, so it is commonly believed that effective implementation is relatively easy to achieve (White 1988; Agardy 1997). Despite this assumption, studies in the early 1980s and very recently have found that there are few well-managed marine parks in the Philippines, Indonesia, Malaysia or other parts of the tropical world (White 1985b; Bryant et al 1998; Agardy 1997). It is disturbing to note that Indonesia, with 66 legislated marine parks or reserves and another 42 proposed areas, had only thirteen with some form of management. Of these, only several small areas were properly protected and managed (White 1983; Bryant et al 1998). A generalization about the Indonesian

marine parks at that time is that there was almost no attention given to working with local resource users and stakeholders dependent on resources within or adjacent to the park areas. This has improved somewhat since the early 1990s when projects in the Bunaken National Marine Park and the Komodo National Park have focused on stakeholder involvement in park planning and management (Agardy 1997).

In Malaysia, the situation was somewhat better with five legislatively protected areas and nineteen proposed for protection. Four of the five existing areas received some kind of management attention. The overriding problem in Malaysia for managers of marine parks is that state governments control the land, but the national government controls the aquatic portion of the parks. This has created a situation in several marine parks where the park authorities could not control land-based activities. In the case of Pulau Redang Marine Park, as an illustration, state development interests have severely damaged a portion of the coral reefs in the protected area because of land clearing and the resulting sedimentation.

In sum, although marine parks and reserves are commendable and necessary, they have not contributed much to the overall problem of coastal area management in Malaysia or Indonesia. Despite this disappointment, a few exceptions are found in the Philippines.

Community-based Management in the Philippines

Beginning in 1974, various projects in the Philippines have been experimenting with community involvement in ICM (Ferrer et al 1996). The well-documented examples of Sumilon and Apo Islands have shown that by protecting a portion of the coral reef on a small island from all forms of exploitation, fish yields from the entire reef surrounding the island are enhanced (Alcala and Russ 1990). This finding, along with other benefits such as improved coral reef quality, cessation of all destructive fishing in the area, attraction of scuba-diving tourists, and improved incomes for the local fishermen have tended to reinforce the value of small-island coral reef sanctuaries and reserves in the minds of local fishermen and national policy makers (White et al 1994; White 1989).

Silliman University's Marine Conservation and Development Program (1985-1987) supported by USAID has demonstrated the means and benefits of assisting local communities to design and implement marine reserves on three small islands following the prototype of Sumilon Island. In this program, these communities had a full role in the development of the marine reserve design, research, implementation, and monitoring (MCDP 1986; White and Savina 1987). Considerable experience with the protection of these islands has shown that:

1. It is possible to engage local fishermen in the sustainable management of their resources if they are given some responsibility for the process;
2. If the benefits derived from such management accrue to the local residents in a form recognized by them, they will participate actively in the management process;
3. The process needs to include local officials, who can be supportive of the management regime and aware of individuals who are capable of sabotaging the program for personal gain;
4. Education is an important component of any such program both for the local residents as well as for government officials and national policy-makers;
5. Baseline data and monitoring of resource condition and abundance can be used as educational tools to illustrate to local residents the condition of their environment and to reinforce their management participation; and,

6. Similar information can be used to convince policy makers and government officials, both local and national, about the effectiveness of a coastal management regime (White 1989; White et al 1994).

A NATIONAL INITIATIVE IN THE PHILIPPINES

The Philippine government became interested in CRM in 1978 when a task force was formed to define the coastal zone for management purposes. The process evolved throughout the 1980s, and much legislation has been passed to protect and manage resources and areas. Philippine laws enable the local, municipal and city, governments to take responsibility for management of their coastal resources from the land side to 15 kilometers offshore. Separate national laws address destructive fishing methods, over-exploitation of vulnerable resources, and protection of critical habitats such as coral reefs mostly through the devolved units of the national Bureau of Fisheries and Aquatic Resources (BFAR) of the Department of Agriculture and the Department of Environment and Natural Resources (DENR). Forestry laws cover mangrove forests and requirements for environmental impact assessments for all large and potentially polluting developments. The DENR has responsibility for the latter and also houses the Coastal Environmental Program. The first legislation to support an integrated form of coastal resources management was drafted in 1991 under the Philippines' Fishery Sector Program (FSP) supported by the Asian Development Bank. The ultimate result, the Fishery Code for the Philippines, was passed in 1998. This important legislation suggests an institutional mechanism to allow several municipal governments within a province and the national government to act collaboratively to manage bays around the country. This mechanism was tested by the FSP (1990-1997) and is being further refined by the Coastal Resource Management Project (CRMP) of USAID (1996-2001). These projects are highlighted here to exemplify the largest CRM efforts in the Philippines and Asia.

The Fishery Sector Program and the CRMP

The FSP for the Philippines was implemented through several agencies with BFAR being the most prominent. The FSP had six complementary and partly overlapping components: fishery resource and ecological assessments; CRM in twelve priority bays; law enforcement; research and extension; credit to promote alternative livelihood options; and, the improvement of infrastructure related to fisheries.

The CRMP, currently being implemented, has four major components: local level implementation in "six learning areas"; information, education and communication; enterprise development; and national policy formulation. Unlike the FSP, the CRMP field level activities are in six learning areas on various types of coasts with multiple issues and environments, not just bays. Similar to FSP, the other program components are supportive of and, in some cases, fully integrated with the CRM activities at each site.

The CRM core component of the FSP was the manifestation of all efforts in the actual management of coastal resources in the twelve bays. It was comprised of rapid resource, ecological, legal, cultural, socioeconomic, and institutional research and assessments that provided the main inputs for bay profiles and the draft CRM plans. Training was an important activity in the beginning of CRM plan generation in each of the twelve bays. Regional staff from the Departments of Agriculture and Environment and Natural Resources were targeted along with provincial fishery management units, municipal agricultural officers, local government units, non-governmental organizations, local law enforcement officers and fishermen associations. Training was also directed

at the BFAR personnel responsible for CRM (White and Lopez 1991).

In a similar manner, the CRMP promotes "participatory coastal resource assessments" in each municipality of its six learning areas which in total cover 29 municipalities and cities along 650 kilometers of coastline. The outcome of the assessments (mostly shown on maps) are compiled into coastal environmental profiles which also bring together all existing secondary information (Walters et al 1998). Training under the CRMP targets a similar audience as the FSP but utilizes a 11-day intensive course in ICM which is more comprehensive than that used by FSP.

Management Goals of FSP and CRMP

A key goal of the projects is to involve the coastal communities and local government units in decision making and implementation of ICM and CRM. Regulatory functions are encouraged at the municipal level to complement national laws affecting coastal resources. Decisions and participation lie with the communities, municipal governments, regional offices of the Departments of Agriculture, and Environment and Natural Resources, and NGOs working in the area.

Management structures evolve from the organization of community-based management groups and "barangay" (smallest political unit in the Philippines) units that are represented at the municipal level through the formation of Fisheries and Aquatic Resource Management Councils (FARMC) mandated by the new Fishery Code of 1998. Territorial use at the barangay, municipal, and bay levels are incorporated into the management program in the form of use zones by municipal ordinance and bay or area wide management agreements as they evolve (DENR et al 1997). Another crucial goal is to relieve pressure on fishery and coastal resources through limiting access and by developing alternative livelihoods.

CRM Planning and Implementation Process

Both FSP and CRMP preferences for action has encouraged both planning and implementation of field projects to be conducted simultaneously at the field management sites. Several different tasks leading to a CRM plan occur simultaneously to facilitate rapid completion of preliminary draft plans. These include the resource and socio-economic assessments, mapping, and the completion of the environmental profiles. Extensive information, education and communication campaigns through various channels benefited both projects and are increasingly seen as critical components of a successful program to educate people and market important concepts and actions.

The flow of activities leading to CRM at each management site in both the FSP and CRMP generally include:

1. Compilation of a CRM environmental profile that contains all existing information and data from secondary sources and initial site observations on environment, resources, population, socioeconomic and resource uses, institutional and legal frameworks for CRM issues, and causes and preliminary solutions through various participation methods.

2. Development of a preliminary draft CRM plan through informal meetings with communities, government officials, and research teams to define management problems and their causes and to formulate management policies and strategies appropriate for the site, including detailed pilot projects for immediate implementation. This usually occurs first at barangay and then municipal levels.

3. Conducting research to collect primary data as determined from gaps in the secondary information and initial observations of the site and as required for detailed planning and long-term monitoring of project implementation. For CRMP, this research occurs in a few selected marine reserve sites to assist with management and evaluation. In FSP, it was more generalized on fisheries and conducted by contracted academic institutions to generate a comprehensive set of baseline information for management planning.

4. Conducting workshops with local government and community leaders to review draft CRM plans and to ensure that all perspectives are represented. Pilot projects are ratified after discussions with the communities, local government, and NGOs. An initial result is the formation of resource management organizations.

5. The implementation of CRM interventions at each site through contracts with NGOs that work with and organize coastal communities around resource management issues and solutions. The pilot projects are used to test the larger plan strategies and to refine the plans from experience.

6. Refinement and expansion of the CRM plans through research, experience from pilot projects, and ongoing field work, which provides experience on what is practical to implement and working well. Pilot projects are then expanded to cover more area at the management sites.

The planning and implementation cycle is decentralized in design and based on the participation of local and regional governments with guidance from BFAR, DENR, project staff and ultimately the local government personnel (Figure 1). The cycle is also relied on to update and continually improve the CRM plans for municipalities and bay-wide or learning area-wide areas.

The CRMP has added some innovations which emphasize:

- Development of a critical mass of local leaders who support and perpetuate ICM practices;
- Encouraging a strong synergy between the project's national and local level initiatives to ensure that the development of local ICM regimes are consistent with national government policies and so the latter can be infused with practical experiences from the field level;
- Insisting that local governments allocate budget and personnel for ICM activities;
- Not relying too heavily on site-based models but rather on expansion using a variety of forms of community resources and collaboration; and,
- Using an aggressive education and communication campaign at the national and local levels which is integrated with all project components to achieve maximum and long-lasting influence on different interest groups.

The CRMP activities are being implemented at national and local levels to achieve expansion of the project activities to 2,000 kilometers of Philippine coastline by the year 2000. The six "learning areas" serve as models for coastal resource management and represent the core of the field activities of the CRMP to achieve a threshold that will continue beyond the life of the project. These six field areas include 29 municipal government units and cover about 650 kilometers of coastline.

Work within learning areas entails a collaborative planning and implementation process which is centered around the role of the municipal government, community organizations and national agency initiatives. A typical agenda for a learning area and the roles of the various partici-

pants is detailed in Figure 2 and includes (White 1996; 1997):

a. Defining memorandums of agreement between the CRMP and local governments which commit personnel and budgets for ICM;
b. Identifying local organizations and individuals (both public and private sector) who can potentially play key roles in the planning and management process;
c. Implementing participatory coastal resource assessment and mapping exercises with barangay (smallest political unit in Philippines) level groups;
d. Developing coastal environmental profiles through local community participation and collaboration with local academic institutions;
e. Conducting ICM training for key government and NGO participants;
f. Promoting participatory planning at the barangay, municipal and learning area level;
g. Implementing an enterprise development scheme through community groups and the private sector which provides livelihoods outside of fisheries;
h. Defining ICM plans and projects within larger area plans; and,
i. Facilitating ICM interventions, monitoring and evaluation.

The CRMP identifies, cultivates and promotes the current and future coastal resource leaders in the Philippines through its training and planning programs. The five practices of effective leaders espoused by Kouzes and Posner (1995), are adapted for CRM leadership and used as a guide. These are:

Challenge the process. Search for answers to the open access problem and stop destructive practices. Take risks to achieve extraordinary results.

Inspire a shared vision. Enlist all stakeholders to share a vision of sustainable use of coastal resources where active participation and management is the norm.

Enable others to act. Foster collaboration in planning and implementing coastal resource management by soliciting participation and sharing information.

Model the way. Set an example by participating in and contributing to coastal resource management activities.

Encourage the heart. Recognize the hard work and commitment of others and advertise the successes to other coastal communities.

After two years of operation the CRMP has refined its operational objectives for field level interventions to help clarify all project activities. This occurred through the development and refinement of indicators for measuring project performance both for the benefit of USAID and all project participants. The indicator which measures project performance within its six learning areas covering 650 kilometers of coastline is shown in Table 1. The thrust of this indicator is that each municipality meets certain criteria indicating improved coastal management. The criteria are somewhat flexible to accommodate varying conditions in different areas and different propensities of different local governments.

Table 1. Performance indicators for learning areas of the CRMP (650 km of coastline)

OBJECTIVE*	Enhanced management of renewable natural resources
INDICATOR	Kilometers of shoreline where improved management of coastal resources is being implemented
UNIT OF MEASURE	Kilometers of shoreline and number of municipalities
INDICATOR DESCRIPTION	To be counted municipalities need to be meet all of the following conditions: 1. Resources for CRM allocated by local government unit 2. Resource management organizations formed and active 3. At least 2 CRM interventions implemented: a. Illegal fishing substantially reduced b. Fishing pressure reduced c. Marine sanctuaries established and maintained d. Open access restricted e. CRM plans prepared and adopted f. Other habitat protective measure in place

* Overall objective is the same as "Strategic Objective No. 4" for USAID which covers all USAID natural resource management projects

The CRMP is obligated to assist to improve coastal management along 2000 kilometers of coastal areas which includes the learning areas (650 km) and expansion areas (1350 km). The first indicator (Table 1) measures "improved management of coastal resources." The second indicator measures the number of municipalities (km of coastline) "replicating or initiating improved CRM utilizing CRMP products and services." The various CRMP products must be utilized and initiated in the expansion areas which are those coastal areas and municipal governments where the CRMP hopes to catalyze improved coastal management without an on the ground presence of personnel. Rather, the CRMP is achieving this through dissemination of technical and educational materials, support of trained personnel, spreading examples of work in the learning areas and other means which are usually triggered by the demand of the local government or communities of concern.

Within the CRMP learning areas, one of the favored forms of intervention is the establishment of marine sanctuaries which effectively reduce fishing effort and rehabilitate coral reef and near-shore marine habitats. To measure the relative success of the marine sanctuaries, the CRMP is monitoring change in fish abundance and the average percent change in living coral cover inside and adjacent to the sanctuaries. These biophysical parameters reflect the effects of management and they are also useful in showing results to local participants. The monitoring techniques are performed collaboratively by Philippine scientists and local community members. The mangrove component of CRMP is measured by the hectares of mangroves under community-based forest management agreements, approved Protected Area Management Plans, or other tenure instruments.

The CRMP also has a large information, education and communication component which cuts across the entire program at both the national and local levels. A few of the activities and interventions include: publications, videos for national television and training, media events, contests, a moving exhibit on the value of marine and coastal resources and a variety of public seminars. The indicator of success for this broad set of activities is the percent of respondents from a survey of target groups that demonstrate knowledge of CRM and ICM problems and solutions. Although the ultimate goal of CRMP is behavior change in the coastal areas as a result of IEC interventions, the only effective measure of this is through actual improvements in management noted within the learning and expansion areas of the project. These changes are measured by the indicator shown in Tables 1.

CRM Plan Strategies

The plan strategies are effectively addressing the serious resource use and degradation problems in each field area. Community-based approaches that include education, training, and participation centered on projects that manage resources for the benefit of the people involved are the focus. If benefits do not quickly accrue to the participants, they lose interest and revert to practices of over fishing, habitat destruction, and other harmful means. In brief, the strategies include: improved law enforcement; zoning schemes and limitations on fishing effort through municipal marine reserves and sanctuaries; community organization and education to form core management groups; habitat enhancement through protection and mangrove reforestation; the development of alternative livelihoods; and, the formation of area management councils. These strategies fit into a participatory program supported by 1990s legislation that increases the authority of municipal governments and management councils to make decisions about the rules applied in each barangay, municipality or larger management area. NGOS, likewise play a significant role in the implementation of village-level projects using these strategies together with local government planners and field staff.

Strengths and Weaknesses of the Philippine Projects

The CRM component of the FSP was a large and complicated program attempting to implement comprehensive management plans in an integrated manner. Accordingly, the program encountered many problems. As an example, the lack of a central agency responsible for ICM or CRM hampered efficient implementation. Having both the Department of Agriculture and the Department of Environment and Natural Resources share responsibility for implementation created some tugs-of-war over control of certain aspects of the program. The two departments argued over which is responsible for coral reef management—they both have laws covering protection of coral reefs. Also, communications between the national and regional offices as well as with all the participating governments and NGO groups at the provincial and village level were not very effective. Notwithstanding these pitfalls, for such a large undertaking, the design for CRM as well as its planning and implementation have been progressive and sensitive to the reality of conditions in the Philippines and produced substantial results.

The CRMP, now in its third year, is attempting to learn from some of the problems encountered by the FSP. It has tried to find strategies to enhance the active participation of a majority of coastal resident users. The CRMP realizes that it is these user communities that will affect the type and level of resource use and the ultimate sustainability of the program. Thus, the CRMP has experimented with making the local government units the center of planning and implementation process and it has encouraged resource assessments to occur at the community level, unlike FSP which accomplished most assessments with outside researchers.

The CRMP has even a more decentralized locally responsive approach than the FSP. Although almost all CRM programs emphasize education and participation, the CRMP incorporates these elements into the main strategy for the program. Its chances to become sustainable thus rest in the hands of the participating communities and the supporting structures that are democratic and reflective of the country's social and political culture.

Both the FSP and CRMP are worth watching because they certainly have the seeds of the future imbedded in their design. Indeed, they teach some lessons about sustainable development and are a credit of the Philippine government for making these experiments.

THE COASTAL ZONE MANAGEMENT PROGRAM IN SRI LANKA

Coastal Use in Sri Lanka

With 17 million people, Sri Lanka is one of the world's most densely populated countries. Unfortunately, this population is testing the limits of its environment's carrying capacity. As an illustration, Sri Lanka's annual rate of deforestation is one of the highest in the world (Baldwin 1991; UNDP 1992). Sri Lankans may be imposing similar stresses on their marine and coastal resources. Indeed, Sri Lankans are heavily concentrated in coastal areas. Livelihoods such as fishing, tourism, small industry, coral mining, and others that require a coastal base comprise about 40 percent of the gross national product. Ninety percent of the country's industrial units are located in coastal areas, as are about 80 percent of tourism-related infrastructure and sites (Savundranayagam et al 1994). The conflict between these two uses of coastal water is becoming more apparent as pollution increases in area and severity. Although the problems of coastal resource degradation and mismanagement are similar to the situations found elsewhere in Southeast Asia, the single, small-island perspective of Sri Lanka is helping to focus attention on the importance of developing management programs now before a crisis situation occurs.

CZM Program in Sri Lanka

Sri Lanka's coastal management program is recognized as one of the most successful and advanced among developing nations (Lowry and Wickremeratne 1989). Coastal management has long been a major concern, and the first significant legislation, the Coast Conservation Act (CCA), was approved in 1981. This act gives the Coast Conservation Department (CCD) authority to manage resources and activities within the narrowly defined and designated coastal zone through: policy formulation, planning and research; administration of permit procedures regulating coastal development activities; and construction and maintenance of shoreline protection works. The permit program has been functioning since 1983, and currently processes about five-hundred applications each year for a variety of construction activities (Wickremeratne and Sadacharan 1991).

The 1981 act established the Coast Conservation Advisory Council (CCAC), which reviews critical coastal management problems. The CCAC is comprised of key government agencies with jurisdiction in coastal areas and several non-government members from the academe and the private sector. The act also gives the CCD a mandate to coordinate the sectoral authority of many other agencies including: the Ministry of Fisheries and Aquatic Resources; the Urban Development Authority; the Irrigation Department; and, the Central Environmental Authority. To accomplish this coordinating role, the CCD can regulate all new coastal development. In practice, however, the CCD encourages frequent and informal interagency discussion and holds periodic meetings of

the CCAC.

Substantively, the CCD is obligated to prepare a national Coastal Zone Management Plan (CZMP), and the Cabinet of Ministers approved such a plan in 1990, which was revised in substantive form in 1997 (CCD 1997). The plan covers shoreline erosion, loss and degradation of natural coastal habitats, and loss and degradation of historic, cultural, recreational, and scenic sites (Olsen et al 1992). To date, the CZM program has produced legislation providing the mandate and guidelines for the CCD and CCAC; the completion of the national CZMP and a plan to stem coastal erosion; refinements in the regulations for coastal development and implementation of setbacks for new construction; reduction in user conflicts; regulation of critical resources such as sand and coral; several studies to support management and resource-use levels and impacts; a procedure for environmental impact assessment designed for siting coastal development; improved interagency cooperation; and, a core of well-trained personnel in the CCD. The accomplishments are many and yet the question remains whether there has been significant change at the field level and in the use, condition, and management of coastal resources.

An Assessment of the CZM Program in Sri Lanka

The CZM program has evolved a necessary and functional supportive national framework. But by 1990, the program in Sri Lanka began to focus on how to benefit and involve coastal communities and local governments in the process. The regulatory program that the CCD administered functioned well but was mostly reactive. The program responded to proposals from other government agencies and private developers for construction and alteration of the coastline.

Thus, beginning in the early 1990s after a decade of attempts to stop the destructive practices of coral and sand mining, CCD realized it could not address the root causes of these problems alone or only through regulations. It became evident that such regulation, without a more integrated approach, could not lead to effective resource management or approach the requirements for sustainable development (Hale and Kumin 1992). As an illustration, the mining of coral provided a lucrative source of income for many coastal residents who had few other opportunities for employment. The threat of social disruption prevented enforcement of the ban on such mining. Likewise, the sand mining industry, despite restrictions to the contrary, continued to circumvent the law and to move its operations beyond the 2-km regulatory reach of the CCD. Consequently, there was a net loss of sand to the coast (Dayananda 1991).

Critical assessments of the overall coastal program in 1991 in Sri Lanka came to the following conclusions:

1. An approach to resource management that focused on regulation was too narrow in scope and cannot meet the complex set of needs of coastal communities;
2. Regulation alone tends to alienate coastal residents;
3. It is difficult to mobilize the collaborative effort of many agencies and levels of government;
4. Experience indicated that the scope of CZM must be broadened;
5. A collaborative effort of several government agencies, NGOS, and local communities was required;
6. The geographic area and issues addressed must be expanded for effective management to occur;
7. The CCD should transform itself from a regulatory agency to a service-oriented organization to provide leadership, coordination, technical assistance, and the training required to support a scientifically based management strategy; and,

8. The CCD needed to facilitate locally based planning and implementation efforts and be more proactive in its approach to coastal management (Olsen et al 1992; CCD 1997).

New Directions for Sri Lanka CZM in the 1990s

The Sri Lankan government agencies concerned with coastal management have not shied away from the daunting problems facing them to implement a truly integrated approach to CZM. The CCD along with other key agencies and several NGOs and universities, forged a proactive and far-sighted strategy to address the future needs of Sri Lanka's coastal resources. While not disregarding the significant progress and accomplishments under the first generation of coastal management beginning in the late 1970s, the 1990 strategy addresses the faults and weaknesses of the past program. Coastal 2000: A Resource Management Strategy for Sri Lanka's Coastal Region highlights the need to broaden the existing program and to integrate efforts of various government and non-governmental groups to achieve effective coastal management. Most important, the strategy strives to develop site-specific and special area management projects that are collaborative with local communities and government in their planning and implementation.

The first major effort of the CCD to test the broader policy was to implement two "special area management" projects on the south coast. One is a tourism enclave with the first national marine park for a small coral reef area (Hikkaduwa town and coral reef), and the second is a traditional fishing community with extensive beach, lagoon, mangrove and fishery resources within its environs (Rekawa). These two management projects have both proved extremely successful in that for the first time in Sri Lanka, local government and communities took on an ongoing role in the protection and management of their coastal areas. The result has been an evolving management regime in both areas which are facilitated by, but not controlled by the CCD. The relationship was difficult at first but has become more comfortable and gained respect for both the local and national government and non-government groups concerned. Both projects have produced practical management plans which are in varying stages of implementation (RSAMCC 1996; HSAMMSCC 1996).

CONCLUSIONS AND LESSONS LEARNED

Sustainability of Programs

The sustainability of the donor-assisted coastal management programs themselves and the extent to which they are achieving sustainable development are closely linked. One begets the other to the extent that when such programs have the lasting support of their constituency, it is an indication of their contribution to achieving sustainable use of resources. This assumption provides a useful tool from which to evaluate the ICM and CRM efforts discussed in this chapter.

The ASEAN-US CRMP was a "Project" with objectives tied to project implementation and not necessarily to the management of coastal resources per se. Thus, although project objectives have been achieved, the planning process has had relatively little impact on the coastal areas addressed. The true measure of long-term benefits from this project, discussed more fully elsewhere, cannot be measured without reviewing, at the field level how the CRM plans in the six countries are being implemented (Tobin and White 1992). Whether they are fully approved and supported

will vary from country to country. The extent to which people in each country, both locally and nationally, feel true ownership of the plans will certainly affect how seriously they will be promoted for implementation. The benefits from all the educational materials, training of personnel, workshops and other interactions can substantially upgrade CRM efforts in the six ASEAN countries. But measurement in terms of on-the-ground coastal management will be difficult to observe, but some conclusions are possible.

The Thai government's acceptance of the National Coral Reef Management strategy is encouraging for the improved sustainable use of coral reefs. The question of management approach is crucial in this case. The strategy means nothing if large numbers of people at the local level remain uninvolved in the effort. Unfortunately, Thailand's governmental processes tend to be highly centralized and devolution of authority to local governments is uncommon but starting to change (Nickerson 1998). Although a local and participatory approach is included in the strategy, optimism about widespread use of this approach is not great given the past dominance of a national agency in the Phuket coral reef management project. At times, this agency undermined the incentives to cooperate among the local authorities and communities concerned (Hale and Lemay 1994).

Marine parks in Malaysia and Indonesia are becoming more sustainable with improved efforts. The oldest marine parks in these countries have received attention and support for more than ten years. The parks are beginning to achieve balance with local populations and sustainable use of resources within certain zones of the parks. Although the geographic scale of such parks is small compared to national programs for coastal management, the parks are providing useful lessons on how to be effective in special areas. The most notable problem in both Indonesian and Malaysian marine parks is the lack of local collaboration in their implementation. National agencies, which are sometimes inefficient and alienating to local populations, dominate the management of these parks (White 1988; Agardy 1997).

Community-based management projects in the Philippines are providing lessons for larger CRM programs in the Philippines and elsewhere. At least three such projects are now totally supported and continued by the communities involved without any long-term outside financial or institutional support (White et al 1994). The incentive for this sustainable situation is the continued supply of fish, improved condition with coral reefs, increasing numbers of tourists who come to scuba dive and swim, and the pride derived from sharing the management techniques and successes with neighboring communities with similar interests. Both the CRMP and the Philippine FSP have sent community leaders to the island sites where municipal marine parks have been successful and allow the island residents to conduct small training sessions. Sustainability and tangible benefits are most easily measured in these cases. It must be recognized, however, that the island projects are small and simple compared to densely populated and multiple-use coastlines.

The national level programs of the CRMP and the FSP in the Philippines reveal a major thrust for local-level autonomy for CRM. These large programs are the first in Asia to decentralize the decision making and planning process to the provincial and municipal levels. Many communities have already made significant improvements in the management of the coral reefs, mangroves, fisheries, and conflicts in resource use. Carigara Bay, Leyte, has designated and successfully implemented two municipal marine parks with sanctuaries. A bay-wide management council has been formed for the bay and coordinates management planning and regulation. Commercial fishing boats have been banned from the bay. This was considered crucial for rehabilitation of fish stocks in the area. All these activities point to tangible benefits and a possibly sustainable program at the level of management that makes a difference to those affected, namely the resource users.

The six learning areas of the CRMP, which include 29 municipal governments along 650 kilometers of coastline have made significant progress towards improved coastal management. One notable gain is the substantial local government budgets being allocated for CRM in more than two-thirds of the municipal government units. Also, almost every one has initiated or maintains at least one or more marine sanctuaries.

An important change in the manner that CRMP approaches the problems of ICM in the Philippines from past projects is that it is not only rooted in coastal fishing and resource user communities. The CRMP was designed from the outset with the realization that the issues facing Philippine coasts and their human communities are too complex and caused by too many factors to come to viable solutions by intervening only at the local community level. The CRMP is strategically orchestrating interventions at both the national and local levels with various government and non-government institutions. It is attempting to catalyze action at the local community level through collaboration with local government in a manner which will empower the local government and its partners to continue on alone without the assistance of the CRMP. Although the CRMP is less than 3 years in operation, there are some useful lessons being learned.

1. FOCUS BOTH ON NATIONAL AND LOCAL LEVEL WORK SIMULTANEOUSLY. Past CRM precursors either focused on national level setups or were too site-specific and/or community based. CRMP works synergistically and simultaneously at both levels. Thus, the practicality of field experience fuse with the generalities espoused at the national level. The processes related to the preparation of the Legal and Jurisdictional Guidebook for Coastal Resource Management in the Philippines (DENR et al 1997) show this synergy. At the field level, problems pertaining to clarification, interpretation and implementation of laws affecting coastal resource use were identified through research and a series of technical working group meetings involving Department of Environment and Natural Resources, Department of Agriculture-Bureau of Fisheries and Aquatic Resources, Department of Interior and Local Government, and a host of non-governmental organizations, as well as the academic and scientific communities. These meetings provided a venue for the agencies to come to a common interpretation on a number of coastal environmental laws which are often perceived and treated differently.
2. USE MULTIPLE EDUCATION AND COMMUNICATION STRATEGIES TO BUILD A WIDE BASE OF SUPPORT FOR ICM. CRMP promotes ICM and its related issues to capture the interest of the mass of Filipino population by embarking on media and education campaigns that are designed to increase awareness and ultimately, mobilize the populace into action. The approach builds and enhances networks of constituency groups to support ICM initiatives thus ensuring sustainability beyond the life of the project.
3. ENCOURAGE COLLABORATION AND SYNERGY AMONG AGENCIES AND DONOR PROJECTS. CRMP started its policy component with (1) the development and application of legal and operational guidelines for CRM implementation; (2) setting CRM on the national social agenda; and (3) aligning resources and funding toward common objectives in consultation with counterpart government agencies and other donors. These efforts have resulted in most donors and government sponsored coastal projects at least attempting to coordinate and share plans before implementation starts. This has resulted in more effective field results in several instances.
4. PROMOTE EXPANSION BY SUPPORTING DEMAND FROM COMMITTED LOCAL GOVERNMENTS AND OTHER INSITUTIONS. CRMP is establishing a critical threshold of coastal municipalities who are actively implementing ICM to achieve the “snowballing” effect. At present, technical assistance at both national and local levels

targets 2,000 km of shoreline or roughly 11% of national shoreline length. At this threshold level, ICM is anticipated to continue beyond project life because of the development, implementation and institutionalization of ICM tools.

5. SUPPORT LEADERSHIP IN ICM THROUGH TRAINING, EDUCATION AND LEARNING BY DOING. The CRMP is nurturing and developing a group of ICM leaders by providing skills and training opportunities at the local field level as well as provincial and national through training opportunities which emphasize hands-on planning and analysis within the context of the participants own geographical areas of responsibility.

These lessons are helping to draw up plans for present and future directions for ICM in the Philippines. The most important finding is that for ICM to be adopted by local governments throughout the country in a mode which enhances both quality of environment and life for people in coastal areas, it must be acceptable, understandable and mostly practical for local governments, communities, national government and private sector partners to implement. ICM cannot be empty concepts and ideas. It has to offer tangible solutions which produce results in terms of improved quality of coastal ecosystems and their production, improved livelihood opportunities and improved ability of the part of local and national participants to do the job themselves. Although the complexities are great, the vision cannot be clouded by objectives which overshoot their mark. Objectives of field projects must be achievable while providing real benefits.

The CZM program for Sri Lanka, as an institutional and legal entity, has achieved a model program and developed a group of qualified coastal zone managers. The coastal erosion management program will continue as long as there is national and international funding for the costly structures required to prevent further erosion. Yet, a more preventive and proactive approach will be needed to sustain the tangible benefits of the past ten years. It will be too costly to continue to stop erosion on a crisis basis.

The larger CZM plan and program implementation will have to integrate its efforts with all agencies concerned working collaboratively with special area management projects that can achieve short- and long-term benefits both for and with the local residents. This push for more responsive field involvement, as endorsed in the Coastal 2000 strategy, and the two special area management projects in Hikkaduwa and Rekawa, are essential for sustainability of the CZM program. Coastal management in Sri Lanka can stay on top of pending coastal problems of the next decade if the major shift toward less centralized, “top-down” management continues to occur over the next few years.

In conclusion, the coastal and donor-assisted programs in Sri Lanka and Philippines are certainly enduring in time and coming under more and effective national and local government control with sustainable levels of support for certain activities within their programs. The benefits of these programs are not trivial in terms of resources saved, managed and improved since the resources at stake—fisheries, critical habitats and water quality—are all essential ingredients in the economies of these countries. The economic returns from proper management and sustainable use of these resources are usually undervalued and need to be highlighted more in the future. The economic benefits from fisheries and tourism alone will be sufficient to drive increased investment in the management of coastal resources and areas in tropical Asia where some of the most diverse and productive coastal ecosystems in the world occur.

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Feed-back to appro-priate phase

Phase	Activities and Outputs	Technical Assistance Roles of Non-Government Organizations, Academe, Donors and National Government	Roles of Community Local Government and Stakeholders
1. Program preparation	· Determine boundaries and scope · Make workplans/budgets · Assign personnel · Secure consensus on overall approach	· Prepare workplans · Formulate working agreements · Contract staff · Train staff · Facilitate consensus on design	· Enter into memoranda of agreement · Participate in discussion · Communicate needs and potential roles
2. Secondary information gathering	· Compile existing maps, reports, data · Interview information sources · Compile existing laws, agreements, plans · Review other sources of information	· Locate sources of information · Compile information in useful form · Coordinate activities	· Provide information · Assist to compile information · Begin to develop information storage and retrieval system
3. Field assessment/study: 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	· Train practitioners · Facilitate PCRA · Conduct specialized research · Analyze research data · Make results available	· Conduct PCRA with technical assistance · Participate in special research and data collection · Assist to analyze data · Provide inputs to mapping
4. Database and profile development	· Set up data storage and retrieval system · Compile coastal environmental profile · Use profile as planning base · Refine boundaries and further research needs	· Determine data storage site, personnel · Write profile · Distribute profile · Facilitate discussions on boundaries and research needs	· Provide information · Assist with profile analysis · Use profile for planning · Decide on boundary demarcation
5. Prioritize issues and analyze causes	· Conduct community and municipal-based planning sessions · Develop issue tree · Prioritize issues for management · Determine causes of issues	· Facilitate process · Interject outside perspectives, research findings, policies, etc. · Help translate issues into causes	· Participate in process and provide major input · Participate in conflict resolution · Set priorities in real terms
6. Policy and plan formulation	· Conduct planning workshops to determine objectives, strategies and actions · Determine clearly stated goals, objectives and indicators · Interagency coordination · Determine composition of management body · Initiate preliminary plan implementation	· Facilitate planning process · Provide technical guidance · Assist to set up management bodies	· Provide basic policies · Provide major inputs to plan · Build consensus among community · LGU support to planning process
7. Plan/project implementation	· Design pilot projects · Test projects · Formalize and set up management council · Secure support as required · Increase implementation effort	· Facilitate initial implementation · Provide seed funding · Provide technical guidance · Conduct training course as required	· Take full responsibility · Participate in implementation · Provide local personnel
8. Monitoring and evaluation	· Train monitoring and evaluation team · Monitor environment and ICM process and feedback to database and plan · Evaluate program results and feedback to plan	· Assist to train LGU personnel · Assist to analyze data · Assist to set up sustainable system	· Collect data · Use data to refine plan and update database · Participate in process · Take responsibility