Integrated coastal management and marine protected areas in the Philippines: Concurrent developments

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Abstract

Integrated coastal management (ICM) in the Philippines has evolved as a result of initiatives that established community-based marine protected areas (MPAs) since the 1970s. Since then, the development of both ICM and MPAs have benefited from a number of factors that include devolution of management authority to local government, continued active engagement of local non-government organizations, strong support from the national government and from marine science academic and research institutions, and the influx of donor-assisted marine conservation programs in the past two decades. ICM and MPA programs in the Philippines implement a variety of components that include community organizing, participatory planning, alternative livelihood development, public education, research, regulating resource uses, and policy development that address various marine conservation issues. The unabated degradation of the marine environment and its resources continue to motivate efforts to improve the existing paradigm of community-based resource management and MPA establishment, which are carried out in various adaptations depending on the issues addressed and the socio-political context in which the initiatives are taking place. A number of recommendations are put forth in addressing the problems and obstacles faced by ICM and MPA initiatives and in improving their effectiveness for consideration by local practitioners and decision-makers.

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1. Evolution of marine protected areas (MPAs) and of integrated coastal management (ICM) in the Philippines

The Philippines is an archipelagic country, endowed with rich coastal resources and marine biodiversity [1]. It is comprised of more than 7100 islands with a total coastline of 33,900 km [2]. Coastal fishing activities account for 40–60% of total fish catch with the fisheries sector employing more than a million Filipinos [3]. Fish and other marine products supply 70% of total animal protein intake and 30% of total protein intake [1,3]. Tourism is a growing industry in the coastal areas, where 70% of the country’s 1500 municipalities are located [3].

The establishment of MPAs began in the 1970s when academic and research institutions recognized the signs of depletion and degradation of marine resources, particularly coral reefs. About 27,000 km² of coral reef area occur within the 20 m depth contour, but in 1981, a national survey indicated that 70% of these coral reefs are in poor to fair condition [4]. Over two decades later, degradation of coral reefs is continuing largely due to dynamite and cyanide fishing, trawling by subsistence as well as commercial fishers, and siltation and other forms of pollution [1,5].

In 1974 and 1979, Silliman University initiated the establishment of marine reserves off Sumilon and Apo Islands in the Central, Visayas.¹ These reserves have been well documented over a period of more than two decades [7–10]. This early experience was followed in the 1980s by projects in the Visayan region that were motivated by the same issues of resource depletion and degradation, such as the Central Visayas Regional Project [11] and the Marine Conservation and Development Program of Silliman University [12,13]. These projects applied the small-scale marine sanctuary concept to coastal community development and management programs where a marine sanctuary was either a main theme of the conservation effort or one of several important project strategies [14].

Over the last decade, additional projects such as the Fisheries Sector Program [15] and several other local and foreign-assisted projects also started to promote the community-based marine sanctuary concept. Several government agencies, universities and environmental non-governmental organizations (NGOs) have all been developing and implementing marine sanctuary programs, sometimes as a component of larger coastal management initiatives. The establishment of these marine sanctuaries was facilitated by the implementation of the Local Government Code of 1991, which granted to local government units (LGUs), the authority to manage their coastal resources. There are now many marine sanctuaries located in every coastal region of the country, numbering around 500 (Fig. 1), a majority of which are small-scale marine reserves and sanctuaries [1,16,17].

Lessons learned throughout this period of marine reserve establishment were woven into the design of ICM programs that were implemented one after another in the country following the implementation of the Central Visayas Regional Project in 1984–1992 (see Table 1 for a list of donor-assisted and government programs). The ASEAN-US Coastal Resource Management Program emphasized the need for

¹See Alcala [6] for a detailed account of the beginnings of MPA establishment in the Philippines.
science-based and integrated management planning as essential components of coastal resources management [18]. The Fisheries Sector Program followed the coastal management approach by targeting the development and implementation of ICM plans in 12 priority bays in the country, with marine sanctuaries as one of its major components. The Coastal Environment Program’s main objective was the establishment of national MPAs in each political region of the Philippines following the guidelines of the National Integrated Protected Areas System. The USAID-funded Coastal Resource Management Project established ICM learning areas that served as models for the replication of similar efforts in other LGUs. The Fishery Resource Management Project, the second phase of the Fisheries Sector Program, continued what FSP began and initiated ICM in 12 other bays. The Community-based Resource Management Project is a demand-driven project, providing support
Table 1
Donor-assisted and government ICM programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Duration</th>
<th>Donor agency</th>
<th>MPA component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Visayas Regional Project</td>
<td>1984–1992</td>
<td>World Bank</td>
<td>Incorporated watershed and coastal interventions, conservation as well as economic strategies; established MPAs that provided lessons learned on the need for strong community organizing and involvement of local government</td>
</tr>
<tr>
<td>Marine Conservation and Development Program</td>
<td>1984–1986</td>
<td>USAID</td>
<td>Established three MPAs on Apo, Pamilacan, and Balicasag Islands that became models for MPA establishment in the Philippines</td>
</tr>
<tr>
<td>PCAMRD-ICM Program</td>
<td>1991–present</td>
<td>Philippine Department of Science and Technology</td>
<td>Conducted research and technical assistance in the establishment of MPAs; assisted in the coordination and involvement of appropriate partners in ICM and MPA programs</td>
</tr>
<tr>
<td>Coastal Environment Program</td>
<td>1993–present</td>
<td>Philippine Department of Environment and Natural Resources</td>
<td>Conducted technical assistance in the establishment of MPAs; at the political regional level, social forestry and other upland programs complement MPA programs</td>
</tr>
<tr>
<td>National Integrated Protected Area Project</td>
<td>1995–2001</td>
<td>EU</td>
<td>Two MPAs have been assisted in their management</td>
</tr>
<tr>
<td>Coastal Resource Management Project</td>
<td>1996–2002</td>
<td>USAID</td>
<td>Participating municipalities established/strengthened MPAs; provided technical assistance and training to local government units; produced training and information materials used by other ICM and MPA programs</td>
</tr>
<tr>
<td>Fisheries Resource Management Project</td>
<td>1998–2003</td>
<td>Asian Development Bank</td>
<td>MPAs included in local government ICM programs as a “best practice;” emphasizes need for municipal fishers’ participation in resource management; aims to enhance government capability at the national and local levels to manage resources</td>
</tr>
</tbody>
</table>
for natural resource management projects that are identified by communities themselves and implemented together with LGUs.

### 1.1. Factors that helped promote or inhibit MPA and ICM

A number of factors combined to bring about the proliferation of ICM and MPA initiatives in the country, including:

1. An archipelagic country rich in natural resources that need to be preserved or rehabilitated for socio-economic and other purposes.
2. Strong scientific and technical support from marine science and fisheries research and academic institutions.
3. Influx of donor-assisted development and conservation initiatives.
4. Decentralization of governance with the implementation of the Local Government Code.
5. Active grass roots movement and proliferation of environmental NGOs following the deposing of the martial law regime.

Competing resource users, e.g., subsistence, commercial fishers, tourists and tourist facility operators, either support or oppose ICM because implementation of management plans could either curtail or enhance their respective economic practices in the coastal zone, e.g., fishers that use explosives, cyanide poison, and muro-ami; recreational divers that fish with the use of spearguns; industrial plants that dump untreated wastes into waterways. There are cases where sustenance fishers oppose the establishment of MPAs because of the perception that other users, e.g., recreation divers and touristic facilities who are allowed access to no-take areas, benefit more from the MPA while they are deprived of fishing grounds. Some fisher groups who oppose ICM or MPAs (e.g., dynamite fishers) do so out of desperation and lack of alternative means of livelihood, reflecting a mindset similar to those held by coastal communities that support the local deployment of artificial reefs.

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2A type of fishing practice that disturbs coral reefs and other benthic habitats in which rocks and other implements are used by divers, usually boys, to smash reef corals to scare fishes from their hiding places so they can be netted [19].
Although it is commonly assumed that artificial reefs are deployed in overfished fishing grounds as a habitat rehabilitation technique, they appear to serve as aggregating devices that facilitate depletion of fish stocks [20].

Competing priorities of cash-strapped LGUs constrain the establishment or implementation of local ICM programs. Previously, the governance of natural resources was divided between the Department of Agriculture and the Department of Environment and Natural Resources, two large bureaucracies whose programs had limited local impact on the resources since it became apparent in the 1970s that natural resources were suffering from poor management and destruction. This structure changed drastically with the passing of the Local Government Code, when social welfare and the management of natural resources and environmental protection, among other functions, was devolved to LGUs. There is very limited financing to support the execution of devolved functions with the local governments such that they are unable to prioritize environmental management over social welfare and infrastructure development programs.

2. Objectives, principles, approaches, and legislation

2.1. Objectives

The ICM and MPA projects and programs in the Philippines were largely issue-based. Therefore, the objectives that were laid down for these programs were formulated to address major coastal environmental and socio-economic issues including:

1. Serious resource depletion problems, mainly in fishery resources particularly felt in the decrease in catch per unit of fishing effort particularly by subsistence fishers.
2. Loss of or damage to productive coastal ecosystems (e.g., mangroves, seagrass beds, and coral reefs).
3. Cases of local extinction of economically important marine species.
4. Conflict among uses/users of coastal resources.
5. Poverty and other social problems of coastal communities.
6. Lack of capacity among local governments and communities to manage coastal resources.
7. Sectoral/fragmented approach to coastal resources management.
8. Point-source and non-point-source pollution.

All these issues are common to both ICM and MPA programs but the first two issues are generally the focus of both programs while the last one has been almost always neglected. However, consideration of potential downstream impacts of upland activities has started to become a standard practice in the design of ICM programs in the Philippines, e.g., in the Southern Mindanao Integrated Coastal Zone Management Project, which is following an ICM-watershed ecosystem management
Approach in the protection and management of Mt. Matutum and Sarangani Bay [21].

2.2. Principles of MPA/ICM

Since both MPA and ICM generally follow a community-based approach, the principles for both are the same. The following is a summary of principles identified by practitioners in the Philippines and in other Asian countries in a workshop and incorporated in a workbook for various users [22]. The application of these principles in ICM and MPA is described in a discussion of the community-based approach in subsequent paragraphs of this paper.

1. Empowerment. Coastal communities are empowered politically and economically so that they can assert and gain rightful access and management control over their coastal resources.
2. Equity. Equity would be attained if disadvantaged groups such as subsistence fishers have equal access to opportunities that exist for the development, protection and management of coastal resources.
3. Ecological soundness and sustainable development. Technologies and practices promoted by ICM and MPAs should recognize the absorptive limits/carrying capacity of resources and ecosystems.
4. Respect for traditional/indigenous knowledge. Coastal resources management encourages the adoption of traditional/indigenous knowledge in its various activities and processes.
5. Gender fairness. ICM and MPA programs must recognize the unique roles and contributions of men and women in the productive and reproductive spheres.

2.3. Approaches of MPA/ICM

ICM and MPA programs in the Philippines implement a variety of components that include community organizing, participatory planning, alternative livelihood development, public education, research, regulating resource uses, and policy development.

These components are embraced in an approach known as “community-based coastal resource management”, which is “a comprehensive strategy that seeks to address the multi-faceted issues affecting the coastal environment through the active and meaningful participation of coastal communities” [22]. It facilitates greater local control of resource management with community organizing as its main tool.

2.4. Community-based coastal resources management

Through a series of ICM and MPA projects and programs beginning in the early 1970s, the Philippines has gradually developed the capacity for community-based coastal resources management. Considerable experience had been gained in this form of coastal resources management among various institutions including national and
LGUs, NGOs, and academic and research institutions [23]. A compilation of participatory methods in community-based coastal management put together by various practitioners based on their experience in the field [22] attests to this (see also [24]). Nevertheless, despite what has been accomplished by coastal management initiatives so far, there is unabated destruction and depletion of coastal resources. The effort to conserve coastal resources in the country continues in cooperation with international and regional organizations, and the support of donor countries.

One of the main goals of community-based coastal resources management is the empowerment of disadvantaged groups that comprise the majority of coastal residents affected by multiple management issues. The community-based management approach uses education and community organizing as a major tool in accomplishing its goals of resource protection, habitat rehabilitation, and poverty alleviation [25]. Disadvantaged groups, which are mostly small-scale fishers and other extractive users, are directly affected by management initiatives such as “no take” MPAs. In addition to raising public awareness and support of MPAs, educational efforts also attempt to assist various stakeholders in negotiating the imposition of restrictions on fishing and similar extractive activities in MPAs. Recent reports estimated that only around 10–20% of MPAs in the Philippines are fully protected [1,16,17]. This poor rate of success hinges on, among other things, alternative livelihood options, an aspect of coastal resource management that remains problematic and requires national as well as community-based interventions.

2.5. Community-based marine protected areas

Community-based MPAs illustrate the Philippine version of the community-based coastal resources management, which has continued to evolve with its failures and successes. A general framework of MPA establishment (Fig. 2) was put together in consultation with MPA practitioners through a series of focus group discussions held in December 1999–January 2000 [14]. There appear to be much adaptation and variation within this basic framework. Adaptations depend on the local context and the type of institutions involved. There are also many differing philosophies concerning specific approaches and the timing and sequence of various interventions.

The general steps in the process of establishing and implementing a community-based MPA are:

1. Community entry, preparation and appraisal.
2. Planning, which includes sanctuary site selection, determination of management mechanisms, ordinance formulation and financing arrangements.
3. Formalization through approval of a municipal ordinance, plan and budget.
4. Implementation and adjustment [14].

Several components run throughout the process and particularly in the pre-implementation phases. These include community capacity building, public participation and education, monitoring and evaluation. Key elements of the intervention strategy include the assignment of a full time field worker to the
community from the very beginning of the initiative throughout a period of implementation by the community. The field worker can either be a fisheries or marine biologist or ecologist skilled in community development or a community organizer with environmental conservation experience. Additionally, it is important that over time, there is a change in the roles among the community, the field worker and the intervening institution. Gradually, the community takes on increasing responsibility as their capacity increases and the field worker’s efforts in the community then start to wind down. However, continuing linkages to external institutions within a region and their support systems is desirable to ensure sustainability of these initiatives [14].

The time period of active engagement of external institutions with any community to achieve success and sustainability in any given place may take years. Once sanctuaries are established, some benefits (community empowered, tourism revenues received, increased fish abundance inside the sanctuary) may be seen rather quickly. However, it may take between 3 and 5 years after the sanctuary is established before longer-term benefits such as sustained increases in fish yield in fishing grounds outside the no-take reserves are evident. During the implementation phase, intervening institution roles are primarily in the area of monitoring and evaluation, and ad hoc technical support as needed [14].

2.6. Legislation for MPA/ICM

The 1987 Philippine Constitution provides the basic framework governing the use and conservation of the country’s natural resources while the Local Government
Code of 1991, the National Integrated Protected Areas System (NIPAS) Act of 1992, and the Fisheries Code of 1998 provide the major legal policies and guidelines. The implications of the Local Government Code and several other laws with respect to MPAs are described by White et al. [26].


The legal and jurisdictional framework for the management of coastal resources was drastically changed in 1991 with the passage of the Local Government Code (Republic Act 7160, 1991). Under this law, municipalities were given jurisdiction for fisheries management up to 15 km from the shoreline. The provincial field offices of BFAR were devolved under the administrative jurisdiction of the governors. A number of other functions were also devolved to LGUs (Provinces and Municipalities). In addition, revenue sharing formulas put a greater share of the national budget into the hands of the provincial administration under the governors and within the municipalities and cities under the jurisdiction of local mayors. Municipalities could now establish marine sanctuaries and fish sanctuaries without the need for central government approval. Under the 1990 Department of Agriculture guidelines for the establishment of fish sanctuaries [27], all fish sanctuaries had to be approved by the Secretary of Agriculture at the central office in Manila. Under the new guidelines, fish sanctuaries are approved at the municipal and provincial level in coordination with BFAR and in consultation with the municipal fisheries and aquatic resources management councils [28].

Within the decentralized context created in 1991, the community-based marine sanctuary concept has flourished. Barangay and Municipal Fisheries and Aquatic Resource Management Councils (FARMCs) have been formed to institutionalize resources management at the local level. FARMCs have some form of oversight concerning marine sanctuary establishment and management. Many sites have special committees or councils formed specifically to manage the marine sanctuaries often detailed in the approved municipal ordinances that formally establish these sanctuaries [14].


The NIPAS Act (Republic Act 7586) is the primary national legal framework that governs protected areas in the Philippines. It covers protected areas that are national in scope and are declared as such by Congress. The Act contains provisions on the scope of protected areas, how they are established and managed. Under the Act, public hearings and other forms of community participation are essential in the establishment of protected areas. The Act also provides that a Protected Area Management Board, the overall planning and decision-making body for a protected area be formed, which is composed of various stakeholders including people’s organizations, tribal communities, local government, NGOs, and government line agencies. The Act also provides for the creation of a protected area fund for the support of the protected area after withdrawal of external funding.
2.6.3. The Fisheries Code of 1998

The Fisheries Code of 1998 (Republic Act 8550) and its earlier versions provide the framework for the development, management and conservation of fisheries in the Philippines. The Fisheries Code reaffirms the authority of LGUs over municipal waters and specifies their authority to prohibit or limit fishery activities in overfished areas. The Fisheries Code provides the LGUs the authority to establish and manage MPAs and specifies that at least 15% of bays, foreshore lands, continental shelf, or any fishing ground or habitat area may be declared as a sanctuary where no fishing is allowed.

2.7. National Legislation in Coastal Management

The Department of Environment and Natural Resources has initiated the development of national legislation in coastal management through a consultative process. The analysis of legal and jurisdictional aspects of coastal resources management in the Philippines [29] has been useful in guiding the development of a draft Executive Order providing for a national policy in coastal management. Other sectors, however, need to be brought in and actively involved in the development of this national policy.

The Philippines has started to review its existing coastal and marine policies and strategies, revise a dated National Marine Policy,\(^3\) and produce a more comprehensive and more detailed policy document. A national integrated coastal and marine policy framework is to be developed as a component of the UNDP-sponsored project on the “ENR Programme: Environment and Natural Resource Framework Development and Implementation” for the Department of Environment and Natural Resources. The ENR Project is intended to guide the planning and implementation of interventions for the protection of the environment and the sustainable development of natural resources in the country. The Project provided the opportunity to build upon activities directed towards policy reforms in coastal resource management [2,30].

3. Characteristics of the programs established

3.1. Types of MPA program established

Majority of the MPAs established were community-based marine sanctuaries that are small, ~50 ha in size, initiated by LGUs or by an external institution such as an academic institution or an NGO. The MPAs established under the NIPAS program of the DENR, which include seascapes and marine parks, are much bigger in scale.

\(^3\)In 1994, the Philippines was among the first countries in the Asia-Pacific region to issue a National Marine Policy that attempted to define the country’s general policy framework for the management of its oceans and coasts. It was approved by a Cabinet Committee on Maritime and Ocean Affairs that was primarily concerned with the impending entry into force of the 1982 Law of the Sea Convention [30].
All MPAs were established with the goal of stopping the destruction of coastal resources and ecosystems and rehabilitating these degraded ecosystem and marine environment, to increase the yield of fishers in fishing grounds close to the MPAs, and to prevent further losses in biodiversity. The MPA commonly consists of a buffer zone (~70% of the MPA) where only non-destructive fishing practices are allowed. The rest (~30%) is a no-take area where extractive activities are not allowed.

3.2. Types of ICM program established

There are ICM programs established at various levels of government hierarchy in the Philippines. There are national (see Table 1), regional (e.g., Southern Mindanao Integrated Coastal Zone Management Project), provincial (e.g., those developed for Negros Oriental, Bohol, Masbate and Davao del Sur), and municipal coastal management programs with the latter as the most prevalent since the enforcement of the 1991 Local Government Code. There are also bay-wide coastal management programs such as those developed under the Fisheries Sector Program in 12 bays [15] and the GEF/UNDP/IMO Regional Programme for Marine Pollution Prevention and Management in the East Asian Seas project in Batangas Bay (see [31]). A management plan developed through a participatory process is a key feature of these programs and may include any subset of the following components:

- Socio-economic profiling
- Physico-chemical–biological profiling
- Stock assessment and population dynamics
- Community organizing
- Environmental scanning/rapid resources appraisal
- Environmental assessment and monitoring using standardized methodologies
- Education and training and other capability-building strategies
- Policy development and advocacy (national and local)
- Livelihood development/entrepreneurship
- Strategic planning
- Institutional development (government reorganizations in structure and functions to accommodate CRM)
- Infrastructure development (fish processing plants/ice plants)
- Aquaculture development (seaweed farming; mariculture)
- Research
- Fisheries regulation and other regulatory activities including establishment of MPAs (Fisheries Code of 1998; local/municipal ordinances)
- Tourism development (development of the National Tourism Master Plan) [29].

Some of the ICM programs also addressed issues related to the watershed and incorporated forest plantation and/or reforestation among its components.
4. Governance, financial arrangements, and enforcement

Environmental and natural resources governance in the Philippines was highly centralized before 1991. With five levels of government in the Philippines (i.e., national, regional, provincial, municipal, and village-level), shifts in leadership at any level have a potential impact on the implementation of coastal resources management projects. However, changes in the municipal government leadership pose the greatest risk because of the devolution of coastal management authority to the municipalities in 1991. Devolution in this case meant the shifting of some, but not all, managerial control over marine spaces from the national government to the LGUs. This involves a transfer of both rights and responsibilities, so that an LGU may obtain new opportunities to control exploitation, but must also assume significant management obligations [32]. Specific tasks and powers had been assigned to three local levels of government, the provincial, city/municipal, and the barangay (i.e., village) levels, most of which had no capacity to formulate and implement coastal resources management programs.

MPAs are managed by the coastal communities who feel an ownership over the MPA because of their involvement in its establishment. A multi-sectoral advisory body oversees the management of the MPA, commonly called “marine sanctuary management council” or “protected area management board”. Regional or provincial representatives of government line agencies, local organizations (“People’s Organizations”), and the private/business sector are represented in the advisory body.

The establishment of MPAs may be initially funded by an intervening institution (e.g., academic, government program, NGO) with in-kind support from the local government. As soon as the MPA is declared and a management plan is in place, the MPAs may be funded under the local government internal revenue allocation, if it makes it into the municipalities’ priority list of projects or activities to be funded. It can also be supported by income from the collection of user fees from divers and other tourists who visit the marine sanctuary.

MPA regulations are enforced by a team composed of the Coast Guard, local government police, volunteers from NGOs involved in the MPAs, and members of local organizations commonly called “Bantay Dagat” (= “Bay Watch”) who are trained and deputized to apprehend sanctuary violators. Funds for the implementation of MPA management plans are usually inadequate requiring contributions from various stakeholders involved.

Various government agencies are involved in coastal management programs in the country. These agencies implement various mandates that sometimes overlap. For example, both the Department of Agriculture (DA) and DENR are involved in the establishment of MPAs; the former historically assuming such a function through the issuance of Fisheries Administrative Orders, and the latter through the more recent National Integrated Protected Areas System (NIPAS) program [33]. A legal and jurisdictional guidebook for coastal management in the Philippines prepared by the Coastal Resource Management Project [31] listed the following mandates of
agencies involved in coastal management in the Philippines: (please see Table 2 for a key to the acronyms)

- Policy formulation (LGU, FARMC, NGA, DENR)
- Resource assessments: coastal (DA-BFAR, DENR, PCAMRD); marine (DA-BFAR, DENR, PCAMRD)
- Statistics gathering and compilation: fisheries (DA-BAS); mangroves (DENR); fishponds (DA-BFAR)
- Establishment of protected areas (LGU, DA-BFAR, DENR, Congress)
- Mangrove reforestation (LGU, DENR)
- Fishery licensing: municipal waters (LGU); offshore waters (DA-BFAR)
- Fishery law enforcement (LGU-PNP, PCG, DA-BFAR, deputies)
- Pollution law enforcement (LGU, PCG, DENR)
- Land use management (LGU, DENR)
- Tourism management (LGU, DOT)
- Reclamation (DENR (LMB and EMB), PEA)
- Pollution monitoring, including marine waters (LGU, DENR-EMB, PCG)
- Establishment of municipal/fishing ports (PFDA, PPA, LGU)
- Research (DA-BFAR, DA-BAR, DOST-PCAMRD).

With the exception of the Coastal Environment Program, which is funded by the national government, all the major coastal management programs were mainly supported by external funding in the form of loans or grants, with matching funds from the Philippine government. The implementation of program components after external funds are withdrawn is expected to be borne by local governments with some assistance from the national government, NGOs, and local organizations. ICM programs initiated at the regional, provincial, and local levels are financed at varying levels by the initiating national ICM program, participating businesses, local government appropriation, and external funding. These local ICM programs are expected to develop self-sufficiency through time.

The major ICM programs are implemented by a program management office, consisting of foreign and local experts, which is co-terminus with the program. The program management office, which is accountable to a multi-sectoral advisory body, is assisted by program staff at the regional, provincial, and municipal level. A multi-sectoral technical working group at the national, regional or local level, a local academic institution, or a local environmental NGO may be tapped to provide technical guidance and training in the implementation of program activities.

Local-level ICM programs have local government staff as its secretariat, consisting mostly of the planning and development officers, and agriculture, forestry, or fisheries staff, and members of the city or municipal policy-making body tasked to address environmental concerns. A municipal or city coastal management council provides general oversight, while local academic and research institutions as well as NGOs provide technical support and training. Recently, the Philippines has been exploring the potential of provincial-level ICM to provide assistance in the
replication of ICM among LGUs. A number of provincial environment offices are slowly gaining ground in taking a lead role in facilitating the formulation of provincial ICM plans [34,35].
Planning and consultative workshops, community meetings and public hearings are the usual venue for the discussion of issues and contentious matters to be resolved before management plans are adopted.

5. Problems/obstacles faced

The problems and constraints confronted by ICM and MPA programs generally involve the lack of resources, e.g., technical expertise and funding, to conduct essential management activities effectively, such as management planning\(^4\) and monitoring and evaluation. Lack of adequate preparation among key players such as community-organizers and project managers is a common factor for ineffectiveness of management interventions. Failure to reach out to higher-level support for community-based ICM or MPA programs is a common reason for discontinued initiatives.

Lack of adequate provisions for the sustained implementation of ICM plans is a major constraint, particularly because management programs were put in place mainly with external support (see [36] for the Lingayen Gulf case). Implementation without the benefit of phasing and learning from pilot implementation was also a problem particularly with the Fisheries Sector Program. Livelihood schemes generally do not work well because of problems with the administration of loans and inadequate planning and marketing infrastructure. Experts at the national, regional and provincial levels, are involved in CRM and MPA programs implemented in overlapping time-frames, and are consequently overwhelmed by the amount of work to be done.\(^5\)

Donor conditionalities sometimes take precedence over lessons learned in the planning, design and implementation of CRM programs. Contextual factors such as lack of political will among local chief executives constrain implementation of local projects.

6. Outcomes of the programs and long-term outlook

The lack of significant impact of a centralized, fragmented governance of coastal resources, a change in national leadership and greater freedom to conduct community organizing and other grassroots activities in the second half of the 1980s provided the opportunity for a community-based approach to coastal resources management. This approach relied heavily on participatory methods that provided communities with some degree of control over the planning and implementation of coastal resources management programs.

A participatory approach to coastal management, sometimes considered synonymous to community-based coastal management, is especially manifest in the

\(^4\)Less than 20% of MPAs have management plans [17].
\(^5\)This can also be regarded as an opportunity since these experts become effectively informed about ICM and MPA developments because of multiple assignments.
establishment of artificial reefs and MPAs. An evaluation of a number of this type of coastal management projects indicated the following lessons learned from various experiences:

(a) Evaluations of project success by project staff and beneficiaries may vary because they use different criteria.
(b) Early and continuous participation of project beneficiaries in project planning and implementation is related to their positive evaluation of impacts.
(c) Positive cultural attitudes toward the efficacy of collective action were consistently related to perceptions of positive change.
(d) Mobilizing people for collective action is a time-consuming process that requires the presence of committed, competent, and people-oriented project personnel, and a shared understanding of project objectives by both the cooperators and the project personnel.
(e) Capability-building efforts enhance the perception of empowerment and sense of confidence of project cooperators to undertake new tasks and to meet current and future challenges.
(f) Project cooperators, as well as non-cooperators perceive positive changes in the impact indicators.
(g) User rights to material interventions must be specified and enforced.
(h) The data indicate that fishers like their occupation and would not necessarily change to another job, suggesting that supplemental, rather than alternative, occupations may be the most effective [37].

More in-depth research is still needed to understand more clearly how MPA and ICM approaches work in a large number of situations in the Philippines. With the impetus for replication and expansion provided by the Local government Code and Philippine Fisheries Code, with the latter calling for 15% of municipal waters to be set aside as fish sanctuaries, greater efforts are needed at building capacity at the local level and among local/regional institutions that can provide support and assistance to municipal governments and community organizations in undertaking MPA and ICM initiatives. Program planning and design remain very important factors to consider in ICM and particularly for MPAs a large number of which lack a management plan. Identifying strengths, building on them, and addressing weaknesses of key players collectively constitute a key step in planning that could boost the effectiveness of ICM and MPA efforts in the country.

7. Linkages between the MPA programs and the ICM programs

The following are some of the apparent linkages between the MPA and ICM programs:

1. MPAs are invariably an essential component of major ICM programs in the Philippines. Thus, the principles and concepts of ICM are applied in the MPAs
established under these ICM programs particularly in the development and implementation of MPA management plans. Furthermore, other ICM strategies could enhance the effectiveness of MPAs such as fisheries management strategies that could lead to overall reduction in fishing effort [38].

2. At the municipal level, in cases where MPA establishment preceded the development of a broader coastal management program, the principles and lessons learned in earlier MPA initiatives are carried over and applied to other components of the coastal management program.

3. MPAs are commonly used as flagship projects by ICM programs to demonstrate the effectiveness of the ICM approach. “Cross-visits” are a technique used to promote the replication of MPAs by encouraging visits to a successful MPA site, of local government and NGO officials, and other potential adopters of the approach. In this case, both the MPA strategy and the ICM approach are promoted. The establishment of municipal coastal management learning sites by the Coastal Resource Management Project has furthered this practice. Government officials from neighboring countries in southeast Asia such as Indonesia and Vietnam visit MPAs in the Philippines to learn strategies in managing protected areas and other ICM strategies [39,40].

4. The processes and the tools used in the development of MPAs and local ICM programs are commonly the same. The general steps in the process of establishing and implementing a community-based marine sanctuary are usually similar, only broader in scope and scale in the case of ICM programs. Key strategies such as community capacity building, public participation and education, and the assignment of a full time field worker to the community from the very beginning of the initiative throughout a period of implementation commonly run throughout the MPA and ICM processes.

5. At the local level, and to some extent at the national and regional level, the same groups of stakeholders are represented in multi-sectoral advisory committees and working groups of MPAs and ICM programs, e.g., the environment, fisheries, economic development, and tourism agencies, local/provincial council, local chief executive, people’s organizations, NGOs, and the private sector. Hence, the principles and best practices in ICM and MPA are applied to both programs.

8. Improving the effectiveness of MPA and ICM programs

The following are some viewpoints for consideration on how to improve the effectiveness of ICM and MPAs in the Philippines at various stages in the management process.

1. Preparation:
   - Conduct a formative evaluation of the project at the beginning stage in order to verify whether the issues, objectives, strategies and activities of the project are logically connected and to determine whether sufficient resources could be
devoted to each strategy or activity to ensure the accomplishment of its goals (see Fig. 3 for a sample logic model).

- Use a checklist of supporting conditions to determine extent of preparedness among key players in the project during project start-up (see Table 3 for a sample checklist). Supporting conditions are components or criteria of preparedness of program participants for carrying out new roles and implementing new technologies [41]. It would be useful to determine the presence of conditions supportive of the Project interventions by using a rough assessment of the conditions as to whether these are “absent/none,” “weak,” “adequate,” and “strong.” See Balgos [42] and Fernandez et al. [43] for examples of how the assessment of key conditions was applied for CBRMP and for co-management programs in Banate Bay and Batan Bay.

- Vertical integration is an approach that needs to be applied in conjunction with the principle of comparative advantage. The organizations involved must be logically appropriate for the roles that they play in the program. There should be careful consideration of the organizations’ resources vis-à-vis the extent of their involvement. Throughout a program hierarchy, identification of strengths of the organizations involved should lead to each organization taking actions that other organizations could not. In particular, there should be an identification of what more people’s organizations could do in the implementation of subprojects. Labor is the greatest resource that these people’s organizations have in abundance and which is not tapped optimally. Local

**Program Logic Model**

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Staff Activities</th>
<th>Target Audiences</th>
<th>Performance Outcomes</th>
<th>Resource Management Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>• External services, production costs</td>
<td>• Teach about rehabilitation techniques through lectures and fieldwork planting of mangroves or removing exotics</td>
<td>• Volunteers, students, scouts, civic groups, fishers, tourist facility operators</td>
<td>• Participants will be able to</td>
<td>• Altered areas resulting in impacts</td>
</tr>
<tr>
<td>• Education specialists, other staff</td>
<td></td>
<td></td>
<td>1. Demonstrate restorative techniques</td>
<td></td>
</tr>
<tr>
<td>• Resource management equipment and boats</td>
<td></td>
<td></td>
<td>2. List reasons for restorative efforts</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Transfer learned actions to personal conservation actions</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 3. A sample logic model (Source: [42]).
organizations such as these people’s organizations can provide opportunities for group communication where reaching rural publics is costly because of the great number and dispersion of persons to be contacted [44]. People’s organizations can be effective in providing education and training to their members as well as to the general public by the process of horizontal diffusion, e.g., farmer-to-farmer extension method [42,45]. Fishers and their wives who are unable to leave their homes and work in order to come to training sessions may be involved in such a training process provided an effective system of diffusion and feedback is used.

More careful planning in the design and establishment of MPAs within broader ICM and area development programs and nesting these MPAs within a network of MPAs are two strategies that could enhance their effectiveness [17]. The importance of appropriate scientific input, especially in setting the size and location of MPAs must not be neglected, especially when guidance from local academic and research institutions are available.

2. Implementation:

- More careful planning in the design and establishment of MPAs within broader ICM and area development programs and nesting these MPAs within a network of MPAs are two strategies that could enhance their effectiveness [17].
- The experience and skill level of community organizers or on-site field-worker assigned to work with the communities to assist in the establishment and implementation of community-based ICM and MPA programs is a key success factor [14] on which depends the level of technical expertise applied on-site. Community organizers are the communities’ link to more advanced and effective ICM tools and techniques. The lack of choices in terms of possible

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Table 3
Sample checklist of supporting conditions among key players in either an ICM or MPA program

<table>
<thead>
<tr>
<th>Condition</th>
<th>Key players</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local government</td>
</tr>
<tr>
<td>1. The skill level of the field worker assigned to the community and the level of effort and technical expertise applied at any given site</td>
<td></td>
</tr>
<tr>
<td>2. A good understanding of proven approaches</td>
<td></td>
</tr>
<tr>
<td>3. Proximity of the local support institution to the community</td>
<td></td>
</tr>
<tr>
<td>4. Political will and support of the community-based marine sanctuary concept</td>
<td></td>
</tr>
<tr>
<td>5. Organizational vision and strategy</td>
<td></td>
</tr>
<tr>
<td>6. Human and logistical resources</td>
<td></td>
</tr>
<tr>
<td>7. Adaptive management approach/monitoring and evaluation systems designed into the Project and implemented at the beginning of Project implementation</td>
<td></td>
</tr>
<tr>
<td>8. Realistic expectations of the time and effort required</td>
<td></td>
</tr>
<tr>
<td>9. Continued engagement with communities once sanctuaries have been established</td>
<td></td>
</tr>
</tbody>
</table>
solutions to problems and issues encountered during implementation may sometimes be attributed to the community organizers lack of expertise or resourcefulness in accessing support that is tantamount to inadvertent issue-framing. Therefore, intervening institutions should gently pull out after the adoption of management plans, ascertaining that local community organizers and leaders have been linked to information sources and adequately equipped to deal with incoming problems and changing project circumstances.

- Development of mechanisms to sustain the implementation of ICM and MPA plans is essential. After the basic groundwork for capability building, natural resources management, livelihood generation, and other program components are put in place, the next step is the formulation of a set of mechanisms that would ensure the sustainability of these efforts, including continued input of state-of-the-art knowledge of technologies, continued training of project implementers considering changing project needs, sufficient public support, continued infusion of financial assistance until supporting livelihood enterprises are effectively in place, and continued engagement of the people’s organizations and the community in general in decision-making. This set of mechanisms may be provided through national legislation that mandates funding and implementation of these mechanisms at the local level with adequate guidance and technical support from line agencies.

3. Learning:

- Lessons can be sought by searching across time and space, scanning programs in effect elsewhere, and assessing what would happen if a program already in effect elsewhere were transferred to another place in future [47]. It does not have to be a whole program, it can be a strategy or a technology used in a program, which is well documented such that decision-makers can make informed decisions about its adoption. Furthermore, lessons can be sought and adopted across sectors, and rural development [44,45] and terrestrial protected area management are particularly rich in lessons that do not need to be learned anew in the ICM and MPA processes.

- Learning from the private sector through public–private partnerships in order to make alternative livelihood projects work is another application of the comparative advantage approach. Ensuring the feasibility of alternative livelihood for fishers displaced from no-take areas is considered to be a key success factor in MPAs. This aspect is emphasized in the Wild Reef permanent exhibit in Chicago’s Shedd Aquarium showcasing the Apo Island reef and marine reserve [48]. What lessons can be learned from this $47-million underwater exhibit recreating Apo Island’s coral reef? How can we use coastal resources sustainably without compromising their integrity in order to improve the quality of life of coastal communities while sharing the resources with others? These are questions that need to be asked bearing in mind that ICM

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6Issue framing is the process of focusing attention to a particular portion of an extended causal chain, cutting off parts from people's vision; a list of alternatives is an important method of framing a policy problem [46].
and MPA management require collective action and that the involvement of the private sector is not an option but a necessity.

4. **Adjustment:**

- ICM and MPA management are dynamic processes that involve decision-making amidst changing issues, changing goals, changing partners and governance structures, and changing resources. Thus, monitoring and documentation are necessary adjuncts for effective program assessments and subsequent program adjustments. For example, the proliferation of fish cages and their encroachment in MPAs has recently become a threat to the coastal environment and its resources and the frequency of fish kills due to nutrient overloading from fish pens and cages was unprecedented. This unanticipated problem requires the sharpening of skills of ICM and MPA practitioners for adjustment that requires a new perspective of aquaculture, long considered the solution to avert pressure from dwindling wild fish stocks but has become an inadvertent instrument of environmental degradation.

- Include political reason among the criteria used in evaluating effectiveness and justifying choices among alternative management options. Since collective action occurs in a political world, players must strive to understand how the world looks from different viewpoints, interact with one another and persuade others, and to look outside their interests for a rationale for action [44], especially in regard to recalcitrant stakeholders whose agenda may not be congruent to those of MPA and ICM initiatives.

**References**


