



Cultivating *peace*

Conflict and Collaboration in Natural
Resource Management

edited by Daniel Buckles

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Conflict and Collaboration
in Natural Resource Management

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INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
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BOLINAO, NORTHERN PHILIPPINES: PARTICIPATORY PLANNING FOR COASTAL DEVELOPMENT

**Liana Talaue-McManus, Alexis C. Yambao,
Severino G. Salmo III, and Porfirio M. Aliño**

A participatory process for planning coastal development in Bolinao, northern Philippines, was integral in empowering marginal fishers and other community members and involving them in decision-making. Empowerment was effected through transfer of knowledge about their environment and natural resources, the laws that determined access to them, and the institutional mechanisms through which they could meaningfully participate. Throughout this process, resolution of conflicting interests occurred in parallel and allowed community members to achieve a consensus on appropriate management options for their coastal waters. Forging a partnership between a community and its leaders, the Coastal Development Plan embodied a collective vision for the long-term feasibility of Bolinao's living coastal resources.

Bolinao is a municipality in the province of Pangasinan on the northwest coast of Luzon, Philippines (McManus et al. 1990). One of 18 towns bordering the Lingayen Gulf, Bolinao has one of the most extensively developed reef systems and associated habitats in northern Luzon (McManus et al. 1992). Demersal fish, shellfish, and seaweeds living in reef and seagrass areas dominate the fisheries of the town. In 1993, the Lingayen Gulf was declared an environmentally critical area under Proclamation 156. The Bolinao–Anda reefs — the only coralline section of the gulf — are the spawning and feeding grounds for a significant number of fish and invertebrate species.

From an environmental perspective, significant indicators of unsustainable levels of resource extraction were evident in the late 1980s. Talaue-McManus and Kesner (1995)

documented the collapse of the valuable sea-urchin fishery in 1992, despite the existence of town resolutions limiting the fishing season and establishing a minimum harvestable size. Data gathered over a 4-year period (1988–91) revealed evidence of overharvesting of reef fish: a decrease in adult-fish density and species diversity, as well as in the size of reproductively mature fish (McManus et al. 1992). A survey of the coral reefs of the Lingayen Gulf conducted during 1987 and 1988 showed that sites in the Bolinao–Anda system had 30–51% live coral cover; siltation and the use of dynamite and poison posed the major threats to the reef (Meñez et al. 1991).

This paper examines the conflicts that occurred over the coastal waters of Bolinao and the multistakeholder consultations that sought to address them. Lessons are identified regarding the role of local organizations, environmental education, and the contributions of science to the development of a collective and long-term vision of Bolinao's coastal resources.

The initial situation: resource degradation and inequities in access rights

Balingasay River and the milkfish fry concession system

Milkfish fry are found from April to September in the Balingasay River (Salmo III, personal communication, 1998¹) (Figure 1). Currently, fishers bid on the right to collect fry, with the local government granting them a concession in return for a fee. However, the bidding process may be modified by the mayor, with support from the municipal council (the Sangguniang Bayan). For example, the mayor may enter into negotiated contracts with favoured business partners, a discretionary practice subject to many irregularities and corruption. Since postwar years the municipality of Bolinao has received significant funding in tariffs from the milkfish fry concession.

The subsistence collectors are forced to sell their catch to those holding the concession at prices usually below those dictated by market demand. The concession holder makes a large profit, and fry collectors earn a minimum income. This situation of short-term monopoly on access and distribution marginalizes the subsistence fry gatherers and leaves few incentives to regulate the harvest of fry or of spawning fish. It has also led to illegal fishing, which is widespread.

The use of the Balingasay River for tourism, navigation, and sand-quarrying further exacerbates the conflict. Resort owners want shorefronts to be open and free from any activity; however, both subsistence and deep-sea fishers living near the river must use the area for navigation and docking. Overcrowding of houses on the beach and sand quarrying activity create further tensions.

Siganid fishery in the Santiago Island reef system

Reef flats and slopes are most extensive around Santiago Island (Figure 1), making this the richest and most diverse fishing grounds of Bolinao. Each year, this area is allocated to the highest bidder as Fishery Lot 1. Forty percent of the catch obtained from this zone is made

¹ S.G. Salmo III, Marine Science Institute, University of the Philippines, Diliman, Quezon City, Philippines, personal communication, 1998.

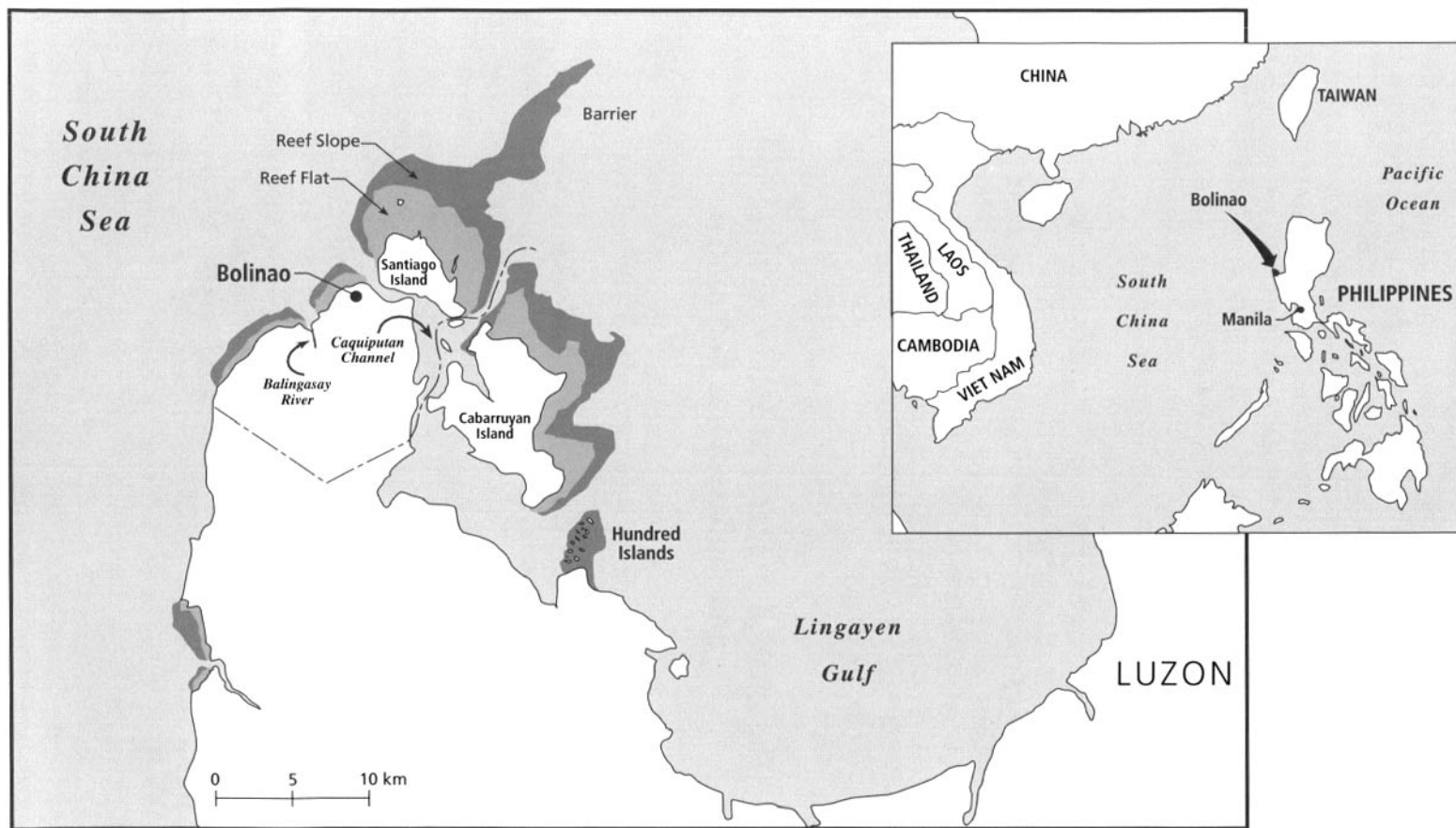


Figure 1. Lingayen Gulf and its reef areas, Philippines.

up of siganid fish, which migrate beyond the reef flats to spawn (McManus et al. 1992). Newly settled juveniles migrate back to the seagrass meadows on the reef flats to feed and grow. Siganid fish are harvested at all stages: juveniles are used in various grades of fish sauce, and adult fish are sold dried or fresh as a preferred food species.

The system for granting concessions in the siganid fisheries of Bolinao has been in place for a long time and is an important feature of the local economy (Rodriguez 1997). Concession holders, or occasionally a negotiated contractor, build fish corrals in which they catch the siganids. They may also sublease the right to set up corrals to others, provided all of the catch is sold back to the concessionaire.

Like the milkfish concession, exclusive fishing privileges for the siganid fisheries create inequitable access to a rich resource and result in a disparate distribution of economic benefits. Marginal fishers are prohibited from fishing near the fish corrals, the open arms of which collectively form a formidable trap for migrating fish coming from or leaving the reef flats. These constraints interfere with navigation and promote illegal fishing. Although the local government earns revenues from the sale of concessions, it has not been able to ensure the long-term feasibility of the siganid fisheries. Studies of the reef fisheries by McManus et al. (1992) indicate that the size of reproducing siganids is decreasing (fish 3 cm long were already gravid), a sign of overexploitation. Loss of habitat (as a result of the destruction of coral reefs) and the deterioration of seagrass beds further undermine the sustainability of the resource.

The change process: people's organizations and multisectoral planning

In July 1992, the need to take action in light of declining catches, inequity of access to resources and to benefits accruing from their use, and degradation of the coastal environment was publicly articulated. A meeting (Coastal Management Forum I) of the coastal community and agencies active in Bolinao was called by concerned scientists and environmentalists to collectively air environmental issues and begin to identify possible courses of action (Rodriguez et al. 1992). Testimonies from fishers and other stakeholders (fish vendors, shell craftspeople, etc.) echoed the findings of scientific studies showing the deterioration of the living coastal resources and the decline in fishing as a feasible livelihood and mainstay of the town's economy. The forum resolved to coordinate development work in Bolinao through an integrated coastal management approach involving citizens' groups, regional and national governmental organizations, and university-based environmental organizations.

Two years later, concerns about the sustainability of the fisheries raised during the first public meeting were intensified by a proposal of the national government to industrialize the "Northwestern Luzon Growth Quadrangle" (Executive Order 175, 30 April 1994). The first major initiative was to build a cement plant complex, including a quarry site, power plant, cement factory, and wharf to facilitate shipment of bulk cement to Taiwan. In response to this plan, concerned environmental groups called a second public meeting (Coastal Management Forum II) to discuss the potential environmental impact of the project on the fisheries and the need for a municipal development strategy to weigh the costs and benefits that municipal government support for the plan would entail.

Establishing people's organizations

Although the *Local Government Code*² had been in effect since October 1991, town leaders and the community at large realized that they did not have the information and technical advice they needed to make crucial decisions regarding the direction of development and the management of the coastal resources. A University of the Philippines project called the Community-based Coastal Resources Management (CBCRM) in Bolinao, Northern Philippines was initiated in 1993 to respond to this need. (This project was supported by the International Development Research Centre [IDRC]).

The approach of the project was to focus first on community mobilization and environmental education (McManus 1995). Previously nonaligned sectors of the community were mobilized to form local groups and learn about environmental issues. The hope was that once organized and empowered with knowledge and skills, the groups would embark on their own resource management initiatives, including the development of environmentally friendly livelihood options and networking with other like-minded groups. An environmental education and information campaign was conducted in 11 of the 14 coastal villages (*barangays*) of Bolinao. Data indicated that the direct users of coastal resources — 3 000 families of marginal fishers or 30% of the town's population — could lose their resource base if it was not appropriately managed.

By early 1996, people's organizations had been set up in four coastal villages (Arendo and Balingasay on the mainland and Binabalian and Pilar on Santiago Island). A second-generation organization was established in the mainland village of Ilog Malino, with the help of the Balingasay organization (Figure 1). Among the first proposals of these organizations was the establishment of protected marine areas in the waters next to the villages of Balingasay, Arnedo, and Binabalian. They also proposed a mangrove rehabilitation area in Pilar to increase aquatic spawning habitat.

The CBCRM project held a number of internal meetings to build on these resolutions. A zoning plan for Bolinao, first conceived in 1994 (Yambao and Salmo 1998), was broadened into a coastal development planning exercise to include multiple stakeholders. The project developed strategies for facilitating the creation of new roles and functions for the local government (both the executive and legislative branches) and for the fledgling people's organizations. These included taking all possible steps to build the appropriate knowledge and skills needed to ensure the active participation of all community sectors and the local government. The team also developed first drafts of a resource map indicating the location of the proposed protected marine areas, the mangrove rehabilitation area, the watershed management area, and potential mariculture sites.

Enhancing the role of people's organizations and working toward conflict management

In May 1996, an orientation session on coastal development planning was conducted for the leaders and members of the four people's organizations collaborating with the CBCRM project. The participants defined uses in the major divisions of the coastal areas; identified fishery and coastal management issues, problems, and concerns; and described a range of management options for each area. The draft resource map developed by the project was

² The *Local Government Code* is a statute passed by the Philippine Congress, which provides for the devolution of governance from the central government to province, city, municipality, and village levels. It includes management of municipal waters up to 15 km from shore.

used to prepare village-level maps, and management activities for several villages were proposed.

After further discussion within the organizations and several community workshops on resource management, the four people's organizations integrated their resource maps into a regional map. Technical studies and the wide dissemination of their results were crucial steps in formulating alternative management options with the potential to resolve ongoing conflicts. For example, during community workshops and meetings, the CBCRM project widely disseminated the results of ongoing monitoring of the siganid fisheries of Bolinao by the University of the Philippines' Marine Science Institute (UPMSI). During the meetings, fishers and traders corroborated the trend toward diminishing catches and decreasing size of reproducing adults. This enhanced the credibility of the information collected by the CBCRM project and the UPMSI and led to a common understanding of the resource problems. It also provided a basis for discussion of possible solutions and local participation in data collection in some areas.

The community meetings and workshops helped clarify local perceptions of the living coastal resources, the legal and social mechanisms that govern access to them, and the problems and possible solutions associated with their use. The active participation of stakeholders in the process deepened their sense of involvement and commitment to achieving prospective solutions to the problems they had identified. Recognition of their common concerns also led to the federation of the four organizations under the name of the Municipal-wide Federation of People's Organizations for Coastal Resource Management (KAISAKA) to promote the development of a Coastal Development Plan (CDP) for Bolinao.

Eliciting the support and participation of the local government

In August 1996, the Department of Environment and Natural Resources refused to issue an environmental compliance certificate for the cement plant complex, bringing to an end a controversy that had mobilized local and national groups concerned about its environmental impact. One of the main reasons cited for denial of the certificate was the absence of a municipal land-use plan. The CBCRM project had proposed such a plan to the municipal government sometime earlier, but the idea had been rejected by the mayor and other officials. However, after it became apparent that the absence of a plan had frustrated a significant industrial development initiative, the municipal government asked the CBCRM project to provide assistance in coastal development planning. Key officials of the Municipal Development Council (the executive branch of the local government), the mayor, the municipal planning and development coordinator, and the local government operations officer met with project personnel to discuss the CDP already developed by the KAISAKA federation. The mayor later agreed to sponsor a multisectoral consultation on the development of Bolinao to build on the existing plan and finalize it for consideration by the municipal government.

A workshop was held to present the federation's plan to other community stakeholders, including representatives of the village governments, local organizations, and other concerned groups. The results of a study on land use that was conducted by the CBCRM project were also presented. Drawing on this study and the CDP, four management zones were identified: ecotourism, multiple use (milkfish pens and fish cages), fishery management (reef fisheries), and special management (trade and navigation) (Figure 1).

In December 1998, the first Multi-sectoral Consultation on the Development of Bolinao was coordinated by the office of municipal planning and development and the CBCRM project. The meeting was attended by about 120 people, most of whom were *barangay* leaders, heads of village-based organizations, the media, and representatives of the provincial government and other government agencies and community sectors. The consolidated development plan was presented, and the need to form a drafting committee was discussed. The mayor later issued an executive order (No. 6, Series 1996) to create a Multi-sectoral Committee on Coastal Development Planning for Bolinao (MCDB), composed of 21 members representing 11 community sectors, including the four people's organizations and five members of the Municipal Development Council. The executive order also stipulated that the CBCRM project would provide technical assistance to the committee and allocated a budget of 100 000 PHP for the preparation of the plan (in 1999, 38.44 Philippine pesos [PHP] = 1 United States dollar [USD]).

New conflicts emerge

Although progress was being made in the development of local capacity to manage coastal resources, new conflicts were also emerging. Throughout 1996, fish pens and cages proliferated in the Caquiputan Channel between the Bolinao mainland and the islands of Santiago and Cabarruyan (Figure 1). According to a survey by the Lingayen Gulf Coastal Area Management Commission, the number increased from about 330 in December 1996 to 3 100 in July 1997. These aquaculture facilities are used to raise the estuarine milkfish *Chanos chanos*, using fry gathered from the Balingasay River. Leases of 3 to 5 years were granted by the municipal government, but officials were not prepared to determine the optimal number of structures, locations, or the distance between them needed to sustain healthy waters.

As noted above, the economic and political elite of Bolinao controlled access to the milkfish fry of the Balingasay River and had a monopoly on feed and other supplies for aquaculture operations and the milkfish trade. When the number of pens and cages first began to increase, conflicts arose because they reduced the area of the fishing grounds and navigable waters for subsistence fishers, thereby exacerbating an already inequitable situation.

The conflict was further intensified because water quality in the channel quickly deteriorated. The rate at which water flushed through the system, naturally cleaning the channel, was reduced because the density of the pens obstructed water flow. Residues from the large amounts of feed used in the aquaculture operations built up in the channel, causing a decline in the amount of dissolved oxygen in the water. During the warm months of 1997, this reached a level that was lethal to milkfish; fish mortality increased, and growth rates declined, leading to significant economic losses. The number of pens and cages dropped the following year to 1 200 because of this.

In 1996, the CBCRM project initiated a technical study on which to base specific guidelines for coastal aquaculture operations. Using basic physical and chemical parameters, such as bathymetry, water residence times, and tidal velocities, a zoning scheme and the optimal number and size of fish pens and cages were determined (MCDB 1997). This study was incorporated into the planning process for Bolinao's CDP and was also presented to the adjacent municipality of Anda, which shares the waters of Caquiputan Channel with Bolinao and was beset by the same conflict.

Preparing the Coastal Development Plan

The economic losses sustained by the milkfish aquaculture system in 1997 provided additional incentive to support the planning process. A team-building and planning workshop was held to articulate the vision, mission, and goal of the MCDB and to provide a venue to renew the commitment of its members to pursuing the planning exercise to completion. A workplan for the committee was developed and regular monthly meetings were scheduled, including community consultations in all coastal villages (Yambao and Salmo 1998). By the second meeting, the committee had adopted the proposal to divide the municipal waters into four zones, and by mid-1997 community consultations were completed and all inputs and amendments were recorded.

The committee then held a series of meetings to finish drafting the text of the plan. The draft went through a parliamentary procedure of being read and scrutinized three times while the committee sat *en banc*. The plan was assembled by the CBCRM project and revised and amended by all members of the committee. To ensure that all the concerns raised during the public consultations were addressed, all documents and the minutes of meetings were reviewed by the committee.

After the draft CDP was approved on its third and final reading in October 1997, the committee submitted it to the mayor and members of the Municipal Development Council, which included five people who were also members of the drafting committee. The mayor endorsed the plan and asked the Municipal Council (the body with legislative authority) for approval. By mid-January 1998, the Municipal Council approved the CDP.

The active participation of key municipal authorities in the development of the plan was key to securing final endorsement. However, the timing of the planning exercise and its submission to the Municipal Council was also fortuitous and instrumental in its acceptance. Just weeks before submission to the Municipal Council, the president of the Philippines issued an executive order (No. 450, Series 1997) requiring all 800 coastal municipalities of the country to formulate comprehensive coastal development plans that would form the basis for the passage of fishery ordinances. Bolinao was the first to fulfill this requirement.

The outcome: providing a practical framework for conflict management and participatory planning for coastal development

The events leading up to the development of the CDP were characterized by polarization in the Bolinao community because of inequities in access to resources and threats to livelihoods posed by the cement plant complex and resource degradation. These conflicts animated a process of community organization, demand-driven research, and multisectoral planning.

The impact of the CDP exercise on the sustainable and equitable use of coastal resources in Bolinao cannot be fully assessed, and the implementation process is still uncertain. The people's organizations supported by the CBCRM project are still too weak to spearhead implementation on their own. Partnership with nonaligned sectors of the community, such as the UPMSI and with the local government, is necessary to begin realizing key management interventions contained in the plan. Members of the people's organizations are active environmental advocates, whose level of awareness and commitment

help sustain the momentum of collective efforts, but time, skill, and organizational constraints hamper their functional role in implementing the plan.

The process seems to have provided an effective venue for channeling conflicts and building consensus by articulating a development vision and formulating action plans to achieve it. Although among sectors of the communities, there were various degrees of involvement, commitment, and active participation in the drafting committee, a sense of collective ownership of the plan emerged. The Municipal Council formally acknowledged in a public meeting that the consultative and participatory process used in the CDP was positive and should be used in the formulation and passage of other forms of municipal legislation.

Key government agencies, such as the Lingayen Gulf Coastal Area Management Commission (LGCAMC) and the National Economic Development Authority (NEDA, Region 1), have also taken note of the process. During a workshop on community development plans with municipal officials from all the coastal towns of the Lingayen Gulf, the LGCAMC and NEDA presented the Bolinao plan as a model for member municipalities. Other government organizations and nongovernmental organizations working in coastal areas around the country have also used the Bolinao CDP as a reference in their planning exercises.

Lessons learned

The Bolinao experience in participatory coastal development planning is a strategy for institutionalizing collective management practices from the community level through the hierarchy of governance (local, regional, and national). Various lessons can be gleaned from this experience. These include the importance of environmental education, community mobilization, and the active participation of all stakeholders in the process.

Environmental education plays an important role in organizing and empowering communities, and so encouraging community-led resource management initiatives. Prevailing conflicts (for example, the cement plant, fish pens) that divided sectors provided potent venues for information campaigns that were conducted outside partisan politics but well within a transparent framework for coastal resources management. The wide dissemination of the results of technical studies, corroborated, whenever possible, by the observations of local fishers, further served to increase understanding of the resource issues at hand. The technical studies conducted by the CBCRM project and others at the UPMSI were widely accepted as credible sources of information and were used to help settle conflicting interests. To achieve these results, the project struck a balance between providing information and expertise and facilitating local decision-making among feasible options. This ensured credibility, even during very divisive times, a role academic institutions are well suited to play because of their accepted mandate to teach, conduct research, and provide extension services.

Two principal groups of stakeholders need to be actively involved and supportive of the planning process in order to manage conflict in the region. The first group is the direct resource users (for example, subsistence fishers, and fish vendors). In addition to being educated about environmental issues, they must be mobilized and empowered through knowledge and capacity-building. This allows them to participate effectively in a collective process, and their active participation increases their sense of commitment to finding solutions to the problems identified. In the case of the CBCRM project, such mobilization led

to the formation of people's organizations. This strengthened the position of marginalized fishers, who had no other vehicle through which to participate meaningfully in larger planning processes. The contribution of plans for protected marine areas from the people's organizations in Bolinao was a major turning point in the development of the CDP. It crystallized what a grass-roots initiative could achieve when focused action was taken. It also spurred the local leaders to become involved in an exercise that had the potential to provide a much-needed blueprint for the town's development.

The second group of stakeholders that needs to be actively involved is the local government. The active involvement of the executive and legislative branches of the local government in the design and public consultation greatly enhances the institutionalization of a planning process for coastal resources management. In the early stages of the plan's evolution, elected leaders felt insecure because the people's organizations had taken the initiative in the form of a proposal for integrated protected marine areas. This insecurity was overcome when a leadership role for the municipal authorities was defined through sponsorship of the multisectoral forum. National leadership through the *Local Government Code* and the requirement that municipal governments develop coastal resource management plans also provided a direct incentive to participate. Participation led to the development among local leaders of a sense of ownership, as well as of accountability, in formulating and implementing the plan. This may be a good indicator of its future success. It also showed the representatives of the municipal government and others that public consultation and sectoral representation were effective means to develop consensus for collective action.

The experience of the CBCRM project in Bolinao demonstrates the importance of participatory planning for conflict resolution in coastal development. Environmental education, coupled with community mobilization and the active participation of all stakeholders, facilitated the participatory process. This process channeled conflict and built consensus, ensuring a collective sense of ownership for the final plan.

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