

Sustaining appropriate community-based coastal resources management: Experiences and lessons from Vanuatu¹

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Introduction

Coastal communities in Vanuatu depend heavily on marine resources for household subsistence and cash incomes. However, recent development activities and climate change have altered coastal ecosystems, resulting in a notable decline in coastal marine resources. Thus, in its National Development Plan 2006–2015, the Vanuatu government acknowledged the need for the appropriate management and use of coastal marine resources. However, personnel and technical and budgetary shortcomings have constrained efforts to improve and disseminate community-based coastal marine resource management (CBCRM). As a consequence, the government requested technical cooperation from Japan in providing comprehensive CBCRM. In response,

between 2006 and 2009, as requested by the government of Japan, the Japan International Cooperation Agency (JICA) conducted the technical cooperation project “Promotion of Grace of the Sea in the Coastal Villages in the Republic of Vanuatu (Phase I)”. The project focused on the propagation and culture of easily established shellfish together with community awareness building for coastal resource management (CRM). On Efate Island, the project set up a model for CBCRM. Based on Phase I, the Vanuatu government requested the project to establish CBCRM and to simultaneously improve community livelihoods to ensure their sustainability.

This article is based on Phase II of the project, which was conducted from January 2012 to January 2015, with local activities undertaken between February 2012 and October 2014 in: 1) northwestern Efate, at Mangaliliu, Lelepa Island and Moso Island; 2) northeastern Malakula, at Amal Crab Bay, Uripiv Island and Uri Island; and 3) southwestern Anenityum, at Analcauhat and Mystery Island (Fig. 1).

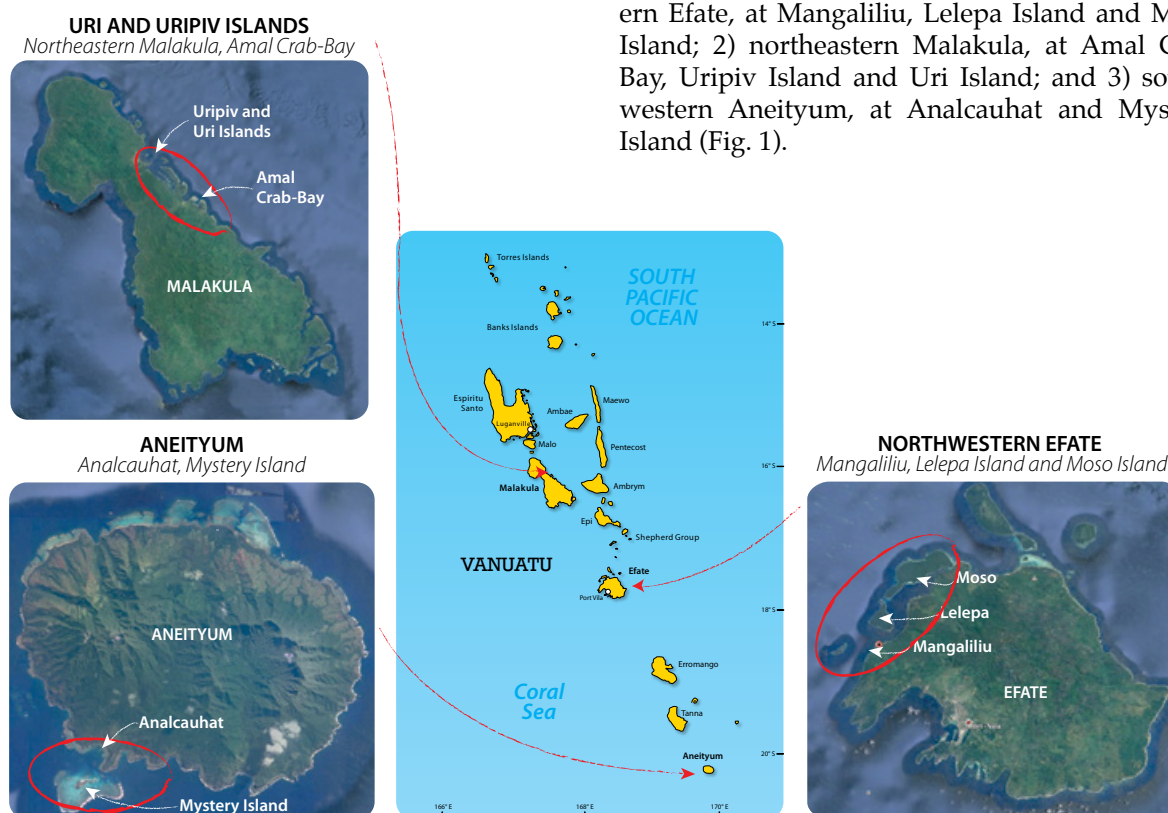


Figure 1. Location of Grace of the Sea project sites in Vanuatu.

¹ This article is dedicated in memory of Chief Mormor Kalotiti, from Magaliliu, a highly influential community leader who passed away on 15 December 2015. His leadership, dedication, enthusiasm, and hard work greatly inspired the project, not only in northwest Efate, but in all three project sites.

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The project's goals were to enhance conservation of the coastal environment and the sustainable use of coastal resources in the project areas, and disseminate CBCRM to areas around the project sites. For these purposes, the capacity of the Vanuatu Fisheries Department (VFD), which supports CBCRM, had to be strengthened, particularly its ability to provide technical support to communities for CRM. To implement the project jointly with VFD, participatory resource evaluations and socioeconomic surveys were done in the project areas; the capacity of community organisations to make resource management plans was either established or enhanced; and trial CRM plans implemented as pilot projects were evaluated and revised, and lessons learned from resource management activities were shared with all stakeholders.

The project developed three innovative ways to implement CBCRM: a "community-based extension" approach, a "strengthening of existing organisations and collaboration" approach, and an "integrated management" approach that focused on tourism. The community-based extension approach was used in Aneityum, where a community extension officer was identified by VFD to handle CBCRM and supporting measures. As the first such case in Vanuatu, it was envisaged that the delegation of selected government services to communities could also be feasible elsewhere in the country. Integrated management was implemented in Malakula, where young leaders were closely involved in the cooperative relationship among the 16 communities of the Amal-Crab Bay area. Integrated management — focusing on tourism development — was the approach adopted in northwestern Efate, and was based on shellfish management and a tourism development plan.

To promote integration, fisheries management measures were combined with supporting measures that focused not only on alternative income generation, value-adding to fishery products, collective marketing, and diversification of fishing effort, but also on the community system and organisation strengthening. If such forms of integration were not ensured, sustained CBCRM would not have been feasible. Particularly important for ensuring sustainable CBCRM were inter-community coordination, managing local committee clusters, and an "authorisation mechanism". Inter-community coordination requires a local CRM committee to coordinate communities, as was done for the 17 communities of Malakula. Diverse small group activities of the committee necessitated "cluster management", such as was done by the Lelema committee in northwestern Efate, which formed six subcommittees: fish aggregating device (FAD) management, tourism, craft-making, marine protected area management, prawn farming, and management planning.

Project outputs included inexpensive FADs, data collection, locally made shell products, "fish cafés", and study visits. Low-cost, nearshore FADs were designed to diversify fishing activities, in an attempt to reduce pressure on vulnerable reef resources. The modernisation of traditional canoes improved fishing efficiency by allowing fishermen to access offshore deep-bottom reef fish and fish from the nearshore FADs. Fishermen recorded their catches in order to run their own local fish market or to monitor the status of target resources. Besides providing an additional source of income for women, shell craft making was linked to tourism development. With a certifying "eco-label" attached, products became more attractive to tourists wishing to support community efforts in CRM. The fish cafés enabled fishermen's families to generate more income than could be derived from simply selling fish at the local market, and thus reduced their reliance on coastal resources. Communities become motivated to participate in CRM when they observed other communities' work on fisheries management. They were also able to learn from each other and share important experiences during study visits.

Conceptual structure of CBCRM

Both management rules and their supporting measures must be in place to ensure effective and appropriate CRM. Supporting measures can be classified into those relating to: resource and the environment, economy and production, sociocultural factors, and institutions and governance (Fig. 2). The four perspectives of CBCRM and activities under each perspective are complementary and equally important. Because CRM can be realised only if those who exploit the resources are managed successfully, the sociocultural perspective sustains the resources and environment, and economy and production perspectives.

Resources and environment

In order to motivate community members to engage in CBCRM and establish coastal resource management rules, it is necessary to conduct coastal resource surveys, and to collect and analyse fishing activity data. These must be done together in order to determine the socioeconomic situation of a target community. As an initial step, a baseline survey should be conducted on the four perspectives for CBCRM, followed by selecting the best combination of approaches, and then developing appropriate action plans for promoting CBCRM.

Economy and production

To reduce fishing effort on coastal resources and compensate for the economic loss resulting from CBCRM activities while financially supporting CBCRM activities, alternative income-earning opportunities and linkages with the tourism sector are necessary.



Figure 2. The four perspectives of community-based coastal marine resource management used in Vanuatu, and the activities necessary for each perspective.

Sociocultural

To provide a motivation for CBCRM and improve community management capacity, participatory workshops and meetings should be organised in a way that maximises the exchange of opinions and experiences.

Institutions and governance

Communities must coordinate with relevant external organisations in order to acquire essential support from the government and NGOs.

A pilot project in each project site was designed so that VFD participants and their local community counterparts could develop an understanding of what CBCRM is and how it works. Based on results of the baseline surveys, the project adopted a “linkage to tourism development” approach for northwestern Efate, a “strengthening of existing organisations and collaboration among different communities” approach for Malakula, and a “community extensionist approach” for Aneityum.

1) Linking CBCRM with tourism

During Phase 1, an attempt was made to establish a marine protected area (MPA) management

committee in northwestern Efate to promote collaboration among communities. The attempt failed because communities could not agree on how coastal resources should be used. However, transplanted green snails and giant clams had been well maintained, showing that community members were able to take care of marine resources. Thus, the project attempted to re-establish the MPA committee and to link CBCRM and tourism development.

An additional reason was that the site has the potential to attract tourists because it is the location of the Roy Mata Domain — the only World Heritage site in Vanuatu — and has resort hotels and restaurants that could enable the community to generate income for promoting CBCRM. The project promoted the linkage of tourism and CBCRM and helped the community to implement its coastal resource management plan, which was developed during Phase 1.

Probably the single most important factor for the success of Phase 2 was the involvement of clan chiefs in the pilot project, which then motivated them to promote CBCRM. In Phase 1, community chiefs and young leaders were involved. The MPA committee could not be established, however, owing to a lack of common understanding of the importance of CBCRM. Phase 2 ensured that clan chiefs

became involved; as a result, they began to realise the significant potential of northwestern Efate for tourism development. In particular, the tourism development in Aneityum and Malakula inspired them. Thus, the clan chiefs understood the importance of CBCRM, tourism development, and the linkage between them leading them to play an important role in establishing the CBCRM committee. Because they own the land and decide on the way that sedentary resources on adjacent reefs are used, agreement among clan chiefs was required for establishing an MPA instead of a traditional taboo area. The approach of promoting the linkage between CBCRM and tourism development provided a catalyst for clan chiefs and young leaders to work together for the sake of CBCRM.

2) Strengthening existing community institutions

Strengthening existing community institutions can be effective when one or more arrangements for resource management is not functioning. A good example is provided by the 16 communities around Crab Bay that formed the Crab Bay MPA committee, with the support of the Malampa Province VFD Extension Officer. The committee, however, gradually became incapable of monitoring the resources. As a consequence, the project sought to strengthen it and develop income-generating activities for its support. Committee membership was restructured to involve younger community members because initially, meeting and workshop participants were mainly older people within the community, which was likely related to the stagnation of the MPA committee's activity. Based on their own ideas, younger members developed activities that included training on the maintenance of outboard motors, and the establishment of a fish market on Uripiv Island. Supported by the Department of Environment, younger community members also sought and obtained the official legislation for the Crab Bay MPA. Initiatives from younger members also stimulated the management of the land crab, which was being increasingly harvested illegally.

The pilot project was implemented in a fully participatory manner to ensure that the MPA committee could enhance its capacity. With the implementation of the pilot project, the younger members became capable of planning, monitoring and implementing activities. At the beginning of the pilot project, they were not official members of the MPA committee. However, older members admitted the youngsters' significant contribution, and accepted them as formal members. The MPA committee became a CBCRM committee to supervise other groups, and younger people were promoted to become board members. Now, representatives of the committee continue to promote tourism development in regular collaboration with member communities.

The younger people promoted the implementation of a tentative CBCRM plan made in February 2013. Their efforts were supported by the Department of Environment and the International Union for Conservation of Nature to legislate the Crab Bay MPA. For the legislation, the VFD Extension Officer and the younger community members repeatedly visited the 16 communities to explain the importance of and need for the Crab Bay MPA legislation. This first legislation of a coastal MPA in Vanuatu was a product of their dedication. Through their success, they came to understand the importance of working cooperatively. It led to their voluntary work for the tourism development in Crab Bay, which attracted the support of the Department of Tourism of Malampa Province, and that of private companies.

3) Community extensionist approach

Mystery Island provides one of the best examples of CBCRM in Vanuatu. The community of Analcauhat designated the reef around Mystery Island (an important tourism area) as an MPA, and began collecting data on the number of lobsters sold to tourists, and took actions to protect trochus, green snail and sea cucumbers. A pilot project focused on the sustainable management of lobsters. Because there was no VFD officer based in the area, the project adopted the "community extensionist approach": VFD appointed a "community extensionist" who became the local coordinator even before the project started. Once the project began, he prepared and conducted workshops and technical training, liaised with the community, and monitored the project's progress.

The duties of a community extensionist include almost all of those of an VFD Extension Officer: monitoring fishing activities, data collection and reporting, and awareness raising. These responsibilities require both technical knowledge of fishing and aquaculture, and communication and coordination skills for community development.

As a result, it was regarded as important for promoting CBCRM to establish clear criteria for the selection of extensionists. In the pilot project, the performance of the community extensionist was monitored, and the necessary skills and knowledge for such a person was discussed with VFD. VFD and project members then prepared guidelines for the selection and duties of a community extensionist.

The community extensionist in Aneityum was the first to be approved officially. For the smooth implementation of the pilot project, the community extensionist ensured the fair and equal participation of the six clans in Analcauhat, which fostered a better understanding of CBCRM among the community. The community extensionist selected young

leaders, and assigned them the task of managing FAD fisheries, engaging in shell polishing activities, managing the fish café, and other tasks. Among the young leaders, the woman in charge of shell polishing was given the opportunity to participate in shell polishing training in Indonesia. As a result, her skills improved dramatically. Three members of the fish café group studied cooking at the Hospitality Tourism and Leisure Training Centre in Port Vila. The young leader in charge of FAD management was recommended as a new community extensionist. In this way, guidance from the community extensionist contributed to the capacity development of the young leaders.

The two main outputs of the pilot project were the stable use of offshore and reef fisheries using FADs, and local fish sales through the fish café. Hitherto, fishing efforts tended to concentrate on lobster sales to tourists. However, after the fish café had demonstrated that local fish also could be sold to tourists, part of the fishing effort was shifted to offshore reef locations. Production and marketing of polished shell products resulted in both improved community livelihoods and enhanced environmental awareness.

From the pilot project, community members began to understand the importance of linking CBCRM and its supporting measures. The MPA committee that began managing the MPAs around Mystery Island and Analcauhat, also understood the need for supporting measures to manage the MPA. As a result, the committee was renamed the Analcauhat CBCRM Committee. This led to the designation of a new MPA.

An important conclusion demonstrated by this project is that various measures must be implemented along with management rules. Such essential supporting measures must be carefully planned to ensure effective CBCRM. In the case of this project, there were seven main categories of supporting measures.

1. Those relating to resources and the environment such as community participation in resource surveys and monitoring, which are required to motivate community members for CBCRM and to establish coastal resource management rules.
2. Activities such as awareness-raising about CBCRM, coastal resource surveying, and the collection and analysis of fishing activities data.
3. Rules and supporting measures that relate to economy and production are required to reduce fishing effort on coastal resources, and to compensate for the economic loss resulting from CBCRM activities, as well as the financial support needed for CBCRM activities.
4. Alternative livelihood measures such as FAD fisheries and shell crafting activities are linked to the tourism sector.
5. Rules and measures related to society and culture, are necessary to provide a motivation for CBCRM.
6. Participatory workshops and meetings should be organised to improve community management capacity, and allow the exchange of opinions and experiences.
7. Finally, rules and supporting measures that concern institutions and governance are needed so that communities can acquire essential support from government and NGOs.

Communities must coordinate with relevant external organisations, and resource management is only possible if the people who exploit the resources are managed successfully.

The remainder of this article examines the design and implementation of project activities, beginning with a brief summary of the baseline surveys and pilot projects in each project area and the development of activities. The common components of pilot projects — community-based collection and analysis of fishing activity data, FAD fishing management, and shell craft — and projects implemented in individual areas (north-western Efate, Malakula Island and Aneityum Island) are then described and analysed. This is followed by a discussion of the making of CRM plans because it was emphasised that, based on the experiences of the pilot project, the communities were expected to formulate their own implementation plans. As a result, communities largely managed their own fisheries and organised their own planning workshops.

The design and implementation of project activities

The first field activities were baseline surveys conducted in the three project areas, which consisted of interviews with individuals and workshops to evaluate the current CRM and the socioeconomic conditions in communities and relating to fishing activities. To complement previous activities for the promotion of CBCRM through Phase 1 and projects financed by other donors, the project conducted an institutional development and organisational strengthening workshop for VFD staff, during which the main external factors affecting the promotion of CBCRM were examined, as were potential approaches to mitigating threats against it (Table 1). The main internal strengths and weaknesses of the VFD were also identified (Table 2).

Table 1. Approaches for Vanuatu Fisheries Department to take to promote community-based coastal resource management (CBCRM).

	Main external factors	Approaches for promoting CBCRM
Opportunity	Large domestic demand for fish	Market development for fish
	Fishermen's association cooperates in data collection on fish catch	Collaboration with community organisations in charge of CBCRM to collect data on fish catch
	Traditional social governance system sustains the CBCRM	Promotion of collaboration with decision-makers in community (e.g. chiefs)
Threat	Long time to establish a fishermen's association	Capacity development of the community organisations that implement CBCRM activities
	Most community members engaged in fisheries are not registered	Organisation of a fishermen's association to register fishers
	Absence of a local fish market	Establishment and management of a community fish market

Table 2. Main internal factors affecting the promotion of community-based coastal resource management (CBCRM) at Vanuatu Fisheries Department.

Strengths	Weaknesses
Has capacity for data collection and analysis of fish catch (1)	No regular meetings (1)
Has accumulated research information (2)	No policy for coastal fisheries (2)
Can exempt tax on fuel for registered fishers (3)	The data collection on fish catch by fisheries extension officer has stopped (3)
Always collaborates with MPA management committee (4)	There is no reporting of data on fish catch from fisheries extension officer (3)
The Extension Officer has a good relationship with the provincial government (4)	There is insufficient follow-up by VFD officer (3)
Can provide small-scale financial support in collaboration with local NGO (4)	Financial management by fisheries extension officer is inadequate (6)

Note: Numbers in brackets show the workshop participants' rating of the importance of the factors.

Six major strategies for VFD were identified to promote and disseminate CBCRM: 1) making improvements in the distribution of local marine products, 2) strengthening the collection of fishing data by fishery organisations, 3) respecting and strengthening traditional resource management systems, 4) establishing and strengthening the activities of fishery organisations and fishermen's associations, 5) establishing local fish markets, and 6) strengthening CBCRM activities.

The project designed the pilot projects in each area based on the CBCRM issues identified through the baseline survey (Table 3). The different characteristics of CBCRM in each area are summarised in Table 4. These were also considered carefully in

designing the pilot projects. Thus, in northwestern Efate, a link to tourism development was adopted. On Malakula, the strengthening of existing organisations and collaboration was adopted for coordinating the different communities that participate in the management of land crabs in Crab Bay. On Aneityum, a community extensionist approach was adopted to counter the pressure for the temporal opening of the MPA, a high fishing pressure on lobster, and the problem that no VFD staff member was assigned to the island. From the results of the baseline survey it was clear that activities have three components: those directly related to CRM, those either supporting CRM or indirectly related to it, and activities for creating organisations and systems needed to conduct the first two.

Table 3. Community-based coastal resource management issues in each project area in Vanuatu.

	Northwestern Efate	Malakula	Aneityum
Main economic activity	Agriculture, tourism, fisheries	Agriculture, marketing, fisheries	Agriculture, tourism, fisheries
Percentage of income from fisheries	~ 20%	~ 10%	~ 10%
Status of coastal fisheries resources	Declining both inside and outside MPA	Stable inside MPA; declining outside MPA	Stable inside MPA; declining outside MPA
Status of offshore fisheries resources	Good	Good	Good
Interest and participation in community social activities	Moderate	Crab Bay: High Uri/ Uripiv: Moderate	High
Understanding of MPA management plan	Lelepa: High Moso island: Moderate	Crab Bay: High Uri/ Uripiv: Moderate	Moderate
Participation in CBCRM activities	Lelepa: Moderate Moso: Low	Crab Bay: Moderate Uri/ Uripiv: High	High
Main issues in CBCRM	Development of alternative income source Linkage with tourism development Market development for fish Fishing method diversification Establishment of MPA management organisation	Shortage of funds for MPA management committee Prevention of poaching	Development of alternative income source Awareness building on CBCRM for community Establishment of fishermen's association

Table 4. Characteristics of community-based coastal resource management (CBCRM) in each project area in Vanuatu.

Area	Characteristics of CBCRM
Northwestern Efate	MPA management plan exists (made during Phase I of the project), but is not respected by community Conflicts over fishing ground use No collaboration between Lelema and Moso Island. The community in Moso Island was particularly uninterested in working cooperatively
Malakula	16 communities consisting of different tribes participate in the management of the land crab in Crab Bay, so coordination is difficult In Uri and Uripiv islands, the coastal resource and economic status are in difficult situations. However, the remaining 14 communities in the main island of Malakula are relatively well off. There is a socioeconomic gap between the main island and remote islands. Owing to a shortage of funds, monitoring activities in Crab Bay were limited
Aneityum	There is a pressure for a temporary opening of the MPA Only lobsters are sold to tourists; hence, fishing pressure on lobster is too high No VFD staff member is assigned to the island. A VFD officer visits several times per year and provides limited governmental services.

Table 5. Components of coastal resource management in selected areas of Vanuatu.

Component	Envisaged activities
Resource management	<p>Formulation of management rules for coastal resource-related activities: Coordination among fishing grounds, deciding on protected species, size restrictions, legislation for MPAs, and others.</p> <p>Resource recovery measures: Releasing and raising the seeds of marine shellfish (e.g. trochus and green snail), relaying bloodstock, and others.</p>
Support for resource management	<p>Fishing activity diversification: The promotion of fishing activities in offshore areas using FADs.</p> <p>Livelihoods other than fishing: Shell polishing, ecotourism based on MPAs, ocean nursery of Tridacna clams, and others.</p> <p>Adding value to caught marine products: Running restaurants using or selling local fish, keeping fish fresh by developing fish markets, and others.</p>
Institutional and organisational strengthening	<p>Establishing and strengthening the activities of MPA committees</p> <p>Strengthening the operation and management of fishermen's organisations such as FAD management committees and fishermen's associations</p> <p>The collection and analysis of fishing activity data by fishermen's organisations</p>

The contents of each pilot project were designed to be consistent with the local socioeconomic situation. Based on the results of the baseline survey, the project agreed on the contents of the pilot project with the MPA committees. In northwestern Efate, where the traditional governance system is weakening owing in part to immigration from other islands, the baseline survey indicated a high potential for tourism development. However, the decline of reef fish stocks and the degradation of coral reefs were also indicated. Therefore, the project adopted a tourism development approach for promoting CBCRM. To strengthen the linkage between tourism development and CBCRM, activities were developed, such as an ocean nursery for giant clams used as a tourist attraction, the protection of reef resources by the introduction of FADs, and the use of a modified canoe. The community proposed to include fish marketing and the selling of polished shell products to local hotels and restaurants, so these activities were included in the pilot project. At Malakula, the Amal-Crab Bay MPA committee had been established more than a decade ago, but activity stagnated owing to a shortage of funds. The project re-activated the MPA Committee by generating a CBCRM promotion fund. The project also introduced a FAD fishery, the release and monitoring of green snail and trochus in Uripiv Island, production and marketing of polished shell products, the marketing of kava, bee-keeping, and the installation of

a yacht mooring facility. The communities proposed to establish fish markets in Uripiv Island and Louni; the market established in Uripiv made possible the joint fish marketing with the fish market in Lakatoro - the capital of the main island - through the Japan Overseas Cooperation Volunteer programme. On Aneityum, the Mystery Island MPA Management Committee developed CBCRM activities such as data collection for lobsters and the protection of reef fish, trochus, and green snail inside the MPA area. The lobster fishery needed to be controlled, so the controlled area was expanded to outside the MPA area. Because there was no VFD officer on the island, the community extensionist was playing an important role. The project introduced FADs, a fish market, a fish café, shell polishing by women, and helped the community extensionist to manage the pilot project. The pilot project provided both alternative income earning potentials for villagers and funding for CBCRM.

The project created pilot implementation plans (Tables 6, 7 and 8) by combining the above-mentioned activities to suit each project area. In particular, it was decided that three activities would be common to all project areas. These included the promotion of offshore fishing activities through FADs, shell polishing as an alternative source of income, and the collection and analysis of fishing activity data by fishermen's organisations.

Table 6. Draft pilot project plan for the northwestern Efate area (Mangaliliu, Lelepa Island and Moso Island).

Objectives	Establishing and strengthening coastal resource management organisations for relevant communities, and improving compliance with the MPA management plan
Activities	<p>Securing alternative livelihoods by promoting a link with tourism (e.g. joint sales of marine products caught, shell craft by communities, mariculture of ornamental Tridacna clams, and promoting giant clam — <i>Tridacna gigas</i> — raising sites for tourism)</p> <p>Diversifying fishing activities by promoting fishing outside reefs by introducing FADs</p> <p>Strengthening coastal resource management by strengthening community compliance with the MPA plan.</p> <p>Establishing and strengthening the activities of the MPA committee and fishery organisations</p>

Table 7. Draft pilot project plan for the Malakula area (Crab Bay, Uripiv Island, Uri Island).

Objectives	Revitalising the activities of the Crab Bay MPA committee by securing financial sources for coastal resource management activities
Activities	<p>Strengthening joint activities between communities: Joint introduction of FAD fishing by relevant communities; shell polishing by community women; ecotourism activities using the Crab Bay MPA, etc.</p> <p>Improved distribution of marine products caught: The development of joint fish collection points (fish markets); the sale of marine products caught in cooperation with the Lakatoro fish market</p> <p>Fishing activity diversification: The promotion of fishing outside the reefs through the introduction of FADs</p> <p>Coastal resource recovery: Releasing and raising marine shellfish (trochus and green snail)</p> <p>Organisational strengthening of the MPA committee and fishermen's organisations: The community-based collection and analysis of fishing activity data; the diversification of financial sources for MPA activities such as lending fishing gear, bee-keeping, selling kava, etc.</p>

Table 8. Draft pilot project plan for the Aneityum area (Analcauhat) — Activity development: Technical capacity building for VFD staff.

Objectives	The reduction of fishing pressure on spiny lobsters through fishing activity diversification and the introduction of alternative livelihoods
Activities	<p>Training of community fisheries extension workers: A trial extension worker system where community representatives recognized by the VFD serve as extension workers</p> <p>Securing alternative livelihoods: Cooperation with cruise ship tourism (the provision of cuisines using locally produced fish other than spiny lobsters; the production and sale of shell craft); the development and operation of joint collection points for marine products caught (fish markets)</p> <p>Fishing activity diversification: The promotion of fishing outside reefs through the introduction of FADs</p> <p>Strengthening coastal resource management activities: Strengthening the size restrictions for catching spiny lobsters and the expansion of the MPA</p> <p>Organisational strengthening of the MPA committee and fishermen's organisations: The community-based collection and analysis of fishing activity data; management of fish markets by fishermen's organisations, etc.</p>

Activity development: Technical capacity building for VFD staff

The impact of management actions on relatively sedentary shellfish is readily visible, more so than on reef fish, and facilitates acceptance of other CBCRM measures. Therefore, basic guidance for propagating shellfish was provided during Phase 1, and monitoring and further guidance provided in Phase 2. The release and raising of giant clams, done during phases 1 and 2, promoted community awareness of CBCRM. The idea was that VFD CEOs would conduct seed production independently, and the facilities of VFD's hatchery together with its operation would be improved. The *Tridacna* seed production was led mainly by VFD staff.

The project released fluted giant clams at Gideon's Landing beach — a privately owned beach in north-west Efate that tourists from Port Vila often visit — to promote community clam management as a resource for tourism.

The techniques for *Tridacna* mariculture using net cages had been established in Phase 1. However, seeds were supplied only to localities near Efate. The project set up the air transport of *Tridacna* seeds to remote areas, and in November 2013 transported seeds to Uri and Uripiv islands in Malakula, in addition to installing aquaculture cages there. The project monitored giant clams transplanted from Tonga to northwest Efate (Mangaliliu, Lelepa Island, Tasiriki and Sunae) in 2007. In Phase 1, green snails from Aneityum Island, the only place in Vanuatu to have experienced a stock recovery from overfishing (following a community initiative in cooperation with VFD), had been released at Mangaliliu, on Efate Island, which later formed a broodstock population. In February 2013, the project conducted a recapture survey and found evidence of reproduction.

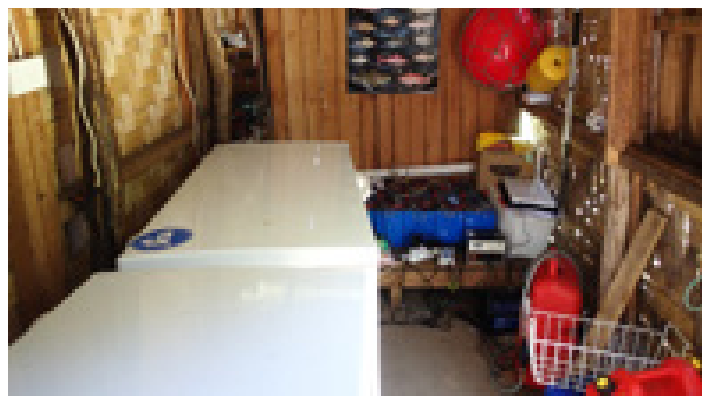
Common components of pilot projects

Community-based collection and analysis of fishing activity data

To properly conduct CRM, it is important to record and analyse coastal fishing activity data, and to apply it to adjusting catches and effort. Communities were encouraged to assemble their fishing activity records and understand the general trends and changes in their fishing activities. In addition, the aggregated results were used to consider future CRM activities for target communities. Easily understood data recording sheets were introduced when the first FADs were deployed and their management committees established, in November and December 2012. The project also created and taught community members to use a simple programme using Microsoft Excel, which allows each community to manage and use its fishing activity data. The

project provided a computer to the MPA committee or the FAD management committee in each project area. Only a few community members, however, continue to keep their records.

In the Aneityum area, the project installed two solar freezers and developed a fish market in Analcauhat. A joint collection point with a small solar freezer was also developed on Uripiv Island through the cooperation of the Japan Overseas Cooperation Volunteer (JOCV) programme. These fish markets are run mainly by local FAD management committees.



The interior of the fish market in Analcauhat community on Aneityum. Solar freezers and fishing gear are kept in the building.

FAD fishing management

A major issue concerning CRM in the target communities is that fishing pressure on the reef is high. Therefore, the project aimed at relocating activities outside the reef by using FADs. To disseminate FADs widely, a simple and inexpensive unit that could be installed and maintained by communities was essential. The FAD designed by the project costs approximately USD 1,000–1,500, depending on deployment depth, and because sandbags are used to anchor it. This FAD can be installed using a community's small boats. In November and December 2012, the first FAD fishing workshop was held, and a FAD committee was established in each project area, mainly by the workshop participants. In May and June 2013, a second workshop on FAD fishing management was held in each project area. Objectives included maintaining and inspecting the two installed FADs, and improving and teaching the trolling method of fishing in the waters around the FADs. For trolling, project staff introduced fishing gear as an alternative to the simple trolling currently practiced. In October and November 2013, a third workshop on FAD fishing management was held in each project area. The objective was to provide guidance on new fishing methods for catching offshore fish using FADs, such as a vertical dropline and diamondback squid drift vertical line, and to motivate the establishment of a user's group whose members would maintain the FAD themselves.



A member of the Aneityum FAD management committee measures and records fish when they are brought in to be kept in the solar freezers introduced by the project.



The Malakula FAD committee records in a notebook data on fish caught when they are received for storage in the solar freezer at the fish market on Uripiv Island.

Shell craft

Because women and children play an important role in resource management, working only with men and MPA committee members is not enough to promote CBCRM. Therefore, project staff helped MPA management committees establish women's groups to promote shell polishing and marketing. A major issue in shell craft and marketing was the lack of information for tourists on the origin and eco-friendliness of the products. Therefore, the project introduced an "eco-tag" for shell craft products. VFD and the Department of Tourism jointly produced eco-tags for use on shell craft merchandise

and a pamphlet about the products. An additional function of the eco-tags was for purchasers to appreciate the significance of shell polishing and marketing as a CBCRM activity, and that the proceeds were used to fund activities of the MPA committee.

Shell polishing activities became increasingly organised after workshops were held in each target site. From 5–7 February 2014, a shell polishing and marketing workshop was held at VFD in Port Vila, to enable the exchange of opinions among shell craft groups in each project site and to provide marketing guidance by local owners of souvenir shops.



- A Eco-tags used on a trial basis as a promotional tool for local shell craft.
- B Eco-tags used for shell craft marketing (from left to right: those used in Aneityum, Efate and Malakula).
- C The eco-tags are used as a promotional tool for shell craft.
- D In November 2013, the sales of shell craft began at a store on Mystery Island near where the cruise ships dock.
- E The poster and booklet (in Bislama) used to promote shell polishing and marketing.
- F Shell craft products made by women's groups from Aneityum and Malakula.
- G Shell craft made by the women's group were displayed as samples at the ceremony for legislation of the Crab Bay MPA.
- H The shell craft studio, equipped with a new solar power generation system (February 2014).
- I Shell craft workshop held on Uripiv Island, with a local instructor providing guidance on the basic techniques for making shell craft.

Projects in individual areas

1) Northwestern Efate

During Phase 1, an MPA committee was established in northwestern Efate. However, collaboration, including that for CRM, has been collapsing together with traditional governance via the chief system, due perhaps to a large influx of immigrants from other parts of the country. On the other hand, the area boasts excellent tourism resources such as the World Heritage Site of Hat Island. Taking advantage of this situation, a tourism approach was selected for northwestern Efate. To strengthen CRM capacity informally, several activities were conducted to instruct communities about management methods. Project staff conducted ocean nursery tests for *Tridacna maxima*, which can be sold to ornamental fish markets in Sunae and Tasiriki, on Moso Island. Difficulties resulted largely from the varying levels of awareness in the communities who volunteered to participate, and VFD was unable to provide enough technical support. As demonstrated by the successful cases of *Tridacna clam* aquaculture in Sunae, having core human resources in a village is a key to success. In June 2013, project staff distributed fluted giant clam seeds to the two families in Sunae who had performed successfully in the *Tridacna maxima* clam aquaculture tests, as well as to one clan on Lelepa Island and another in the Lelema area of Efate Island, who have aquaculture experience that they gained from Phase 1 of the project. They then started a full-fledged ocean nursery. If the aquaculture of the fluted giant clam and the giant clam can be launched in the future, *Tridacna* clam aquaculture can potentially provide an alternative income source for coastal communities.

To raise funds for FAD management activities, the management committee conducted FAD fishing trials, mainly involving communities from Lelepa Island and Mangalili. The management committee has been trying to sell fish caught from around the FAD directly to Port Vila Capital Market and tourist cottages. The committee has also been charging a user fee for sports fishing boat owners who use the FAD. The proceeds were used as activity funds for the FAD management committee. Fuel prices, however, are high in Vanuatu; a single trip using a 30–45 hp outboard engine to go fishing offshore costs at least 2,000–3,000 vatu.¹ This is one reason why communities hesitate to use offshore FADs. To promote the use of FADs, project staff constructed modified canoes that were inexpensive to build and would save fuel costs by using a sail. In January 2013, a canoe modification workshop was held in Mangaliliu. Project staff introduced a small canoe equipped with a sail and outboard engine, and alter, together with community members, began fitting existing canoes with sails and outboards. A

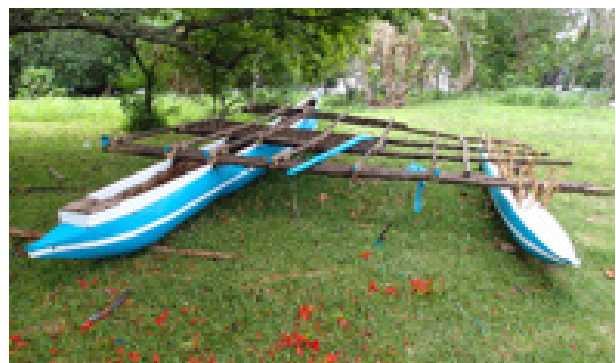
demonstration fishing trip using a modified canoe was found to save at least 10–15 litres of fuel worth about 1,500–2,000 vatu. The modified canoes are being used for everyday fishing and tourism activities in Mangaliliu and on Lelepa Island. Inspired by the concept, communities in Mangaliliu and on Lelepa Island have modified a large canoe using the FAD committee's profits from selling marine products.



Community members from Mangaliliu and Lelepa Island participated in the canoe modification workshop in January 2013.



Existing canoes were converted by project staff and community members.



The completed large modified canoe (December 2013).

New fishing methods such as dropline and diamondback squid fishing were introduced and trialled on two occasions with members from the

¹ 100 vatu = 0.95 USD (September 2016)

Lelepa Island community on Efate, and several diamondback squid were caught. In October 2014, diamondback squid processing techniques were introduced to people involved in tourism and fisheries in Port Vila. Samples of processed squid were also provided to hotels and restaurants in Port Vila.

2) Malakula Island

On Malakula, the Crab Bay MPA committee, which was established more than a decade ago, provides an excellent example of a CRM committee. However, its activities became moribund owing to the lack of a sustainable finance system. The main goal on Malakula Island, therefore, was to strengthen the finances and organisation of the Crab Bay MPA committee and increase the monitoring area and the number of marine species under management. To diversify funding for the Crab Bay MPA activities, support was provided to encourage foreign yachts to visit the bay, and mooring buoys and a tank to catch rainwater were installed. Visiting yachts would be charged to use the moorings, and the proceeds would be used to finance committee activities. The MPA committee borrowed a mincer to produce kava that was then sold at community and church events. The mincing machine helped increase committee profits.



In July 2013, members of the MPA committee set up a place for yachts to moor in Crab Bay. It is a potential new source of funds for resource management.

At the Coastal Resource Management Planning Workshop in Port Vila, hosted by VFD in late February 2013, the Crab Bay MPA Committee made legislating the Crab Bay MPA part of the action plan. This came about because it was difficult for local communities to independently maintain the MPA scheme under the chief system. With support from the International Union for Conservation of Nature, and led by the Crab Bay MPA Committee and the Malampa Province Fisheries Department, the committee applied to the Ministry of Lands and Natural Resources for the MPA to be legislated. Workshops on rewriting coastal resource

management plans were held in the 16 communities around Crab Bay between late September and early October 2013. Based on the results, Crab Bay was announced as a legislated MPA on 19 December 2013, and the revised MPA management plan was published as a pamphlet. Given that full support was given to resource management activities of the Crab Bay MPA Committee, legislation of the Crab Bay MPA was regarded as a major success of the project.

Through the Japan Overseas Cooperation Volunteer programme, a rural fish market was built on Uripiv by the island community, and a small solar-powered freezer was installed. As a result, catches of fish can now be kept frozen on the island before being shipped in bulk to the Lakatoro Fish Market. Also, because the fish are almost all stocked and stored for market, catch records are now made at the fish market. The market is managed by members of the FAD management committee, and organised as part of the project. Spurred by the activities on Uripiv Island, the Crab Bay communities began preparations for a similar fish market in Louni. The youth group within the MPA committee purchased materials for a market building, using funds coming from various activities, such as the selling of kava.

3) Aneityum Island

Several activities were undertaken to reduce fishing pressure on lobster using the community extensionist system. These were: starting a fish café business, running a “cooking with fish” workshop, building a modified canoe, and establishing a fish market.



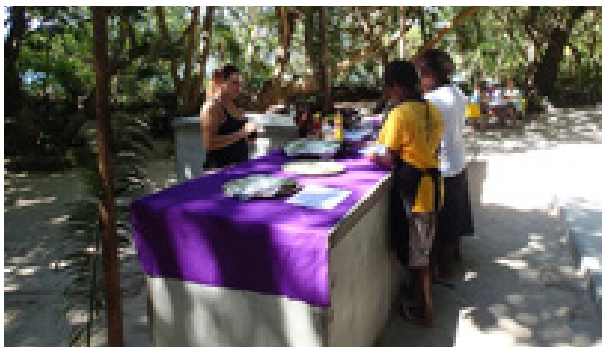
Tourists from a cruise ship, waiting for their fish dishes at the fish café.

Mystery Island, adjacent to Aneityum, is visited annually by over 70 cruise ships. However, the only local food item targeting tourists is the spiny lobster, resulting in heavy fishing pressure on this species throughout the entire island of Aneityum. To diversify the local foods offered to tourists, a “fish café” business was set up to encourage the use of underutilised fish resources.

From 27 July to 3 August 2013, a workshop on cooking with local fish was provided, and was attended by 15 people from the communities of Analcauhat. Instruction focused on four different fish dishes and coconut juice cocktails, and procurement and cost calculations. The three days of trial sales at the workshop generated about 270,000 vatu in sales. By late September, the Café Management Committee had sold fish dishes to tourists five times, with average daily sales of approximately 60,000 vatu. Two additional fish restaurants opened on Mystery Island, both modelled on the original fish café.



Sample of an à la carte dish taught at the “cooking with fish” workshop.



Operating conditions of the fish café on Mystery Island (28 November 2013).

In conjunction with the fish market and the introduction of a solar freezer, a market management committee was established by members of the FAD management committee. In effect, the market is operated and managed by the FAD management committee. All of these activities are controlled by the community extensionist.

Making CRM plans and conducting national and regional seminars

Rather than the project or VFD drafting plans, it was emphasised that the communities were expected to formulate, independently, their own implementation plans, based on the experience of the pilot projects. As a result, with the assistance of VFD, communities organised their own planning workshops and drafted their own fishery management plans.

For example, the First Coastal Resource Management Planning Workshop, held in February 2013, was attended by three-to-five community representatives involved in CBCRM activities from each target area. The main topic of this workshop was that the CBCRM plans were not working well. Community representatives listed the issues (problem analysis), and examined potential solutions to them (objective analysis). The content of existing MPA management plans was reconfirmed, the revision of details was discussed, and CBCRM action plans were undertaken by the communities.

Feedback seminars were also held in each target area to deepen local discussion, and workshop participants explained their action plans to community members in terms of preparatory procedures, implementation, and support from the project and VFD.

In February 2014, community members from northwestern Efate and Aneityum visited Crab Bay and Uripiv Island. This was an important “farmer-to-farmer” study tour to understand CRM and livelihood improvement activities implemented by Crab Bay communities. The visitors were particularly interested in the cooperative activities of the Crab Bay MPA management committee, especially with regard to schemes to fund activities, and the Uripiv fish market. Given their inability to develop a successful cooperative relationship, the representatives from northwestern Efate were surprised by the level of cooperation of the 16 Crab Bay communities. The representatives from Aneityum were interested in the fact that the solar-powered freezer, FAD fishing equipment, tools for making shell craft and other items were being managed collectively and stored at the fish market. They spoke of developing facilities on Aneityum using a similar concept.

After the first CRM planning workshop, and in cooperation with JICA, FLAMMA (Fiji Locally Managed Marine Area) held a joint seminar with stakeholders from Fiji, Tonga and Vanuatu in December 2013, to share lessons learned from similar activities. By visiting project sites, participants from Vanuatu learned things to apply in their own communities. And other regions paid attention to activities being implemented in Vanuatu.

The second Coastal Resource Management Planning Workshop was held in February, 2014 to: 1) examine the progress of the pilot projects, 2) distil

lessons learned, and 3) formulate CRM action plans and activity schedules for the following three-to-five years. Community representatives from each site participated in the workshop together with VFD personnel and Japanese specialists. Community members themselves conducted this workshop with the cooperation of VFD staff.

In northwestern Efate, following Phase I, each target community managed its resources individually, focusing on raising giant clams and green snails. The pilot project had heightened awareness of the need for communities to join regional efforts in CRM. For this purpose, in May 2014, Mangaliliu and Lelepa Island re-established the Lelema MPA committee in order to extend the MPA area and conduct CBCRM activities.

On Malakula, efforts to manage the land crab resource was already underway, and in addition to keeping records on land crabs shipped from the Lakatoro Market, the sale of gravid females has been prohibited. Measures to manage mud crabs have also been incorporated into the action plan.

To strengthen CRM activities on Aneityum, measures incorporated into the action plan included a review of traditional systems for community governance, the establishment of a new Fisheries Cooperative Association, expanding the MPA to include reefs at Analcauhat mainland area and surrounding Mystery Island, and continuing to collect fisheries data and enabling the communities to use it. The subdivision of the Analcauhat management area of the mainland into five management zones, in line with the traditional land tenure system and individual clan ownership, further improved the monitoring of management measures. Under this system, the community has ownership and direct control of the management of their coastal resources

Plans to further promote a number of initiatives led by community organisations were introduced into the pilot projects. These supporting measures to the management plan included the promotion of FADs, reduction of fuel costs through modified canoes, improvement of women's livelihoods through shell craft and value-adding to local fishery products, and operating fish cafés and roadside shops. In northwestern Efate, diversifying livelihoods based on villages' proximity to Port Vila was incorporated into the action plan.

During the February 2013 workshop, participant community representatives performed a key role in formulating the one-year action plans for CRM. Given that the pilot project had not yet reached its midpoint, the action plans were not specific. However, at the second workshop, community representatives could formulate more realistic action plans based on the experiences gained from the pilot projects and observing other sites. The second workshop also enabled communities to clarify how

they could independently carry on CRM activities without the direct support of the project.

Armed with the draft action plans for CRM for the next three to five years, participants returned to their communities to share the plans with other community members. Feedback seminars, participated in by 20–30 community members, were held at each project site with an aim of focusing the plans. Where necessary, a counterpart from VFD provided guidance. These seminars enabled the details of the action plans to be conveyed to community members and future activities to be organised clearly and concisely.

A major result of the Second CRM Planning Workshop was a booklet of CRM action plans compiled for each area. Further, MPA management plans were amended, including expansion of MPAs to other districts, increasing the number of protected species, and adding new communities.

A national workshop (7–10 October 2014) and a regional seminar (13–16 October 2014) were held to share and disseminate project results. Both were co-sponsored with the Pacific Community (SPC). Participants in the national workshop included 12 community representatives. Group discussions were divided by target province. Participants visited project sites in northwestern Efate to observe community CRM initiatives. In addition to officials from VFD, the regional seminar was also attended by representatives from the fisheries departments of Fiji, Solomon Islands, Tonga and Samoa, as well as from SPC's Fisheries, Aquaculture and Marine Ecosystem Division, and the School of Marine Studies of the University of the South Pacific. The objective of the seminar was to share CBCRM initiatives and organise regional cooperation. Issue-specific groups were based on the three themes under the conceptual structure of CBCRM with three perspectives comprising the content of the pilot projects: FADs, shellfish aquaculture, and livelihood improvement activities. The conventional FAD model disseminated by SPC is both expensive and difficult to deploy in rural areas such as Aneityum, where shipping services are irregular. The project FAD, on the other hand is inexpensive, easy to deploy under rural conditions, and durable. Therefore, requests were received for regional training in its construction and deployment.

Various initiatives for improving the livelihoods of coastal communities are in place in each country, and common to each are handicraft making, including shell craft, coastal tourism activities, and the farming of tilapia and freshwater prawns. Livelihood improvement activities require a comprehensive approach rather than just providing technical advice because it is also important to provide target communities with guidance in management, sales and organisation.

Cooperation with organisations

Collaborative activities conducted in pilot projects included a survey, in cooperation with SPC, of the green snail and trochus off Northwest Efate and Aneityum, and marketing shell craft by women's groups with the Department of Women's Affairs in the project areas and with the Department of Tourism to affix ecotags to shell products. The manager of programmes at Wan Smolbag Theatre, a local NGO engaged in environmental programmes, explained that as part of a mini-seminar with a local community on Aneityum, the NGO's Sea Turtle Protection Program and the importance of "Fishing Activity Record Sheets" were being recommended by the project.

Project achievements

The project strengthened the capacity of VFD to support CBCRM, target areas where communities successfully acquired skills in CBCRM approaches and tools, and the experiences gained was disseminated.

Strengthening VFD capacity

VFD counterparts worked closely with the project staff to conduct a baseline survey, and through it learned how to conduct an initial survey intended to elucidate motivation for undertaking CBCRM and existing local organisations and institutions to support it. VFD counterparts experienced the entire process of conducting workshops and a questionnaire survey by instructing and overseeing surveyors recruited from each community, thereby acquiring broad skills in practical social science methodology. Using the baseline survey, existing MPAs were upgraded, providing a basis for drafting CBCRM plans. The VFD counterparts monitored activities in each area, analysed their monitoring results and prioritised their support for the activities. Thus, they could understand both community perspectives on activities and the types and levels of support they could provide during planning and implementation. VFD counterparts provided training, coordinated with the Vanuatu Institute of Technology, and also experienced the installation of smaller FADs. VFD gained experience and "know-how" in several activities related to CBCRM, including: giant clam ocean nursery management, released shells monitoring, data collection on fishing activities, and FAD fishing technique skills. The project incorporated these supporting measures into the entire CRM by providing direct benefits to the communities, so that a cycle of resource management emerged.

Community acquisition of CBCRM-related skills

It was observed during the project that a mechanism of CBCRM in the target communities has been strengthened. The target areas already had MPA committees managing taboo areas before the

project was implemented, but through discussions and activities among all stakeholders, the MPA committees became more active and there was greater involvement of community members as a whole, plus various sub-committees and groups, such as FAD management committees, shell polishing groups, and a fish café group. In rural areas where full government support and services cannot be expected, responsibilities can be delegated effectively by the government to the area, where various participatory committees and groups are established under the framework of CBCRM. The experiences of this project demonstrated that such an integrated management approach was successful with a higher degree of participation of motivated community members. In addition to the workshops and training programmes provided at each site, joint workshops and mutual study visits were conducted, and these motivated the participants. Examples include: 1) a visit to Aneityum that stimulated representatives from other pilot areas when they observed how the reef environment on Mystery Island had revived in 10 years, after most coastal resources had been depleted; 2) an MPA member in northwestern Efate learned from a member from Aneityum that it would be effective to keep shellfish close to each other in the protected area when releasing them for easier reproduction; and 3) observations of shell crafts made in other areas provided good ideas for diversifying their own products.

Lessons learned from the project

1) The relationship among the four perspectives of CBCRM

Close consideration must be given to the relationship among the four perspectives of CBCRM. In Aneityum, for example, the community extensionist approach (the institution and/or governance perspective) was linked with FAD fishery management, shell polishing and a fish café (the economy or production perspective), thereby strengthening community organisation (the sociocultural perspective). However, in Malakula, strengthening existing organisations and/or collaboration among the different communities' approach (the sociocultural perspective) ensured the serious commitment of the community, which led to external assistance from the government and NGOs (the institution and/or governance perspective). Given that different approaches generate different synergistic effects, these simple examples demonstrate the importance of carefully considering the best combination of the four approaches to suit the conditions and constraints in each individual area. It is equally important to understand that there is no generic combination applicable to all areas.

2) Inclusion of wider social segments of the community (cluster approach)

The FAD fishery management workshop motivated fishermen. However, the number of community members with access to a FAD for fishing was limited. As a consequence, the community was initially little interested in CBCRM. Later, community members began to develop various activities, including modifying canoes, shell polishing, and building a fish market and fish café. Gradually, this participation of wider segments of the community enabled the successful promotion of CBCRM.

3) Involvement of clan chiefs

During Phase 1, community chiefs and youth leaders worked for the project. However, they could not establish an MPA management committee owing to the lack of understanding of it by community members. Possibly the underlying reason was that the project did not properly involve clan chiefs, the people with the power to manage the reef area. So, in Phase II, the participation of clan chiefs was requested, which led eventually to the formation of a CBCRM committee.

In northwestern Efate, the project's target site during Phase I, an MPA committee was not established owing to the lack of awareness about CBCRM among community members. The project believes that the situation arose because of the weakening of the traditional governance system and a low dependence on coastal marine resources. However, after the second FAD fishery management workshop, a clan leader on Lelepa Island showed interest in the FAD fishery, and became the leader of the FAD management committee. Awareness of CBCRM within the community began to increase after this. This clan leader exerted strong leadership not only in relation to the FAD fishery but also in CBCRM planning and other activities. Through these activities, he realised the high potential of tourism development in the area and began to convince the chiefs of other clans. Without his understanding of the linkage between CBCRM and tourism development as a supporting measure for CBCRM, the creation of the Lelema CBCRM committee would not have been possible.

4) Thorough participatory CBCRM planning and implementation

The project always ensured community participation in CBCRM planning and implementation. Through workshops, community members made their own CBCRM plan, with support from VFD and project staff. Through the planning, implementation, review and updating of CBCRM plans, community members became self-reliant and capable of sustained promotion of CBCRM.

5) Feedback on project achievements

The project always ensured feedback to community members. For example, the results of the baseline

survey were presented to the community, CBCRM plans made in Port Vila with the representatives of each site were taken back to the community for further consultations, and the fishing data collected and analysed was presented to the community. These types of feedback to the community were critical in order for the community to understand the importance of CBCRM.

6) Study tours

In Vanuatu, there is little opportunity for exchange programmes. Through the study programme organised during implementation, the project demonstrated that even if just for a few days, community members can learn many things from each other by discussing and observing project sites.

7) Collaboration with various local resources

Collaboration with various other groups and organisations facilitated a higher level of promotion of CBCRM than would have been possible had the project operated independently. As a result, the project collaborated with various local resources in addition to VFD. For example, a young leader in Mangaliliu worked as trainer for shell polishing and taught basic skills to women's groups. The owner of a handicraft shop in Port Vila gave advice to community members during the shell polishing workshop. Trainers from the Hospitality Tourism and Leisure Training Centre in Port Vila came to Aneityum to teach the basic skills needed to manage a fish café. The Department of Tourism cooperated to promote giant clam farming and the production and marketing of local polished shell products.

8) Collaboration with relevant organisations

One key to the project's success was timely collaboration with national and international organisations. Whereas Phase 1 of the project focused mainly on resources and the environment, Phase 2 focused on the other three perspectives important for CBCRM: economy/production, sociocultural factors, and institutions/governance. Development of activities based on the various perspectives brought timely collaboration with relevant organisations such as the Department of Environment, the Department of Tourism, the Department of Cooperatives and Ni-Vanuatu Business Service, and NGOs. The timely collaboration also contributed significantly to motivating communities to engage in CBCRM. The resource and environment perspective was not the main focus during Phase 2. Therefore, the collaboration with the French Research Institute for Development (IRD) and SPC for stock assessment was indispensable. Their survey and feedback to the community enhanced awareness of CBCRM and motivated communities to become involved in it. In particular, the demonstration of green snail reproduction made by IRD and SPC in Efate, and

the survey of the potential use of coastal resources for tourism development by IRD were important for community motivation.

9) Collaboration with other schemes such as training and volunteering

A contributing factor of the project's success was the collaboration of former participants of JICA training. Of eight VFD counterparts, six were former participants in JICA training courses. Through those courses, the VFD staff understood the fisheries management system of Japan, as well as project cycle management and rapid rural appraisal. As a result, from the beginning, these individuals could facilitate the community participatory workshops for CBCRM planning. They also trained community members on how to organise and coordinate the community.

A JOCV and senior volunteer also played an important role in the project. The JOCV assigned to the VFD office in Malampa Province worked together with youth leaders in the community. The senior volunteer assigned to the Hospitality Tourism and Leisure Training Centre was made possible by the training on cooking in Aneityum and the introduction of a fish café.

With cooperation from the expert assigned to USP in Fiji, counterparts from VFD and local communities participated in the FLMMA-JICA joint seminar in Fiji. A youth leader from Malakula participated in JICA training in Okinawa on ecotourism. He worked hard to promote Crab Bay as a tourism destination.

From these experiences the project recommends a well-designed framework for implementation that enables smooth collaboration with other projects and schemes, such as training and JOCV.

Conclusions

The most important achievement of CBCRM is to allow the recovery of resources and, where possible to increase their productivity. However, accurate stock assessments are difficult, costly and affected by natural uncertainty. Hence, just checking whether a resource has recovered or increased could

mislead the evaluation of a project. The project not only contributed to the self-reliance of communities and the capacity-building of VFD staff, but also influenced VFD policy and SPC cooperation in the Pacific region.

However, the effectiveness of the four approaches remains a hypothesis proven only in the target sites of this project. For this hypothesis to be useful and have a wider applicability and replicability throughout the region, it is important to start another project to test the hypothesis in a timely manner, and in the long term.

In the South Pacific region, self-sustaining development is difficult owing to the disadvantage of small island states, such as their high dependency on foreign aid and remittances, and limited governmental capacity. Experience indicates that in many cases outputs and achievements eventually shrink after the completion of projects. If started too late, the next project would require additional inputs to recover the lost outputs and achievements. Therefore, timely and continuous support is essential.

For regional development to occur in the South Pacific, including Vanuatu, the sustainable use of marine resources, especially fisheries resources, is indispensable. In most cases, the level of exploitation of the beyond-the-reef fisheries resource is low, and the domestic fishery depends heavily on reef resources.

The project promoted CBCRM and its supporting measures to ensure sustainability after completion of the project. Diversification of fisheries, distribution and marketing, and value-adding through the fish café were introduced. Moreover, the linkage with tourism and the production of shell polishing brought wider segments of the communities into CBCRM, particularly women and children.

The experience gained through this project indicates that comprehensive community development can promote CBCRM, and that community development through CBCRM can be quite effective for small island states.

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