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Mainstreaming Resource Conservation: The Fiji Locally Managed Marine Area Network and its Influence on National Policy Development

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Abstract

The experience of the Fiji Locally Managed Marine Areas (FLMMA) network provides an illustration of how to mainstream community-based resource management practices that began with local communities, and were in-turn supported by a Government which has witnessed the success of community-based intervention. To improve the success of conservation in the communities and attract attention to its approach, FLMMA formed a learning portfolio. This is a network of projects that use a common strategy to achieve a common end and agree to work together to collect, test and communicate information about the conditions under which the strategy works, to enable the partners to exchange ideas and experiences. The learning portfolio enhances collaboration and also ensures that lessons learnt are shared widely with people in the network. FLMMA is working to increase the effectiveness of conservation and to ensure that the involvement of people in the management of their marine resources is both satisfying and meaningful.

Modern science is an important part of the FLMMA approach because it is used to demonstrate the effects of the use of traditional resource management practices. Using simple biological, social, and economic monitoring methods, the villagers are collecting impressive results on resources and habitat recovery and the associated social and economic improvements in living conditions. The objectives of improving conservation to protect biodiversity and improve people's living conditions are important features of the kind of community-based resource conservation that is now being undertaken in the Pacific and Asia region. The objectives are also consistent with national policies for inshore fisheries development and global concerns about poverty alleviation.

The success of community-based conservation in different parts of Fiji has resulted in long-term support from the communities. It has also facilitated the articulation of Government fisheries development policies. The Government has set up a new conservation unit and has formalised its support, and adopted the FLMMA method of involving local community units in the sustainable use of their marine resources. Under FLMMA, the success and combined experiences of conservation practitioners are being used to mainstream resource conservation and influence policy development in Fiji.

Introduction

The Fiji Locally Managed Marine Areas (FLMMA) is facilitating the revival of traditional resource use practices in Fiji as people are attempting to manage their fisheries resources to maximize the benefit to them, while ensuring the sustainability of the resources. Over the last decade, there has been growing interest in working with local communities to conserve dwindling marine resources. Although this idea sounds attractive in theory, implementation has been problematic as practitioners struggle to understand the conditions under which the theory works?

The lack of national legislation was a major drawback as there were no resource management guidelines to follow. The Fisheries Act did not mention resource management except where it referred to the protection of native customary rights. Otherwise, the legislation emphasized licensing and regulations (Sections 5 to 10). However, the legislation specified the protection of native customary rights owners (Sections 13 to 20) and the appointment of honorary fish wardens (Section 3). In a truly community-driven fashion, the people and their conservation partners have used these limited provisions to push for the protection of their marine resources. With FLMMA, these isolated initiatives undertaken in different parts of the country have been brought together

and pushed onto the national and global stages where they are used to promote a strategy to conserve resources while improving the people's livelihood.

Over the last three years, FLMMA members have worked with coastal communities to address issues associated with their depleting marine resources. In all the notable instances, the initiatives to manage marine resources have involved the use of traditional Pacific Islands resource use practices. Consequently, there has been a revival of traditional resource use practices such as the periodic banning of fishing in countries such as the Cook Islands, Samoa, Vanuatu and Fiji, as communities in these modernizing countries attempt to manage resources within their care and prepare for a future where their children's needs are taken into consideration. These traditional resource use practices are easier to implement and are observed extensively within the communities.

FLMMA was established to bring together community members, conservation practitioners, researchers, and government officials to learn more about how community-based conservation can best be achieved. Improving the number and skills of people doing effective community-based marine resource management in Fiji will in turn help with the preservation of natural biodiversity while providing for the livelihood needs of communities. The success of FLMMA projects has been instrumental in the mainstreaming of conservation in Fiji and the articulation of policies for the sustainable development of inshore fisheries resources. For instance, the Ministry of Fisheries and Forests has adopted an adaptive approach to implement a government resource use policy to return the ownership of the 410 customary fishing areas to the indigenous owners.

The intervention of FLMMA has been timely as the commercialisation of inshore fisheries experienced over the last 50 years has been stressful on the fisheries resources. With the increasing number of fishers and their extended capacity, the sustainability of the resource has become a problem. Resource management activities determined by Government and based on legislation have not worked (Laws of Fiji 1985). Consequently, community-based resource use arrangements have been adopted to make marine resource conservation more effective.

FLMMA's approach enables local communities to play an active part in the management of their natural resources. Traditional resource use practices are used to organise people. Local communities own the resources and therefore are most affected by their status. With the communities' resource use traditions and close ties, the people are better able than government to determine the level of use of their resources, while their traditional cultural values allow for the effective implementation of management decisions.

In many of the coastal communities in Fiji, initiatives to better manage marine resources are already underway. In Cuvu, the villagers have physically removed crown of thorns from the reefs, have begun to culture corals and have designated protected areas. In Naboutini, Vunaniu, Lomawai and Korotogo, in the Coral Coast; Namena in Tailevu; Saioko in Ra and Malawai in Gau, the villagers are replanting and rehabilitating mangroves which are contributing to the recovery of their fishing areas and the protection of their shorelines. In Sasa-Mali and Macuata, the chiefs of the district have put in place a central licensing system that designates one chief from the three in the district to handle all consent applications within the district (Fong 1994). This approach provides the chiefs with greater control over the number of licences in their area and is a better way to ensure accuracy in the number of licences that are offered. The chiefs also banned the use of gillnets within the district and have decided to allow only the use of handlines.

Given the range of community-based initiatives, the challenge for FLMMA is to identify the factors that make these community-based conservation initiatives work well in order to facilitate widespread use and successful conservation. In this case, Government and FLMMA are hopeful that by the time the ownership rights to the customary marine tenure areas are returned to the indigenous communities, the people will be in a position to sustainably manage their marine and other natural resources. This is important as people in the communities routinely make decisions that affect natural resources and therefore should be involved in nature conservation.

Modern science is used to make resource management more effective and appealing to the people involved. FLMMA promotes the use of simple monitoring to prove the effectiveness of the interventions and maintain the people's commitment to resource management. Previously, the assumption was that greater understanding and awareness of the values of conservation would lead to positive conservation work. However, local communities always live with the dilemma of choosing between immediate incomes from the unsustainable use of resources, and more remote future tangible benefits through conservation activities. Past experiences also have shown that conservation can be successful only if the needs of the local resource owners are accommodated.

In this paper, we will describe the Fiji Locally Managed Marine Area network and discuss the method and approach it uses. The paper concludes with a discussion of how success at the community level has contributed to national policy changes.

Locally Managed Marine Area

The Locally Managed Marine Area (LMMA) is an evolving network consisting of communities, conservation organizations, research and training institutions, and government departments in the Pacific and Asian region. The LMMA learning portfolio (Parks and Salafsky 2001) is a collection of projects that use a common strategy to achieve three common goals to:

- implement more effective projects;
- systematically learn about the conditions under which this strategy works best and why; and
- improve the capacity of the members of the portfolio to practice adaptive management

(Locally Managed Marine Area Network 2002).

This learning portfolio was set up by the Foundation of Success to collectively share lessons learned about marine resource management interventions in order to maximize benefits and avoid painful mistakes. Based on earlier experiences with conservation initiatives undertaken in the Pacific Islands and Asia and the conservation activities now undertaken in the marine sector, the Foundation of Success instigated the development of the portfolio. Key components of the portfolio include community-based marine resource management projects, which consist of teams of practitioners that are interested in taking action to achieve specific goals and objectives and using adaptive management to improve the chance of project success.

The network aims to determine the conditions under which the LMMA strategy works best and the reasons why. LMMA encourages each participating project in the portfolio to follow a process that involves describing the conditions at the site, what actions the people will take to change the existing conditions and what information they need to collect to monitor the results of their intervention (Locally Managed Marine Area Network 2002). As a result, each project is expected to collect, analyze and communicate their information to check on the effectiveness of their actions. Questions such as whether the action worked or whether the assumptions were valid or whether changes need to be made to the project design can thereby be answered.

The goal of the portfolio is to make the learning process more efficient. Thus, if the members of the portfolio use the same strategy to obtain their information, the sharing of their findings should allow the network to find more rapidly and more reliably the conditions under which the strategy is most effective. It is critical that projects use a common language to communicate with one another. It is also essential that the projects agree on the strategy they use, what questions they study, what common sets of information they need to answer the questions, and what the different terms and phrases mean. This is why the LMMA network invested a great deal of time and effort in preparing a Learning Framework that can provide the basis for comparative work and learning (see www.lmmanetwork.org for a copy).

The LMMA network partners collaborate on the basis of a Social Contract that they agreed to work together to make conservation better for the people involved and the marine environment. The Social Contract is not legally binding but demands that the members observe common values that emphasise good social relations. The core values include commitment, teamwork, transparency, empowerment, respect, fun and the belief that practitioners can make a difference. This concept of emphasising the common values is appropriate to overcome the rivalry and suspicion that has existed amongst conservation practitioners and their organisations in the past. These barriers to genuine partnership cannot be easily untangled through legal contracts as such but through a social commitment to doing our work better.

FLMMA

FLMMA is made up of marine conservation partners in Fiji. Formed in 2000, FLMMA is one of the most active members of LMMA. FLMMA consists of representatives of the communities where the different conservation initiatives are undertaken, the Ministry of Fisheries and Forests, the Ministry of Fijian Affairs, the Departments of Environment and the Ministry of Tourism, World Wide Fund for Nature (WWF), International Marinelife Alliance, and the University of the South Pacific (USP). Collectively FLMMA partners are working in over 10 districts throughout Fiji and have a growing list of additional sites where people have shown interest in doing community-based conservation.

FLMMA's story began in the early 1990s when residents of villages such as Ucuivanua in Verata, Tailevu and Waisomo in Ono, Kadavu realized that the marine resources in their customary marine tenure areas (*qoliqoli*) were becoming scarce. In Ucuivanua, the elders of the village remembered how in the past, a woman could go out and in a short while, collect several bags of large clams (the clan totem) that are found in the shallow mudflats and seagrass beds and are the clan totem. At the time the villagers decided to undertake management measures, it could take a woman all day to collect only half a bag of small clams.

Subsequently, people in different areas began to search for answers to their problem of depleting fisheries resources. For instance, residents of Ucuivanua and Verata began working with scientists from the USP on a conservation and development project. The group decided to experiment with setting up a 24 hectare *no take* area (customary marine tenure area that is declared out of bounds) on the mudflat and seagrass beds directly in front of the village in the hope that it would lead to increased clam harvests in the adjacent down-current areas.

The community appointed a group of 20 men and women to be on the *no take* area management team. Working with the researchers, the group staked out the boundaries of the proposed protected area. The team then worked with the paramount chief and elders of the village to hold a traditional ceremony declaring the area out of bounds for the following three years; now extended indefinitely. The researchers then spent a week working with the team members to develop and implement simple monitoring methods that the community members could use. After consulting the community members, the researchers decided to use line transects and quadrats to sample clam populations inside and outside the *no take* area. In effect, the community members were conducting an experiment to see whether their locally-managed marine area strategy would lead to increased resource yields and conservation.

Replication Across a Network of Projects

Other projects were also undertaken in different communities to explore ways in which local action could be used to improve marine resources. In Ono, on Kadavu, villagers of Waisomo were working with the World Wide Fund for Nature's South Pacific office to find ways to protect and manage blue holes in their reef. Led by a village elder, Mr Mika Vunituraga, the people were convinced that a portion of their reef should be conserved as a protected area even though there were no legal provisions for such as thing. The villagers of Waisomo and their partners at WWF worked hard to convince the other villages that share the *qoliqoli* of the benefits of conservation,

and took the message to their provincial office to endorse the proposal, before forwarding it to Government for recognition at the national level.

This example from Ono shows the current trend in community-based marine resources management in Fiji. If people are committed to the welfare of their resources then nothing really is impossible, even when there is no legislation to support their efforts. In this case, the people with some enlightened leadership, had negotiated within their village, district (*tikina*) and province and eventually government, to recognize their wish to conserve part of their *qoliqoli* as a protected area. The publication of this area in the Fiji Gazette in 2002 showed recognition by Government of this community-based initiative.

In spite of the lack of legislation on resource management, the people had taken on the task of conserving their marine resources because it was the right thing to do. In fact, in each of their projects, FLMMA partners are effectively testing some variation of the basic locally managed marine area strategy to see if it could contribute to conservation and resource management. This was why it was easier for the partners to come together in a network, because they saw it as a logical next step to make their work more effective. By pooling their experiences and agreeing to collect and share a common set of data, the projects in the portfolio are learning more efficiently about the specific conditions under which locally managed marine reserves work, do not work, and why. The project teams also provide technical support to one another through the learning portfolio.

The accomplishments of FLMMA partners were presented to the policy makers in Government in a workshop in 2001. The Ucuivanua clam monitoring had shown a 300% per annum increase in the no-take area and a 100% per annum increase in surrounding areas, as well as increased household income and greater catch per unit effort. After the policy makers got over their surprise at being given scientific findings by community members, they informed FLMMA of their desire to adopt the use of traditional Fijian customs to manage marine resources. As a direct result of FLMMA's work, the Government recently developed a full time program focusing on the use of locally-managed marine reserves within Fiji's coastal waters. During a community workshop in June, 2002 on Vanua Levu, 15 Fisheries Department Extension Officers were trained in the Participatory Learning and Action techniques. Furthermore, four relevant government agencies have formally joined the network.

The Approach

FLMMA has been working with their partners in the communities to formulate ways of addressing their marine resource management problems. Its experiences are unique and provide useful lessons that must be understood by those who are dealing with similar situations. The point to remember is that to involve people in community-based resources management requires a great deal of consultative work, goodwill, trust and commitment. The process cannot be shortened and requires patience and understanding. This is why externally developed management activities have had very little success.

FLMMA partners use the Participatory Learning and Action (PLA) method to involve local people in the decision to manage their resources. The method emphasises a number of phases and steps that should be undertaken. Background research and coordination are critical to ensure that the preparation is relevant and appropriate. For this reason, the FLMMA teams are purposefully made up of people who could converse in the vernacular and therefore better appreciate the people they were working with. The Training of PLA Practitioners is essential to promote the use of the method and ensure that the training is continuous. The PLA Fieldwork is emphasised because the work should be set in a context. In many instances, resource management arrangements are finalised externally and are taken to the communities to implement and observe them. As is the case with national laws people are often not committed and therefore enforcement measures are necessary. The analysis of data is important to illustrate the significance of information and data gathered from the people who need to be convinced that what decision is being arrived at is directly related to the discussion in the workshop. Lastly, follow-up is critical because the people need to be convinced that the method is responsive to their needs.

During resource management workshops, people are asked to reflect on their resources and the changes they have experienced over the last 30-50 years. Using the PLA approach, people are asked to identify the main problems they face and to propose ways by which these may be addressed. After this opportunity to reflect on their situation, people then list activities they think they can undertake to solve their problems. The result is a resource management plan which outlines the management actions that the people have agreed to undertake. Table 1. provides an example some issues and proposed management actions.

Table 1: Critical resource issues and management actions taken by a community in Verata.

Issues	Management actions
Over-harvesting or overfishing of resources	Stop the issue of commercial fishing licence and use of gillnets. Alternative income arranged by USP through bio-prospecting enterprise to offset short-term losses in income from actions taken. Delineate species-specific reserves via <i>no take</i> area or <i>no take</i> species.
Mangrove and coral extraction	Banned
Siltation	Mangrove replanting and rehabilitation
Trash and human waste	Set up of village health committee to periodically organize beach and water cleanups and oversee that each household has proper toilet and rubbish dump.
Poison Fishing	Ban the use of <i>Derris sp</i> plant and other killing agents.

It is amazing to learn what people know to be the causes of their depleting fisheries resources. As shown in Table 1, some of the proposed management activities from one of the districts include declaration of fishing restrictions, declaration of *no take* areas, identification of action to address pollution issues, coastal erosion, education and awareness, and a community management framework. *No take* areas are established as replenishment zones, specifically to rehabilitate depleted economically important marine resources and degraded habitats. The assumption is that when the resource population in the *no take* area has recovered and increased, there will be a 'seeding effect' to harvesting areas, provided there is enough brood stock.

The communities and their FLMMA partners are responsible for supervising the achievement of the management plan. Follow-up meetings and training workshops are periodically undertaken to maintain interest. Monitoring training workshops are organized in all of the managed sites to allow the local communities to conduct their own monitoring activities. This has proven to be a very useful tool. Until now, people's claims of the recovery and the impacts of the intervention have not been substantiated. This can now be done through ecological, social and economic monitoring which has provided evidence to support local community intervention.

People are asked to determine their own indicator species and to conduct their own monitoring activities. Community-based monitoring work has illustrated some dramatic gains in the health of local marine species. Ucunivanua village provides one example. This community's data indicate that both the number and size of clams significantly increased in both the *no take* area and the adjacent down-current harvesting areas. At the start of the project, it was extremely rare to find a clam bigger than 5cm in diameter. Today, the community routinely finds clams in the *no take* area that are over 8cm.

Clams exceeding the largest adult size class (> than 9cm) are now being found by villagers for the first time in three generations. As an additional indicator of ecosystem health, the community is finding that other fauna are returning to the system. For example, it has become more hazardous to conduct the surveys in shallow water without proper foot cover because of the large numbers of stingrays (a major predator of the clams) that now frequent the mudflats. More importantly, once the people of other villages in Verata saw the effectiveness of the *no take* area in increasing clam stocks on the mudflats in Ucuivanua, they decided they would also set up other *no take* areas in portions of their mangroves and their coral reefs, to protect one species of mud lobster, several species of sea cucumbers, and several coral reef fishes and invertebrates. Similar results are being obtained at other project sites. To date, communities in six districts in Fiji have set up marine protected areas and are monitoring their effects. People in several other districts have asked for assistance and initial discussions have been held about assisting them with this process. These districts together contain about 10% of the total inshore marine area in Fiji.

The locally managed marine areas are not just being set up for conservation, but to also improve the yield of marine resources that people use for subsistence and cash income. Clam collectors in Ucuivanua are able to gather 4-5 bags in a morning of work. The increased resource yields of clams, crabs, and other species from areas adjacent to the *no take* area that can be sold in the municipal market of the capital, Suva, has led to a 35% increase in household income over three years and a tripling of the resource catch per unit effort. This project also had an enterprise component by which the people of Verata district have received to date US\$30,000 in proceeds from licensing biodiversity samples for testing. This money has been placed in a community biodiversity trust fund and the interest used to support the monitoring work and to meet needs such as improvement of village primary schools, which would otherwise have been funded from the parents' minimal cash resources.

Influence on policy development

The Fiji Locally Managed Marine Area network is fundamentally about partnership. Whereas in the past, the communities worked in isolation and the conservation organizations competed with one another, they are now cooperating to make the work at each site more effective and to enhance learning across sites. This is why FLMMA has been effective in bringing about changes nationally and internationally even though there is still no legislative framework. Perhaps one of the best examples of cross-project collaboration is the way in which members of the different project teams visit one another's sites to conduct joint training exercises. For example, FLMMA members from five NGOs and two government departments in 2001 held a week-long participatory workshop to help eight villages on the island of Gau to develop marine resources management plans. This type of collaboration should enhance integration and involvement of all stakeholders, which is critical to the management of marine resources.

FLMMA has grown to include a number of projects and government agencies. Networking is vastly enhanced because the partners are based in the same city and can get together on a regular basis and talk about matters of common interest as well as share a ritual bowl of *kava* (traditional drink in the Pacific Islands). The network has also benefited from the logistical support it has received from the USP and WWF and from generous funding from the MacArthur and Packard Foundations, which have provided resources for both individual projects as well as network activities. Government has promised FLMMA the use of its research boats and has promised to provide a motorised fibreglass punt for each of the sites to assist in patrolling against outside poachers. Such support is welcome because it will enhance the work in the communities and act as an incentive to those who are contemplating similar activities.

Perhaps the most important driver of success is the feeling of all involved that working together in FLMMA allows their work to be carried out more effectively. People are excited about how the approach can engage the communities, help them solve their problems, improve their lives and enhance biodiversity. All the organizations have signed the Social Contract that requires support from the highest level of the different organizations involved.

To allow for long-term sustainability of the FLMMA approach, it is hoped that locally managed marine areas will become part of the Government work program. Such development will free up the conservation organizations to play a facilitating role and will enable them to concentrate on developing new sites as their funds permit. There will be no problem with consistency and quality as all the partners are committed to implementing the communities' marine resource management plans. Once management plans are fully implemented the conservation organizations' role would be to visit sites once or twice a year to discuss results and any problems. This approach would allow for the involvement of all the community-based groups in the country.

FLMMA has already gained regional and international recognition. The Pacific Biodiversity Roundtable, a group of international NGO representatives, donors and conservation practitioners who meet annually to consider progress in implementation of the Pacific Nature Conservation Action Plan chose FLMMA as one of two examples of innovative projects in nature conservation. They also agreed to assist with spreading this concept to Caribbean and Indian Ocean small island states. The United Nations' International Coral Reef Action Network (ICRAN) project in the Pacific, being administered by the South Pacific Regional Environment Program (SPREP), has chosen FLMMA as a demonstration site for its new projects in the region. It is seen as a model that other projects should emulate.

At the recent World Summit on Sustainable Development, FLMMA was one of the six recipients of the United Nations Development Programme's Equator Initiative: The Innovative Partnership Awards for Sustainable Development in Tropical Ecosystems and specifically for best practices on the theme of biodiversity conservation and poverty reduction. Thus the individual experiments in the different parts of Fiji have been successfully publicized to the world through FLMMA. It is hoped that the publicity will lead to more emphasis on successful management that conserves resources while enhancing people's living conditions nationally and globally.

Lessons Learned

Decisions about how to protect the fishing grounds should be made by the resource owners and community. Some of the aspects of management intervention that need to be considered include the sizes of the *no take* area (which should be big enough for any biological processes to take place), and the length of the management period. Traditional prohibitions were mostly short-term, but these have to be lengthened to facilitate the recovery of the resources within the marine reserves. The area open to fishing should be big enough to support the communities' day-to-day requirements. By monitoring, analyzing and discussing the results, communities are better able to make such decisions. In one village in Verata, the people were declaring a *no take* area for one year and then opening it. The villagers wondered why they were only getting small increases in the size of some types of clams, until the fact that the clams only sexually mature after eighteen months was made known to them. They have now extended the duration of their rotating *no take* areas to two years.

Conservation areas will only be successful if the approach is holistic and it is a part of a broader resource management plan, which must include monitoring and evaluation. People in the community need to understand how they will benefit from the conservation initiatives. In this era where resources are becoming scarce and cash needs are increasing, fishers and community members are capable of doing anything to make ends meet, even if it means exploiting the *no take* area. Hence, a sustainable enterprise to generate income and continuous community awareness programs should be part of the approach if these conservation programs are to work in the long-term.

FLMMA has shown that conservation organizations, research institutions and communities can work together if they are committed to the cause. The Social Contract is an effective way to get institutional backing and get the work done. FLMMA has also shown that the sum of the collective work is much more than the sum of individual projects. In terms of mainstreaming conservation, FLMMA's impact has been far more effective than the impact that individual members could have had.

The success of FLMMA in conservation should be seen throughout Fiji and other places as a guide to how people should be involved in the management of their resources and their development activities. The future looks brighter given the interest people are showing in seeking assistance to manage their marine resources. At all levels from the communities, to the *tikina*, province, and the National Government, the people now promote and practice integration, collaboration and iterative management, which are the pillars of the FLMMA approach. This proven approach should now be formalized into the countries' Fisheries Act which needs to be revised to reflect the need to manage marine resources and to involve people in the management of their resources.

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