

Marine Protected Areas and Locally Managed Marine Area Establishment in Milne Bay Province:

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Introduction:

Establishing marine protected areas may sound simple where a site is set up as a reserve for food security and other reasons. It is a long-term ongoing continuous process, which requires corporation from the local resource owners and the assisting organizations. In Papua New Guinea this concept is difficult because of the land tenure system, which gives ownership over the resources by clans or family groups. To develop such things needs very good explanations and clarification from the start during involvement with communities. Awareness on the need for sustainable management is very important for which MPAs and LMMAs are an essential tool to derive sustainable resource management. Thought they may be several reasons why an LMMA may be set up by different groups of communities in different villages. For whatever reasons these communities have, it is important that we assist them in doing so. Biological studies are an important part in site determination. The area may not be necessarily being biologically diverse area, but it may be a sink area during larval dispersal, which would be a source or reservoir for fish and other marine stock replenishment. In such cases it is important that we assist communities in setting up these sites for the purpose of food security. There may be other options that which are larger and complex. Preservation and maintenance of large biodiversity areas is also significant however, this will be observed and maintained by the communities if it is understood and does not clash with their daily sustainable activities such as fishing and collection of trochus, beche-de-mer for cash income. Provided below are some of the thoughts or points to consider when we think of setting up MPAs and LMMAs with the local communities in Milne Bay Province.

Ecological opportunities vs. Commercial opportunities

The trend in high value sedentary species (beche-de-mer, trochus, clam) that earn people money is rapidly declining at an uncontrolled rate. This may ecologically have a direct or indirect threat to the general biodiversity. Ecological processes have an indirect relationship with commercial opportunities. By better managing the marine resources, commercial opportunities would be high. If on the other hand the marine environment is not managed, then commercial opportunities will be phased out. Healthy marine ecology is complemented by high opportunities therefore; the project tries to maintain this concept, which will benefit local communities in MBP on a long run. Though the CI RAP had identified a tremendous decline in sedentary resources (holothurians, clams, trochus), it is not too late to start protecting the ruminant stock. Because these last remaining stocks will again re-generate to cover the decline. Even though time may be longer, it is still better to do something than doing nothing to save these last remaining stocks for the local communities.

Legislations Governing Conservation

The following main conservation legislations and acts listed have been identified to be of relevance to the Marine Conservation Project.

- ❑ Fauna (Protection and Control) Act (1976)
- ❑ Conservation Areas Act (1982)
- ❑ National Parks Act (1982)
- ❑ Fisheries Management Act (1998).

These given legislations, all have different specifications when establishing MPAs. In most instances, the most favored method is the Wildlife Management Area (WMA) set under the Fauna (Protection and Control) Act, 1976 Chapter 154. This protective mechanism is always

considered best by the communities as management responsibilities lies almost entirely with the resource owners and appointed WMA committees. The government does not have a major role in it though it may have some manipulation on the management rules. The other protected areas such as National Parks and Conservation Areas are held by the state. Fisheries Management Areas is managed and regulated under the Fisheries Management Act 1998 Section 30. This gives certain restrictions and management regulation provisions for the area. From past experiences and papers documented, all these piece of legislations do have both advantages and setbacks.

Establishing MPAs in Milne Bay Province.

Establishing MPA is one of the possible mitigative solutions to the restoration of the declining commercial species and other marine fauna. Studies on several sites around the world have revealed MPA as a strategic approach to restore depleting commercially exploited stock and maintain biodiversity. As a fisheries management tool, appropriately placed MPAs can protect adult spawning biomass of targeted sedentary species, maintain a continual supply of recruits to key fisheries and thereby ensure these fisheries is sustainably harvested.

Benefits within MPAs.

Site selection process for an MPA or LMMA establishment is an important component. If MPAs were established on a barren site where species diversity is low, the output would be very different to those set up on areas where biodiversity is still intact. A number of contributing factors could be used to describe this. a). The area could have been over-fished to a level, which could not replenish to provide the expected outcome within the scale of the project. b). One benefit that communities physically observed is not significant in terms of scientific explanation. For instance the increase in surgeonfish would be seen as a possible benefit from MPAs, which in scientific terms could attribute to an insignificant result or cause, which had derived through algal bloom as a result of large sediment load.

Benefits outside MPAs.

Although it is reasonable to expect MPAs to directly benefit sedentary species within the closed area, their future successes depends on the availability of a source of larvae to replenish the areas outside the MPAs. This creates another basis for MBP, which is to support sustainable catches. Areas outside the MPA can be beneficial through increase abundance inside protected or reserved areas to 'spill-over' into exploited areas. For fish it is very easy to observe given that 25% area closure could lead to 50% enhancement of surrounding fisheries. (Alcala, 1999, *In* Adams, 1998). However, for beche-de-mer and trochus direct spillover effect (i.e. movements of adults) may occur but given their relative slow movement rates, this impact is likely to be limited. Therefore, for such sedentary species the greatest source of benefits outside MPAs would come from spillover of planktonic larvae.

Permanent MPAs/LMMAs vs. rotational closure

Management through a long-term closed area would have a long-term impact on the fishing community. If the area closed is large, fishers must either leave the fishery (thereby reducing their effort but thereby requiring a change in job), or must concentrate their activities in a smaller fishing area. This may have an adverse effect on stock. The uses of seasonal closures have been used in New Caledonia, Vanuatu and French Polynesia. The lessons learnt had shown that these might reduce the long-term management of the fishing communities while closure of a percentage of the fishable area may force some fishers to leave the fishery. The impact of increased fishing

pressure will be mitigated by the periodic rotational closure of those areas, allowing those exploited (and possible over-exploited) resources to recover. The optimal length of this rotation will depend on the life history of the target species and the status of both the stocks and the fishery. A good example of this is the national beche-de-mer management that is controlled by NFA.

MPA/LMMA in the context of MBP.

The objective here is to enable communities to develop their potential and organized activities to enhance development and the sustainable use of marine resources. Establishment of MPAs and local management plans through the Fisheries Management Act which, the National Fisheries Authority is also seeking ways to return all enforcement of the marine resource management to local resource owning communities. The establishment process could also be done in a number of ways depending on the community interest. However, the project perceives to have it gazetted through the Fisheries Management Act as this coincides well with the commercial and artisanal fisheries practiced by the Milne Bay communities. MPA if managed well is a possible tool to achieve sustainable fisheries. It can maintain a productive fishery by protecting critical stock within their borders. An immediate action in management should now be developed to combat over-harvesting and cater stock recovery. Creation of the MPAs/LMMAs is an initial step toward achieving the described benefits from the resources yet sustainably manages the population in a healthy manner.

The second phase thereafter is to look at capacity building of local resource owners by means of an adaptive management for local enforcement and self-compliance through the development of community-based management plans. The established MPAs or LMMA may include a variety of management tools and no-take zones rotational and/ or seasonal closures, and/or restrictions of fishing gears and/or fishing activities and size limits. The implementation and/or strengthening of management and tenure systems also has the potential to avert or overcome problems of poaching, open access fishing and to generate incentives to harvest efficiently and conserve and manage valuable marine resource. This concept is very important now, since the recent stock assessment has revealed that some species of beche-de-mer and giant clam stocks are heavily over-fished in some localities and recent research in the Pacific has shown that a degree of regulated access, enforced at a local level via the community has the best chances of success.

Throughout MBP the traditional practice of MPAs had already existed over generations through such forms as closing reefs or seasonal closure of fishing grounds for a certain length of time following a death of a clan member. After a period of several months to years these areas are/were reopened and people could access that area for fishing and harvesting again. People are aware of the benefits of such reef closures in resource re-generation and this practice therefore offers the most appropriate way to introduce MPAs to communities by promoting cultural and sustainable adaptations acceptable to communities as they exploit their resources commercially.

The authority of tradition reef closures need support to fit into today's society which is influenced by outside market forces, education, the churches, the people's increasing mobility and exposure to new ideas and world views. Ten years ago barter and trade was still common and sharing of goods was common in the village among relatives. Today it is common for relatives to sell goods and services. The environment is now used for earning their living and this has seen an increase in harvesting of marine resources to get money. Communities should now consider making MPAs an associated management plans so they continue to make money, because once the resources are finished so does the money.

Implementation Strategy.

These sets of strategies tries to achieve output 2, which focuses on, a *representative network of community-based marine conservation and sustainable near shore resource management areas*. These detailed strategies also provide options to government legislation for which these MPAs could but into management and enforcement. It also focus on providing resource owning communities with necessary information, training and organized community management structure to manage the marine resources during phase 1 of the project. The project also understands the rising need in cash generation and will anticipate options, which will focus on potential benefits that could be reaped out from MPAs, which is beneficial to a wider community, that benefiting individual interest.

Marine Protected Areas/Locally Managed Marine Areas Establishment in zone 1.

The idea of setting up MPAs has already been stated in output 2. The project also seeks to provide options where by local communities benefit from these in terms of food security and income source. A stand out benefit that communities could get is through dive tourism. A workable model is still embarked on where we are looking at how best MPAs when set up could be sustainable in terms of its management at all levels. (Provincial/LLG/Community levels). This is a critical issues is that this must not be taken as an advantage where it benefits individuals or become manipulated by individuals. MPA establishment will be strictly placed on areas of high biodiversity value to save the ruminant biodiversity in the province and the country as a whole. By doing so the value of this will be further analyzed to prove to the areas of high interest in zone 1. Three areas identified and described earlier within the zone will be focused on. For zone 1 the project looks at establishing 3 MPAs. From these three MPAs, an association will be formed which will comprise of MPA committees form respective MPAs. This association will be the vocal piece for the MPAs in MBP. Should other MPAs be later established in zones 2 and 3, representatives will also join the association. This creates a powerful body, which will represent respective MPAs during stakeholder meetings and discussions at the provincial level. This association will work very closely with conservation organizations, dive industry, fishing association and the provincial fisheries office in addressing relevant issues that may need attention in the near future.

Community Based Marine Protected Area Design.

The initial design of the Marine Protected Areas in Milne Bay Province will be based on a number of factors. These factors will comprise of the past experiences and lessons learnt from similar MPAs in Papua New Guinea and the Pacific. More emphasis will be targeted at the PNG concept and target strategies laid out by the Conservation International. Based on CI's objectives, the MPAs will have more focus based on the results derived from the biological, social and economic assessment. These assessment reports will be used as basis for site identification together with community options of which areas to have for conservation. The areas of significance identified based on the mentioned surveys will be made known to the communities and the reasons for having it protected will also be stated. However, decisions will be made by the resource owners based on land tenure ship and other social obligations pertaining to ownership will be made clear by the communities. The local communities will decide the size and scale of the MPA however, the projects approach to this will very much be based on information from the general livelihood and income generating avenue for these villages.

Adaptive Management System

The communities will be given all the priorities in all processes of MPA establishment. The project will facilitate and guide the process of establishment right through the gazettal stage. The project tries to perceive that the community sets up these MPAs so that the need and the idea of

conserving their proportion of sea areas is left to them to see that it is for their benefit in the long run. The communities engaged would learn through adaptive management process whereby they will gain ownership over conservation processes through a “learning-by-doing” approach that will allow for management activities to be adapted by the communities to sustain the MPAs in a long run. A long term monitoring program will be installed on targeted sites, with focus on building stakeholders capacity to monitor social and ecological indicators. Innovative monitoring methodologies, which will be designed on a non-scientific approach, specifying on Reef, check targeting their commonly harvestable stock (*Fish, invertebrates, and substrate*). Independent reef check surveys will also be conducted by the program on a biannual basis to provide more scientific detailed information to those collected by the community-based monitors.

Formalization of MPA System.

The program will work very closely with the village councilors, ward development committees (WDC), clan members and families within a community to undertake the formalization activities with relevant authorities responsible. These include the formulation and follow-up with either the National Fisheries Authority or the Department of Environment and Conservation with regard to the type of gazettal procedures stipulated under subsequent conservation and management acts. The community will have two options to decide where to have the MPA gazetted under the Fauna (Protection and Control) Act and the Fisheries Management Act. The project would like to see these areas managed as under the Fisheries Management Areas than Wildlife management area because of a number of reasons. The project will also convene community management forums of WDCs, village interest groups, churches; community-based organizations (CBO) etc to communicate lessons learned and inform the management of MPAs by WDCs. The forum members will be given some form of formal and informal MPA training and exposure to other MPAs in the country to enhance good MPA management methods, including threats identification, enforcement, reporting and administration.

Specific target outputs

Capacity building for Village Engagement Teams (VETS)

Project staff and community workers must first understand the whole concept and mechanisms used in establishing Marine Protected Areas. The community engagement teams have kept in touch with the local communities doing awareness campaigns on the establishment of LMMA. However, when communities ask questions on the biological significance and other biological functions the team expresses lack of in depth knowledge on the matter. The concept of MPAs and LMMA will be addressed to these community trainers to ensure they are aware before any community patrols.

Awareness on different MPA processes, motives and the need for MPA to be established.

This is an important step where communities are made aware of the different types of MPAs and the regulation that are available for gazettal. Detailed structure and explanations on the establishment and management procedures will be explained. The need for having marine protected areas which community would manage to conserve and sustain their marine resources will be made known to the local communities. Discussions will center on the potential benefits and likely constraints that are expected to be faced when dealing with MPAs. The aim here is not to stop or ban the fishing communities but to provide means where they fish today but yet sustain the resources for their future.

Boundary mapping

Procedures and explanation of why a boundary mapping is needed will be explained to the communities to better understand before having them draw up their boundaries. This process will be done first on land where all community members, ward councilors and neighboring clans would map out their sea area boundaries. Based on agreements by all parties on the protected area, then GPS coordinates will be taken to map out the protected area.

Establishment of the MPA committee members, MPA rules and penalties.

This is another step that caters for voting or election of the MPA committee members to run and manage the MPA. Having the necessary committees in place then communities will draw up MPA management rules and penalties. Whether it be a WMA or FMA depending on the community's interest appropriated procedures for the process will be executed. The option of gazettal either under the Fauna (Protection and Control) Act or the Fisheries Management Area will be decided later by both the local communities and the project.

Reconfirmation with the communities on the boundaries, management committees management rules and penalties is very important as communities might decide to change some decisions at a last minute. This process will also ensure that all things discussed earlier and decisions made are accepted and there shall be no further disputes within the communities later.

Application for gazettal

An application will be submitted to either DEC or NFA depending on which management legislation we choose with the community. This application will already contain all the necessary procedures required for gazettal of that site as MPA and or Fisheries management Area.

Payments for gazettal procedures

This part is just an additional requirement that is needed during the establishment of WMA. Payment of fees is a requirement under the Fauna (Protection and Control) Act, where communities who establish protected areas have to pay certain fees to get the conserved area registered under the PNG national gazette.

Monitoring and sustainability.

As already indicated in 1.1.2. Adaptive Management, the communities will elect each representative to be trained by the project staff on methods of conducting reef Checks, creel surveys, fish consumption surveys and other socio-economic surveys. A network system will be established with the GCRMN whereby monitoring data from the MPAs in MBP would be submitted and utilized on a broader scale.

Enforcement System

The project will design a good monitoring system together with other stakeholders to effectively monitor the MPAs. Other enforcement, which would be cost effective, would also be integrated and imbedded into local institutions such as using the village court system to empower the MPA management rules for poachers and lawbreakers. As mentioned earlier, management rules and penalties will be drawn to suit different community.

Institute Alliance with the Tourism Sector.

A developed integrated approach will be developed during the phase of the project to support community and sustainable eco-tourism in MBP. An innovative alliance would forge with the local dive operators using the PNGDA as platform to collaborate with the growing tourism industry. There has been some agreement from the industry during the initial planning of the CI project whereby the project will transfer user fees to communities with user rights. The local dive industry could also act as natural awareness facilitators and relay to divers, the important community based conservation and resource management efforts occurring in the region which significantly broadens the project's stakeholder support base.

What is Locally Managed Marine Area (LMMA) and what is its function?

The LMMA Network was launched in October 2000 and is a collection of marine conservation project practitioners working around the world who have decided to join together in order to collectively improve the success of their conservation efforts. Members in the LMMA share knowledge, skills, resources and information with one another in order to learn collectively how to improve marine management activities and thereby measurable increase their conservation impacts. The purpose of the LMMA network is to work towards a share vision where;

- Healthy managed marine ecosystems support the people and the community that depend on them
- The resident marine biodiversity is protected for the benefits of the future generations;
- Sustainable coastal development is a reality under active application; and
- Effective methods and models of local marine management exist for the world's use.

The vision not only speaks to enhance marine conservation science and practice but equally to an improvement in the overall well-being of those people who live along the world's coasts including their livelihood and food security.

A locally-managed marine area (LMMA) is an area of near shore waters that is either actively and wholly (or largely) being managed in a 'local' practitioners context by residing or neighboring communities and or families, or is being collaboratively managed by both resident communities the local government representative that are based at the immediate vicinity of the LMMA. The LMMAs are usually 'managed' to achieve local conservation and/or sustainable development objectives. A "community-based marine protected area" is one example of a LMMA that is commonly used in many developing countries. Having said that one would ask how is a LMMA different from a MPA? The IUCN (1998) defines a MPA as "any area of intertidal or subtidal terrain, together with its overlying waters and associated flora and fauna, historical, cultural features, which has been reserved by law or other means to protect part or all of the enclosed environment". Because this definition is too broad, it includes much type of marine management and protection activities. Under this definition, a LMMA is only one example of a MPA, just as a permanent reserve (no-take) zone managed remotely by local people. The network is a "learning network" meaning that its members act as collective, not as individuals. The participating members agree to collect, share and together analyze information relating to LMMA use.

What are the benefits of participating in the LMMA Network?

Some of the benefits that are received by participating projects include;

- Receiving training from the network in adaptive management and sharing expertise or exchanging skills with other projects and practitioners.
- Increase the level of community involvement, support, and learning in LMMA projects;
- Sharing and exchanging ideas and information with other members through site-to-site visits, workshop, conferences.
- Build lasting and rewarding personal relationships between conservation practitioners.

The LMMA Network comprises of member countries like Philippines, Fiji, Indonesia, Federated States of Micronesia, Palau and Papua New Guinea. Options are open for projects within these countries to be become either provisional or full members. It tries to promote projects in each of the countries described. At present two project sites in PNG (i.e. Madang Lagoon and Kimbe Bay) projects are provisional members. Being provisional members allows for the project to fully train and institutionalize resource owners with the capabilities to locally manage their MPAs.

The project in MBP will register under LMMA once it has MPAs established. LMMA is a good mechanism, as it would provide training and exposure for local representatives to similar projects in PNG and possibly abroad. Eligibility to become a member of the network is determined by how much data and information the project had collected based on the necessary learning framework factors (LF Factors). The generalized LF Factor matrix is presented in the table below. Based on surveys and reports from the project, MPAs established inside the province could easily join the network.

LMMA management and Sustainability in Local Communities

Management and regulations of LMMA rules in local communities will be endorsement by respective area managers. This then becomes recognized and at the district level and managed by ward councilors in the respective wards.

For the recognition under the National Acts such as the Fauna (Protection and Control) Act, Fisheries Management Area Act, the documentation of the protected area will be submitted to these relevant authorities for endorsement and gazettal purposes. As stated earlier, there are different options to choose from by the communities. Wildlife management areas (WMA), Parks, Fisheries management area (FMA) are such options for which these LMMAs are recognized nationally.

Commonly Asked Questions

Q. What is a Marine Protected Area (MPA) and what is Locally Managed Marine Areas (LMMAs) and what significance do they have?

A marine protected area is a larger area reserved by law or other means to protect part or the entire enclosed environment. There is several recognized government Acts that governs the establishment of MPAs. The most common Acts are the Fauna (Protection and Control) Act, National Parks Act, Conservation Area Act and the Fisheries Management Area Act. These acts have different guidelines and regulations. To give you a fair idea of what they are;

- Fauna (Protection and Control) Act, 1976. – Under Chapter 154, of this act it allows for the establishment of Wildlife Management Areas (WMA). WMAs are decided upon by local communities, who have all the rights in electing its WMA committee members who governs and run the area. This act gives the mandate to the resources owners to draw up their management rules and penalties to safe guard the protected area.
- Conservation Area Act, 1982 and the National Parks Act 1982, are state held lands. If you decide to have your area gazetted under this two acts then the state or the government does all decisions on management.
- Fisheries Management Act 1998.

A LMMA is simply a locally managed area managed at a community level or to the extent the management rules and penalties are recognized by the local level government. Their significance is that they both share the same purpose, and that is to protect species of endemism, marine fauna and flora and importantly for food security purpose.

Q. Why is it that important to set up marine protected areas and LMMAs?

There are two main reasons why people or you resource owners should start thinking of starting up LMMA.

1. Marine resources will not be always here for you today and tomorrow. It is now up to you to critically think about the future of your resources for your sons and grandsons. Conservation is not that these resources are taken away from you. What we would like to see is that people give consideration for tomorrow's use. Marine resources such as beche-de-mer, trochus and clam will one day disappear from shallow reefs and accessible areas. As this province cash income for communities is dependent on these resources. If it faces of then that's it your money is also gone. Other resources such as fish are also to be considered. Marine protected areas serve as a pool or reservoir, which caters for recruitment of stock into fishing grounds and other adjacent areas. Without having this reserves, then there is no place that will regenerate new stock to fill your fishing and collecting grounds.
2. Milne Bay province has the largest diverse coral reef in Papua New Guinea. Due to this fact it harbors a verity of fish species that are of consumptive value to people. Care for these biodiversity naturally maintains the ecosystem health whereby the province also is richly blessed with turtles, and other marine organisms. Though the local people do not recognize it, it is however one of the hottest, or highest coral distributed place inside the Pacific Coral triangle. This was identified during the WWF Eco-regions workshop in Madang. MBP was highlighted as an area of global significance during that workshop.

Q. Will the LMMA and MPA bring economic benefits to the community?

These LMMAs and MPAs will not bring direct benefits in terms of cash and cargo. The objective of this system is to ensure villages; communities utilize their resource in a sustainable manner with consideration on resources for the later years to come. The mechanisms of this concepts is to safeguard villagers in ensuring they do not over-harvest and that there is a reserve set aside that will replenish fishing areas with fish and other marine resources. In terms of economic benefit it will but will not be in a short time period. It would be a gradual process where by reserves will re-stock fishing and collecting areas. It may help with beech-de-mer, clam trochus if the current supply is not depleted to a level where it can regenerate quickly.

Q. Who are the owners of these LMMAs/ MPAs?

These LMMAs and MPA that we set up are not for Conservation International (CI). It is for the communities and clans that agreed to have these areas protected or reserved. CI's role is to assist or facilitate the process, which the communities themselves should realize the need and urgency to look after their marine resources. The national government does not have the capacity to come down to the local community to provide this assistance. Therefore, CI acts as the middle person working directly with the communities to address this and related issues in the villages. Therefore, local community or local people should not have this perception that "this is done for CI own interest". CI will be gone tomorrow and also will not benefit from the harvest you get from your sea. Ownership, decision-making is all up in your hands as you are the sole owners and guardian of your surrounding marine environment.

Q. How can offenders be punished?

The communities will do all management rules to guide their LMMAs/MPAs. The communities will also draw up penalties to punish offenders or poaches who do not comply with the LMMA or MPA management plan. The community will draw up all these rules themselves. These drawn up laws will be endorsed by the respective LLGs, which will become effective as a community rule to be enforced by the councilor. Offenders can be punished by the councilor as he has the mandate to execute these rules.

Q. Who will monitor the LMMAs?

Monitoring of your LMMA covers both the biological aspect and the socio-economic pressures. For biological monitoring this involves doing reef surveys and data collection to provide scientific evidence of the habitat health. Communities' will chose reliable person from the community to be trained in SCUBA diving and in conducting biological monitoring. Methods that will be used will be both from the Global Coral Reef Monitoring Network (GCRMN) and the methods by the Australian Institute of Marine Science (AIMS). For a long-term sustainability, links will be created with the international institutions to supply data and information to. GCRMN is a good example where we could work with once formal agreements have been arranged. For socio-economic surveys, surveys such as the creel market surveys and fish consumption surveys will be done by the communities once villagers are trained on how to do that. The information that is gathered from these surveys will be used by the LMMA communities to tell which areas or portions of reefs are used most as fishing grounds and which are used less. These will then steer the committees to make informed decisions on sustainable use of the resources.

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