

Mangrove Ecosystem for Climate Change and Livelihood Solomon Islands (MESCAL-SI)

Final Report

Methodology and lessons learned during the facilitation of mangrove resource management at the MESCAL-SI demonstration site



30th May 2013

Submitted to: Ministry of Environment, Climate Change, Disaster and Meteorology

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Summary

This report summarises the lessons learned and methodological approach for the facilitation of mangrove resource management at the MESCAL-SI demonstration site of Eliote Village, Maramasike Passage. The approach used by WorldFish is based on a participatory diagnosis and adaptive management framework nested within an ecosystem approach for fisheries management; it builds on lessons learned from community-based resource management activities undertaken in Solomon Islands and elsewhere in the Pacific.

During the MESCAL project (April 2012 – April 2013) WorldFish has guided Eliote Community (the MESCAL-SI demonstration site) through the community based process of implementing mangrove resource management which has resulted in the formation of a mangrove resource management committee; the identification of an area for mangrove management, as well as rules and controls for managing the mangroves. Mangrove management activities have been compiled into a mangrove management plan, which the community has implemented and they are also interested to register their plan through the Protected Areas Act with the Solomon Islands Government. Although there is a history of community based resource management activities in Solomon Islands, this is one of the first that is working specifically in a mangrove-dominated ecosystem. Through this process numerous lessons have been learned and will be built upon to strengthen community-based mangrove resource management activities elsewhere in Solomon Islands and the broader Pacific.

Lessons Learned

Scoping and participatory diagnosis

- Resource management projects that have been requested by a community and are community initiated, are more likely to be successful and locally owned
- A gendered approach to participatory diagnosis involving youth (girls and boys), men and women in the process is essential to ensure a comprehensive understanding of the mangrove fishery and ensure full community participation and support for mangrove management initiatives
- Language barriers and use of terminology (e.g. science and management speak) need to be carefully considered during discussions with the community
- Initial community doubts, community expectations and false hopes need to be addressed in the earliest stages of engagement to ensure the development of a trusting relationship
- The project needs to be clearly explained (i.e. what it is, what are benefits, who will be involved, etc) at initial community engagement.
- In large projects like MESCAL that involve multiple partners and organisations it is vital that effective coordination and communication is maintained throughout the project to ensure communities are fully aware of the project objectives and the roles different partners will play.
- It is important that parallel activities undertaken by external service providers (such as the supporting fauna, flora and economic studies that were part of this project) are undertaken in a timely manner to provide information needs for the development of the management plan.

Management planning

- A strong existing community governance structure can facilitate management efforts by showing clear leadership and direction
- Involving appropriate national and provincial government organizations in the management plan development process is important for the community to understand government support to community-based initiatives
- Delays in the management process can occur when key members of the management committee are absent from the community; timeframes need to follow village time, not project deliverable timeframes
- Setting management goals is the foundation upon which community ownership of the management process is built. Facilitators of CBRM need to step back and allow the community to develop their own goal
- Management rules and penalties should be relatively simple, utilizing those that the community are comfortable with and building upon existing traditional practices
- Management plans need to be developed with the community and in simple text so that it can be easily understood by the full community (with different levels of education and experience)
- Management plans need to be realistic (allow communities to maintain subsistence and cash needs)

Adaptive management

- Monitoring needs to suit local needs: it needs to be kept simple, reliable, and cost effective to be sustainable.
- The use of service providers with no/minimal in-country experience should be kept at a minimum to ensure outcomes are relevant to the local context and that science builds on local knowledge
- Printed management plan awareness materials in simple/local language are a powerful tool to facilitate widespread awareness
- Communities will need to be supported to undertake widespread awareness of their management plans. This may include support in the development of awareness posters, budgets to cover costs to undertake awareness activities or, materials to develop "billboards"
- Project time frames need to consider the fact that communities operate on different timescales and therefore the timing and nature of community outcomes may differ from those originally projected in a proposal
- Projects involved in CBRM need to have inbuilt mechanisms for ongoing community support and guidance after the project ends

Introduction

Mangrove Ecosystem for Climate Change and Livelihoods (MESCAL) is a five country initiative (Fiji, Samoa, Solomon Islands, Tonga and Vanuatu) implemented by IUCN and funded by the German Federal Ministry for The Environment, Nature and Conservation and Nuclear Safety (BMU). The overall goal of MESCAL is to increase the climate change resilience of Pacific Islanders as well as improve their livelihoods through selected capacity support in adaptive co-management and restoration of mangroves and associated ecosystems.

The Ministry of Environment, Climate Change, Disaster and Meteorology (MECDM) is the focal point for MESCAL Solomon Islands (MESCAL-SI). MESCAL-SI is focused on developing a stakeholder based co-management plan, supported by scientific and tradition knowledge, using a community in Maramasike Passage, Malaita as a demonstration site. The purpose of the demonstration site was to inform the development of mangrove management policies and legislation and to provide lessons learned to inform the development of mangrove management plans in other parts of Solomon Islands.

MESCAL-SI activities are being undertaken by MECDM and other partners including other Government Ministries, external service providers and in-country NGOs. Activities are co-ordinated by a Project management Unit (PMU) housed within MECDM. WorldFish was the primary NGO that assisted the Eliote Community to develop and implement their mangrove co-management plan.

The specific objectives of the demonstration site were to:

1. develop mangrove co-management plan for the demonstration site, adopting the best practice methodology from other natural resource management projects in Solomon Islands and the Pacific; and
2. identify challenges and lessons learnt in developing co-management plan involving active stakeholder participation and supported by robust scientific and traditional knowledge; and
3. increase awareness of the importance of adaptive management (learning by doing and adapting as new information comes to hand) and provide relevant training to the local communities in monitoring and evaluation for strengthening of mangrove management.

In relation to the MESCAL-SI project outcomes, the WorldFish deliverables were:

- a community endorsed draft co-management plan for the demonstration site;
- a report describing challenges and lessons learnt in active stakeholder-based co-management planning that is supported by scientific and traditional knowledge;
- training resource material on community-based adaptive co-management; and
- community awareness brochure on the value of mangroves and importance of management
- a policy brief on the outcomes of this project and recommendations for mangrove management in Solomon Islands

Although WorldFish was working with the demonstration site community to develop the mangrove co-management plan, various other activities (including flora and fauna survey, social and economic assessments and formal governance reviews) were undertaken by various service providers. These activities were undertaken in the view to help inform the development of the co-management plan for the site as well as national policies and advocacy material.

This report fulfills demonstration site objective 2 and provides an overview of the methodology and lessons learned during the development of a mangrove co-management plan for Eliote Village, Maramasike Passage. This report is built on work undertaken by WorldFish and additional information provided by other providers to the PMU where available.

Background

Co-management and community based resource management (CBRM)

Co-management is a process of management in which government shares power with resource users, with each given specific rights and responsibilities relating to information and decision-making. In Solomon Islands, the Government approach to resource management follows a decentralized approach to empower communities to become better stewards of their customary land and sea resources. Within the Ministry of Fisheries and Marine Resources Corporate Plan (2011 - 2013) and the Solomon Island National Plan of Action (NPOA), community based resource management (CBRM) is the recognized approach for resource management. In a broad perspective, CBRM relates to communities, government institutions, and civil society groups that work together to manage resources at the community level. To provide consistency with the Solomon Island Government approach the approach used for MESCAL-SI is based on community based resource management rather than co-management.

Summary of lessons learned on coastal management (Pacific and Solomon Islands)

In a recent review on lessons learned on coastal management across the Pacific (including Solomon Islands) it was highlighted that to be effective coastal management activities need to:

- Integrate coastal, catchment and island management
- Enhance the role of government and strengthening the enabling environment
- Achieve multi-sector partnerships
- Support and achieve cost-effectiveness
- Provide appropriate information through education, awareness, monitoring and/or research. (Govan 2011).

In Solomon Islands a summary of lessons learned from CBRM work undertaken by WorldFish and the Foundation of the Peoples of the South Pacific International (FSPI) in Solomon Islands (Boso, *et al.*, 2010) highlights that:

- Initiatives in community resource management that develop from genuine requests for participation from entire communities, have realistic expectations, secure stakeholder access to land and sea, and compensate for language barriers can successfully identify risks and threats to communities in order to guide adaptation planning and the assessment of possible supplementary livelihoods.
- Good community management institutions must be created and/or strengthened, provincial and national fishery officers should be brought on board, and research-for-development partnerships should be sealed with formal agreements and facilitated with effective communication.
- Management plans and monitoring methods should be simple and straightforward, tailored to local conditions so that they build on existing community norms and are realistic and sustainable.
- Decision-making tools and skills for adaptive community resource management enhance stakeholder capacity in general, improving community governance, cooperation and cohesion.

Through the Solomon Island Locally Management Marine Area network (SILMMA), guidelines and principles for implementing CBRM in Solomon Islands were developed and agreed upon by MFMR, SILMMA and other NGOs (Alexander *et al.*, 2011).

These principles are summarized below:

- Engagement with a community should follow a request / genuine expression of interest
- Consult stakeholders at national, provincial and local level
- Effective community awareness and project clarification
- Community based problem and situation assessments
- Participatory management and action planning resulting in a clear and agreed management/action plan
- Implementation (and monitoring) of the action plan including following agreed rules and agreed responses to rule breakers
- Adaptive management = monitoring and evaluation which are critical to assess performance
- Long term, sustainable / exit strategy

Methodology for MESCAL Solomon Islands: Approach and lessons learned

The approach for MESCAL-SI has been developed using the CBRM principles and best practices building upon lessons learned through previous CBRM activities in Solomon Islands and the broader Pacific (see summary above). The approach is based on a participatory diagnosis and adaptive management (PDAM) framework (Andrew et al., 2007, Andrew and Evans 2009) nested within an ecosystem approach for fisheries management.

The CBRM approach is composed of:

- A scoping phase that explores the information available before or during the first visit to the community
- A participatory diagnosis phase which involves discussions with the community about marine resources to assist the community to discuss and agree upon the main issues and problems; and
- A management phase where structures, management goals and mechanisms to achieve management goals are defined.

The PDAM implementation framework specifically addresses the challenges presented by small-scale fisheries in least developed countries and aims to provide a flexible framework that provides the minimum set of elements in the research and management cycle (Figure 1). It places emphasis on: (i) the broader non-sectoral drivers of fisheries management performance and the opportunities and threats they present to people's livelihoods, and (ii) the institutions that govern fisheries, particularly the nature and legitimacy of use rights as a central and identifiably separate precursor to effective management. Underpinning the framework is the issue of defining the fishery and, therefore, making a judgment about what is within the fishery and what is external to it. Management should seek to make the fishery less vulnerable to those external drivers. This framework attempts to integrate assessment and advice into the management implementation cycle of the fishery.

The three main phases of this approach and detailed information about the process followed at the MESCAL demonstration site are summarized below.

Phase 1: Scoping phase

Scoping is about finding out what information about the community is available before or during the first visit. This information provides an opportunity to ask specific questions and guide the participatory diagnosis phase.

Information was collected from various sources including site visit reports undertaken for other purposes to the region (e.g. Israel-Malaita Program), the initial letter of interest in mangrove resource management received from the community and discussions with community members located in the capital, Honiara. These initial findings were incorporated into a scoping report which was shared with the project team prior to the initial visit. The scoping report provided the team with information on village governance, general mangrove use and the communities interest in mangrove mud crabs, which had been noted to be in decline. The information gained during the scoping phase was verified during the first visit to the community.

Phase 2: Participatory diagnosis phase

The participatory diagnosis phase involves discussions with the community about marine resource management to get them thinking about what management actually means to them. These discussions also aid the project team to understand community dynamics and leadership structures, and provide targeted awareness information so that the

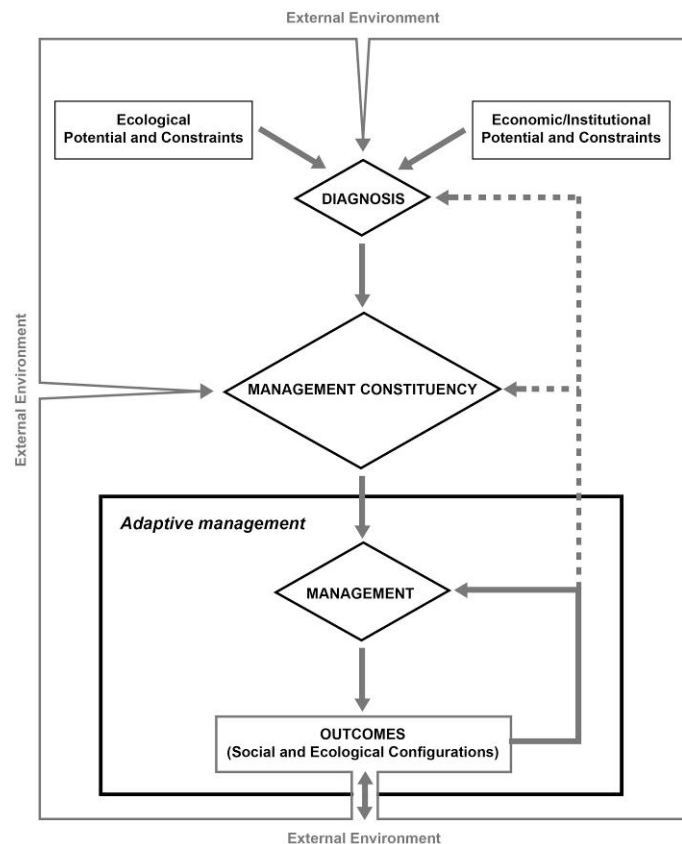


Figure 1 The participatory diagnosis and adaptive management (PDAM) framework

community is able to make informed management decisions. The information shared during the diagnosis can also be used to populate and form the background information for the communities management plan. It may also include the sourcing of traditional ecological knowledge and baseline scientific information on species, habitats and fisheries trends that may help determine management actions.

At the Maramasike demonstration site, the largest component of the participatory diagnosis phase was undertaken during two field trips to the demonstration site (11th to 16th March 2012 and 16th to 20th July 2012). Focus group discussions (FGDs) were the primary instruments used to stimulate discussions with the community. Initial scoping identified that men, women and youth of Eliote have various but often gendered roles in the collection and use of mangrove resources, therefore focus group discussions were held separately for women, men, boys and girls. A separate FGD was held with village leaders and resource owners to discuss community and clan governance structures as well as mangrove resource ownership. Suitable times were identified with community leaders for the focus group discussions to have least impact on daily community activities. For example, youth FGDs were undertaken in the afternoon after school, whereas the women structured their FGD times around the tides so that they were able to go to the mangroves to source mud shells and crabs for their families evening meals, while village leaders preferred to meet in the evening. Matrix mapping of fisheries information, SWOT analysis and habitat mapping were they key instruments used.

Matrix mapping of fisheries information provided detailed information about important resources collected from the mangroves and rivers; their status and trend and the identification of key threats to these resources. SWOT (strength, weakness, opportunities and threats) analysis was used to assist the community to identify internal threats and opportunities within the fishery domain as well as the external environment (ecological, social and economic) that arise outside the fishery domain and the strengths that can underpin their resilience. Habitat mapping identified key habitats, fishing areas and the distribution of mangrove resources. This mapping exercise precipitated discussions within the community on the area they wanted to include as part of their management activities. Community members involved in the FGDs shared the outcomes of their discussions with the broader community and deeper discussions were held on the similarities and differences between these outcomes. Outcomes from these discussions were compiled into a document for the community for final verification, which was undertaken on a return visit. Final verified outcomes are summarized in the Inception report (submitted to MECDM 30th May 2012).

The participatory diagnosis phase would have provided an ideal time to share the findings on the scientific studies that were being undertaken by external scientists as part of this project (e.g. fauna, flora and economics) with the community. Unfortunately these studies had not been undertaken at the demonstration site before the diagnosis activities had been undertaken.

Scoping and participatory diagnosis: Lessons Learned

Resource management projects that have been requested by a community and are community initiated are more likely to be successful and locally owned

A gendered approach to participatory diagnosis involving youth (girls and boys), men and women in the process is essential to ensure a comprehensive understanding of the mangrove fishery and involve full community participation and support into mangrove management initiatives

Language barriers and use of terminology (e.g. science and management speak) need to be carefully considered during discussions with the community

Initial community doubts, community expectations and false hopes need to be addressed in the earliest stages of engagement to ensure the development of a trusting relationship

The project needs to be clearly explained (i.e. what it is, what are benefits, who will be involved, etc) at initial community engagement.

In large projects like MESCAL that involves multiple partners and organisations it is vital that effective coordination and communication is maintained throughout the project to ensure communities are fully aware of the project objectives and the roles different partners will play

It is important that parallel activities undertaken by external service providers (such as the supporting fauna, flora and economic studies that were part of this project) are undertaken in a timely manner if they serve to provide information to support the development of the management plan.

Phase 3: Management

The management phase is composed of two main components:

1. Management planning
 - Identifying the management constituency
 - Setting management goals
 - Identifying rules and controls
 - Penalties and enforcement
 - Developing a draft management plan
2. Adaptive management

Awareness, education and knowledge sharing is an integral and on-going component of the management process. It is important that the whole community; children, youth, women, men and elders are included in this awareness as it provides the building blocks for successful long-term resource management activities. A variety of tools can be used including presentations, posters and brochures, DVDs, informal discussions and habitat mapping. The tools used should be specific to the communities needs. Specific awareness activities undertaken by WorldFish as part of MESCAL-SI included;

- presentations (topics included: climate change, habitats, life cycles, importance of mangroves);
- DVDs (topics included: marine resource management case-studies and lessons learned from a variety of villages in Solomon Islands; Solomon Island marine ecology DVD; climate change stories from the Pacific);
- brochures (Getting started in CBRM, mangrove replanting guideline, mangrove management brochure);
- informal discussions (mud crab and mud shell life cycles, mangrove ecology and uses)
- action research (mud crab and mud shell size class monitoring and mud crab movement tagging experiment)

Awareness activities under the broader MESCAL-SI program included drama on the importance of mangroves to Solomon Island communities. A theatre drama production was undertaken by SIDT in Eliote and surrounding communities in Maramasike Passage, this form of awareness was well received by the communities.

Management planning

Defining the management constituency

The management constituency is a group or committee of people that guide and lead marine resource management activities at the community or regional level. They are responsible to advocate and lead by example. This group will act as the community drivers or champions to lead the development of the management plan (with the responsibility to identify and communicate community needs and outcomes of the management plan process). Based on previous experience in the Solomon Islands, an effective committee involves resources owners, community leaders, youth and both male and females. The committee members should hold a position of respect in the community, spend most time in the village and be effective communicators. The establishment of the management committee is undertaken by the community and its leaders and may utilize existing structures or be an entirely new structure. It is important however to ensure that the development of the management committee is a transparent process to ensure the process empowers existing power relationships rather than developing new ones. The members on the management committee (whether a community or regional approach) is dependent on the area or region involved in management.

The people of Eliote and the Apuilalamoa clan have strong existing governance structures and the concept of a committee was not new for the community. The development of a mangrove management committee was undertaken by the Eliote community and village leaders after the initial WorldFish visit (March 2012) when the majority of participatory diagnosis and scoping was undertaken. The Eliote community met on the 4th April 2012 to form the management committee (an official record of the meeting was provided to the WorldFish team). The mangrove management and conservation committee is composed of 20 members including all mangrove resource owners, tribal chiefs, village leaders, youth leaders, women and men. The committee structure includes a chairman and vice-chairman, secretary and vice-secretary and a treasurer and vice-treasurer.

The management committee met several times between visits from WorldFish. Unfortunately the management committee chairman was not in the village for an extended period of time, due to other commitments. The committee vice-chairman also works and spends the majority of time out of the village. Subsequently there was a long period where the mangrove management committee were unable to make decisions about mangrove management activities. Discussions were held with the committee members about whether changes were required in the committee, however it was decided that these two people were the best people for the positions and the committee would wait for their return.

Setting management goals

The identification of a goal is the key to the whole management process i.e. What does the community want to see happen as a result of management? All management activities will be working towards meeting or maintaining this goal. To ensure community ownership, it is important that the community themselves come up with their own management goals. It is important to have a champion (preferably from within the community) to help focus broad goals into one or two overarching goals.

During the second visit to Maramasike Passage, WorldFish facilitated the community through the process of identifying their management goals. Separate men, women and youth FGDs were held discuss what the different groups wanted to see happen as a result of management and what their visions for marine resources were in the future. These discussions produced a list of management goals. Subsequent open discussions held with the resource management committee. During this discussion a local school teacher was able to assist the community form the overarching goal for management which was “*To ensure that all marine resources are well looked after for the present and future generations*”.

Identifying rules and controls

Management rules and controls are the foundations of which are used to reach management goals and there are a number of options and tools available. There is no simple or right answer for what the best way to manage marine resources as it depends on social, economic and environmental factors specific to a village or region. When considering what management tools are appropriate it is important to consider:

- *Subsistence harvest*: Ensuring local people are able to harvest enough food to support healthy diets
- *Artisanal harvest*: Local communities often rely on harvesting and selling resources for the cash needs, this needs to be considered, and an alternative source of cash income may be required.
- *Commercial harvest*: Outside companies harvesting and selling resources
- *Tenure*: Considering who owns the land and sea resources that are the focus for management
- *Lifecycles*: Considering each phase of particular animals lifecycle to ensure these animals are able to complete their lifecycle
- *Spawning success*: Some animals come together to spawn at certain times or places. It is important that these areas and times are looked after.
- *Habitat*: It is important to look after all different habitats (e.g. seagrass, mangroves and coral reefs) as they all support the health of marine resources in different ways.

Ultimately there is no simple answer for the right methods or management rules that are followed and it depends on the suitability to the particular community. In general there are three main methods that are generally considered for coastal management.

1. *Gear restrictions*: often focusing on destructive fishing methods such as small mesh sizes, poison/leaf fishing, dynamite, night spearfishing
2. *Catch limits*: quota (bag limit) or size limit.
3. *Closed areas*: full closure, temporal closure, seasonal closure or a combination of the above

Through a series of workshops, WorldFish facilitated the resource management committee through the process to develop the rules and controls for their management activities. These workshops used the information discussed during the participatory diagnosis phase and built upon existing traditional management systems.

Separate rules were developed for the broader ‘management area’ and the specific tambu areas.

Management area rules included:

- No use of destructive fishing methods to harvest resources (dynamite, Akwa dust, DDT)
- No use of any nets to catch fish or crabs
- No removal of mangrove tree bark or unnecessary cutting of mangrove trees
- No harvesting of female mud crabs with eggs
- No harvesting undersized Alimango (smaller than 150 mm)
- No harvest of Ke’u during breeding (Ke’u He’a)
- No harvest of undersized Ke’u (smaller than 40 mm)
- Outsiders are not allowed to fish or harvest resources in management area without permission from management committee
- Management committee decides on when the community can harvest mud shells and mud crabs (initial trial of harvesting these resources only on a Saturday)

It was highlighted that areas for tambu will be decided upon and defined overtime by the appropriate resource owners in discussion with the mangrove management committee. The resource owner will mark tambu areas using traditional tambu signs and the management committee will ensure widespread awareness of the tambu area. The tambu area will be closed for a given period of time (2 years+) as defined by the resource owner and management committee. There is currently a mangrove tambu area in the northern most sector of the passage that has been under tambu for almost 12 months.

Specific tambu area rules defined include:

- No entry into tambu area for a given period of time, unless for good reasons
- No cutting of mangrove trees in tambu area for any purpose
- No fishing or harvesting resources of any kind
- All tambu signs must be respected

Penalties and enforcement

Penalties or fines are a method that can discourage rule-breaking. Penalties need to be defined and the management committee needs to decide who will issue the penalties to the rule breakers. Penalties can be defined according to traditional kastom, although many communities are now looking towards the legal system to give them more power to enforce their management plans.

The Eliote resource management committee decided that committee members were the most appropriate people to enforce rules and apply penalties in the management plan. The penalties were defined separately for management area and tambu area rules.

The fines for breaking a management area rule are:

- Fine \$50 if community member found breaking the management rules
- Fine \$100 if committee member found breaking the management rules
- Fine \$100 if outsiders found breaking the management rules

To provide incentives for the broader community to be involved and active in the management process, the committee also decided that the person who catches someone breaking management area rule will get the payment for fine.

The fine for breaking a tambu area rule is:

- Any person found breaking tambu area rules will be fined 3 String Red Money if not \$300.

The person who catches someone breaking any tambu area rule will share the fine of \$300 with the Management committee i.e. \$150 watchdog and \$150 management committee.

Developing a draft management plan

A management plan is not an essential component of CBRM, however registering a management plan under appropriate legislation is expected to help communities if they are having issues with enforcement. Mangrove management initiatives will be able to be registered under the National Fisheries Bill (revision of the 1998 Fisheries Act) as community managed fisheries areas, the Protected Areas Act (2010) or Provincial Ordinances that have that capability. Depending on the specific legislation under which the management plan is to be registered, there are a number of requirements of a management plan. In general a management plan requires: a map or description of ownership/management area, goals of management, rules and controls, penalties and enforcement for rule breakers, indicators and period for review. Much of this information can be sourced from information gained during the participatory diagnosis.

A draft management plan was compiled with the Eliote Village management committee based on the information discussed during the participatory diagnosis and management planning phase. In October 2012, the Eliote mangrove management committee was able to finalise their mangrove management plan "*Ha'akalea Mangrove Management Plan*" (Ha'akalea is local language meaning "to look after"). The management plan covers the entire mangrove area of the Apuilalamoa clan and the management area is defined as the area of mangroves (including passages and rivers) within the Apuilalamoa Clan area from Weili River to Maliki River.

A copy of the *Ha'akalea Mangrove Management Plan* is included in appendix A. This plan belongs to the Eliote community and should not be distributed or put onto any websites without prior approval from the management committee.

Management Planning: Lessons Learned

A strong existing community governance structure can facilitate management efforts by showing clear leadership and direction

Involving appropriate national and provincial government organizations in the management plan development process is important for the community to understand government support to community-based initiatives

Delays in the management process can occur when key members of the management committee are absent from the community, yet it must be remembered that these processes must follow village processes and timeframes. In this context time is irrelevant of project deadlines.

Setting management goals is the foundation upon which community ownership of the management process is built. Facilitators of CBRM need to step back and allow the community to develop their own goal

Management rules and penalties should be relatively simple, utilizing those that the community is comfortable with and building upon existing traditional practices

Management plans need to be developed with the community and in simple text so that it can be easily understood by the full community (with different levels of education and experience)

Management plans need to be realistic to ensure communities can meet their subsistence and cash requirements

Adaptive management

A critical component of management is adaptive management or 'learning by doing'. Adaptive management simply means that something is tried, you see if it works and if not you change it. In the most basic form adaptive management has four main cycles: plan, implement, monitor, learn (Figure 2).

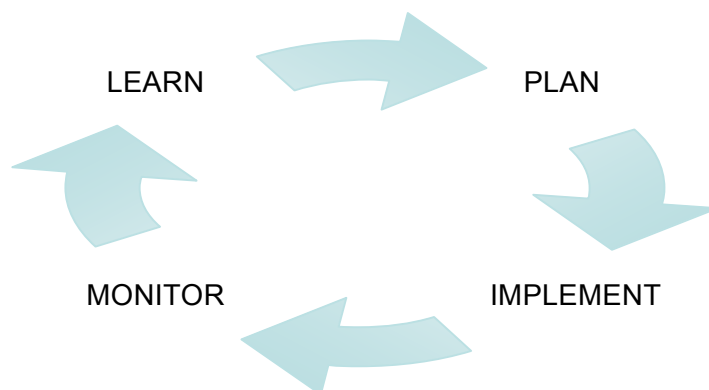


Figure 2 Adaptive management cycle

In the case of community-based resource management, adaptive management can be described as the process where the community develops their management plan, they implement the plan, after a set period of time they assess (monitor) any changes that have happened, and review whether management actions need to be adjusted.

Implementation

The mangrove management committee and Eliote Community implemented their mangrove management plan in May 2013. Prior to implementation, the committee undertook widespread awareness of the management plan both within the Eliote Community (including the broader community based in Honiara) and neighboring communities in

Maramasike Passage. To facilitate awareness at a local level WorldFish developed a poster showing the mangrove management area and describing the rules and penalties that apply to the management area (Figure 3). Multiple copies of this poster were produced and Eliote Community distributed these posters to larger surrounding communities. A mangrove management pamphlet was also developed to support the widespread awareness of the need to managing mangrove forests (Appendix B). The Eliote mangrove management committee was provided with a small awareness budget (to cover fuel costs) to support awareness visits to surrounding communities. The committee was also supported in their request for mangrove management sign boards (to placed at either end of the management area (within the Maramasike Passage itself)). The committee was supplied with the materials (marine timber, marine paint, paintbrushes and posts) for the sign boards which were put in place when the management plan was implemented.

To facilitate broader awareness for those community members based in Honiara and elsewhere, in partnership with the community, WorldFish published a press release about implementation of the Ha'akalea mangrove management plan in the local newspaper.

Figure 3 Poster developed for awareness of the Ha'akalea mangrove management plan

Ha'akalea mangrove management Plan
 "To ensure that all marine resources are well looked after for the present and future generations"

Management Rules
 The management area includes all mangroves and passages within the Apuilalaoa Clan area from Weili River to Maliki River. The following rules apply.

- No use of destructive fishing methods to harvest resources (dynamite, Akwa dust, DDT)
- No use of any nets to catch fish or crabs.
- No removal of mangrove tree bark or unnecessary cutting of mangrove trees
- No harvesting of female mudcrabs with eggs
- No harvesting undersized Alimango (smaller than 150 mm)
- No harvest of Ke'u during breeding (Ke'u He'a)
- No harvest of undersized Ke'u (smaller than 40 mm)
- Outsiders are not allowed to fish or harvest resources in management area without permission from management committee

The management committee decides on the days allowed to harvest mudshell and mudcrab. Mudcrab and mudcrab can only be harvested on Saturday _____.

Penalties
Management area fines
 community member \$50
 committee member \$100
 outsider \$100

The person who catches someone breaking a management area rule will receive the fine.

Tabu area fines
 3 string red money or \$300

The person who catches someone breaking a Tabu rule will share half the fine with the Mangrove Resource Management committee.

The management committee will ensure penalties are enforced.

Tabu Rules
 Mangrove resource owners can make an area tabu after discussion with the management committee. The tabu area will be closed for a given period of time (2 years+).

All tabu signs must be respected.

- No entry into tabu area during closure (unless essential)
- No fishing or harvesting resources of any kind
- No cutting mangrove trees for any purpose

This management plan has been endorsed by the mangrove resource management committee on behalf of Apuilalaoa Clan, Maramasike Passage.

Monitoring

Monitoring simply means to observe or measure a situation to look for any changes. This can help the community to understand how and where they are going and how far they are from their management goal. An 'indicator' is a term used to describe specific aspects that the community wants to monitor to assess these changes over time, they can be biological (e.g. a specific animal) or community (e.g. behavior or social characteristics). Monitoring 'indicators' that show how management activities are or are not changing the resource status is an important component of the adaptive management cycle.

Previous experience in the development of indicators as part of marine management activities in Solomon Islands highlights the need for simple and easy social and biological indicators that are developed together with the community. This includes the development of mechanisms to record and monitor chosen indicators.

Although monitoring activities should be initiated after the management plan is implemented, the short time-frame of the project meant that the committee needed to be briefed prior to implementation. During a trip to Eliote Village in September 2012, the concept of monitoring and indicators was introduced to the mangrove management committee. Outcomes from the initial diagnosis phase as well as activities undertaken by external science providers (primarily fauna work) was used to facilitate the community identify appropriate indicators. During the initial diagnosis phase mud crabs and mud shells were identified by the Eliote community as the two key marine resources that have declined and that the community is concerned about. These two species were also listed by the Fauna team as possible biological indicators.

The fish survey implementation plan for Maramasike Passage (developed by external service providers), proposed monitoring of mud crab (Alimango or *Scylla serrata*) and mangrove mud shell (Ke'u or *Polymesoda erosa*) by all community members when they are collected for household use. The fisheries scientists proposed that this monitoring should measure the carapase or shell width of all animals collected over three days each month (following the full moon). When WorldFish discussed this with the community, it became apparent that such a monitoring regime would NOT be a viable option as:

- education levels were insufficient for the majority of the community to participate;
- the measurement of the carapase width of every individual animal would be too onerous; and
- the number of collection times suggested was considered too intensive to be undertaken

The mangrove management committee did want to undertake mud crab and mud shell monitoring, but in a revised form. The revised monitoring involves monthly counts of mud shells and mud crabs based on three size classes (small (no-take size); medium and large). The management committee established a team of five monitors (male and female youth) to undertake the monitoring activities. Once a month (the first Saturday of the month) the team will go to each household to measure and count Ke'u and Alimango collected that day. Simple tools were developed to aid the quick assessment of size classes. The monitoring team was trained by WorldFish in the measuring and recording data. The monitoring team decided not to initiate monitoring before widespread mangrove management awareness was conducted at the community level.

The management committee also identified a community indicator (penalties given) as another means to track management success; the management committee are the enforcers of the management plan rules, so they will keep track of rules broken and penalties given.

Learning

The fourth phase of the adaptive management cycle is to learn. After a period defined by the management committee the management committee should meet to discuss mangrove management progress and what changes have occurred (positive or negative). Monitoring activities and indicators along with general observational data will provide the mangrove management committee with information to be able to help determine whether the rules and controls put in place are sufficient to reach the management goal. If the committee decides that nothing has changed, they may consider the need to change rules or behavior. For example this may include increasing awareness about the plan, adding or removing rules.

In an ideal situation the management committee should be supported through the adaptive management 'learning' phase during their initial review cycle. Unfortunately due to time restrictions, the management committee was only able to be briefed on the process, rather than working through real examples with them.

During a field visit in March 2013 the monitoring team and the broader management committee were trained in simple methods to analyse and interpret monitoring data on mud crabs and mud shells as well as number of penalties and rules broken. It is hoped that the management and monitoring committee will be able to begin and sustain and understand the outcomes of this monitoring to enable them to adapt their management plan when it comes times to review (defined by the management committee to be undertaken on an annual basis).

Adaptive Management: Lessons Learned

Monitoring needs to suit local needs: it needs to be kept simple, reliable, and cost effective to be sustainable.

The use of service providers with no/minimal in-country experience should be kept at a minimum to ensure outcomes are relevant to the local context and that science that builds on local knowledge

Printed management plan awareness materials in simple/local language are a powerful tool to facilitate widespread awareness

Communities will need to be supported to undertake widespread awareness of their management plans. This may include support in the development of awareness posters, budgets to cover costs to undertake awareness activities or, materials to develop "billboards"

Project time frames need to consider the fact that communities operate on different timescales and therefore the timing and nature of community outcomes may differ from those originally projected in a proposal

Projects involved in CBRM need to have inbuilt mechanisms for ongoing community support and guidance after the project ends

Management plan registration

A management plan is not an essential component of CBRM, however registering a management plan under appropriate legislation is expected to help communities if they are having issues with enforcement. Mangrove management initiatives will be able to be registered under the National Fisheries Bill (revision of the 1998 Fisheries

Act) as community managed fisheries areas, the Protected Areas Act (2010) or Provincial Ordinances that have that capability.

As the MESCAL-SI project is supported by MECDM, the Protected Areas Act (2010) was the obvious legislation to propose to the Eliote Community as they would have the direct support through MESCAL for this process. Specific requirements for a management plan to be registered under the Protected Areas Act include:

- Zoning of a protected area and a description of the activities that may be carried out in different areas;
- Activities that are prohibited in the Protected Area or zones of the Protected Area;
- Identification of species or habitat that need special controls;
- Management objectives;
- Application of relevant traditional management practices;
- Implementation and enforcement program;
- Public awareness programs;
- Research and monitoring;
- Staff and staff training; and
- Proposed penalties to proposed rules

A joint field trip with MECDM personnel with expertise in the Protected Area Act regulations was planned for March 2013. The purpose of this was to enable the community to make the connections with MECDM to gain support to register their plan. Unfortunately all MECDM staff were busy during the planned time and MECDM decided to schedule a trip for this purpose at a later date. At the time of writing this report, WorldFish had not received any feedback about a follow up trip.

Next steps and future support to Eliote Community

As far as the WorldFish team is aware, there is no provision (under MESCAL) for future support to the Eliote Community to implement, monitor and register their mangrove resource management plan. Through the MESCAL Steering Committee Meetings, several discussions were held with regards to supporting communities to develop and implement mangrove management in Solomon Islands, this included support from the Ministry of Planning as well as MECDM, although as yet nothing concrete has been established.

In 2012 WorldFish, through the CGIAR Aquatic Agricultural Systems (AAS) program identified Malaita Province as the initial priority hub for implementing the AAS program. The AAS Program will pursue action research with partners, including communities, to address agricultural and fisheries management and development opportunities identified by rural Malaitans. Through the AAS and other parallel bilateral projects WorldFish will be able to maintain support to Eliote Village in the implementation and adaptive management of their mangrove management plan through knowledge sharing with other communities interested and involved in mangrove management.

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