

Tanintharyi Conservation Programme

IMPLEMENTATION OF LOCALLY-MANAGED MARINE AREAS (LMMA) IN THE MYEIK ARCHIPELAGO

SCOPING TRIP TO LANGANN ISLAND AND THAYAWTHADANGYI ISLAND GROUP



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I. INTRODUCTION

This report summarises the findings of an LMMA scoping visit to Langann Island and the Thayawthadangyi Island group in Myeik Archipelago communities in December 2014.

This is a follow up to the socio-economic survey conducted by FFI between June and September 2014 in the same villages, which aimed to inform the development of appropriate management interventions related to marine resources.

Following the visit, three potential LMMA sites were targeted: Langann, Don Pale and Linlong including Palawar. Don Pale, Linlong and Palawar are all located within the Thayawthadangyi Island group, and Palawar is included within the Linlong proposed site as they share the same local fishing grounds.

Objectives

The objectives of this scoping trip were:

- To identify any information gaps at each of the proposed project sites and in relation to the targeted communities with a view to possible LMMA implementation
- To analyse the situation in each of the project sites following the enabling conditions for the implementation of either LMMA or co-management strategies for the management of marine resources
- To provide recommendations and build an action plan for FFI's marine project focusing on the required design, planning and implementation phases.

Methodology

The Information in this report was collected through key information interviews, focus groups and meetings with key stakeholders, as well as through the author's observations during the field trips. A literature review of existing published documents was also conducted. Relevant documents and tools were used to assess the enabling conditions for LMMA and fisheries co-management as well as to build the action plan for the future.

We start by presenting a situation analysis of the project sites including the targeted communities; then a SWOT analysis related to the enabling conditions to implement LMMA and marine resources co-management; then finish by providing a list of special recommendations, and propose as action plan for FFI to use to guide further the project planning and to develop and finalise the implementation phase.

Location of the sites

Thayawthadangyi is 5 hours and Langann is 12 hours from Myeik by motorised boat (Figure 1).

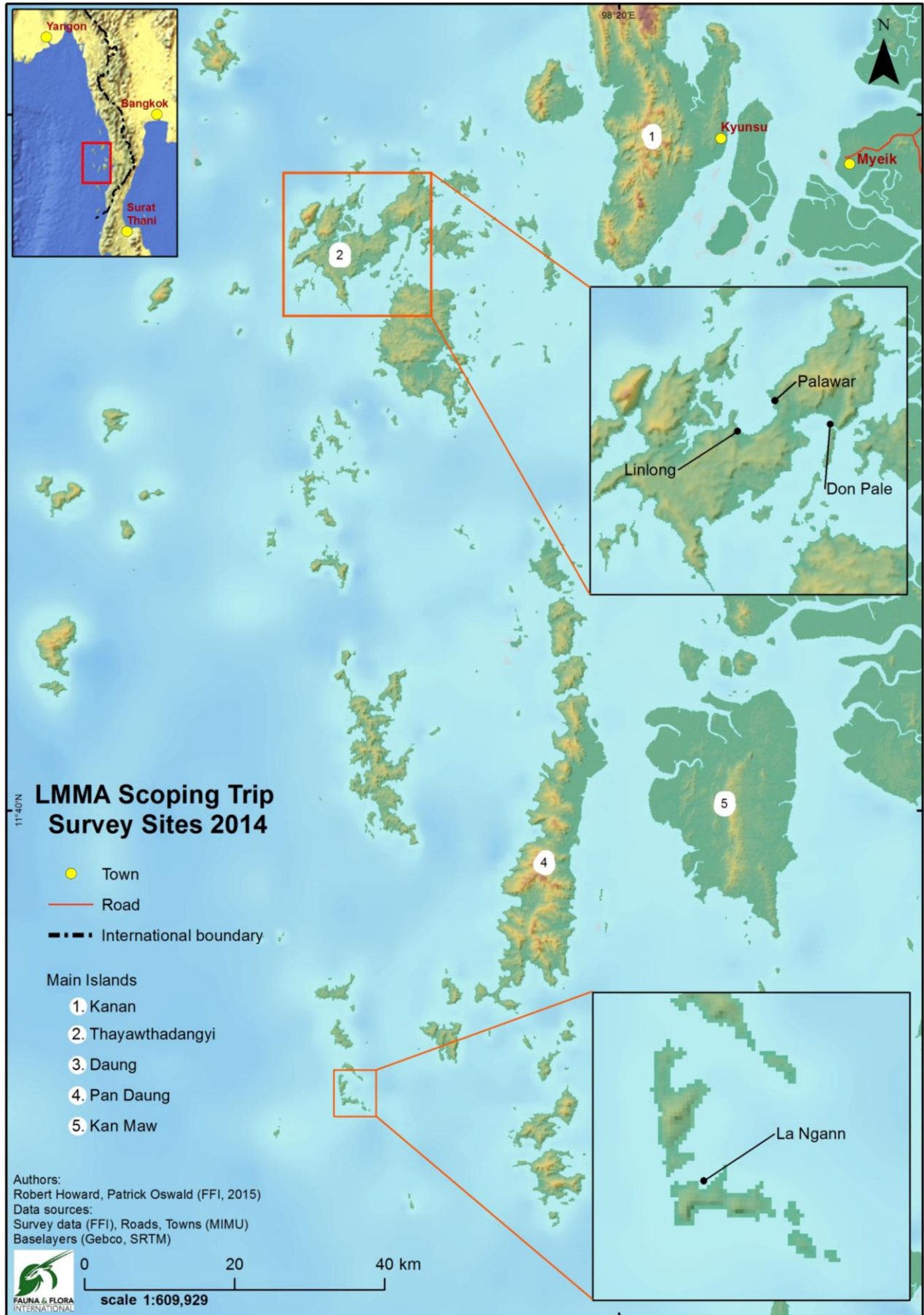


Figure 1: Map showing location of project sites

II. SITUATION ANALYSIS

1. Social organisation

a. Local governance, leadership and social conflict

Each village is managed by a similar local governance structure comprised of one village administrator and several household leaders (1 household leader represents 10 households so for example in a village of 100 households there would be 10 household leaders). These positions are officially elected by local communities every 4 years, and the next elections will be in 2015. The village administrators receive some support from the government, but the household leader positions are purely voluntary.

- Langann Island

Langann has **1 village administrator and 8 household leaders**. It has also a Freshwater and Education Committee, which was formed by the village at the request of the government to manage any local projects developed or introduced by the government or other funders.

The administrator is quite well respected and shows a sense of leadership. However, only 4 of the village leaders are motivated to take some responsibility, primarily due to the fact that their positions are voluntary.

Decision-making often occurs during or following meetings between the administrator and the household leaders. However, teachers and Monks can also influence decisions.

The people on Langann represent both Bamar and Moken ethnic groups. However, Langann was only developed after the settlement of the Bamar people starting 15 years ago. The current administrator was one of these early settlers, but the majority of the population seems to have arrived in the last 5-10 years.

Langann can be considered a young village with no history of traditional governance system.

The Bamar people dominate the governance structure in Langann even though the Moken people were the first settlers. The Moken traditions are disappearing due to a variety of factors including: traditional cultural superiority of the Bamar people, death of their Elders/leaders, or even just their men; gradual adaptation to the Bamar life, and religious influences. However, the administrators and one of the respected household leaders are married to Moken women and often seek to represent them in decision-making.

It is also worth to mention the role of the Moken women here in their society. Moken women have a huge responsibility, both within their households and the fishing. Most of them practise line fishing for fish and squid; or join the fishermen crews to look after the cooking. A number of them are widows and have to look after themselves and their kids, which gives them more power to make decisions.

Outsider fishermen who frequently stop and shelter in Langann are also well respected, because they are the main customers targeted by the shop owners. Running shops is the main source of income for 21 out of 80 households in Langann and shop owners were always found to be very influential members of the community.

In general, there is no apparent conflict amongst villagers in Langann, and village cohesion is not really an issue despite the history of the Moken and Bamar people; and even after the relocation of some of the Moken people from the main village to Zee Pin Aw. However, there was a small conflict between the owner of the land where the Moken were relocated and the administrator because the latter did not request approval from the land owner before moving the Moken. This incident was resolved during a meeting amongst the leaders.

It was also mentioned that the Administrator wants to be involved in every committee created in the village, which was not appreciated by some of the village leaders.

- Don Pale

The village is divided into 3 settlements following the ethnic groups, which are present: Moken, Bamar and Karen. It has **1 Administrator and 28 Household leaders**.

The administrator is quite active and receptive to marine resource management. However, most of the time he does not consult the communities in decision-making; relying and consulting only on his team of household leaders and informing the villagers of the decision afterwards. As a result, the fishermen do not really listen to him because they have seen the evidence of his top-down approach to management, and do not feel involved in management.

As an example, the local fishermen tried to stop outsiders using barrier nets in the bay (which is a destructive fishing method); but it was unsuccessful because apparently the administrator allowed them to fish there after they paid him a small fee.

They also have some very respected and influential leaders such as local boat owners, shop owners, the priest and Monks.

In general, the community is well organised with very good cohesion and respect between the different ethnic groups; particularly with regards issues related to their religion.

As an example, although only the Karen people are Christian, the entire village dedicated two weeks of their time to celebrate Christmas, including the fishermen. The financial prize for the Christmas football competition was even offered by the winning team as a donation to the church!

- Linlong and Palawar

The majority of the population in Linlong are related. During the FFI SocMon survey in June there were about 90 households, and this has now increased to 170, mainly due to immigration of other members of the family from another island.

These villages are part of Don Pale and only have 1 village head in charge (a position slightly below the local administrator) and 17 household leaders. However one of the Elders, a retired ex village administrator of the Don Pale village group mainly leads local organisation.

They have a very effective traditional organisation and leadership system in Lin long because of the history of the village. For example, the church and the school were both built from villagers' donation. Another example, of the strong traditional leadership is that unlike other villages like Langann or Don Pale, the Priest here has successfully forbidden the consumption of alcoholic drinks in these villages.

They also have some very active young people taking some leadership and responsibility for social organisation.

b. Conflict resolution mechanism

It was very important to find out about this as a guide for the establishment of any local rules and subsequent enforcement mechanism for newly established LMMAs later in the project.

In general, there is no apparent conflict amongst these communities and even with outsiders. All conflicts are resolved through discussion with the village administrator and sometimes assisted by the household leaders and the two parties involved in the conflict. Some examples of conflict we observed during our visit were damaging someone's fishing gear in the water, small land issues, or drunken people acting badly in the village (in Langann)

In general the offender has to pay to cover the damages, but the amount is always negotiated. However, if it is not resolved at village level, the administrator will defer it to the township level.

2. Use of marine resources

The following represents some general information about the use of marine resources around the project sites to help understand the importance of the area for the communities and guide us in developing management strategies. I have summarised the state and level of use of marine resources for each village, but for more detailed information please refer to the SOCMON report (Schneider et al, 2014 draft report) and other reports from the area which detail scientific research on marine biodiversity.

a. Langann

- Marine Habitats

- Coral reef surrounding the Islands
- No Mangrove forest
- No Sea grass bed, only a few areas on one Island further away

- Fisheries activities

Small-scale fishing is undertaken by both locals and outsiders (include people from Don pale and Linlong and Palawar), as well as trawlers and large lighting boats.

- Local fishermen use traditional non-motorised Moken style canoes for hand lining squid and reef fish fishing, reef fish spear diving and gleaning. N=46 canoes
- Local fishermen use small, motorised boats to catch reef and pelagic fish using hook and line; and line fishing for mackerel. N= 8 boats
- It is estimated that there are approximately 300 outsider fishermen boats operating in the area using:
-

Table 1: Outsider fishermen activities around Langann

Type of boat (Gear) operated by outsider	Target species
Trawlers	All species
Lighting Boat (Accompanied by 3 other boats)	Pelagic fish
Lighting Boat for squid	Squid
Pelagic Boat (net in mid water, 6 m under the water)	Small Mackerel
Hook Line Boat	Snapper, grouper, jack
Diving boat (compressor and hose)	Sea Cucumber, snapper, grouper, parrotfish
Fish Trap Boat (6 operating in the area)	Snapper, grouper, jack
Bottom Net Boat	Lobster, Snapper, grouper
Small trap (coming from Lampi)	Cuttlefish
Net boat	Manta Ray, Pelagic

Figure 2: Participatory mapping of fishing grounds and activities around Langann village



Figure 3: Participatory mapping of fishing ground and activities around the Island North of Langann

b. Don Pale

There used to be good fishing sites around the Island but they have since been destroyed by dynamite and other destructive fishing practises.

- **Marine Habitats:**

- No reef near the village. Nearest reef is on the other side of the Island near the area where they grown some crops. There are also some small patch reefs in the bay where they fish mullet
- Mangrove forest around the village
- No Sea grass beds

Targeted species: sea cucumber, lobster, reef fish and mullet

- **Fishing during open season**

- Diving for sea cucumber, Lobster and fish depending on the available markets, sea conditions, and tidal state and only in the sites far away from the Island.
- Net fishing around the Island targeting mullet, sand crab and prawn
- Outsiders using trawlers, Lighting boats for squid, barrier nets and scuba diving

- **Fishing during rainy season**

- Net fishing around the Island targeting mullet/ sand crab and prawn
- Some fishermen and the others farm beetle nut, coconut and rubber
-

- **Number of fishing boats and fishermen**

- 38 diving boats

1 boat owner works with about 6 divers in the boat; e.g., there are 2 boat owners with 3 fishing boats and each has around 20 people working with him.

- 6 permanent mullet net fishermen mainly operating in the nearshore sites around the Island; 2 to 3 people per boat

- **Other alternative marine related livelihoods**

- Pearl mariculture, which was started 18 years by Atlantic Company TNC. This was previously an Australian owned company but Myanmar government now own it, and the ownership is actually shared between the government and the company. They are guarded by the Navy, and the Company pays the navy for this, as well as other support
- There was also Seaweed farming in the area previously, but it did not work well and has since been abandoned for different reasons such as:
 - Lack of production (there no seeds available, not enough production to create a nursery sites and also presence of disease),
 - Lack of capacity by the farmers (not enough knowledge and training in seaweed farming),
 - Lack of commitment by the owners (do not invest enough in human power and monitoring)

c. Ling Long and Palawar

- **Marine Habitats:**

- No reef near the village, only on the other side of the village. There are some small patch reef areas for mullet habitat
- No Sea grass beds
- Muddy, sandy Bay
- Mangrove forest

Targeted species: sea cucumber, lobster, mullet, sand crab, prawn and squid

- **Number of fishing boat/ fishermen**
 - 15 boats diving for sea cucumber, lobster and spear fishing, depends on the sea condition and the availability of resources in the water.
 - 20 boats fishing with nets in the bay (mullet, sand crab and prawn).
 - Squid traps were introduced into the village 1 year ago, and they also catch some other species in the bay using the traps

They do not fish on the coral reef anymore during the open season because there is no high value sea cucumber left, but they still target the closest reef sites to the village reef for fishing during the rainy season.

They do not fish in the mangrove nor cut it. They allow outsiders to harvest mud crab there but only the Karen fishermen.

They get more mullet during the rainy season, which they attribute to reduced salinity in the bay, which attracts small mullets.

There is only one local sand crab buyer in Palawar and none in Linlong. However, the villagers in Linlong organise amongst themselves and sell their catch to a village member who sometimes has access to ice.

There was seaweed farming in the village for 3 years, but it has now stopped (same reasons as the Don Pale project above)



Figure 4: Participatory mapping of fishing grounds activities in Don Pale, Linlong and Palawar areas

3. Community perception of the state of marine resources

This helps us to identify community knowledge and attitudes about the existence of problems and the need for management; which is one of the conditions needed in order to implement co-managed marine areas. For more detail, this is also documented in the SocMon 2014 report.

In general:

- Local communities perceive a decrease in marine resources compared to 10 years ago caused by both anthropogenic factors, natural disaster (Tsunami) and climate change which include: change of species season, weather, wind, tide and sea level.
- They are also concerned about the sustainability of both their own and their children’s livelihood, which is heavily reliant on marine resources. As a result of this they perceive and understand the need for management to sustain community livelihoods.

4. Threats to marine resources around the project sites

Below is a concept model describing the threats to marine resources. This exercise was mainly done in Langann because of its local importance in terms of marine biodiversity, and the high level of use of local resources around the Island. However, most of the results are also applicable to the other project sites.

Many of these threats were also described in general during a previous study run by FFI (Saw Han Shein et al 2013, Howard et al 2014) and WCS (Holmes et al 2013) summarising the marine biodiversity of Myanmar, and in particular the Myeik Archipelago. However here we focus only on the specific situation at the project sites. In this participative process, most of the threats were identified by local communities during individual interviews, and then validated during a meeting of the community leaders towards the end of the visit (in the case of Langann). Some additional threats were also included based on the author’s knowledge and observation at the sites.

a. Threats identified at Langann

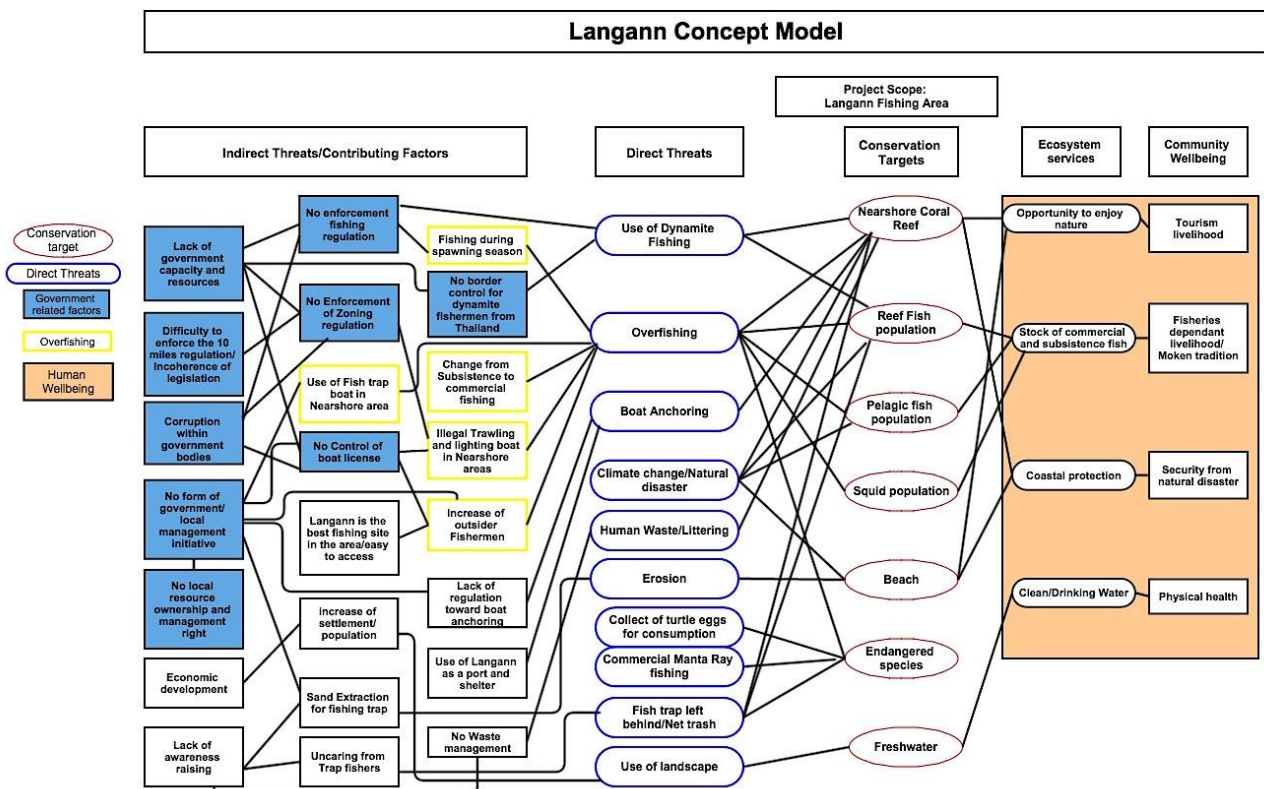


Figure 5: Concept model of Zoning Langann area (Following method in CMP 2013)

Main Threats and contributing factors raised by local communities:

Use of Dynamite fishing, Fishing during spawning season, Change of subsistence to commercial fishing, Illegal trawling and lighting boats in Nearshore areas, Increase of outsider fishermen), Climate change and natural

disaster, No enforcement of national regulation, Langann as the best fishing sites/easy to access, Increase of population, Lack of awareness raising, corruption/bribes within government bodies.

Conservation targets	Direct Threats (anthropogenic)	Indirect Threats/Contributing Factors
<ul style="list-style-type: none"> • Nearshore Coral Reef • Reef Fish • Pelagic fish • Squid • Endangered species • Beach 	<p>Overfishing/Destructive fishing</p> <ul style="list-style-type: none"> • Trawling and lighting fishing in Nearshore areas • Fishing during spawning season • Trap Boats • Dynamite fishing • Boat anchoring • Littering/human waste • Fish traps left behind/Net trash • Collection of turtle eggs • Commercial fishing of Manta Rays • Beach Erosion • Increasing presence of outsider fishermen 	<ul style="list-style-type: none"> • Lack of enforcement (fishing zone regulations-boat licenses, prohibited species, closed fishing seasons...) • Lack of capacity and resources for enforcement • No regulations for boat anchoring • Use of Langann as a port • No form of local/government management of marine resources in the area • Sand extraction for fish traps • Lack of awareness raising • Increasing human population • Change from subsistence to commercial fishing as markets develop • Economic development • No human waste management • Remoteness of the area

Collect of turtle eggs and Manta ray fishing, use of fish traps were mentioned by communities but were not considered as threats

Moken people collect turtle eggs for consumption; they notice that turtles (identified by themselves as loggerhead species in the marine species book) are spawning every two weeks in one of the beach (see Langann participatory mapping in previous section)

The Manta Rays fishing is operated by a group of outsider fishermen with five boats managed by one leader. This is actually his family business and was practised in the area for 8 year now. We found 30 manta rays in his boat during his interview, caught during one fishing periods.

Table 2: Summary of main threats in Langann

b. Main Threats identified at Don Pale

- Trawlers
- Lighting boats for squid from Myeik
- Outsider fishermen using barrier nets. This was highlighted as one of the main concerns of the communities, even though these outside fishers had permission from the Village Administrator and had usually paid him money to fish in the area
- Historical dynamite fishing

- Erosion because of logging/ tree cutting as people increasingly shift to agriculture although this practise is currently reducing

c. Main threats identified at Linlong/ Palawar

- Trawlers operating in the bay
- Lighting boats for squid from Myeik
- Increasing the population of the village
- Harvesting small size sand crab
- Introduction of new fishing methods such as traps
- Historical dynamite fishing
- Erosion because of logging/ tree cutting as people increasingly shift to agriculture although this practise is currently reducing

5. Management options identified/proposed by local communities

- **Langann**
 - Banning the lighting boats and the trawlers from fishing nearshore
 - Stop trawling during the spawning season. This is something, which the government did before, but has not happened in the last 2 years.
 - A hypothesis of one of the local leaders was that if the lighting and trawler boats could be stopped for even 4 years, everyone would have fish for the next 20 years. This highlights some understanding of the destructive nature of these fishing techniques, and suggests a need for targeted awareness raising about marine management for local communities to reinforce existing ideas
 - Need to control Dynamite fishing
- **Don Pale**
 - Banning barrier nets around the bay and the Island
 - Banning Trawlers and light fishing near the Island
 - Managing mullet fishing sites
 - Restocking sea cucumber in the Bay (privately, or by fisher groups/communities)- and lobbying to ensure government both allows and supports the community to put in place some form of ongoing sea cucumber management rules
 -
- **Linlong/Palawar**
 - Banning Trawler and light boats near the Island
 - Closing some mullet sites
 - Managing the sand crab harvest and repopulating the bay through the protection of small size crab

6. Existing Local Management initiatives

There are no resource user rights, which currently exist in any of the project sites. However some local communities have taken their own initiative to manage their resources, even if these pilot initiatives are often not effective yet due to the lack of legal framework, formal rules and enforcement mechanisms. In addition, when it comes to the big lighting fishing boats and the trawlers, no one dares to interfere or enforce the rules at the village level.

- **Langann**

3 coral reef area/bays are protected - These sites were established 10 years ago

- 1- The bay by the Monastery: it is forbidden to use dynamite by administrator, which is also a national regulation. In addition this area is unpopular with net fishermen because the corals and rocks damage the nets, which provides some more protection.
- 2- The reefs by the Moken village in Zee Pin Aw: it is forbidden to practise gleaning by the land owner; however, people are still actively gleaning and it seems like very few people know that it is forbidden. It is noted that often they dive fish in the shallow waters rather than directly walking on the corals.
- 3- The reefs in the bay of Mathay Aw village: It is not allowed by the land owner to fish at all by any method in order to allow fish populations to recover. However during our visit we observed fishing lighting boat in this area.

- **Linlong**

There is an informal sense of ownership of resources by the local communities.

- They do not allow barrier nets and other fishing gear (fish trap) in the bay.
- Sometimes they allow some Karen outsider fishermen to harvest mud crab in the mangroves

Example of local management established in Do She The (near Don Pale) - Private Island/ co-managed by the owner and community members

Objective:

Sustainable harvest of Tiger prawns and protection of prawn spawning and nursery grounds.

The Project started 7 years ago, and it took 4 years for implementation to be considered successful and for people to respect it.

Management tools and rules

- No-Take zone in the nursery site
- Invest money in mangrove re-plantation to protect the larvae in the NTZ
- No fishing within 300m of the boundary of the NTZ
- Existence of a community patrol group which sends out 3 patrol boats every night (that are paid to patrol every night by turn)
- Gear restriction and mesh size regulation
- Also applicable to outsider fishermen

Fisheries activities

- The catch has remained stable or increased for the last 4 years
- They are fishing the entire year even during rainy season
- 300 kg of prawns every 2 weeks/compared to 150kg before management was introduced
- Prawns are processed in situ on the island and then sold in Myeik
- Prawn heads are used for rubber plantation fertiliser
- Men fish and sell their catch to the owner
- Women build and repair nets and sell them to the owner
- There are additional resources in the Bay but they focus only on Prawns and are not targeting other species
- There are some outsiders fishing with hook and line there too, but they also have to follow the established rules

Formalisation

The project was submitted to DOF and received approval in 2014 from the Regional DOF officer to submit the project documents to the regional Minister

Other community benefits

- The project provides income to 80 households
- The owner builds houses for all the workers
- Everyone has a job from kids to the elderly working in fishing or on the plantations
- The project pays for a school and teacher
- The project supports community healthcare provision

Figure 6: Do She The tiger prawn management

There is another example of successful co-management of fisheries in Myanmar documented as **Special Management Area (SMA)** for mangrove fisheries management implemented in the Bogale Township back in 2010.

The Bogale Township SMA was a partnership between the DOF and local communities, funded by FAO (**Project reference: *Sustainable small-scale fisheries and aquaculture livelihoods in coastal mangrove ecosystems (Project G CP/MY A/010/I T A)***). A proposal for the creation of a legal framework for fisheries co-management through the implementation of SMAs has been submitted to the Parliament and is pending approval.

Figure 7: Special Management Area of mangrove fisheries in Bogale

7. Identification and engagement of key stakeholders

For this project, stakeholders are any people or groups involved in the fishery sector at a local, regional or national level that could support, oppose or be impacted by the project.

- **Key local stakeholders within local communities**

Below is the list of key stakeholders that we need to consider throughout the project phases.

Table 3: Stakeholder matrix for Langann (Rare toolkit)

Stakeholder groups	Why might they be interested in the project/why might they be against the project/How important is it that they are involved	Why do you need them and what will you ask them to help with
Local fishermen: Moken and Bamar/including Moken fisherwomen	Main target audiences; aware of the state of resources; feel pressure from outsider fishermen. The project will help to secure their livelihoods	They will be part of the management committee and enforcement committee- Make key decisions for managed areas, tools and rules
Outsider Fishermen: from artisanal to industrial fisheries	They might feel threatened by the project but also they might hope for better catches if there is management in place- They are also one of the main source of threats	They will be consulted during the planning process and will have to comply with any management put in place
Fish buyers and Post harvest processor	Might feel threatened also and are always against management and rules because they buy illegal products; rely a lot on outsider fishermen for their catch; they are very influential to local fishermen because they hold the money	They will be part of the management committee. They will facilitate discussions with fishermen/ One of them has knowledge of Marine resource management from other countries in the region
Shop owners	Threatened by the project if there are rules against the outsiders, which is the main source of customers to their shops	Support awareness raising activities
Village Administrator	Head of village-. He has already set up some regulations at one site; and is aware of the need for protection	He will be a member of the advisor committee. He will be responsible for putting all the new rules on paper, and act as the bridge between government and local communities
Household Leaders	They care about their household group- and they also assist the Village Administrator - very important in decision making	Facilitate discussion with the community; vital in the decision making process
Respected individuals married with Moken women	They care about Moken livelihoods and can control the Moken and represent their decision	Help facilitate discussion with Moken/Ensure that Moken people understand and are involved in the LMMA implementation process/

		Facilitate the patrol of the potential NTZ site
Individuals who adopted a form of local management already	This project will reinforce their initiatives	Lead the formalisation of the existing initiatives
Teacher and Nurse	Care about community development and the potential social benefits resulting from the project- They are very respected community members	They will be members of the advisor committee. Help with Awareness raising as they are literate and also trusted in the village
Monks	They are very respected in the village- They care about community wellbeing-but also might be against the trawler ban because they receive donations from the trawler and other outsider fishermen passing through the village	They will be a member of the advisor committee. Facilitate community engagement/ Could influence any decision within the community

Table 4: Stakeholder matrix for Don Pale

Stakeholder groups	Why might they be interested in the project/why might they be against the project/How important is that they are involved	Why do you need them and what will you ask them to help with
Local fishermen: Scuba divers and net fishermen	Main target audiences; aware of the state of resources; feel pressure from outsider fishermen. The project will help to secure their livelihoods	They will be part of the management committee and enforcement committee- Make key decisions for managed areas, tools and rules
Boat owners	Same as above-	Same as above- They are the fishermen's boss and control them- Concern that the management committee would likely only be formed by them
Outsider fishermen	They might feel threatened by the project	They will be consulted during the planning process and will have to comply with new management put in place
Village administrator	Head of village-. He has already set up some regulations at one site; and is aware of the need for protection	He will be a member of the advisor committee. He will be responsible for putting all the new rules on paper, and act as the bridge between government and local communities

Household leaders	They care about their household group- and they also assist the Village Administrator - very important in decision making	Facilitate discussion with the community; vital in the decision making process
Respected individuals (e.g.: retired Priest, Monks)	They care about community livelihoods	They will be members of the advisor committee. They will facilitate discussions with local communities- and will play an important role in helping fishermen to make decisions
Teachers	Care about community development and the potential social benefits resulted from the project- They are very respected community members	They will be member of the advisor committee. Help with awareness raising as they are literate and also trusted in the village
Manager of the Private island in Do She The	This is a replication of their initiative in resource management, so they might be interested in sharing experiences	Share their strategies, success and challenges

Table 5: Stakeholder matrix for Linlong and Palawar

Stakeholder groups	Why might they be interested in the project/why might they be against the project/How important is that they are involved	Why do you need them and what will you ask them to help with
Local fishermen: Scuba divers and net fishermen	Main target audiences; aware of the state of resources; feel pressure from outsider fishermen. The project will help to secure their livelihoods	They will be part of the management committee and enforcement committee- Make key decision for managed areas, tools and rules
Boat owners	Same as above-	Same as above- They are the fishermen's boss and control them- Concern that the management committee would likely only be formed by them
Fish Buyers in Palawar	Might feel threatened also and always against management and rules because they buy illegal products; they are very influential to local fishermen because they hold the money	Very respected person. He will be part of the management committee. Very important role in the formation of management tools
Village Head	Head of village-. He has already set up some regulations at one site; and is aware of the need for protection	He will be a member of the advisor committee. He will be responsible for putting all the new rules on paper, and act as the bridge between

		government and local communities
Household leaders	They care about their household group- and support the village head. Very important in decision making	Member of the advisor committee. Facilitate discussions with the community and vital in decision making process
Ex administrator of Don pale (leader)	Interest in resource management- Main driver of local management initiatives	Village Elder; very influential member- Member of the advisor committee
Respected individuals (e.g.: retired Priest, Monks)	They care about community livelihoods	They will be member of the advisor committee. They will facilitate discussions with local communities- and will play an important role in helping fishermen to make decision
Teachers	Care about community development and the potential social benefits resulting from the project- They are very respected community members	They will be member of the advisor committee. Help with awareness raising as they are literate and also trusted in the village

- **Key Stakeholders from government at district/regional and national level**

- ✓ Department of Fisheries (DOF)
- ✓ Department of Forestry
- ✓ Department of Tourism
- ✓ Administration officers
- ✓ Navy

- **Private stakeholders**

- ✓ Myanmar Fisheries Federation/ private companies
- ✓ Tourism operators

8. SWOT analysis of each project site following the LMMA and Co-management of fisheries enabling condition

The purpose of this analysis is to look at the situation of each site presented above and the general situation of all stakeholders involved. We then relate it to the enabling conditions for possible LMMA implementation and co-management of marine resources. An LMMA implementation approach is based on adaptive management, which focuses on “learning by doing” rather than “getting it right” at the start. We can start with what we have and go through a cycle of planning, implementation, monitoring and reflection (The LMMA network, 2014). Thus, the objective here is to find the conditions that: 1-are already in place (strengths) 2- do not exist or need to be strengthened/addressed (weaknesses); and then 3- the existing opportunities that we could use and finally 4- the threats and risks that could affect the project.

These conditions are not a definite list, but are drawn from years of experience in LMMA and co-management implementation documented in project examples from around the world; thus more conditions may need to be added to suit the particular local situation.

E.g.: In Madagascar we added the involvement of the private sector in the list (seafood collector/processor company), which is something the LMMA network in Pacific (the founder of the LMMA concept) does not consider.

Figure 8: LMMA and co-management enabling condition

LMMA and Co-management Enabling Conditions: (The LMMA network 2014, Levine and Richmond 2014, Pomeroy et al 2004)

For the local community

- Well defined communities: A clear protocol for defining communities; membership is clearly defined as to who really has a stake in the fishery.
- Recognized resource management problems: There is a shared recognition of a resource use problem that needs to be addressed and commitment to improve their fisheries
- Communities feel that their actions can make a difference
- The intactness of traditional tenure systems and community organizing structures; Strong community cohesion (lack of conflict or factions)
- Strong community leadership
- Sense of resource rights by community

For Co-managers/support NGOs

- Co-manager with long-term commitment to community site
- There is an effective change agent in community (doesn't have to be a long-term manager)
- The willingness of that agency to adapt and respond to community needs as they arise: External agents provide support for management but do not encourage dependency.
- Co-manager has set of guiding principles that respects communities

For Co-manager/Government authority

- Government support: It is important that the collaborating government agency play a supportive role through provision of enabling legislation, enforcement, conflict resolution, and other forms of assistance
- A well design legal framework for management right even if a legal tenure does not exist yet
- Government working with communities, and bringing community designations and rules through the state's legislative process, informal local acceptance of village rights to exclude others.

For all

- Clear objectives form a well-defined set of issues: Clear objectives for management can be defined based on the problems and interests. Community goals are cohesive with co-manager goals.
- Effective communication amongst stakeholders
- Involvement private sector partners, and specifically seafood collection companies, who recognize the importance of local management

Table 6: SWOT analysis of the three project sites

Strengths	<ul style="list-style-type: none"> • Community perceives a decrease in their resources • Community perceives the need for management of their resources • Some of the community leaders have already initiated some informal management and regulation of marine resource use which needs to be strengthened (Langann and Linlong) • Sense of traditional ownership of local resources (Linlong) • Apparent traditional governance (Linlong) • Apparent sign of leadership from Administrator and other leaders in all sites • No apparent existing conflict among communities in all sites • Having both government bodies and respected leaders could facilitate the co-management approach in all sites • Navy based in Don Pale could help for enforcement • MOU signed by FFI and Government with regards management of marine resources • FFI commitment to support the project • Interest shown by the Department of Fisheries for the project
Weaknesses	<ul style="list-style-type: none"> • Communities are heterogeneous/Too diverse (Langann) <ul style="list-style-type: none"> - Different Languages within the communities - Different interests within the communities in term of the fisheries sectors (Case of Langann: Shop owners relying on outsiders fishermen vs. local fishermen who compete with outsiders-could affect regulation toward outsider fishermen) - Different actors involved in fishing (local, outsiders, trawlers...) - Resource use is dominated by outsiders - Marginalisation of the Moken/no existing Moken Leader/degraded culture • LMMA implementation is likely to be introduced by outsiders (FFI and Government) rather than as a community led initiative- Need for sensitisation • No formal rules related to existing resource management initiative (Langann and Linlong) • Community worries about possible enforcement mechanism • Community leadership led by government bodies • No apparent traditional governance in Langann • No diversification of livelihoods/No alternatives • No resource use rights by local communities • Sense of traditional ownership of local fishing areas is very low (Langann) • Mainly fishing far away from the villages- and it is difficult to assess who is using the bay during the rainy season (Don Pale and Linlong) • No enforcement of zoning regulations by the government- challenging to enforce 10 mile commercial fishing regulation • Lack of legal framework for community or co-management of marine resources • Legislation providing user rights over resources and providing authority for fishers to make decisions is absent • Knowledge of existing concepts of resource management (community led and co-management) still low within the FFI team directly involved in the project, and local government partners
Opportunities	<ul style="list-style-type: none"> • Lot of mixed Bamar and Moken marriages, that could help facilitate the approach to the Moken (Langann) • Use Monks and/or Priests and teachers as influencers as they are very respected in all sites

	<ul style="list-style-type: none"> • Working with the fish buyers in Langann (who control the fishermen business), who also is graduated from Myeik university and understands some ideas related to resource management • Biodiversity importance of the area could be used as a selling point to all stakeholders and donors (Langann) • Use of the Tiger Prawn harvest management initiative in Do She The and the Bogale project as evidence of successful SMA implementation models • Government is working on a national plan for MPA implementation in Myanmar • Legal framework for SMAs establishment has been proposed to the Parliament (pending a response) • Well managed hotel development could help with livelihood diversification • Introduction of complementary projects such as, fresh water management to conserve limited resources and freshwater infrastructure development, crab fattening and sea cucumber restocking could incentivise the local community to become involved in resource management in the long term
<p>Threats</p>	<ul style="list-style-type: none"> • Controlling dynamite fishermen coming in the rainy season from Thailand (Langann) • Involvement of the outsiders in every step of LMMA implementation (Langann) • Increasing human population and increasing pressure on marine and land resources • A restriction against outsider fishermen could negatively affect the business of shop owners and could motivate them to go against the project (Langann) • Community settlements around the Islands are very small and it could be difficult to patrol all potential managed areas if they are located away from villages. • Engaging with corrupt Navy and government officials who might not provide support without incentives • Incoherence between Fisheries and forestry department and other authorities responsibilities • Unknown political situation post-elections in 2015 • Tourism and coastal development could be a threat to local communities- due to informal land ownership within the project sites • Community could relapse if the project does not show a tangible benefits over a relatively short time period

III. SPECIAL RECOMMENDATIONS

- a) It is definitely possible to implement an LMMA project in the three project sites. We will use the same basic approach in the three different project sites; however strategies and level of effort invested in each of them will be different due to the current enabling conditions.
- b) We need to start quickly with Linlong, because they are likely to implement management faster as all conditions indicate they are ready to implement management initiatives; however it is recommended to also engage with Langann immediately. This will likely be the most difficult site, but is also the most important site from a biodiversity point of view.
- c) The community in these three sites have different interests in term of fisheries, and also different habitats; this means that their targeted species and management interests will also differ. We need to make sure that the project approach can be adapted to address these variations from the start, and certainly before overly ambitious forms of management such as permanent NTZs are introduced, although we would expect that these would develop as communities understand resource management concepts better.
- d) Strengthen existing management initiatives and use these as the baseline for formalising NTZs and LMMAs. The sites need to be promoted and widely publicised, and ecological surveys should be conducted to assess the current state of the resources to support awareness raising.
- e) The team members' capacity is very low for now; and the best way to build their capacity is learning by doing. Therefore, we still need an expert to support the FFI team as well as the government authority throughout the planning and implementation process.
- f) Soe Win from the DOF, who joined the Don Pale field visit, has some potential to help with this project. He is very interested in marine management and his own personal skills development.
- g) Need to make sure that we fully target the outsider fishermen mostly during the planning process, as they are the main source of the problem. Awareness raising with regards the new proposed managed sites and rules should be spread as wide as possible in every village around the Myeik Archipelago to encompass the villages where the outsider fishermen come from.
- h) The use of social marketing techniques has been effectively used to promote marine resource management in other developing countries, and these techniques could be used throughout the project phases to support the implementation process, and make sure we spread the messages, target the right audiences and implement the right strategy.
- i) Fisheries co-management has been successfully implemented through the SMA in Bogale, even though it did not follow a formal legal procedure it was led by the DOF and thus recognised by relevant authorities so we should learn from this process for our work in Myeik.
- j) We need to identify some best practises from the project in Do She The and the Bogale SMA project. Although the Do She The project is basically a private business, and the community receives economic incentives to participate, there is some important community involvement that we need to consider. We could use the same strategy for sand crab and mullet sustainable harvest in Linlong and Don Pale.
- k) We need to follow up on the proposal submitted to parliament by the Bogale SMA's project promoters; and investigate ways for FFI to support and speed up the process with the help of the DOF if this is feasible.

- l) Compliance and enforcement mechanisms will be the hardest part of this project; it is hard for the local communities to implement NTZs in areas that are not seen from the village. Also there is too much night fishing in the area, which could be a problem, unless community buy in is high enough that night fishers are willing to report incidences of poaching.
- m) It is more than marine conservation or fisheries management in Langann, there is also a need to consider other issues such as: Education, Fresh Water management, Waste management/Education, and Forest management.
- n) The above projects could be integrated within the LMMA implementation. Not only for the social development of the village but also a tool to incentivise community interest in marine resource management.
- o) There is a need to review existing fisheries legislation related to the 10 mile rule for trawlers (its applicability and if it is realistic in the Archipelago)

IV. ACTION PLAN FOR LMMA IMPLEMENTATION IN MYEIK ARCHIPELAGO

1. Action points related to FFI and other partners

- Identify project team- Soe Thiha as a socio-organiser- Put together a ToR based on this action plan
- Recruit a village facilitator in each site- Put together a ToR
- Internal meeting within FFI about the findings of the field assessment discussed here
- Organise a meeting between FFI and the Department of Fisheries (DOF) to discuss the results presented here on the Fisheries co-management assessment in Langann, Don Pale, Linlong/Palawar, and SMA implementation procedures as well as the potential role and responsibilities of the DOF as project partner.
- Discuss with the DOF to designate someone to assist with the project and ideally start working at the same time as FFI start in the field.
- Consult with the regional Administration and get permission to undertake the SMA planning and implementation (establishment of Fishermen groups and committees)
- Consult with MFF representatives about the implementation of LMMAs
- Meet with U Aung Thay Do, ex DOF officer who was in charge of the implementation of the SMAs project in Bogale. Figure out how this FFI project could support and follow up on the proposal submitted to the parliament for the legal framework for SMA implementation for fisheries in Myanmar

2. Action points related to LMMA implementation procedure

This is not an official procedure but a mix of LMMA implementation experience and the SMAs implementation process documented in Bogale. This procedure will be applicable to the three project sites.

- Meet with community leaders to introduce and present the project and implementation of LMMAs. On top of the study we undertook in each of the project sites, we have already began to explain the LMMA concept to the communities, and discuss some of the issues related to LMMA or co-management in the Myeik Archipelago

- Establishment of the Village fishing society (term from SMA implementation from Bogale). VFS should include any groups involved in fisheries e.g.: fishermen, boat owners, fish buyers, post harvest processor...
- Establishment of the VFS structure (Assisted by FFI, DOF and township administration representative)
 - ✓ The Management Committee
 - ✓ The enforcement committee (could be established later on)
 - ✓ General members
 - ✓ The Advisor Committee- (Village administrator and respected leaders, Monks and Priest)
- Put together LMMA implementation project objectives. It is vital to understand explicit and implicit objectives, those pursued by communities, and those influenced or promoted by partner agencies such as FFI and the government, because the success and longevity of LMMAs depends on perceptions or real benefits to community or key stakeholders outweighing the opportunity costs Success of LMMA establishment (cited in Jupiter et al 2014)

Every decision needs to be written in a minutes document and sent to DOF for endorsement

- *(Any time during the project phases)* Raise awareness in marine resource ecology and habitats; fisheries related issues and resources management including legal and illegal fishing gears, closed seasons, species protection, sustainable fishing practices.
- Organise an exchange trip visit with fishing communities in Bogale (SMAs) and/or visit the fisheries management project in Do She The.
- Discuss with committee members:
 - ✓ The result of the situation analysis and the participatory mapping to identify key areas/species for management- (Coral reef, turtle nesting sites, spawning aggregation sites.... etc.;
 - ✓ Proposition of management strategies and tools (in correlation with project objectives)
 - ✓ Ecological surveys by FFI of proposed areas for management, accompanied by local communities
 - ✓ Decide on delimitation of the SMAs
 - ✓ Finally put together a draft management strategy and proposed management tools.

NB: final decisions should always be taken by the VFS. Always consider the interest or importance of outsiders using local fishing ground.

- Committees put together local rules (by laws) following each management tool put in place and identify an enforcement mechanism
NB: final decision should always be taken by the VFS; Assisted by FFI, DOF and Navy- (need to consult any stakeholders that could be affected by the rules)
- Put together a Participatory draft Management Plan of the LMMAs (local context fauna and flora, threats, management strategies, rule and regulations, enforcement mechanisms, management structure stakeholders....)
- Discuss alternative livelihood projects with local communities and run a feasibility study for proposed alternative (sand crab fattening, sea cucumber restocking...)
- Submit Management plan to DOF for endorsement (*In the absence of an enabling legal framework, the formal registration of the VFS can only be arranged through the DOF under 'special provisions for projects'*)
- Organise a workshop involving all stakeholders to validate the rules and regulations proposed in the Management plan (could be just for 1 year)
- Establish a Letter of Agreement (LOA) between Co-managers (VFS and DOF) and lead partner organisation (FFI)
- Decide on demarcation options for any protected sites
- Launch the project and communicate the existence of the LMMAs and its rules to the public

3. Action points Post LMMA formation

- Run a workshop to reinforce committee leadership skills, conflict resolution and governance mechanisms at village level (for this kind of community based project not from a government leadership point of view)
- Run a training workshop in local law enforcement procedures for the enforcement committees supported by FFI, DOF, Navy, and the Administration
- Put together a community outreach plan and design materials- Work with local teachers
- Awareness raising will evolve following the progress of the project-
- Set up a community based monitoring programme in Langann to engage youth in resource management and encourage youth engagement in management going forwards

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