



Emergency Market Mapping and Analysis (EMMA)

Understanding the Fish Market System in Kyauk Phyu Township
Rakhine State.

Annex to the Final report to DfID

Post Giri livelihoods recovery, Kyaukphyu Township, Rakhine State

February 14th 2011 – November 13th 2011

August 2011

Background:

Rakhine has a total population of 2,947,859, with an average household size of 6 people, (5.2 national average). The total number of households is 502,481 and the total number of dwelling units is 468,000.¹

On 22 October 2010, Cyclone Giri made landfall on the western coast of Rakhine State, Myanmar. The category four cyclonic storm caused severe damage to houses, infrastructure, standing crops and fisheries. The majority of the 260,000 people affected were left with few means to secure an income.

Even prior to the cyclone, Rakhine State (RS) had some of the worst poverty and social indicators in the country. Children's survival and well-being ranked amongst the worst of all State and Divisions in terms of malnutrition, with prevalence rates of chronic malnutrition of 39 per cent and Global Acute Malnutrition of 9 per cent, according to 2003 MICS.²

The State remains one of the least developed parts of Myanmar, suffering from a number of chronic challenges including high population density, malnutrition, low income poverty and weak infrastructure. The national poverty index ranks Rakhine 13 out of 17 states, with an overall food poverty headcount of 12%. The overall poverty headcount is 38%, in comparison the national average of poverty headcount of 32% and food poverty headcount of 10%. Only 48.1 % of the population has access to primary health care. This ranks as the second worst nationally (64.9% national average).

Rakhine State receives sufficient rain to support rainfed cultivation of rice, where this is the main crop, occupying around 75% of the total agricultural land. Fishing is a major economic sector, with much of the catch being transported to Yangon for consumption and export. Coconut and nipa palm plantations are also important whilst wood products such as timber, bamboo and fuel wood are extracted from the mountains.

Livelihoods are dominated by agriculture and fisheries, with a high percentage of households engaged in each sector at different times of the year. Market linkages between villages and larger towns are relatively weak with poor infrastructure connecting the villages and boats being the main form of transport. In this respect, the cyclone only made a bad situation worse.

Even with these constraints Rakhine is a major exporter of fish-based products to the rest of the country. These products represent the majority of exported goods and are of vital economic importance for the state.

Remote coastal communities rely on small-scale fishing for consumption and barter, usually for rice. Access to fishing grounds is limited by licensing schemes that largely exclude local communities and favour larger brokers from outside the area. Potential exists to better integrate these communities into the market chain if access to fishing grounds could be improved, enabling them to produce, store and trade higher value produce.

Historically, Rakhine State has been isolated from the rest of Myanmar but it looks likely to soon become a regional transport hub with direct access to large export markets as a result of infrastructure improvements. These include the planned pipeline and railway to China's Yunnan Province, development and expansion of the ports in Kyaukphyu and Sitwee (funded by China and India), close links by sea and land to Bangladesh and improved road access to Magwe Region, which is connected to the national road network.

Strong business support and involvement: Rakhine business associations and private individuals have strong ties to markets within Myanmar and also to foreign export markets. Many business associations and

¹ The Ministry of Home Affairs – The Government of the Union of Myanmar

² WHO defines Global Acute Malnutrition (GAM) as the combined percentage of severe and moderate acute malnutrition based on weight for height (wasting). GAM levels exceeding 10% are considered "serious". When they exceed 15%, they are considered "critical".

individuals express a strong commitment to supporting the development of the state as a means of improving the situation of their fellow Rakhine and not just for financial gain.

Support from State government, local authorities and political parties: The support from state, district, township and local authorities for emergency, recovery and development initiatives is strong. The Rakhine State government and local political parties are well disposed towards local, national and international humanitarian actors and are committed to the long-term development of the area. Similarly, central authorities have indicated their support for continued interventions by national and international organisations in this part of the country.

Presence of humanitarian agencies: A number of agencies have established a presence in the area and developed good relations with local communities, including civil society, business, the local authorities and Rakhine NGOs. Agencies have a deepening understanding of the underlying causes of long-term food insecurity in the area and are exploring ways in which to address structural and policy-related constraints.

Impact on the fisheries sector:

Fishers were less affected by the cyclone than farmers and more able to restart their livelihoods. However, weakened financial capacity has affected the production capacity of fishers and the employment of casual workers. In addition fishers are reporting lower catch, which may be the result of breeding ground destruction as was the case in the Ayeyarwady Delta following Cyclone Nargis.

The Livelihood cluster joint assessment found the fisheries sector is a principal source of income for the Cyclone Giri affected population and the damage to it was severe.

Fisheries: Boat losses (completely destroyed) amounted to 44% on average. An additional 25% were partially damaged but repairable. An estimated 50% of fishing gear was destroyed and 8% partially damaged but repairable. Boats are not only used for fishing but for transport of people and goods also, with boats over 18ft long used mostly for transport and fishing. The main constraints on fisheries – representing a combination of underlying factors and losses due to the cyclone – are access to boats (20%), inability to afford a fishing license (17%) and the cost of repair or replacement of either boats or fishing gear (18%). Other constraints include limited access to fishing grounds, lack of credit facilities, poor access to markets, the low price of fish products, lack of cold chain, difficult weather conditions, theft of signal lights and lack of funds to purchase bait for crabs.

Aquaculture: 241 aquaculture ponds equivalent to approximately 4,820 acres were damaged in 19 villages out of the 55 surveyed as part of the livelihoods' clusters joint assessment. This would indicate that 35% of aquaculture farms were destroyed by the cyclone. The worst damage was in Myebon Township, followed by Pauktaw and Kyauk Phyu. The total number of households owning aquaculture ponds was estimated at 1,172 and the number of labourers affected was estimated at 5,640. Based on reports from agencies, the main constraint on this sector is a lack of capital or credit to rebuild and restock the ponds.

The purpose of EMMA

The Emergency Market Mapping & Analysis (EMMA) toolkit allows for the collection of the economic livelihood and seasonal information that is needed to identify opportunities and inform those with very little economic experience to make informed decisions about appropriate responses. EMMA broadens the approach to recovery work. Going through the EMMA steps requires the team to put the beneficiaries within the context of a market and view the constraints and opportunities within the overall market system and seasonal timeframe.

The EMMA in Rakhine aimed to establish an understanding of the level of recovery attained within the fishing sector and look at the efficiencies in the market system. Mapping the market and value chain of the fishing sector will provide a better insight into demand and supply constraints within the fish market system and present some options for small fishers to gain more benefit from their catch.

EMMA Methodology

In recent years, international agencies have been re-examining their responses to emergencies. Many have begun experimenting with cash-based initiatives alongside or in place of conventional relief distributions of food and non-food items. In addition, local procurement of goods and services is also being encouraged.

Recognizing this, there has been a growing realization that unless responses are designed with a good understanding of key markets, they may inadvertently damage livelihoods, jobs and businesses, thus undermining recovery and prolong dependence on outside assistance.

The EMMA was also chosen as the tool to assess the market system, given its design allowing non-technical staff to collect useful market and necessary economic livelihood information to inform programme decisions and identify opportunities. It must be noted that the use of EMMA was also a risk as it takes the tool out of the timeframe it was designed to be used. The EMMA toolkit is most effective at communicating changes/disruptions in the market system after a disaster and highlighting to the reader the options and potential risks and opportunities associated with supporting or working in parallel with the market. In the case of the Rakhine EMMA assessment, the market had recovered. However it was recognized that even before the Cyclone the Market system was weak and inefficient. The study team wanted to see if it was possible to adapt the EMMA toolkit, which already known as credible tool for gathering appropriate data, and see if they could fit it to the context of Rakhine.

Initially, a 4-day training was held with the study team to introduce the EMMA tool kit, identify the key market actors and refine the research questions. This was then followed by 2 weeks of data gathering. The summary of interviews and focus group discussions is found below.

Target level	Target group	Targeted Sector	Total number from which sample drawn	Sample size (20%)	Tool
Township Level	Buyers	Fish Collection Centre	35	7	Interview
Township Level	Officer	Department of Fishery	1	1(100%)	Interview
Township Level	Officer	Ice-Factory	3	1(33.34%)	Interview & Observation
Township Level	Small sellers	Kyaukpyu Market	50	10	Interview
Village Level	Fishermen	Villages (Say Maw village, Sit Taw, Thit Poke Taung)	138	28	FGD, HH visit,

In addition to primary data gathered during the study, the report draws on information gathered as part of the project baseline and on-going monitoring. The report also takes advantage of and builds on findings of the joint assessment conducted by the livelihoods and food cluster, LIFT Rakhine scoping study and IHLCA II.

The field work was conducted completely by the BLO team and findings compiled and reviewed by the Oxfam Livelihoods Advisor and BLO senior management. The final write up of the findings was done by the Oxfam Livelihoods Coordinator.

Critical Market Systems:

Critical market systems are those that play a major role in the lives and livelihoods of the target population. There are two types of critical market systems for protecting and promoting livelihoods. There are “Supply” market systems that provide food, essential household items and tools or vital services. There are “Income” market systems that provide jobs, create demand for waged labour and lead to increased earning opportunities.

The supply market systems considered important for the fishers are the food commodities (rice & oil), equipment for fishing and transport services to KP. The main income market system is the fresh fish Market. This also includes all the types of catch (fish, crabs & prawns) and how they are sold and utilized to earn sufficient income for the household.

The Fish Market system was selected as the critical market system to assess, in order to understand the supply and demand constraints faced by the target group and develop options for the future.

Key analytical questions:

The aim of the EMMA is to answer the following key questions:

What inefficiencies exist in the fish market system and how can women & men better benefit from opportunities in improving efficiency?

To what degree has the fish market system recovered and what constraints are still faced by both poor men and women along the fish value chain and what local level responses are most appropriate?

These questions were reviewed and refined during the initial training and data collection process.

The target population:

The Rakhine coastal areas are well-known for producing fisheries and seafood products, with 43% of the population relying on fishing or a combination of fishing/aquaculture and agriculture. Fishing is mostly for local consumption and/or small-scale barter while marine (rather than freshwater) produce is mainly for sale outside the locality. The market system is weak compared with the Ayeyarwady Delta and fishing is constrained for local fishers by a combination of factor including a lack of access to fishing grounds, which are monopolised by outsiders who purchase license rights.

Kyaukphyu township has a population estimated to in the region of 200,000 people. The population make a living from fishing and agriculture with groups of people working exclusively on farming or fishing whilst others combine the activities depending on the season and access to land. As well as being owners of fishing licences, boats, nets and land, there is a group of the population that exclusively earn their living as labourers in the fishing and agriculture sector.

This study concerns itself mainly with the small scale subsistence fisherfolk, with a particular focus on those affected by Giri. This group is characterised as having fishing as the major contributor to their household income. They are dependent on the existence of markets for the purchase of rice and oil. There are about 12% of households exclusively living on fishing in the targeted area of 19 villages in 4 village tracts. An additional 30% rely on a combination of fishing and labour for their income. Some farming households also work on producing fisheries as their income business.

The Targeted area for the study is a mix of villages close to the sea and villages more in land. The geography of the village impacts on the ratio of fishers in the villages, as well as the different types of fishers and fishing access.

Small subsistent fishers are the focus of the study, however there are a variety of other stakeholders that are involved in the fisheries sector and impact on the livelihoods of the fishing communities as follows;

Fishers	Food-exchanger	Collectors in Village
Brokers	Labourers	The Army collector
Fishery factory at township level	Custom service for tax	Money Lender

These groups will be considered as part of the analysis. However the main recommendations focus on how to maximise benefit for the smaller fishers, through reducing their external transaction costs and increasing the net profit return on their efforts.

Characteristics and categorisation of the fishing groups:

There are at least two ways to characterise the fishing communities. Either by the locations they fish or the type of fish they catch. In addition, the location where they sell the fish also affects the livelihood of the fishing groups. This presents difficulties in establishing clear lines between the different groups of fishers, although through the assessment process it was possible to describe the fishing habits of each of the villages from the different village tracts. In the study area:

The fishermen from **Gone Chein village tract** go fishing to Ohn Chaung, the sea, Phyu Kyun river, Kyauk Phyu river, Gone Chein river, Myay Pone river and Seik Kyun.

The fishermen from **Ohn Taw village tract** go fishing to Kyauk Phyu Kyun Karry and Ohn Chaung.

The fishermen from **Saing Chon village tract** go fishing to Hinthar Chaung, Wet Kyun river, near Kyauk Phyu Township, Than Phyu Kyun river, Nagar Maw river and Saing Chon Dwin Chaung.

The fishermen from **Sit Taw village tract** go fishing to Sit Taw Chaung, Than Sit river and Kyauk Phyu river.

Through the study period the research team found it possible to categorise the fishermen into 3 wealth groups. They labelled these groups as; better-off, medium and small fishermen. Those better off fishers rely on fishing as their principal source of income and may have as many as 30 nets, whereas smaller households fish to complement their daily meals and may own just one cast net.

The small fishermen have low income and use equipment such as the A Nu Myu net, Kun net and the crab traps. They usually fish daily and even fish in the low season to be able to earn sufficient daily income to cover the basic food items. One small fisher stated that he.... “needs to fish everyday to get the income for their curry.”

Medium fishermen use kyar net, Thone htet net, La Mu Net, Korea Net and A Nu Myu Net. Some fishermen borrow from KP collectors or village small collectors. They have a more regular income than the small fishermen. Most medium fishermen are in debt and have to repay to the collectors loans and as a result struggle for their daily food needs. They catch the fish in the river and then they go to the collectors for repayment of their debt. They are caught in a vicious circle of debt.

Better off fishermen have many pieces of nets and hire the workers for their fishing. They use Kyar Net, Kyauk Puzun Net and Maw Ran Net. Among those fishers, some have to borrow money for their fishing access investment, whilst those with more than 30 nets are able to operate without requiring loans they cannot afford. The larger of the better-off fishermen are able to save some of their income, although this isn't sufficient to make significant improvement to their current living condition.

Fishery Households in Target Area

More fishers are found in Sit Taw village tract and Saing Chon Village tract compared to the other village tracts. There are some fishers located in Gone Chein Village tract. In Ohn Taw village tract, only a handful of fishers are found, as the villages are most surrounded by land.

No.	Village	HH	Male	Female
	Sit Taw Village Tract			
1	Sit Taw	48	125	116
2	Say Maw	27	68	60
3	Thit Poke Taung	63	153	157
4	Chan Chein	22	71	48
	Ohn Taw Village Tract			
5	Pyaing Seik Kay	2	5	6
6	Wut San	2	3	5
7	Kyauk Tin Seik	2	2	2
8	Kaung Baung	0	0	0
	Saing Chon Village Tract			
9	Saing Chon South	7	23	15
10	Saing Chon North	7	18	21
11	Saing Chon Ywar Thit	18	59	37
12	Saing Chone Dwain	18	53	46
	Gone Chein Village Tract			
13	Ah Htet Pyin	11	19	27
14	Lay Dar Pyin	3	6	9
15	In Gyi Nar	4	8	9
16	Say Poke Kay	19	41	44
17	Ah Shey Bat	6	21	18
18	Aung Zay Di	3	6	5
19	Ywar Thar Ywar	0	0	0
Total		262	681	625

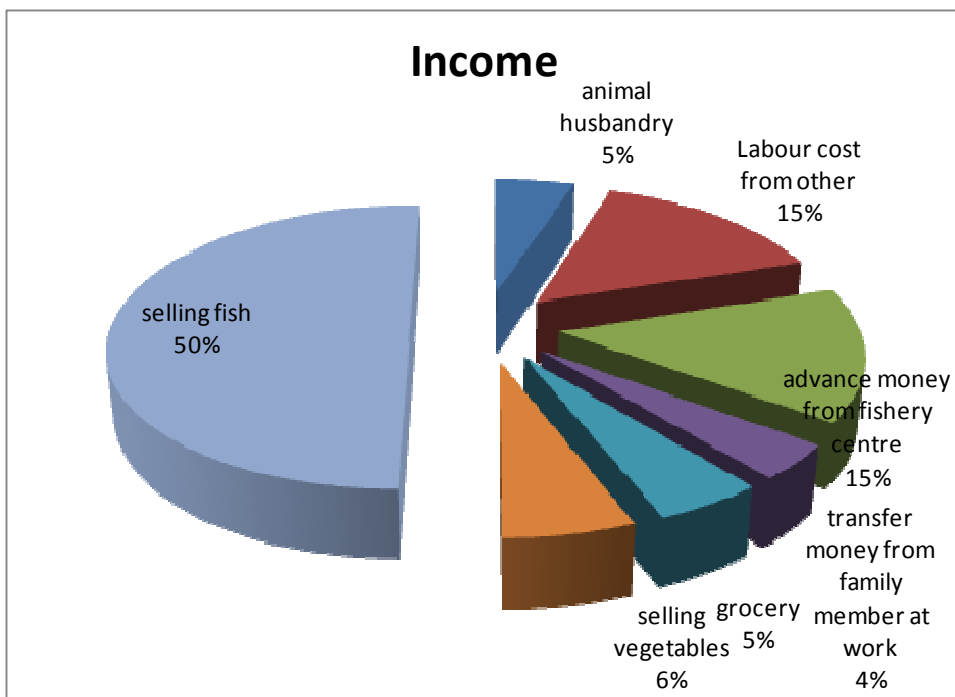
From the discussions with the different groups it was evident that they felt they had partially recovered from the shock of Cyclone Giri, but are still worse off than before the Cyclone. They have not yet recapitalised their assets, are in more debt than before and the fishing catch is less. The options for selling their fish are very limited and previous economic relationships (with money lenders and brokers) are burdening them with additional costs that reduce their ability to invest sufficiently on social services such as education and health.

Fisher Income & expenditure

These data come from focus group discussions talking to fishermen as a homogeneous group. The majority were subsistence fisher and prawn and crab gatherers.

Interestingly, fishing only makes up 50% of their income. A large portion of their total income comes for taking an advance loan for fishing and earning from waged labour.

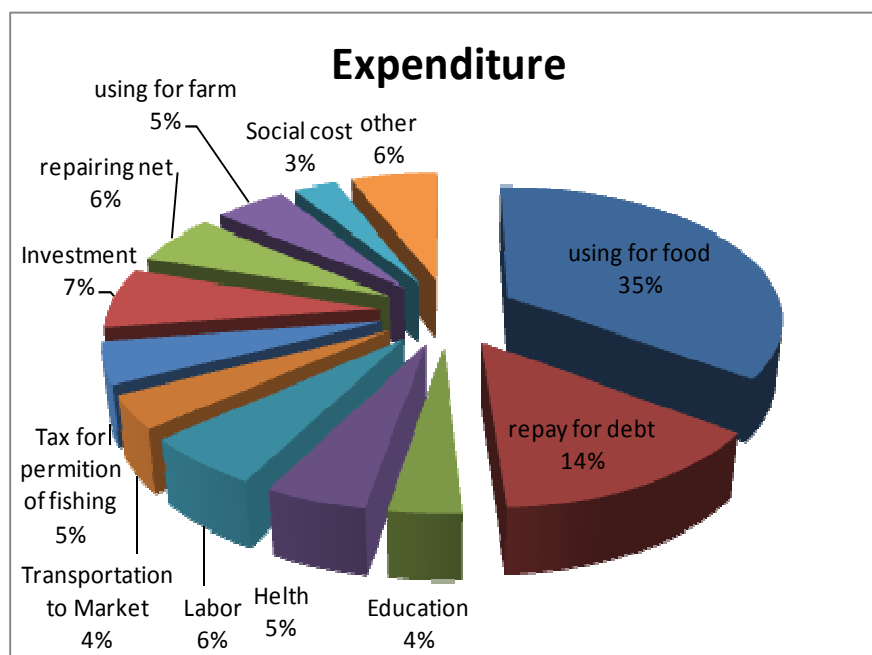
The graphic shows that fishers diversify their income source to cover the income gap. The variety of earning options is limited to the identified categories. However the choices of how to earn additional income vary from household to household.



After considering the annual income, the groups were asked to break down their expenditure.

35% is dedicated to food purchases, which is relatively consistent as an average across the wealth group. The poorer spend a greater proportion of their total on food given their income is less than the middle and better off groups.

A total of 18% of income is dedicated to basic social services (health education etc). Considering overall



spending patterns, this is quite low and is a likely contributory factor to why immunisation coverage for measles, for example, is lowest in Rakhine and why the lowest levels of literacy are also found in Rakhine (75%) against a national average of 90%.

The study found that 27% of the income from fishing is re-invested in production costs, which ultimately is necessary to generate future economic returns. This is relatively high and combined with debt repayments is over 40% of the household income not being used for social or human assets gains.

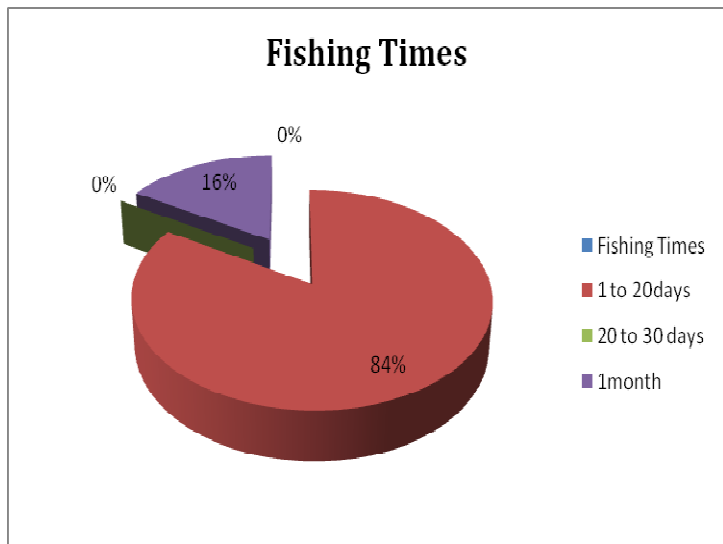
It is interesting to observe that the repayment of debt is about at the same as the loans taken. This indicates that debt isn't spiralling out of control, although 14% is a large amount of income to have to pay back and with high interest rates (15% a month), debt quickly mounts up.

It must also be noted that increasing production might not directly result in a reduction in the overall debt or the culture to take credit. It will however improve the local economy (if the prices do not decrease) by attracting more external investment in the local economy. There is a need to better understand the rural economy in the study area and within that study better understand the reasons why household take the loans and choices they make for their livelihood outcomes.

The majority of fishers (84%) work 20 days a month on fishing. 16% are engaged full time in fishing practices.

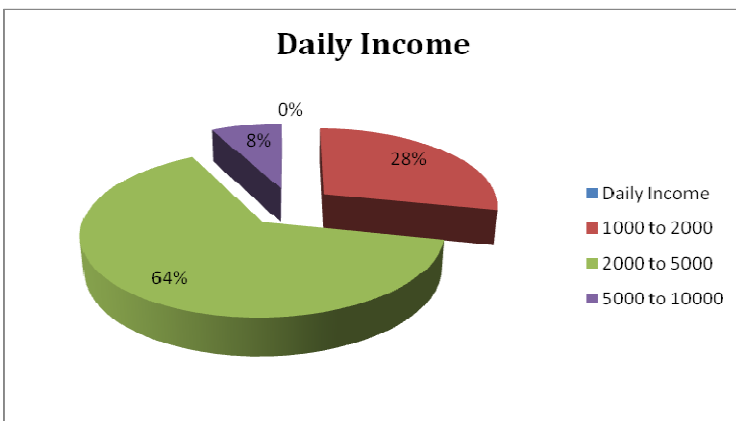
The income earning varies from season to season and type of fish they catch. On average across the different groups fishers earn 2,500-3,500 kyat a day from fishing.

This income is too low to sustain a household on a yearly basis if they only work for 20 days a month. For this reason the majority of fishers gain income and access food from other sources.



If a household of 6 (average for Rakhine) only ate rice it would require 1,299 kilos a year to meet minimum consumption requirements, at an expense of between 400,000-600,000 kyat a year (depending on cost, which varies between 300 kyat and 450 kyat /kg).

This being the case and knowing that households spend 35% of their income on food, we estimate that an annual household minimum income requirement is between 1,140,000 and 1,700,000 kyat. Obviously households will also be purchasing oil, salt, spices and other low calorie foods, further increasing the estimated household income. Thus this would be conservative estimate



This analysis also fits with the findings that fishing contributes 50% to the household income. An estimated annual income for a fisher working 20 days a month is 696,000 Kyat. If this is half of the household income

for a year and the other half comes from non-fishing sources (including loans), income earned is in the region of 1,400,000 kyat. This is sufficient to meet and exceed the survival needs of the group, but too low to create a virtuous cycle of growth required to beat the poverty trap. For this reason there are still particularly high levels of chronic and global acute malnutrition are found in Rakhine.

Seasonality:

Seasonal differences play an exceptionally important part in the livelihoods of the fishers. The most intensive and productive period of fishing is June-November during the rainy season. Fishing is also most successful during high tides. They usually have two “high” tides a month linked to the lunar cycle. It is recognised that there is risk of bad weather whilst fishing in the rainy season, but not enough to prevent them from fishing.

Seasonal Calendar for Fishery														
No	Type of Net	Type of Fish	Month											
			Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
1	Tiger Net(Arhtuk pike)	King Prawn, TigerPrawn, Golden Fish, Myain(Shrimp)												
2	Triple Net(Thone Htat Net) or Prawn Net	Penaeusmonodon(Kyauk Prawn), White Prawn(Penaeus indacus), Various fishes												
3	La Mu Chan	Nga yet Ni(Pseudapocryptes Lamceolatus), Nga Tha Yway, Nga Paung Sauk												
4	Kun (Net)	various fishes & various prawns, Ya Kyat (Squid)												
5	Korea Net, Nga Let Khwar Net	Ngar Let Khwar, Ka Ka Tis (Lates calcarifer), Nga Par Ni, Nga Set Phar,Nga Tauk Tu,												
6	Ganan Mhrone (Crab Trap)	Mud Crab (Scylla olivacea),												
7	Anu Myu Net	Ka Pulu Gyi (Liza Parisia), Nga Zin Rhine (Mystus vitatus), Coil Fish (Leiognathus fasciatus), Nga Pathone (Scatophagus argus),												
8	Moran Net	Ka Ka Tis (Lates calcarifer),Nga Tauk Tu, Nga Par Ni, Penaeus Inducus (Black)Kular Prawn												
9	Yin Tat	May Nyo Crab(Scylla olivacea), Mud Crab, Octpus (Yat Myauk)												
	Rare fish time													
	Plenty fish time													
	Traditional Festival													
	the time of repairing Net		if needed, they used to repair their net to be better											

The season also impacts on the different roles and responsibilities that are assumed by men and women in the year. During the dry season women will dry more fish, whilst in the rainy season the women will be more involved in fish marketing.

Type of Fishing Access

Fishing activities can be classified into freshwater fisheries such as aquaculture, tender fisheries and open fisheries; and either inshore or offshore marine fisheries. The affected area relies most heavily on inshore fisheries (rivers and near the coast) and partly on aquaculture.

Small and medium size fisheries are the most common. Fishing generally takes place during the ‘open season’ from November through to February. Small and medium scale fishers use a variety of nets, which require significant capital to purchase although they can sometimes be borrowed from traders in larger towns.

Depending on the capacity (economic, human and social) of the fisher groups, different types of fishing practices are available to them. The net type is also a defining characteristic of the fishers. Some fishers use

different type of nets depending on the availability of fish and the prevailing weather situation and season. The names of various nets known as local names are: A Nu Myu net, Thone htet net, Kyar net, Kyauk puzun net, Crab traps, Kun net, Maw Ran net, La Muu net (which is made by bamboo like the fence along the coastal)

Among the different types of nets, Kyar net is the most used in Sit Taw village tract. Kyat Net users pay tax at the government custom service on a yearly basis, levied at 10,000 kyat per net. This tax is relatively high, leading to some fishers not declaring all their nets to the government. For example: instead 100 nets, fishers show 85 nets for license.

In addition to taxes there are also periods of the year when fishing is prohibited with certain nets, impacting on the smaller fisher who do not have adequate equipment or fishing permissions. The fishermen who use Kyar net face constraints as the government prohibits use at the time they have the potential to catch larger quantities of Kyauk prawn and King Prawn. This time (June to August) the market is absent, Kyaukpyu collectors prevented from buying as it is illegal.

Types of fishes	Prohibited period
Freshwater prawn, Salt-water prawn, Kyauk Prawn, King Prawn, Nga Lin Pan (Tray Fish),	April to June
Kyauk Ngar Group	June to August
Ka Ka Tis	January to March

All groups interviewed required a small boat to practice their fishing, the equipment they used varied depending on the location and season. They all sold their production to the local market, collectors and army market. The local market includes those that dry fish, small sellers and others who add value before selling onto a local consumer. The “collector” includes the middle men who bring the fish or mainly crabs and prawns to Yangon or Sittwe. They have connections in Sittwe as well as Yangon and are able to decide where the market price will be higher. Generally they concentrate their efforts for export products such as crabs and prawns.

Types of Fish and Prawn Fishers catch:

According to the fishing nets they used, the following types of fish and prawns are caught locally,

No	Types of fishes and prawns	
	Rakhine / Myanmar terms	Biological or English
1	White Prawn	<i>Penaeus indicus</i>
2	Indian Prawn	
3	King Prawn	<i>Harpiosquilla sp</i>
4	Kyauk prawn	
5	Shwe Prawn	Gold Fish
6	Ngar Dingar	<i>Secutor insidiator</i>
7	Ngar Baung Sauk	
8	Ngar Tha Yway	
9	Ngar Kin Kyinn	

10	Ngar Par	<i>Thryssa mystax</i>
11	Ngar Kyawt Nyo	
12	Ngar Par Ni	Blood-red Snapper
13	Ngar Man	Dogfish
14	Ngar Lake Kyauk	Skate
15	Ngar Lat Khwar	
16	Ngar Wun Pu	<i>Anodontostoma chacunda</i>
17	Myat San Kyel	<i>Illisha megaloptera</i>
18	Ngar Poke Thin	<i>Pennahia anea</i>
19	Ka Bluu	<i>Lize parsia</i>
20	Ngar Yin Kone	
21	Ngar Tauk Tu	
22	Myaing Kaung	

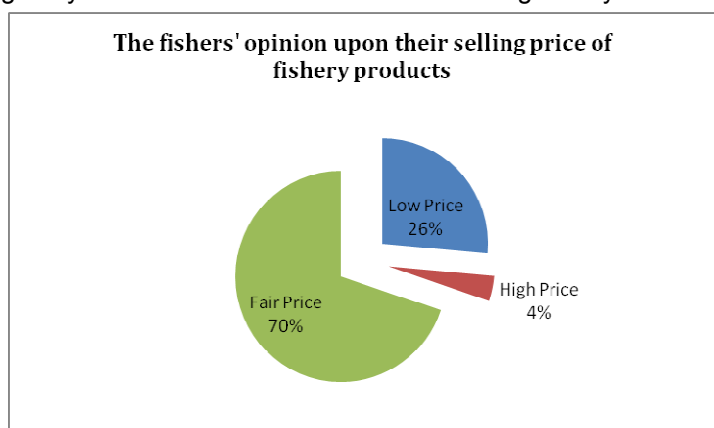
It is clear from the analysis that prawns, shrimps and crabs have further reach into the international market. Some fish production is exported, however the majority of fish caught by local communities remains in the local KP market. This is not to say that fishing companies based out of Yangon do not have an international fish market, rather the research found the local fishing communities do not.

Crabs and (tiger) prawns are desirable products currently. The level of sustainability in the collections methods adopted by villages is not apparent from the study, however a consistent theme from the interviews was the decrease in availability of fish and the impact on their household income. During interviews with the Department of Fisheries they stated “We want them (the fishermen) to obey the rules and regulations, especially at the fish and prawn breeding time, so not to lose the generation of fish and prawn”. This would indicate that the fisheries department are concerned that damaging fishing practices are taking place.

Overall Market Situation:

There are village and Township markets for fishers and small collectors. Fishers sell their fish catch in Kyaukphyu town as well as the village. King prawn and Kyauk prawn are bought by a different group of collectors and make their way via the ice factories to the export market. After Cyclone Giri, those who were still able to fish had to sell their catch at the price of their village and even sometimes with rice. Even now the smaller fishers are not able to sell their catch regularly in the KP market and resort to selling locally. Often if the fish catch is few, the fishers sell them directly to the village consumer.

The price of fish between village and township differ where prices are based on the type of fish, size and existing economic arrangements the collector has with the fisher. Small fishers usually sell their product in the villages for consumers and to small collectors when they catch small amounts of fish in order to save travel and transportation costs. At the village level it was found that the smaller fishers sell their catch to the collectors. The collectors often lend them money for their investment or their food, obliging the fisher to sell his catch at low prices to the collector.

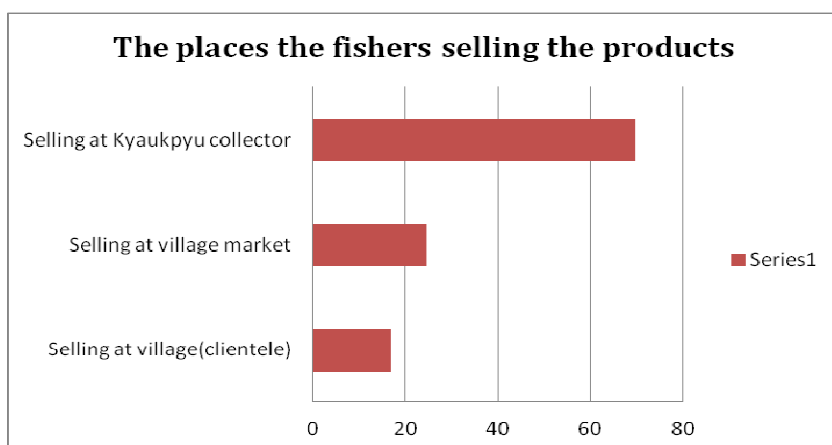


Fishers sometimes feel that they are not getting the right price for their fish, but they said they sell their production because of time constraints needed to make sure that the fish were sold fresh, travel and transportation constraints, ice box constraints and money lender constraints.

Local markets for fish:

The small fish, such as Ngar Poke Thin (*Pennahia anea*), Ngar Dingar (*Secutor insidiator*), Ngar Baung Sauk and Myaing Kaung do not fetch a high price and are not sent to the township collectors. Due to their low value, the fishers normally eat these fish, either while they are at sea during fishing weeks or dry and eat them in their homesteads.

One limitation to long fishing stretches is cold storage and availability of ice; fish are often thrown back to the sea if the catch goes off. Myaing kaung fish are used for making the fish paste. The fish paste is sold in their own and near by villages. Ngar Man (Dogfish), Ngar Lake Kyauk (Skate) and Ngar Yin Kone fishes are also not bought by the fish collectors of Kyaukpyu. Fishers who catch these fish need to sell them in Kyaukpyu market on their own. Kayuk praw and king prawn are especially sold out for export. There are no consumers in village and township level.



ISit Taw village tract, there is a market every morning in Sit Taw village, so they can sell for consumers in the community. There is also an army post near Sit Taw village Tract, which also has a fish collection point where most of the fish are bought by the army. Moreover, there are small collectors at Thit Poke Taung village. They use to collect the fish and sell it not only in the Army but also Kyaukpyu.

Saing Chon Village Tract, Gone Chein Village Tract and Ohn Taw Village Tract, The fishers from those 3 village tracts sell the fish and prawns at their village and Kyauk Pyu. There are different prices between village and Kyauk Pyu described as below:

Fish/ Prawn Name	The price of village per viss	The price of Kyaukphyu per viss	differential
White prawn	2,000	3,000	50%
Indian Prawn (4inches)	7,000	18,000	157%
Indian Prawn (3inches)	7,000	10,000	43%
Kyauk Prawn	19,000	20,000	5%
Shwe Prawn	4,500	6,000	33%
Ngar Let Khwar	7,000	9,000	29%
Ngar Par Ni	2,500	5,000	50%
Ngar Tauk Tu	1,500	3,000	50%

Fishers also highlight the limited market access and transportation costs as a challenge. Currently the fishers go individually to KP and don't have a formal means to transport their catch collectively. The institutions that exist to facilitate the free movement of fish through the market chain do reach to the villages, leaving collectors as the main conveyor of price information and determiner of price.

The Market Map:

Market linkages exist for products that can be sold outside the state. Fresh or dried prawns and fish, crabs, squid, jellyfish and fish paste are exported from Rakhine to other parts of the country. This production represents the majority of exports and is of vital importance to the state's economy. Despite this, remote coastal communities have so far benefitted relatively little from this trade, which could change if they were enabled to produce, store and trade higher value produce. Compared with other states/regions, the level of fisheries production in Rakhine is high but still significantly lower than Yangon Division and Tanintharyi, Bago, and Ayeyarwady regions.

In terms of the market access for small and medium fishers, the system is currently not geared for them to maximise benefits from their labour. A major reason of this limitation to fishers organising sale of production are the brokers and their existing economic ties to the fishers.

Middle fishers try to sell their catch (80%) in Kyaukphyu, as they can get higher price than in the village. Another factor determining whether they go to Kyaukphyu is if they sufficiently large quantities of fish to cover transport costs. Otherwise they sell to village level brokers who transport to Kyaukphyu and distribute within the village.

The smaller fishers often sell their catch in their villages and are obligated to do so due to the system of loans and brokerage; they borrow the money from village brokers, paying off the loan by selling to the broker. Others just don't want to pay the cost the transportation, due to their low levels of catch. The smaller fishers therefore have a limited market access and options to control the price of fish they sell. They are also burdened by the additional costs associated with reaching the further market source. In this situation they are unable to produce enough or get the best price for their efforts. This situation is preventing the smaller fishers from effectively transitioning from a vicious to a virtuous cycle of improved livelihood outcomes.

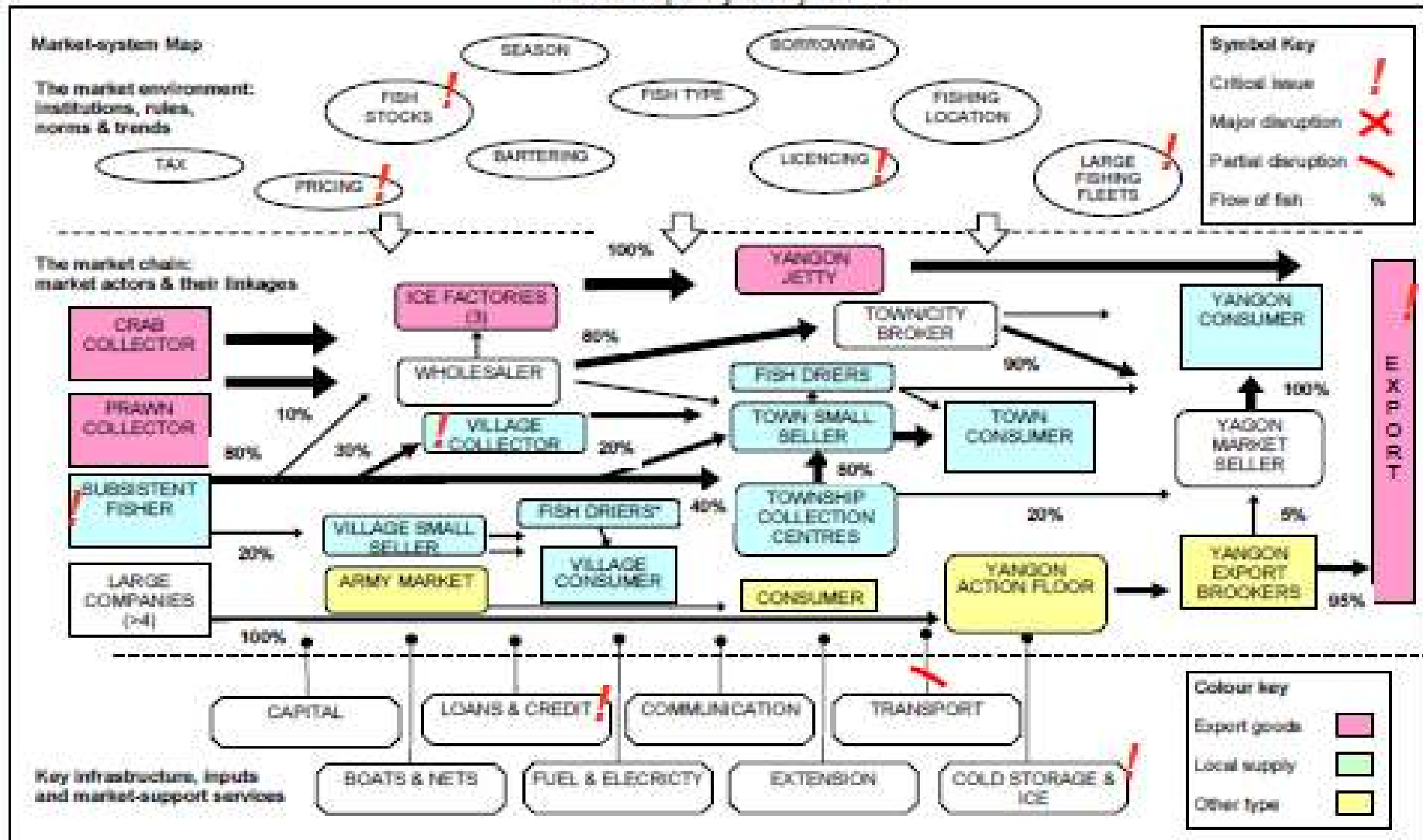
The market map illustrates the flow of fish through the system. It was not possible in the study period to quantify either the weight or the volume of fish flowing in the system, due to the complexity of the type, quality and variety of fish. The Market map shows the proportional flow of fish through the market system and identifies some of the critical issues within the system impacting on the livelihood of the small fishers.

Within the fish market system there does not seem to be a supply or demand constraint impacting on the flow to fish; fishermen are able to sell sufficient fish to meet demand. Interviews with jetty owners found that the demand for prawn and shrimp was greater than the current supply, but faced with constraints in cold storage and reduced capacity of fishing grounds to meet the international demand.

The main constraints for the fishers to obtain a better price for their catch are linked to the market environment, market infrastructure and services, rather than the market chain, resulting in selling their catch to the village brokers, who offer a lower price than the KP market.

The study was not able to unpack the profit margins of the different actors in the market chain. Collectors have commented that the weakening of the dollar against the Kyat affected their profit margins as much of the prawn and crabs are sold in US\$ for export.

Market Map - Kyauk Pyu - Fish



Critical issues in the market system:

Fish stocks:

An overall decrease in the fish stocks (as well as increase in fishermen) is reducing the levels of catch and ultimately their overall income return. The factors contributing to the decreasing stock include; external fishing companies extracting fish, weather, water colour, fishing during the “close season”, size of nets, mangrove removal, increase in number of fishers and limited alternative options for income. Ultimately there is a variety of contributing factors that result in a decrease in fish stocks.

Pricing:

For the smaller fishers they face a 20% decrease in potential income through selling locally. They cannot afford the transport to KP and rely on local sales. There is also a significant fluctuation in prices, controlled by the demand related to the availability. The fishers don't have many options for sale at a “better” price and resort to accepting the price they are offered and taking loans to fill the income gap.

Licensing:

The cost of fishing licences is beyond the affordability of the smaller and medium fishers. The alternative is to pay a tax on their nets, which ultimately is a fee to the licence holder. A key constraint for households engaged in fishing is the lack of access to fishing grounds. Large fishing areas are covered by expensive licenses allocated (i.e. sold) at the state level at a high price to large traders. Local fishers are often excluded from fishing in these areas. This is in contrast to the Ayeyarwady Delta where the cost of fishing licenses is similarly high but local fishers have access to the grounds if they can afford to pay the fee locally.

The lack of access to fishing grounds restricts many fishers to smaller creeks or rivers where the catch is lower. Furthermore, many must also pay a separate license fee for their fishing boat and gear (around 5,000 MKK per year). Some fishers work on behalf of larger scale fishers as sub-license holders. In some cases, fishery business owners may rent out boats, nets and other fishing gear at a fixed cost, allowing fishers to pay in caught fish with some interest. In such cases, the fisher has no choice but to sell the fish to the boat owner at a low or below market price. However, the majority of fishers are free to consume their catch or sell it at the market in larger towns, although the latter option is constrained by high transportation costs and the dominant market position of larger traders, which limits profits.

Large fishing Fleets:

The impact of these fleets on the small fishers is unclear given they fish in different waters. There is a concern that with the continual reduction in fish catch there will be a future conflict for fishing interests for those local fishing communities that fish further out at sea.

The village collectors:

This group earn their living from purchasing and collecting fish from the smaller and middle fishers who don't go to KP. They provide the collection service for the fisher groups and charge a fee for this service by purchasing fish at a lower price. Organising this sector to be more efficient and “fair” would be beneficial to the fisher. The benefit for local collectors would be less than that of the fisher, however with increasing economies of scale (with more fishermen choosing to sell locally), they will also benefit. There seems to be an abuse of power by the collectors, due to the lack of options available to the fisher. The profit margins of the collectors is not completely clear or if they are exploiting the situation of the smaller and medium fishers.

Loans and credit:

The fishers are faced with the need to take loans to cover their income gap. The levels of interest are high and result in households spending 20% or more of their income on loan repayments. This impacts on the amount and variety of food they can purchase or health and education costs. There is a need to involve fishing groups in discussing and developing financial products that meet their borrowing requirements with affordable rates. The lack of financing for trading activities limits the level of market integration and growth of the market.

Cold storage & ice:

Access to cold storage and ice reduces the period of time the fish can be kept and the length of time the fisher can be away fishing. Excess fish is dried and salted and sold locally or eaten within the household. Ice production can be complicated and is expensive to install. The 3 main cold stores only focus on export quality produce in order to off-set their costs. More efficient storage or processing innovations could be piloted to find ways to make use of excess "less desirable" fish.

Transport:

The level of market integration is constrained by the transport infrastructure. There is a higher cost associated with travel to KP and this needs to be offset with a sufficient size of catch. The big fishermen sell the fish in Kyauk Phyu only when they catch over 20 viss of fish, whilst the smaller and middle fishers sell it to Kyauk Phyu when they catch over 5 viss. Reducing the frequency of travel is only possible if fish could be sold locally at a better price or if fisher groups were able to sell their catch collectively.

Export:

This does not impact on the small fishers directly. However the current export levies are the highest in the region for fisheries export and result in the market actors passing the costs back down the value chain - ultimately squeezing the margins of the smallest fishers.

Women, fisheries and economy:

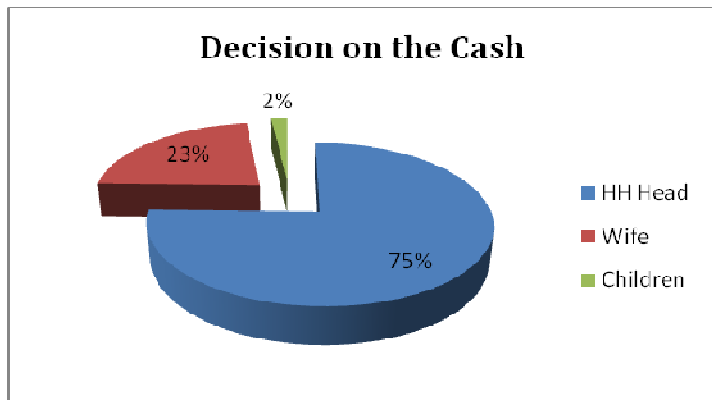
Roles and responsibilities differ between men and women within the fish market system. Women are primarily responsible for processing and aspects of marketing, whilst men are active at every point in the market chain, especially in production, brokering and management. Overall the fish market system is dominated by men in management and decision making positions along the value chain. Men control production.

The laws governing the fish market system do not explicitly discriminate against women. The lack of recognition of women's rights within the law results in the head of household being the default target of the law. Women face greater discrimination from customary law. Linked to attitudes and beliefs within the village structure, women are prevented from contributing to aspects of village life that directly affect them. There are no women in the official community structures such as the village administration or village development committees. Women are not the direct recipient of loans from the main sources of credit. Even within the



household, whilst women are the main managers of cash, it is the men who have the final decision on how money is apportioned within the household expenditure.

This constraining environment has a direct impact on the lives and livelihoods of women. Income earning for women is less than men in terms of salaried income and as opportunities to earn. Women are not prioritised as income earners and are expected to remain close to the home and focus their energy on reproductive household tasks. As a result women are not given the same education opportunities and are not able to access the best jobs.



Women within the target area are not considered equal to men. Women are considered to be naturally weaker than men and cannot do physical activity. Women should not represent the family, as it is shameful to a man. Women are more patient and caring than men and should remain at home to look after the family. As a consequence of these beliefs, women should not have freedom to move, are socially isolated and inevitably do not engage in village level decisions.

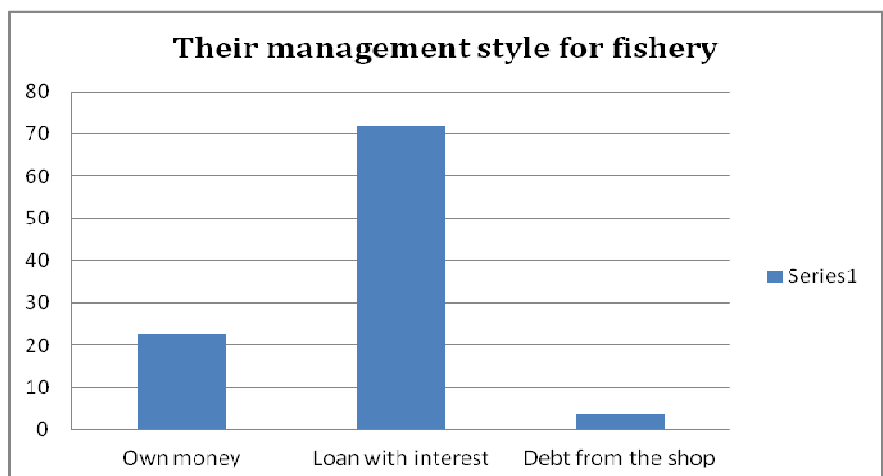
The ownership of assets are not directly labelled as men or women owned, however women have limited control over the decisions on how the physical, financial, natural, social and human assets are utilised within the household. Women are considered to be only concerned with aspects of the homestead and have greater control over areas of their lives that are not of interest to men.

There is therefore scope to work with women and men to develop greater consensus on the value of women as decision makers and contributors to the economy, and begin to redress the current belief systems that discriminate and prevent women from actively contributing as equal to men.

Credit Flow

Taking loans is the main form of coping when there is no fishing. Interest rates reach 15% a month and tie fishers into unfair trade agreements. The study found that they may need to borrow from others to cover debt payments to broker– further contracting the local economy and increasing their debt burden.

The fishermen who use Kyar Nets have to hire workers but there are difficulties in doing so. It was stated by one fisher that “Most Kyar Net fishermen don't like to hire the people from another village because they are not proficient.” This points to a lack of trust between the villages, adding a further obstacle in organising larger groups.



It was found that there are no official money lenders in the villages. There are the small collectors, so when fishers need, they borrow from the small collectors. When they get the fish, they have to sell to the lender at a low price. In lending, the small collectors consider the

economic & social situation of the borrowing fishers. If fishers do not have a good background or good fishing access, they provide loans against collateral (gold or other materials) with 5% interest in borrowing. If the borrower can't repay the interest regularly, the lender has authority to commandeer the fisher's properties and sell as their own after a 6 months default period. This is an accepted customary practice and not regulated. When borrowing without any materials as collateral, interest rate ranges between 10% and 20%.

In Kyaukphyu, there are some collectors who provide capital loans to fishermen, up to MMK 2 million. These loans bind the sale of all production to the lender, where there is no time limit to this obligation but where interest is not charged.

Response analysis:

The response analysis follows the principle of providing assistance to the target populations proportionate to need. While the study has found that the fishing sector has recovered since cyclone Giri, due to structural barriers, small and medium fishers continue to face difficulties in earning enough income from their production or secure access to fishing grounds needed to expand their production. Overall there is much scope to improve market linkages between fishing communities and markets in towns, of benefit to small and medium fishers and to village brokers as more fish is marketed locally. The scope for this is likely to be accelerated as infrastructure and transport links are improved.

Analysing the response options in terms of the 5 pillars of the livelihoods framework, the following options are suggested as a way to improve the livelihoods and food security of the fishing communities.

1. Restoration and improvement of physical capital (boats and fishing gear, cold storage, processing, transport and improved market linkages).

Increasing the local value-added food processing and reach of value-added goods in the fisheries sector has the potential to provide further income for communities. Valued-added processing for the local market will not however significantly improve the economic situation of the poorest group. Ways to extend the reach of local products will need to be investigated, potentially linking fishers with the business sector in Yangon or KP.

Village level collection centres that are organised by fishers (with a focus on women) and provide better returns on production should be tested. These centres can be managed by women within the community and supported to act as "village collectors with a town price". This will need provision of materials to establish centres and skills development to support marketing. This will increase the numbers of fishers selling fish in the village and, through economies of scale, benefit both collectors and fishers and strengthen the local economy more broadly.

Cold storage and low cost processing techniques that extend shelf life and marketing options are also required. There is no established external market for dried fish or fish paste, despite a national demand for these products. Piloting the establishment of linkages with Yangon businesses would be one way to increase alternatives streams of income into the region and boost the local economy.

Standard weighing systems and scales are required and is a further benefit of establishing a local collection centre run by fisher households. Using a fair and accurate system will increase trust fishers have in the collection centre increasing the likelihood of local sales.

Explore ways to improve access to higher quality materials and equipment for fishing. The quality of fishing equipment is considered to be sub-standard, which fishers believe impacts on fishing revenue; greater levels of expenditure are needed for repair and time required for cleaning. Improving the market links to better nets will improve efficiency and with improved regulation of fishing nets a greater likelihood managing the tensions between increased intensity of fishing and conservation of fish stocks and spawning grounds.

2. Strengthening human capital (improving capacities and skills)

Education levels are low as are investments in education. Investment in education with a focus on basic numeracy, literacy and environmental management would be beneficial to growth and opportunities. Initiatives would need adequate support, must reside principally with the State and would be gradual.

Improvements to health, diet and nutritional situation of the households is required. Access to functioning health and good education systems is limited and although a priority for fishers does not receive much investment. This limited access to learning is manifested in poor dietary diversity of the smaller fishers.

DRR/CAA initiatives through a lens of building resilience by diversifying income sources, improving early warning systems and testing aquaculture are alternatives that are not ecologically damaging. The reduction in fish stocks is real, as are the risks of extreme weather and stretched capacities to cope. Fishers need to be able to have the support/means to access and try new ways that bolster income diversity, so that if they are affected by a shock they have alternative income streams to act as a buffer. They will benefit from adopting practices that reduce loss of assets in the first place, augmented by access to mechanisms that can protect their assets through guaranteed social support if stricken by disaster.

Reliable early warning and close communication networks preventing the loss of life and reducing impact on livelihoods assets will strengthen resilience. At a national level more awareness of early warning and disaster risk reduction is taking place, and where accessing weather data and early warning reports from these sources would benefit the groups. The process to do this needs consultation. However local groups could manage phone networks through which to disseminate information within their local area.

3. Improvement of financial capital (cash grants and conditional cash transfers, microfinance and financial services for the productive sectors and the SMEs)

Social protection measures need to be provided for the chronically poor. Poor households will remain poor if they are not provided with support that moves beyond traditional models for development. Testing new ways to guarantee regular payments (in cash or kind) to the poorest groups will enable them to make informed choices over the use of their resources and assist them in finding ways out of the poverty trap.

There is a need for affordable credit and financial products that meet the needs of fishers, who currently do not have access to formal financial institutions and are reliant on others in the community or township for credit. Loan repayments make up a significant portion of the household outgoings at the expense of taking advantage of other services that would grow their asset base and contribute to a virtuous cycle of poverty reduction.

There is a need to increase understanding of investments required to create viable non-fishing economic activities that benefit the poorest women. Fishing income doesn't cover all requirements of a household and alternative sources are sought by both men and women. These activities are limited in scope and growth opportunities are narrowed by the weak local economy. Scope for investigation and piloting should not be limited to value addition to fish products, but can be expanded by exploring other avenues linked to hygiene or other food production.

4. Enhancement of social capital (strengthening of NGOs and CBOs, and networks with business, academia and government).

Capacity of local groups within the target area is limited and a culture of working collectively or collective action by fishers or other groups is largely absent. Great potential exists for strengthening and expanding the capacities of local groups and CBOs, as well as improving the way fishers interact with the private sector.

There is limited means to access relevant and up to date information on fish and basic food prices, weather conditions and other livelihood related issues. This is vital for fishers to make more informed choices about the sale of their fish and the purchases of goods and services. This could be done through village phones (managed by women groups) and posting data on notice boards. EC-FAO plan to launch a free information line for prices.

Integrated government planning processes, now on the agenda, must include the community (and women) in local decision making. There are a lot of non-fishing developments in Kyaukphyu that are having impacts on the fishers. The use of free prior informed consent before establishing projects is non-existent and there is little known about the impact these developments are or will have on the local environment and fish stocks. More opportunities for local people to engage in the planning processes requires improved capacity to work with the government and trust building.

5. Sustainable rehabilitation and management of natural capital (fisheries, mangrove and land conservation)

In addition to improving access to fishing grounds there needs to be greater collective effort to protect fish breeding grounds and prevent off-season for fishing. This could include environmental education and promotion of alternatives to destructive livelihood and coping strategies. More research is required to understand the processes linked to environmental degradation and loss of stocks and breeding grounds.

Access to laws and regulations related to fishing in Myanmar is still limited. The interpretation and implementation of some laws vary across the coastal regions. There is need to have an improved capacity and awareness of the laws within the fishing communities and the enforcement of these laws. There is a significant level of knowledge within the Department of Fisheries. However their capacity (and interest) to go to remote villages is low, with a greater focus on aquaculture and fishing with larger vessels.

The current process for licence control and access to fishing grounds is unfair and needs review. Fishers are unable to reduce external transaction costs and increase total profit returns with unfair payment systems and limits to where they can fish. A review of the current laws and joint advocacy both at state and national level is necessary to promote improved access to fishing licensing for the communities that fish the waters in their area.

Improvement in the agriculture sector will benefit the fishing community. With greater local food availability, prices will reduce and dietary diversity and nutrition improved. An increase in the growth of the local economy will in turn have a positive impact of the fish market system.

A generic recommendation to improve mangrove and forest re-plantation efforts is inevitable when discussing the coastal areas and fisheries. The demand for increased aquaculture if not planned well will negatively impact on the forested areas of the coastal region. Emphasis on integrated systems such as aqua-forestry would be a useful component of wider awareness of mangrove and forestry management and has the potential to provide alternative sources of income for poorer groups. While the study didn't look at forest use, the analysis from a fisheries angle suggests that those with the most to lose from depleting breeding grounds have the lowest stake in how the coastline is managed.

A continuing emphasis on learning and research is needed to address the many unanswered questions in the fisheries sector. The market analysis has highlighted the main inefficiencies in terms of women and men's engagement in the sector, financial and production bottlenecks, as well as the existing constraints to transport, licensing and options to sell fish. However more is needed to better understand the social relationships and internal as well as external factors with constrain the fisheries sector and virtuous cycle for growth. These could include the impact of the foot print created by large companies (fishing and gas), specific environmental impacts studies, social and economic research.

Response Recommendations:

Short term response recommendations – fisheries market.				
Response activities or combination	Key Risks and assumptions	Timing issues	Likely affect on Market system and target groups	Indicators.
Finance/income support	Income will be used to invest fisheries, debt, food and productive capacity.	Before the start of the fishing season	The impact in the long term will be quite limited, although the initial relief to households will give fishers more choice for their expenditure.	Income & expense patterns. Food choice
Organising/collective action	Time for meetings doesn't disrupt earning opportunities.	Long term	In the short term there will be little impact, as the individuals build trust, learn and understand. In the long term it will increase voice.	Formal or informal community groups Membership
Women focused income alternatives	There is acceptance by men and women that options are beneficial and viable	To be determined by women	Improve the local economic situation and strengthen market integration through increasing competition and fisher choice	Number of sellers Volume for local trade of goods
Piloting collection centres	Linked to above the fishers are able to agree on locations and management	Long term	Improve the options for fish sale, increase the competition for fish locally and raise volumes of local trade	Number of fishers selling locally Local fish prices
Agriculture innovation	Increasing locally produced food will increase variety and availability of cheap nutritious food	immediately	Increase in diversity and availability of food stuffs may lead to reduction in costs of varying current dietary intake, as well as increase raw materials for locally made snacks and other food products.	Food prices Market variety
Research	Relevant studies will deepen understanding of local social dynamics that impact on poverty	On-going	Not directly impact on the function of the market system. It will inform improved decision making and can be used for focusing campaign and advocacy.	Types of research Use of research