PROGRAM ON RESPONSIBLE BUSINESS

International Labour Organization

Value chain analysis and competitiveness strategy:

Freshwater Capture Fisheries

Pyapon - Myanmar

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ACRONYMS

AEC	ASEAN Economic Community
ASEAN	Association of Southeast Asian Nations
ADBI	Asian Development Bank Institute
BAFPS	Bureau of Agricultural and Fisheries Product Standards
BDS	Business Development Services
CBM	Central Bank of Myanmar
DANIDA	Danish International Development Agency
DOF	Department of Fisheries
FDA	Fishery Development Association
FGD	Focus Group Discussion
FIND	Financial Inclusion for National Development
GMP	Good Manufacturing Practices
EU	European Union
ILO	International Labour Organization
KII	Key Informant Interview
MADB	Myanmar Agriculture Development Bank
MEB	Myanmar Economic Bank
MFF	Myanmar Fisheries Federation
MDRI-CESD	Myanmar Development Resource Institute - Centre for Economic and Social Development
MEB	Myanmar Economic Bank
NAG	Network Activities Group
RCEP	Regional Comprehensive Economic Partnership
SEAFDEC	Southeast Asian Fisheries Development Center
UNCDF	United Nations Capital Development Fund
VCA	Value Chain Analysis
WHO	World Health Organization
YDC	Yangon City Development Committee

EXECUTIVE SUMMARY

Based on data from the Food and Agriculture Organization (FAO), world fisheries production in 2012 was at 158 million MT. Freshwater capture fisheries accounted for 7% of the global production or 11.6 million MT. About 79.5% of the production came from 15 countries with China as the top producer. Myanmar was the 3rd highest producer of freshwater capture fisheries in 2012. Between 2003 and 2012, freshwater catches in Myanmar increased by 329.6%, which was the highest among the 15 major producing countries. Freshwater catch increased from 1.25 million MT in 2012 to 1.38 million MT in 2014. In 2014, freshwater capture fisheries accounted for 27% of fish production in Myanmar.

As per the 2013 report from the Asian Development Bank Institute (ADBI) on Sustainable Fisheries Management and International Trade in Southeast Asia and the Pacific Region, the subsector employed about 1.6 million workers and of which 31% were fulltime employees and 19% worked part-time. The remaining 50% consisted of occasional workers.

The value chain study is focused in Pyapon Township. Pyapon is the commercial center of eastern Delta. The township is a hub for both the production and distribution of fresh and dried fish. The following are the major value chains in the Pyapon freshwater capture fisheries subsector:

a) Fresh fish for the domestic market: A greater percentage of the freshwater fish from Pyapon are sold to end consumers in Yangon and the Dry Zone. Fishers directly deliver their catch to fish collection centers. Fish from the fish collection centers are sold to consolidators in the township. The consolidators distribute these to vendors within the township and/or deliver the fish to wholesale markets in Yangon and the Dry Zone. There are a few collection centers who sell directly at the wholesale markets in Yangon. Fish vendors in Yangon buy their stocks from the wholesale market. Freshwater fish are sold mainly to end consumers at the wet and street markets.

b) Processed fish: Export oriented processing companies are based in Yangon. They source their supply of raw materials from the wholesalers. These companies usually sell to both domestic and local companies. Artisanal processors in Pyapon source their fish from fishers and the fish collection centers. Oftentimes, these processors also have their own small boats. They usually sell their products to wholesalers and retailers in the dried fish section of the market. Most of these processors are engaged in the production of dried fish, fish paste, and sauce.

The physical harvest of fish remains the domain of men while women are increasingly involved in pre- and post-harvest activities. Though less common, there are women in the villages who join their husbands during fishing operations and act as a crew member. Women usually assist in the making and repair of nets because of its association with sewing which is traditionally considered a female skill.

In the post-harvest sector, women's predominant role is in retail selling, which is equally important to ensuring that industry remains viable and profitable. Wholesale trading, on the other hand, is dominated by men. It is also the men who negotiate and sell their catch to intermediaries. For processing, women are engaged in artisanal processing while men are dominant in export oriented and industrialized processing.

The following are the two means by which fishers can access inland water fishing grounds in Myanmar:

a) **Leasable Fisheries:** These are exclusive key fishing grounds which operate through the establishment of barrage fences around the lease area, which retains the fish as they grow on the floodplain food resources. The resulting fisheries in these waters are based on both naturally recruited and introduced stocks. In Pyapon, about 69 leasable fisheries sites have been awarded.

A fishery is leased through a bidding process, and winning bidder has the sole right to harvest the fishery resources in demarcated "inns" for a period of nine years. Within the period of nine years, the tender owner has to take care of the fishing ground and perform regular restocking especially during the flooding season so as not to be wholly dependent on natural recruitment. Tender owner stocks species of his/her choice. Fishers, either individually or as a group, can access specific fishing grounds by paying license fees to leaseholders.

Production from lease fisheries comprised 22% of the total Myanmar fisheries production in 2013-2014. While number of leasable fisheries decreased from 3,451 in 2009 to 3,290 in 2014, production volume increased by 28% over the same period.

b) **Open Fisheries:** These are fishing operations in areas outside of the 'inn' or leasable fisheries and reserved fisheries. The right to fish is licensed out by DOF. All fishing gears require a license. Large gears such as the stow nets are allocated by a tender. Fees depend on estimated production capacity and projected catch. The tender fisheries 'lots' are usually not operated by the winners of the tender but by sub tender holders at a negotiated price. The sub tender holder, in turn, can pass the actual stow net operations to fishers for a fee, which can be paid in cash installments or fish catch delivery at an agreed pricing scheme. About 107 tender lots have been awarded in Pyapon.

In 2014, open fisheries contributed 78% of the total freshwater fish production. Production in calendar years (CY) 2013/14 was 41% higher than in CY 2009/10. Majority of the small fishers are only able to access open fishing grounds using small gears. The general sentiment among fishers is that fishing grounds accessible to them are shrinking every year and getting further away from their homes. Leaseholders and tender lot holders, on the other hand, are complaining that small fishers illegally fish in their areas and, as such, they have been losing money for many years.

Based on 2011 data from the CBI/Myanmar Seafood Exports report, captured freshwater fish species comprised only 1% of the volume exported by Myanmar. Most of the freshwater fish exported were of the catfish species. In 2013, the country exported a total of 936 MT of frozen catfish worth US$ 1.012 million. Myanmar's share to total volume of world exports of catfish in 2013 was about 3%. The country was the 5th largest exporter of frozen catfish. Myanmar had the lowest price among the top 10 exporters of frozen catfish in 2013. Main export markets for Myanmar's catfish are China and Singapore. Among the top importers of frozen catfish in 2013, Singapore paid the lowest price at US$ 0.99 per kilogram followed by China at US$ 1.11.

Since the majority of the households in Myanmar live along the four big rivers, freshwater fish from inland capture fisheries is mainstay not only for Myanmar households' daily diet but also for trade. Households generally prefer freshwater fish to marine fish. According to FAO 2006 survey, fish account for about 22% of protein intake of Myanmar households. National average annual consumption of fish and fish products based on the same 2006 survey was 21.02 kilograms per capita. Inland species represented 31.5 % of fish consumption while marine species accounted for 23.5 %. Fish paste (made of marine and freshwater fish) comprised 45% of consumption. To fully realize the economic potential of the freshwater capture fisheries subsector, there is a need to promote a broad-based responsibility for the sustainable harvest and marketing of fishery resources. There is a need to make livelihoods and employment more secure, so that the fishing communities themselves invest in improving the resource base and add to the value of the resources. Parallel to this, the industry needs to evolve from a predominantly domestic market orientation into one that supplies both domestic and export markets so as to promote greater opportunities for decent work among inland fishing communities. For Myanmar to boost economic growth through fisheries, it must enter new markets and expand in its existing ones with high quality fish products that meet international standards. Expansion of markets can most likely boost labour demand and facilitate the tightening of labour markets. A tightening of labour markets can generate competition for unskilled and semi-skilled labour which may result in higher wages and generally enhanced structural power for casual and seasonal wage workers. Larger scale and export oriented operations will likely create

more jobs and pay more or provide better work conditions because of much lower proportion of costs as wages (economies of scale) and also because they may be more exposed to external scrutiny and potential reputational damage.

The table below summarizes the key priority constraints, opportunities, and proposed interventions in the Pyapon freshwater capture fisheries subsector.

Summary of Key Constraints, Opportunities, and Interventions	
Constraints and Opportunities	Proposed Interventions
Input Provision	
Constraints Weak compliance to food safety standards and good labour practices in ice distribution and retail Dominance of workers that have had no access to proper training on occupational safety and health (OSH) and hygienic handling of ice **Opportunity** Improvement of skills and work conditions in ice distribution and retailing can contribute to reducing cross contamination, wastage, and improvement of chilling efficiency	Development of capacity of ice plants to provide training to their retailers and distributors on proper ice handling and OSH to ensure that ice supplied to intermediaries meet food safety and quality standards
Constraints Lack of capacity among fishers to pay upfront for replacement gears Lack of awareness among gear suppliers and fabricators (including women) at the village level on current regulations of gears and evolving designs of gears aimed at improving selectivity Lack of valuation of tasks done by women related to gear fabrication, repair, and maintenance **Opportunity** Improvement and modification of gears can contribute to fuel efficiency, safety, and in reducing overexploitation of inland water resources.	Improvement of access of fishers to more efficient and selective types of fishing gears through skills upgrading of gear fabricators at the village level and promotion of linkages between suppliers of gear materials and fishing communities Improvement of awareness and understanding of gear fabricators and fishers on cost benefit of complying with regulations.
Fishing	
Constraints Lack of access among fishers to services and resources that will enable them to adopt sustainable and climate smart fishing technologies Low appreciation on benefits of complying with sustainable fishing practices /Lack of business or enterprise management skills among fishers Weak implementation of OSH **Opportunity** Sustainable fishing practices can help improve resilience to climate change resulting to overall increase in productivity and better market access Traders and exporters have the strongest commercial incentive to ensure sustainable supply of fish to maintain operations at a profitable level	Development of local capacity to provide services that will enable fishers to adopt sustainable and climate smart fishing technologies and manage their fishing operations as sustainable businesses

Summary of Key Constraints, Opportunities, and Interventions	
Constraints and Opportunities	Proposed Interventions
Trading	
Constraints Shortcoming in quality control and food safety practices and lack of knowledge in quality assurance among fish collection centers which limits their ability to also impose quality and food safety standards on their suppliers Lack of access to services and resources that will enable fishers and traders to comply with food safety standards and improve operational efficiency Limited understanding of issues relating to post-harvest storage and handling of fishery products **Opportunity** Improving the ability of fishers and traders to comply with food safety standards can potentially increase supply for export marketing and reduce incidences of price reductions and postharvest losses Increasing chain wide operational efficiency reduces the cost of fishing and delivering fish through the supply chain, improving profit margins and thus improving the returns from fishing and trading as a whole for both women and men	Upgrading of capacity of fish collection centers to act as mentors on basic food safety and proper fish handling to their suppliers and workers
Processing	
Constraints High production cost due to low labour productivity and unstable power supply Lack of access to services that will help processing companies to improve OSH implementation and productivity **Opportunity** Improved productivity can have a positive impact on the price competitiveness of processed fish products in the international market	Development of local capacity to commercially deliver productivity improvement program and related services to enterprises in the freshwater fishery subsector with priority given to the processing companies
Retail Distribution	
Constraints Lack of access to services and infrastructure that will support the safe and hygienic handling and marketing of fishery products with female vendors the most affected **Opportunity** Clean and sanitary merchandising of fish can significantly help reduce postharvest losses and health hazards	Improvement of access of vendors to services that would enable them to adopt better marketing practices parallel to ensuring that there are sufficient market-based incentives to facilitate upgrading

Summary of Key Constraints, Opportunities, and Interventions	
Constraints and Opportunities	Proposed Interventions
Enabling Environment	
Constraints Inconsistent implementation and enforcement of standards (e.g., food safety, OSH) and regulations across all functions in the chain **Opportunity** A strong and effective Public-Private Partnership and harmonized understanding of standards will provide the platform to promote changes, innovations, and chain wide commitment towards building responsible fishery businesses	Development of a harmonized implementation measures of standards and regulations related to fisheries management, food safety and quality, and OSH in collaboration with MFF Pyapon
Constraints Existing fisheries management system stifles the development of a broad-based commitment to promote responsible fisheries Lack of adequate policy and legal frameworks to support co-management **Opportunity** Pilots implemented and soon to be implemented by LIFT and DOF on co-management can potentially pave the way for the inclusion of a wider group of women and men in fishing communities in fisheries management	Support the development of more inclusive and participatory forms of fisheries management that ensures environmental sustainability while allowing the fishery to meet social and economic goals

Section 1
INTRODUCTION

A. Background information

The Value Chain Analysis (VCA) on the freshwater capture fisheries was conducted to inform the strategy of Component 2 of the DANIDA funded Program on Responsible Business in Myanmar. Component 2, which is being implemented by the International Labour Organization (ILO), aims to support the creation of decent work opportunities for men and women working in Myanmar's fishery and garment industries.

The value chain study on the fishery sector involved three phases, namely:

Phase 1 of the VCA Study, conducted between 15 December 2014 to 16 January 2015, included a desk review of previous studies undertaken on Myanmar fishery sector, data collection and preparatory work prior to the first planned field assessment.

Phase 2 of the VCA, conducted between 13 January to 4 February 2015, involved the shortlisting of seven subsectors within the Myanmar fish industry based on perceived market opportunities and scale of production and undertaking a rapid assessment of each of these subsectors in preparation for the prioritization and further analysis of two subsectors.

Phase 3 of the VCA study was conducted between 16 February 2015 to 6 March 2015 involved further analysis into the two selected subsectors, along with the identification of the types of service provision and interventions the ILO could undertake in supporting the growth and the creation of decent jobs in the industry.

Based on the desk review undertaken in Phase 1 of existing data and reports from the Department of Fisheries (DOF)[1] and development programs[2] as well as interviews and meetings with industry players and representatives from MFF and DOF, the following subsectors were identified for consideration:

- Rohu/Carp
- Tilapia
- Sea bass
- Mud crab
- Prawn and shrimps (cultured)
- Freshwater capture fishery
- Marine capture fishery

The shortlisting of subsectors for consideration was primarily based on perceived market opportunities and scale of existing production. Figure 1 shows the relative attractiveness of the seven shortlisted subsectors.

The subsector selection criteria were set to meet the ILO's Program on Responsible Business objective of promoting inclusive and sustainable growth by addressing factors that hinder the adoption of responsible business practices, job generation and implementation of decent work conditions sensitized towards men and women working in the industry. The following selection criteria were established:

- Size and Scale of Subsector
- Market Demand and Growth Potential
- Employment Generation
- Upgrading Potential

In the prioritization of the subsectors, the program also took into consideration those chains where women are already involved and would benefit from the development of the chain with increased income, better work conditions, and skills development.

[1] DOF Fishery Statistics 2013 and 2014
[2] LIFT Program, WorldFish/MyFish, CBI Reports, IDE Discussion Paper, various FAO studies, reports from DOF, MFF, USAID, Dr. Edwards, NAG, and other fishery experts and organizations

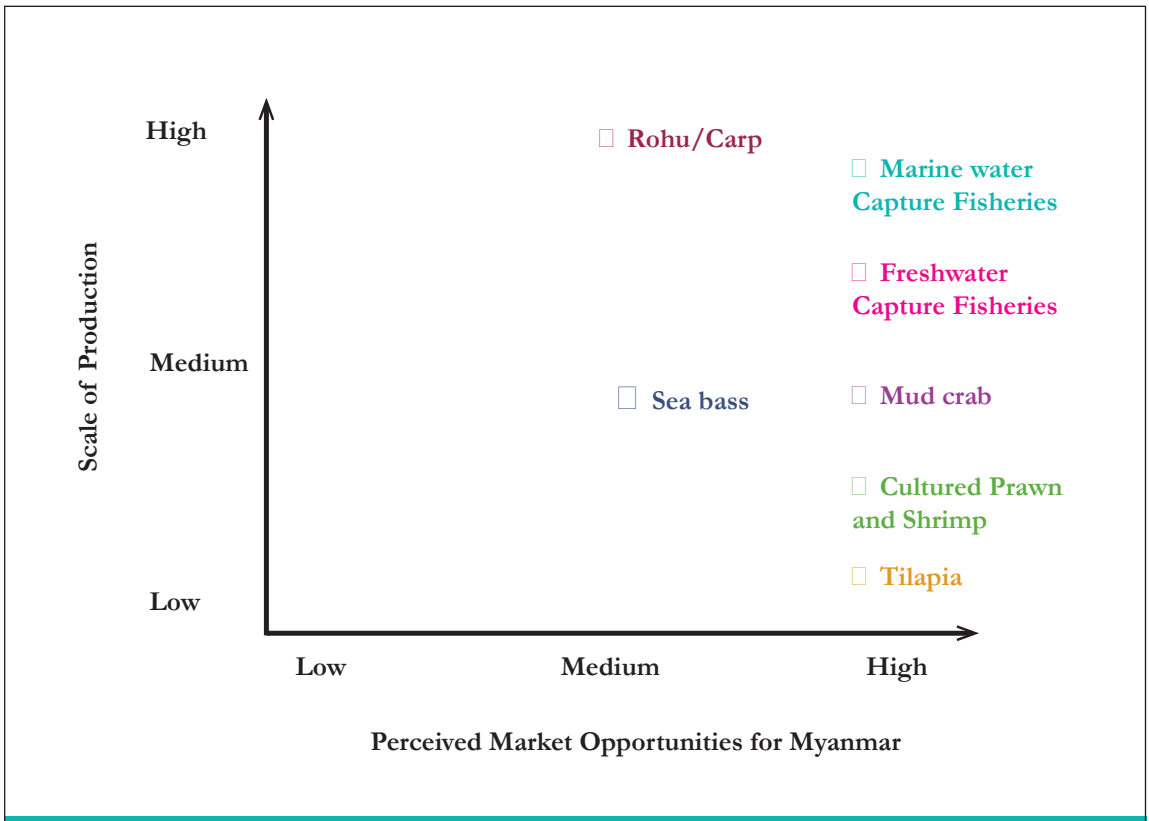

Figure 1. Relative Attractiveness of the Seven Shortlisted Subsectors

Each of the criteria was considered to be equally important for the selection of subsectors and, as such, no weight was attributed to the criteria. The ranking and prioritization of the subsectors was undertaken through a participatory approach in which representatives from the industry, MFF, DOF, and labour unions were invited to participate in a half day workshop which was held on 26 January 2015. During the workshop, ranking and prioritization of the sub sectors was conducted in which participants weighed the shortlisted subsectors against each criterion. Marine capture fisheries, freshwater capture fisheries, shrimps and prawn emerged as the top three priority subsectors. Further meetings with various development programs and industry stakeholders suggested that the ILO Responsible Business Program may be in a better position to respond to the constraints and opportunities in the marine and freshwater capture fisheries than in the prawn and shrimps subsector, where main issues revolve around the white spot disease control and mitigation and improvement of hatchery operations.

The value chain analyses for Marine Capture Fisheries and Freshwater Capture Fisheries have been prepared as stand-alone documents. This freshwater capture fisheries value chain analysis is focused in Pyapon District of the Ayeyarwady Division. Myanmar has extensive inland fisheries resources. Inland water bodies such as natural lakes, reservoirs, river systems and ponds cover around 8.2 million hectares of which 1.3 million hectares are permanent and the rest are seasonally inundated flood plains. The main rivers are the Ayeyarwady, Chindwin, Sittaung, and Thanlwin. These rivers flow from north to south into the eastern part of the Bay of Bengal, Gulf of Mottama, and Andaman Sea. In the delta, the Ayeyarwady River's main tributaries are the Pathein River, Pyapon River, Bogale River, and Toe River.

B. Objectives of the value chain analysis

The overarching objective of the value chain study is to understand and identify the systemic factors and conditions under which the freshwater capture fisheries subsector can achieve higher levels of competitiveness with the aim of facilitating the gainful employment of both women and men and/or improving existing jobs into decent work opportunities that are also gender sensitive. Key objectives of the value chain study are to:

a) Provide an in-depth understanding of the range of factors and relationships that affect performance of the freshwater capture fishery subsector, including end markets, support markets, labour, enabling environment and coordination/cooperation among firms

b) Provide an understanding of how the nature and structure of the freshwater capture fisheries value chain affect labour and work conditions

c) Identify in a participatory process the systemic chain level issues that hinder or promote the industry's competitiveness in general and the gainful and decent participation and employment of women and men in particular

d) Under a participatory process, identify and prioritize interventions needed to overcome bottlenecks throughout the chain that would foster value chain competitiveness and generation/promotion of decent work opportunities.

e) Identify and explore how to catalyze private and public sector stakeholders in the marine capture fishery subsector to collaborate for improved industry performance

C. Methodology and approach

An initial desk study was conducted to collect and summarize information from currently available reports and studies. It provided guidance to issues that needed to be the focus of the field research. It should, however, be noted that government statistics on capture fisheries have often been questioned by the industry and there is a consensus among the private sector players of the need to upgrade methods of statistical collection to ensure its reliability. The VCA research team exerted all efforts possible to countercheck and triangulate secondary data with primary data or, at the least, present the different perceptions and opinions of players and stakeholders.

The field work component of Phase 2 and Phase 3 was conducted using qualitative research techniques particularly key informant interviews (KII), small group meetings, and focus group discussions (FGD). Key informants and participants to the meetings and FGDs consisted of farmers, fishers, traders, processors, service providers, and representatives from the Myanmar Fishery Federation (MFF), Department of Fisheries (within the Ministry of Livestock, Fisheries and Rural Development), and development programs. Key informant interviews were used for collecting data on individuals' perspectives, experiences, and quantitative data. Meetings and focus group discussions were effective in generating broad overviews of issues of concerns to the groups or subgroups represented and in the triangulation/vetting of information obtained from the interviews. Key informants and participants consisted of players and stakeholders of the fisheries sector in Pyapon.

A Stakeholder Consultation Meeting was conducted in Pyapon on 27 February 2015. Participants discussed, commented upon, and validated the findings of the VCA. The participants then identified and prioritized key issues facing the industry and suggested possible course of action.

Figure 2. Meeting with Women and Men Engaged in the Freshwater Capture Fisheries Subsector in Pyapon

Figure 3. Stakeholders consultation in Pyapon

Constraints and interventions were further elaborated based on iterative and inductive analysis of responses during the KII, FGD, and Stakeholders Consultation primarily from the following perspectives:

- Context of key informants and stakeholders consultation workshop participants
- Third party observations (e.g., government agencies, providers, development programs) were important for suggesting key issues to explore and for substantiating the results of the company interviews
- Experiences from other countries such as Thailand, Philippines, Vietnam, etc.

Section 2
OVERVIEW OF THE INDUSTRY

A. Product description

Fish caught from inland waters are multi-species and vary in abundance depending on the productive status of water bodies. Main targeted freshwater and brackish water species among fishers in Pyapon especially those engaged in open fishing are the croaker, hilsa (when they migrate into the river), sea bass, and the giant prawn. In the domestic market, fish are mainly traded fresh and, in some cases, live.

Main species exported are the giant river catfish, wallago, carp, snakehead murrel, and the freshwater prawn. These are usually sold frozen either whole or in fillet and steak formats.

Table 1. Some of the Commonly Traded Freshwater/Brackish Water Species in the Domestic Market

Featherback	Rasbora	Wallago
Snakehead	Tilapia	Catfish
Spiny eel/Freshwater eel	Carp	Freshwater prawn/shrimp
Perch	Croaker	Freshwater crabs

Source: KII/FAO

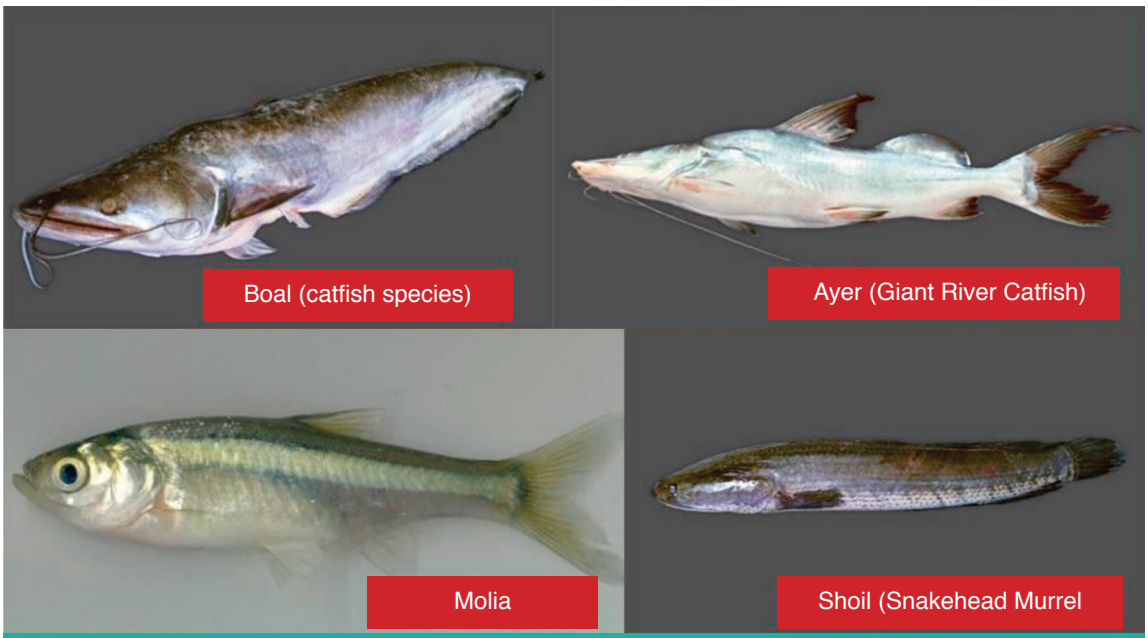

Figure 4. Some of the top capture freshwater species traded in the Export Market

Figure 5. Dried Marine and Freshwater Fish in Pyapon Market

Artisanal processed freshwater fish products consist primarily of dried fish and minced fish. Common species made into dried fish are the snakehead, eel, and rasbora. With the tight supply of marine fish, dried fish processors are also shifting to river catfish and carp although these are perceived by consumers to be of low quality. Dried fish products have generally been associated with marine fish rather than freshwater fish. Pyapon is one of the main trading centers of fresh and dried fish in the Ayeyarwady Region. Supply of dried fish comes from the town itself and neighboring areas.

B. Production trends

1. Myanmar's position in global freshwater capture fisheries production

Based on data from the Food and Agriculture Organization (FAO), world fisheries production in 2012 was at 158 million MT. Freshwater capture fisheries accounted for 7% of the global production or 11.6 million MT. About 79.5% of the production came from 15 countries with China as the top producer. Myanmar was the 3rd highest producer of freshwater capture fisheries in 2012. Between 2003 and 2012, freshwater catches in Myanmar increased by 329.6%, which was the highest among the 15 major producing countries.

Table 2. Major Producer Countries of Freshwater Fisheries

Rank 2012	Country	Production Volume (MT)			Variation (%)	
		2011	2012	2013	2011/12	2012/13
1	China	2,232,221	2,297,839	2,135,086	2.9	7.6
2	India	1,061,033	1,460,456	757,353	37.6	92.8
3.	Myanmar	1,163,159	1,246,460	290,140	7.2	329.6
4	Bangladesh	1,054,585	957,095	709,333	(9.2)	34.9
5	Cambodia	445,000	449,000	308,750	0.9	45.4
6	Uganda	437,415	407,638	241,810	(6.8)	68.6
7	Indonesia	368,578	393,553	308,656	6.8	27.5
8	Tanzania	290,963	314,945	301,885	8.2	4.3
9	Nigeria	301,281	312,009	174,968	3.6	78.3
10	Brazil	248,805	266,042	227,551	6.9	16.9
11	Russian Federation	249,140	262,548	190,712	5.4	37.7
12	Egypt	253,051	240,039	313,742	(5.1)	(23.5)
13	Thailand	224,708	222,500	198,447	(1.0)	12.1
14	Congo	217,000	214,000	230,365	(1.4)	(7.1)
15	Vietnam	206.010	203,500	208,872	(1.3)	(2.6)
Total 15 major countries		8,753,039	9,247,624	6,597,640	5.7	40.2
World Total		11,124,401	11,630,320	8,611,840	4.5	35.1
% Share (15 countries)		78.7	79.5	76.6		

Source: The State of World Fishery and Aquaculture, FAO, 2014

2. Domestic production

Table 3. Fisheries Production in Myanmar, 2012 to 2014

Ecosystem	Production Volume (in Thousand MT)			% Change 2014/12
	2012	2013	2014	
Aquaculture	898.96	929.38	964.26	7%
Freshwater (Capture)	1,246.46	1,302.97	1,381.03	11%
Marine (Capture)	2,332.79	2,483.80	2,702.24	16%
Total	4,478.21	4,716.15	5,047.53	13%

Source: Department of Fisheries

Between 2012 and 2014, fisheries production in Myanmar increased from 4.48 million MT to 5.05 million MT. Marine capture fisheries production registered the highest percentage increase at 16% over the same period. Freshwater catch increased from 1.25 million MT in 2012 to 1.38 million MT in 2014. In 2014, freshwater capture fisheries accounted for 27% of fish production in Myanmar.

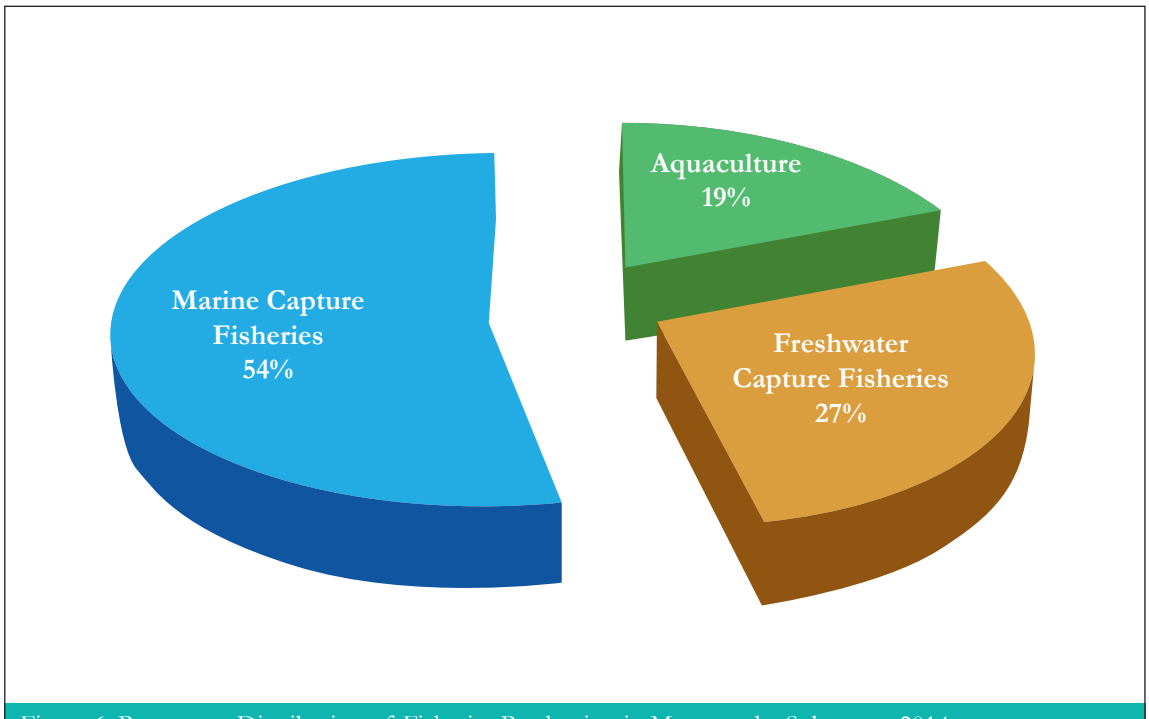

Figure 6. Percentage Distribution of Fisheries Production in Myanmar by Subsector, 2014

Section 3
NATURE AND STRUCTURE OF THE INDUSTRY

A. Value chain mapping

Freshwater capture fisheries in Myanmar are mostly rural artisanal activities catering to rural and urban markets. The sector provides an affordable source of animal protein, employment, and household income. It is, thus, a major support to food security and livelihood generation. While marine fish is oriented to the export market, almost 100% of the freshwater capture fish is geared for the domestic market.

As per the 2013 report from the Asian Development Bank Institute (ADBI) on Sustainable Fisheries Management and International Trade in Southeast Asia and the Pacific Region, the subsector employed about 1.6 million workers and of which 31% were fulltime employees and 19% worked part-time. The remaining 50% consisted of occasional workers. Men are traditionally involved in fishing and wholesale trading while women are engaged in net repair, processing, and vending in local retail markets. In Pyapon, there are a few women who are also engaged in fishing operations.

Pyapon is the commercial center of eastern Delta. The township is a hub for both the production and distribution of fresh and dried fish. The following are the major value chains in the Pyapon freshwater capture fisheries subsector:

1. Fresh fish for domestic market

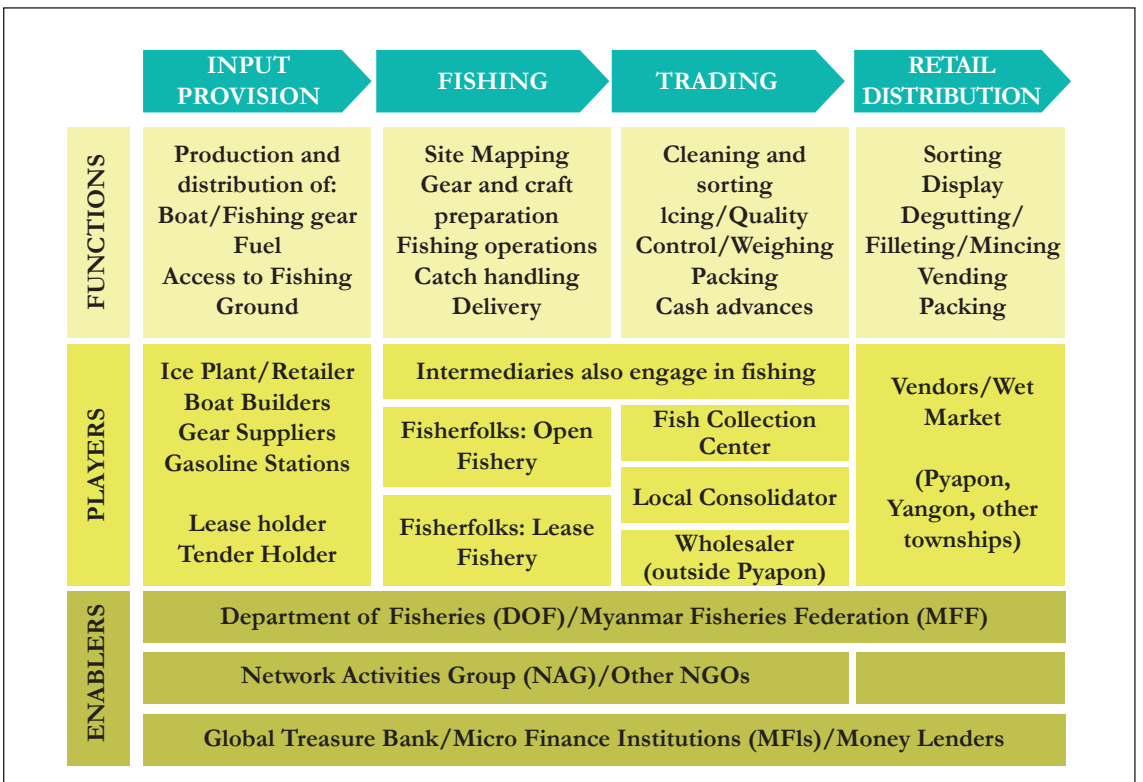

Figure 7. Value Chain Map: Fresh Fish for Local Market

A greater percentage of the freshwater fish from Pyapon are sold to end consumers in Yangon and the Dry Zone. Fishers directly deliver their catch to fish collection centers. Fish from the fish collection centers are sold to consolidators in the township. The consolidators distribute these to vendors within the township and/or deliver the fish to wholesale markets in Yangon and the Dry Zone. There are a few collection centers who sell directly at the wholesale markets in Yangon. Fish vendors in Yangon buy their stocks from the wholesale market. Freshwater fish are sold mainly to end consumers at the wet and street markets.

2. Processed Fish

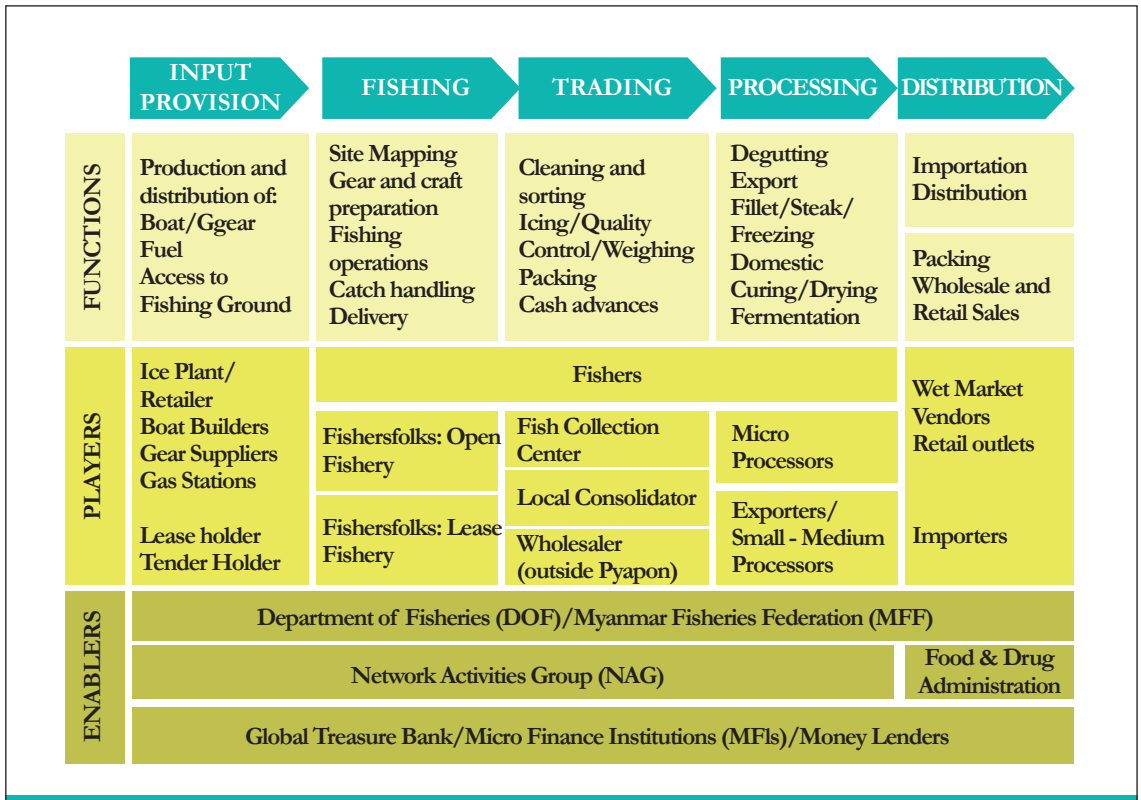

Figure 8. Value Chain Map: Processed Fish

Export oriented processing companies are based in Yangon. They source their supply of raw materials from the wholesalers. These companies usually sell to both domestic and local companies.

Artisanal processors in Pyapon source their fish from fishers and the fish collection centers. Oftentimes, these processors also have their own small boats. They usually sell their products to wholesalers and retailers in the dried fish section of the public market. Most of these processors are engaged in the production of dried fish, fish paste, and sauce.

Artisanal processing is also being carried out by vendors in the wet market. While waiting for customers, they mince a few quantities of their stocks especially the croakers and other freshwater fish with white meat.

B. Key players and functions

1. Input provision

Fishing Ground

Figure 9. Examples of Lease Fishery Sites

Source: Ranjitha Puskur, 2012/WorldFish

The following are the two means by which fishers can access inland water fishing grounds in Myanmar:

a) **Leasable Fisheries:** These are exclusive key fishing grounds which operate through the establishment of barrage fences around the lease area, which retains the fish as they grow on the floodplain food resources. The peak season involves capturing fish migrating off the floodplain at the beginning of river draw-down. Over the years, some of these lease fisheries have been developed into permanent water bodies through the construction of dams or dikes. The resulting fisheries in these waters are based on both naturally recruited and introduced stocks. In Pyapon, about 69 leasable fisheries sites have been awarded.

   A fishery is leased through a bidding process, and winning bidder has the sole right to harvest the fishery resources in demarcated "inns" for a period of nine years. Auction of available "inn" is done once a year. Within the period of nine years, the tender owner has to take care of the fishing ground and perform regular restocking especially during the flooding season so as not to be wholly dependent on natural recruitment. Tender owner stocks species of his/her choice.

Fishers, either individually or as a group, can access specific fishing grounds by paying license fees to leaseholders. Fees are paid twice a year: summer license which is good for 7 months and a rainy season license which is valid for 5 months. The license fee is generally paid one month after the fisher has started fishing. Payment of license fees may also be deducted from sales proceeds provided that fisher agrees to sell their catch to leaseholders or to fish collectors affiliated with tender owners. In this case, species that are not of commercial interest to the tender owner or fish collector may be sold to other traders or brought home for own consumption. Payment of license fees via deduction from sales proceeds makes it easy for fishers to access fishing grounds but, on the other hand, it also erodes their bargaining power and, in many cases, they are forced to be price takers. Anecdotal stories indicate that some leaseholders or their sub leaseholders do not allow fishers to fish during months when shrimps are abundant as they want to keep the shrimp harvest for themselves.

Production from lease fisheries in 2013-2014 comprised 22% of total production. While number of leasable fisheries decreased from 3,451 in 2009 to 3,290 in 2014, production

Table 4. Breakdown of Freshwater Capture Fisheries Production by Type of Access, 2009 - 2014

Type of Access	2009 - 10	2013 - 2014	% Change
Number of leasable fisheries	3,451	3,290	-5%
Production Volume	1,002,430	1,381,030	38%
Leasable Fisheries	237,460	304,440	28%
Open Fisheries	764,970	1,076,590	41%

Source: Department of Fisheries

volume increased by 28% over the same period.

b) **Open Fisheries:** These are fishing operations in areas outside of the 'inn' or leasable fisheries and reserved fisheries. The right to fish is licensed out by DOF. All fishing gears require a license. Large gears such as the stow nets are allocated by a tender. Fees depend on estimated production capacity and projected catch. The tender fisheries 'lots' are usually not operated by the winners of the tender but by sub tender holders at a negotiated price. The sub tender holder, in turn, can pass the actual stow net operations to fishers for a fee, which can be paid in cash installments or fish catch delivery at an agreed pricing scheme. About 107 tender lots have been awarded in Pyapon.

In 2014, open fisheries contributed 78% of the total fish production. Production in CY 2013/14 was 41% higher than in CY 2009/10. Majority of the small fishers are only able to access open fishing grounds using small gears. The general sentiment among fishers is that fishing grounds accessible to them are shrinking every year and getting further away from their homes. Leaseholders and tender lot holders, on the other hand, are complaining that small fishers illegally fish in their areas and, as such, they have been losing money for many years.

Fishing rights for mud crab capture are secured in two ways: (i) creek license which is shared by a group of 10 to 15 fishers; and b) tidal flat plain license which can only be bought individually.

Boats

The boat building industry in the Region has been the focus of intervention of development programs especially after the destruction caused by cyclone Nargis. In a program implemented by the Food and Agriculture Organization (FAO) and funded by the Government of Sweden in 2008, local boat builders and carpenters in Pyapon and other areas in the Delta Region were trained in high quality boat construction. A manual was also prepared on two simple wooden canoes (Bauk Tu and Gault Chun) of flat-bottomed construction, typical of the small multi-purpose boats found in the Ayeyarwady Region. Training in engine maintenance and repair was also provided. In 2010, ACTED Myanmar implemented a livelihood program which combined both boat training and distribution.

A long term benefit of the boat building program has been that many local boat builders were exposed to upgraded production techniques. The boat builders contracted by FAO shared their learnings with their peers and to all those who have been contracted by other NGOs as part of the relief assistance program.

Figure 10. Canoe Design Introduce by FAO in 2009

Source: FAO Manual Building Small Wooden Boats in Myanmar

Figure 11. Fishing Gear Wholesaler/Retailler in Yangon

Fishing gear

Most of the fishing gear materials in the Myanmar market are imported from Thailand by wholesalers based in Yangon and Pathein. Wholesalers sell both materials and ready to use fishing gear. A wholesaler usually has a small manufacturing plant with 5 to 10 workers specialized in the production of different nets. Many of the gear available in the market though lack the technical innovation that would allow greater and more appropriate selectivity of catch to reduce negative impacts on the environment. Price of fishing gear is affected by fluctuations in the exchange rate and the seasonal demand.

Fishers in Pyapon source their gear from another township as there are no distributors within the area. Many of them do not have the capacity to pay upfront for the gears. In most cases, they borrow from money lenders when gear replacement cannot be further postponed. To the extent possible, fishers try to extend the life of their gear through constant repair and improvisations.

For fishers who have opted to work with leaseholders and tender holders, gear may be provided by the latter. Although leaseholders and tender holders do not charge interest rate, the price paid for the catch is oftentimes lower than the prevailing market price.

The large diversity of target species in capture fisheries and their wide distribution requires a variety of fishing gear and methods for efficient harvest and stable income throughout the year. Many of the artisanal fishers use only one to two gear due to financial constraints and the lack of skills and know-how to use other gear.

Ice

Ice is readily available in the wholesale section of the Pyapon wet market which is also besides the port and fish landing site. Grinding of ice blocks and retail selling of ice are done in an open space. Aside from potentially high melting rate due to sun exposure, the ice blocks are vulnerable to contamination which can affect fish quality. Ice blocks are placed directly on the ground and manually lifted to an unprotected ice crusher. After grinding, the box of crushed ice is then delivered to the stall by the workers using a cart or by carrying it over their shoulders or backs. Workers do not use any protective clothing. A worker earns about 3000 kyats (US$ 3) per day.

The same situation and conditions can be observed among ice retailers located in landing sites for freshwater fish in Yangon. The most commonly utilized type of ice in fresh fish handling is the block ice. A block of ice of about 300 pounds is sold for 3,000 kyats (US$ 3).

Figure 12. Ice Supply in Landing Site/Port

Figure 13. Family-based Fishing Operation

2. Fishing

Freshwater fishers comprised 50% of the total number of fishers and fish farmers in Myanmar. Of the 1,583,000 freshwater fishers in 2013, about 31% were dependent solely on fishing for income while 19% were engaged in fishing on a part-time basis. Number of fishers slightly increased from 1,571,600 in 2008 to 1,397,000 in 2010 to 1,583,000 in 2013. In Pyapon, there are about 3,000 fishers. In most areas along the Pyapon River, there are limited opportunities for alternative employment leaving fisheries as the main employer in those rural communities

Table 5. Number of Fishers in Freshwater Capture Fisheries, 2010 to 2013

Categories	2010 - 2011	2011 - 2012	2012 - 2013	% Change 2013/10
Full Time	486,300.00	486,700.00	487,000.00	0.14%
Part Time	299,500.00	300,500.00	300,000.00	0.17%
Unspecified	785,800.00	794,000.00	796,000.00	1.30%
Total	1,571,600.00	1,581,200.00	1,583,000.00	0.73%

Source: Department of Fisheries

Figure 14. Woman Operating a Motorized Boat

Fishing is a male dominated activity in Pyapon but there appears to be a growing number of women who assist their husbands during the actual fishing operation. There are also a few women who operate the boats themselves. Based on interviews, women are more inclined to use motorized boats as these do not require too much strength during navigation. Women also help in the preparation of the gears especially the netting.

Daily fishing operation entails 6 to 9 hours. Depending on gears, fishing may be done by the owner himself or with the assistance of hired fishers. Payment to crews may be in the form of profit sharing or direct cash payment. A hired crew earns from 3,000 to 5,000 kyats (US$ 3 to 5) per day. Owner of the boat provides the meals during the fishing operation. Fishing may also be a family-based enterprise with family members as crews.

A wide range of fishing gears are used in freshwater capture fisheries depending on season, type of fish targeted, and tide. Fishers have preferences for certain fish (primarily due to the price it commands) but take any fish caught in the gear and few fish are discarded as inedible. For many of the fishers interviewed in the village, access to better gears is crucial to stabilizing their income throughout the year and in adopting better practices. Many of the fishers though are not so conscious on the implications of gear design on fishing productivity and on sustainability of their livelihoods. Table 6 describes the common fishing gears used by fishers in Pyapon.

Figure 15. Fence Net - One of the Gears that Require a License

Table 6. Common Gears in Freshwater Capture Fisheries

Gears	Month												Target Species	Comments
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
Fence Net Cost: US$ 180 – 200/set	■	■	■	■	■	■	■	■	■	■	■	■	Mango fish Freshwater shark Croaker Giant freshwater prawn	Day and night fishing; average of 9 hours per day; 2 crews May involve the clearing of mangroves; zero selectivity – small meshes used in the nets
Stow Net Cost: US$ 400/ 30 meters	■	■	■	■	■	■	■	■	■	■	■	■	Threadfin Wallago Croaker Sole GF Prawn Sea bass Dwarf catfish Shrimps	Less frequency of use during monsoon season; very small mesh size especially shrimp stow nets
Trammel Net Cost: US$ 13 – 15/net US$ 150/set	■			■	■	■			■	■	■	■	Hilsa Croaker Threadfin Toil Shad	Usually done during day; average of 6 hours/day; 2 crews Selectivity depending on mesh size especially innermost net and to some extent by vertical slack
Bottom Set Gill Net Cost: US$ 7 to 10/net US$ 70 to 100/set						■	■	■	■	■			Spiny eel Dwarf catfish Snakeskin gourami Climbing perch Snakehead	Day + night fishing; average of 12 hours per day; 10 to 15 crews Generally a passive gear; crucial factors that affect selectivity are mesh size and hanging ratio
Bottom Set Long Line Cost: US$ 10 to 15	■	■	■	■	■	■	■	■	■	■	■	■	Wallago Butter catfish Sea bass Pangasius	Day and night fishing; average of 10 hours per day; 1 crew Passive gear; quite high selectivity; can potentially provide high quality products CPUE can be low; may be expensive if catch levels are low; more for subsistence purpose
Beach Seine Net Cost: US$ 1,100 to 1,200/set	■	■	■	■	■	■	■	■	■	■	■	■	Croaker Pangasius Threadfin GF Prawn	Day and night fishing; average of 6 hours; 15 to 20 crews Risk of catching juvenile fishes if mesh size is small

Sources:
Key Informant Interviews
Field Guide on Common Fishing Gear (FAO/DOF)
Efficiencies of Seven Types of Fishing Gears in Ayeyarwady Region (Nant Thin Thin Kywe)

The most common holding container for fish catch is the plastic pail or at the bottom of the boat. Fishers generally do not use ice. The catch for the day are immediately delivered to fish collection centers.

In the four villages visited, it was reported that catch has declined. The declining fish catch is not only felt in smaller quantities caught but also in reduced sizes of fish. Fishers also recounted that fish seems to be not growing and reproducing as fast as they used to.

3. Trading

Excluding the vendors, there are about 50 fish intermediaries in Pyapon. The following are the key categories of intermediaries operating in Pyapon:

a) Fish collection center

The collection centers are located along the river bank making it very convenient for fishers to deliver their catch. Owners of the fish collection centers are predominantly male. Many of the collectors are linked to (sub) lease and (sub) tender holders. Fish collection owners may also be owners of wholesale fish enterprises. The Fishery Development Association (FDA) has set up a fish collection center with the assistance from the Network Activities Group (NAG). To date, NAG is assisting the group to forge direct linkages with buyers from Yangon and in making their operations financially viable.

A fish collector may have three to five centers spread out along the Pyapon River. The higher the number of collection centers, the greater is the probability of securing their supply as choice of buyer among fishers is determined not just based on price and indebtedness but also the distance from fishing ground especially with the increasing cost of fuel.

Payment of fish delivered to the collection center is on a cash basis. Upon delivery, fish is sorted, washed, chilled and boxed in insulated containers. The fish collection centers rely on ice and ice

Figure 16. Fishing Collection Center

Figure 17. Storage of Fish in the Collection Center

boxes for fish storage during the collection period. It usually takes three days before a fish collection center is able to collect sufficient volume (200 to 300 kg) of fish for delivery to brokers in Pyapon or Yangon. Level of food safety compliance in the collection center is better than in wholesale and retail markets in Pyapon but further upgrading can help them extend shelf life and improve product quality. Likewise, since fish from collection centers form the bulk of the supply base of freshwater fish exporters, improved implementation to food safety and quality standards would become increasingly important given the stringent requirements being demanded now by key export buyers of Myanmar products.

A fish collection center employs from 3 to 10 workers depending on scale of operation. A worker in a fish collection center earns about US$ 3 to 4 per day. Main tasks of workers involve receiving, cleaning, sorting, weighing, icing, and packing of fish. Workers acquire the skills through on-the-job training.

The fish collection center performs a vital role in linking the fishers to the market. They are also the source of information on price and market standards. In many cases, they also provide cash advances to their suppliers. These advances are deducted from the proceeds of fish delivered to the trader.

b) Consolidator/Brokers

Consolidators are specialized operators who buy fish from the fish collection centers and bring them to the landing sites in Yangon throughout the year. The consolidators also supply the Pyapon market. They set prices with the fish collectors depending on fish quality, supply situation, and daily fish market demand. The consolidators usually provide cash advances to the fish collection centers. Some of them are lease and tender holders.

c) Retail vendors

Fish selling is almost exclusively the domain of women in Pyapon. Women are especially active in the retail trade while men may dominate wholesaling activities. Likewise, the fish retail trade requires little capital to start and the profits are immediate.

Range of activities in fish retail vending includes weighing, gutting, cleaning or cutting a whole fish to the desired size or product form. Cleaning, gutting, and slicing are marketing tools employed by vendors to maintain the loyalty of regular clients and attract new customers. To increase their profit, they also undertake minimal processing such as preparation of minced fish in their stalls after the rush hours.

Vendors use little or no ice. During warm weather, the fish spoils very quickly, so most vendors must sell their fish as soon as possible even at reduced prices. Vendors have had no training on proper fish handling and enterprise management. They also have no access to facilities and services essential for the hygienic handling of fish, for the protection of health and wellbeing, and for ensuring consumer health. They have little formal education and from observing their work practices it is apparent that they lack information on basic sanitation and proper handling of fresh fish.

Pyapon is among the major trading centers for dried fish in the Delta Region. There is a section in the market where all kinds and types of dried fish are sold. Traders from Yangon and other townships source their stocks from this area.

In Pyapon and neighboring townships, fish processing is carried out by households and small enterprises. Processing of fish is a female dominated activity. Generally, they are involved in processing dried and fermented fish as well as fish sauce. The small enterprises employ about 5 to 15 workers depending on the volume of fish supply. Processing is carried out using indigenous technology and rudimentary facilities. Products are sold to Pyapon and Yangon wholesalers.

In the four coastal villages visited, processing is done mainly for household consumption and as a strategy to ensure availability of food when catch is low. NAG is assisting FDA in revitalizing its processing operations.

Figure 18. Preparation of Minced Fish in their Stalls

Figure 19. Hauling and Sorting of Fish at the Retail Market

Figure 20. Fish Vending at Retail Market

Export oriented companies are based in Yangon. The companies employ about 50 to 200 workers comprising mainly of women. The female workers are involved in filleting, gutting, heading, labeling, packing and cleaning in general. These are all activities that require meticulous vision and require smaller hands. Workers acquired their skills through hands-on training provided by the companies.

Many of the companies have made significant investment in making their companies compliant to Good Manufacturing Practices. Majority of the companies are producing preprocessed marine and freshwater fish products (whole frozen, fillet, steak cuts). Some companies have their own aquaculture farms to secure their supply of freshwater fish and facilitate compliance to food safety standards and traceability.

C. Nature of interfirm relationships

1. Horizontal relationships

Among private sector players, the main unifying body and driver of development initiatives in the fishery industry is the Myanmar Fisheries Federation (MFF). The creation of MFF was driven mainly by two factors:

- Pressure on Myanmar during the period of its accession to ASEAN to increase the representation of civil society in local and national administration
- Government policy to develop a market economy by encouraging private enterprise

Sectoral associations under the umbrella of the federation are the following:

- Myanmar Shrimp Association
- Myanmar Fish Farmers Association
- Myanmar Fishery Products Processors and Exporters Association
- Myanmar Aqua Feed Association
- Myanmar Marine Fisheries Association
- Myanmar Freshwater Capture Fisheries Association
- Myanmar Crab Entrepreneurs Association
- Eel Entrepreneurs Association
- Ornamental Fish Entrepreneurs Association

The following regional and state associations were also formed under the umbrella of the federation with the main objectives of facilitating the development of the fishery industry and promoting cooperation between and among fishery enterprises:

- Yangon Region Fisheries Federation
- Bago Region Fisheries Federation
- Ayeyarwady Region Fisheries Federation
- Mon State Fisheries Federation
- Kayin State Fisheries Federation
- Mandalay Region Fisheries Federation
- Rakhine State Fisheries Federation
- Taninthayi Region Fisheries Federation
- Sagaing Region Fisheries Federation
- Kayah State Fisheries Federation
- Kachin State Fisheries Federation
- Shan State Fisheries Federation
- Magway Region Fisheries Federation

As of August 31, 2013, the federation had 33,535 members. Support services provided to members include the following:

- Support applications of members to DOF to undertake fisheries and aquaculture activities
- Support loan application to Global Treasure Bank (formerly Livestock and Fisheries Bank)
- Policy advocacy/ Serve as the unified voice of the fisheries industry
- Facilitate access of members to training, technology, and resources to grow their businesses
- Expand and strengthen the marketing network of members and the fisheries industry as a whole
- Promote camaraderie and fellowship among and between the fishery enterprises

At the fishers' level, the LIFT Program, through its implementing partners Oxfam International and NAG, has facilitated the formation of the Fishery Development Association. The association is engaged in management of fishing grounds, fish collection, and processing.

In the four villages visited, fishers are generally interested to work together although they have had no experience yet in collective enterprise initiatives. Fishing households generally get to interact with each other through the monasteries which appear to be the centers of community life. Monasteries are still the centers of learning and can be essential partners in community development initiatives.

The traders tend to work in isolation with minimal cooperation between and among each other. With about 50 traders in the area, there is an intense competition for supply of fish. Many traders tend to compete based on cash advances and access to fishing grounds.

2. Vertical relationships and supply chain governance

The trade and marketing of fish is mediated by fish intermediaries who, in some cases, are also the leaseholders and tender holders. Leaseholders and tender holders who are also handling the trading operate like a vertically integrated chain in which they have control over the backward and the forward linkages of the chain. In such cases, the holders of the lease and tender determine or influence to a significant extent the overall character of the chain. Oftentimes, fishers are "price takers" and have to accept discounted price for their fish in exchange for access to fishing grounds and, sometimes, gears.

Marketing relationships between intermediaries and fishers engaged in open fishery (other than stow) are informal and characterized by the concept of personalized economic relations. The preferred supplier-buyer relations proliferated in efforts to find ways to minimize risks and vulnerabilities to opportunistic behavior and cheating (both trader and fisher). The depth of the relationship differs with each relation but, over time, repetitive transactions with the same person develop trust. On both sides, there is reduced search, negotiation, and monitoring costs because the supplier lives up to the norms and values of reciprocity and comes close to becoming part of the family mindset. The bonds between people engaged in exchange are determined by informal rules or social institutions and serve to enforce the terms of the exchange.

The preferred supplier-buyer relationships are often strengthened by the provision of credit. Fishers who sell their catch on a regular basis to one particular buyer are able to call on that buyer for loans for family emergencies and cash advances when catch is zero or very low. Since buyer knows on a regular basis the value of catch landed by a fisher to whom he/she extended loan, the buyer is in a position to collect on their debts. If the catch is poor, no deduction is made from the proceeds to repay the principal of the loan. The extension of loans is a way for buyers to ensure loyalty of suppliers and, consequently, their supply. However, price paid to fishers with debts is sometimes lower than prevailing market price to cover "cost of money" (interest rates). In a sense, buyers exert monopsonistic control over prices paid to fishers with debts. On the other hand, this informal credit mechanism enables fishers to continue operations even after a period of poor fishing.

3. Gender

The physical harvest of fish remains the domain of men while women are increasingly involved in pre- and post-harvest activities. Male dominance in fishing is due primarily to the degree of physical strength required especially for gears involving nets. Though less common, there are women in the villages who join their husbands during fishing operations and act as one of the crews. Women, however, usually assist in net construction and repair because of its association with sewing which is traditionally considered a female skill.

In the post-harvest sector, women's predominant role is in retail selling, which is equally important to ensuring that industry remains viable and profitable. Wholesale trading, on the other hand, is dominated by men. It is also the men who negotiate and sell their catch to intermediaries. For processing, women are engaged in artisanal processing while men are dominant in export oriented and industrialized processing.

Women are more likely to participate in activities and meetings conducted within the village or their work place than those conducted outside of the village. The general impression it seems is that discussions outside the village or their place of work involves matters outside of their spheres of activities, concerns, and knowledge. In general, men have better access to training and extension services.

D. Price and cost structure

1. Income and profit

Table 7. Indicative Costs and Returns Per Fishing Trip					
Particulars	Unit	Quantity	Unit Price (Kyat)	Total Amount (Kyat)	% Share to Total Expenses
Materials					
Fuel	liters	2	600	1,200	9.0%
Labour					
Food	meals	2	1,500	3,000	22.6%
Fisher Crew	person	2	3,500	7,000	52.8%
Others	person	1	500	500	3.8%
Maintenance and Depreciation					
Depreciation	Share /trip			1,250	9.4%
Maintenance	Share/trip			300	2.3%
License					
Gear License	Share/trip			15	0.1%
Total Expenses				**13,265**	**100%**

Income of Owner per Fishing Trip	
Average Catch per Fishing Trip	8 kilograms
Average Production Cost/Kilo	1,658 Kyats
Average Unit Price/Kilo	3,000 Kyats
Gross Sales	24,000 Kyats
Net Income (before tax)	10,735 Kyats
Profit Margin	45%
Input – Output Ratio	1.81
Source: Interviews	

Total expenses for a fishing operation involving two crews are estimated to be about 13,265 kyats (US$ 13.3). Variable costs comprise about 88% of the expenses. Total variable costs in a fishing operation depend essentially on the fishing effort. Fixed costs which primarily consist of allocated depreciation costs of gears and boat and license fees make up 22% of total expenses.

Inland capture fishery is a labour intensive enterprise. The labour and labour associated costs of the crew are the biggest cost items accounting for 79.2% of total expenses. Another upfront cost per fishing trip is fuel, which accounts for 9% of total expenses. As such, distance of fishing ground from their home and fishing ground to collection center is an important factor that impacts directly the profitability of a fishing operation.

Gross income of a boat and gear owner per fishing trip is about 45% of total sales. Based on interviews in 4 villages, boat and gear owners earn from 150,000 to 250,000 kyats (US$ 150 to 250) per month. Fishing crews earn from 60,000 to

120,000 kyats (US$ 60 to 120) per month. Income of fishing crews is more or less at the same level as factory workers at entry level positions.

Incomes of fishers have wide fluctuations according to price fluctuations, season, water conditions, and fish stock. During the recent years, a greater percentage of the catch is comprised of the medium to low value species and size of fish is becoming smaller. As per fishers interviewed, volume of catch is also declining. A recent study conducted by Dr. Khin Maung Swe of the Department of Zoology of the Dagon University indicated that average hilsa catch during the low season is about 0.32 kilogram per day. During peak season, catch can reach as high as 10 kilograms per day. The study also showed that, on the average, a fisher can earn a gross income (profit) of 5,973 kyats (US$ 5.97) per kilogram of hilsa during the peak season. The hilsa season appears to be also shorter during the recent years as compared to 5 years ago. According to DOF, average catch per month in 2013 was about 127,781 kilograms (multi-species). Based on an assumption of 3,000 fishers dependent on the Pyapon River for their livelihood, average catch per fisher was about 42.60 kilograms/month.

2. Relative Financial Position of Players

Table 8. Relative Financial Position of Players: One kilo of Freshwater Fish Sold in Wet Market

Players	Cost			Profit			Margin	
	Total Unit Cost	Added Unit Cost	% Added Unit Cost	Unit Price	Unit Profit	% Profit	Unit Margin	% to Price
Fisher	1,658	1,658	88%	3,000	1,342	55%	3,000	69%
Fish Collector/ Wholesaler	3,200	200	11%	3,800	600	24%	800	18%
Vendor	3,830	30	2%	4,350	520	21%	550	13%
Total		1,888	100%		2,462	100%	4,350	100%

Total value added costs in the trade of one kilogram of freshwater fish in the wet market is about 43% of the retail price. Fishing accounts for about 88% of the value added to the product. The fish collector has about 11% of the total value added in the fresh fish value chain. This value addition includes everything (icing/ preservation, storage, transportation, display and handling) that is needed to bring the fish from Pyapon to the Yangon wholesale market. The market vendor had the least share to total value added cost at 2%.

Profit comprises about 53% of the retail price. About 55% of the profit generated from trade of one kilogram of freshwater fish accrues to the fisher. Fish collection and retail selling earn about 24% and 21% share of the total profit, respectively. Improvement of fishing efficiency by, for example, controlling of postharvest losses and quality of catch could be critical in helping improve the distribution of benefits in the chain. Fishing absorbs about 69% of the overall value in the value chain. This, perhaps, explain why intermediaries have diversified into fishing by becoming lease and tender holders. The fish collection adds about 18% of the overall retail value. Retail selling contributes about 13% of the retail price.

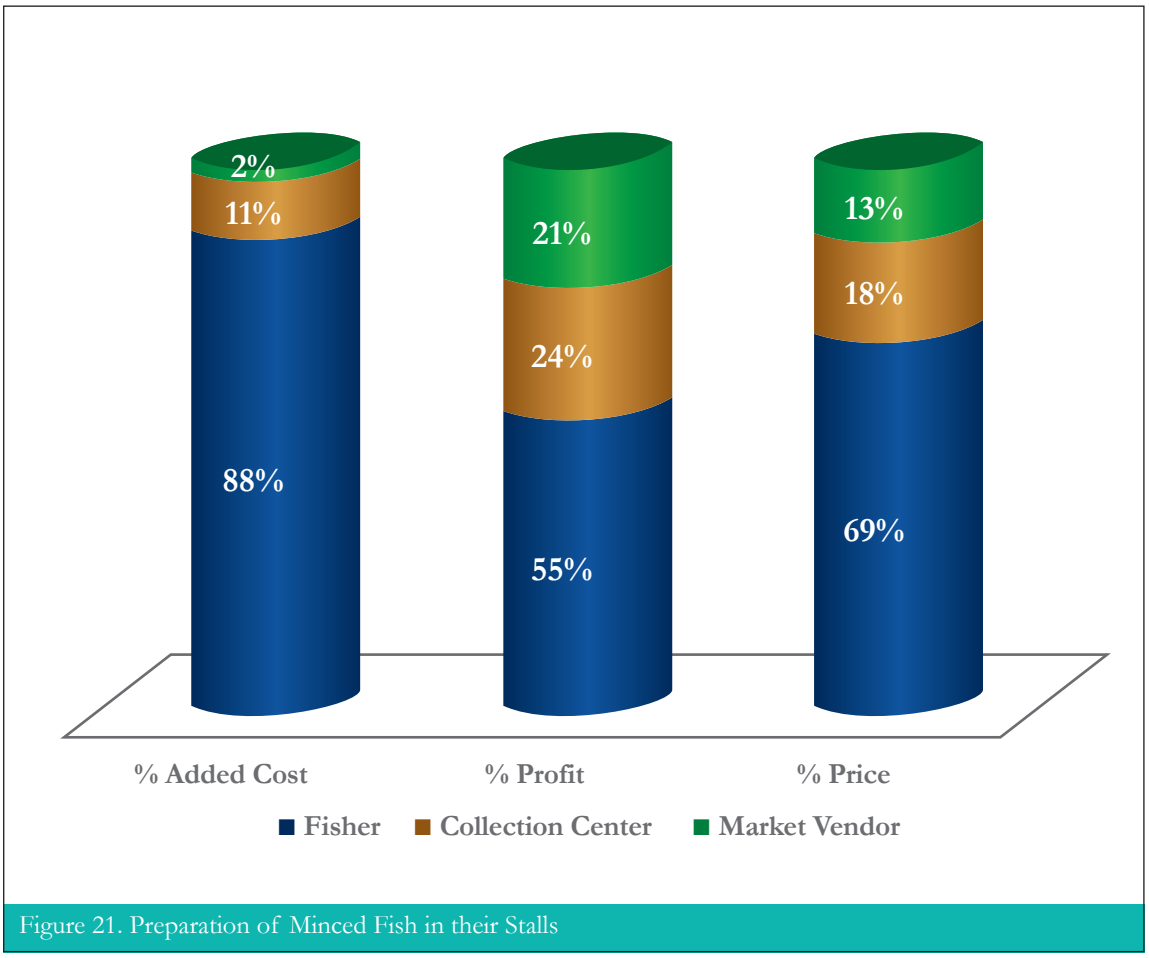

Figure 21. Preparation of Minced Fish in their Stalls

Section 4
MARKET TRENDS

A. Export market

Myanmar's fisheries sector has been the fourth largest contributor to the gross domestic product and also the fourth largest source of foreign exchange earnings in the past five years. In 2013, Myanmar exported a total of 345,000 MT of fish and fishery products to 32 countries with value of US$ 536.27 million. Exported volume was about 7% of the total 2013 fishery production.

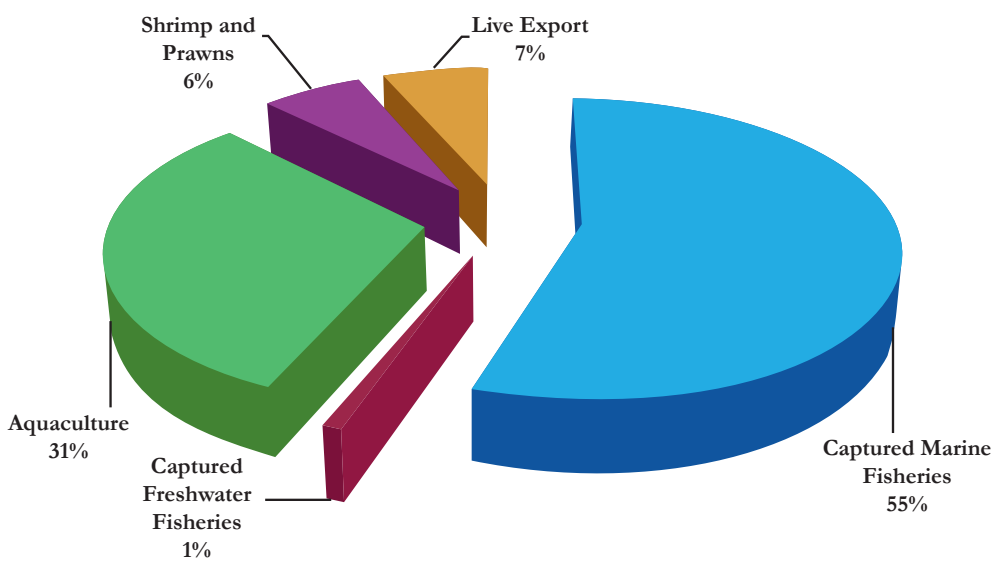

Figure 22. Breakdown of 2011 Fisheries Export Volume by Subsector

Based on 2011 data from the CBI/Myanmar Seafood Exports report, captured freshwater fish species comprised only 1% of the volume exported by Myanmar. Most of the freshwater fish exported were of the catfish species. Table 9 presents the main freshwater species exported in 2011.

Table 9. Main Captured Freshwater Fish Species Exported in 2011

Species	Export Volume (in MT)
Boal (catfish)	749
Ayer (Giant river catfish)	512
Moila	348
Shoil (Snakehead murrel)	258
Pabda (Butter catfish)	85
Chiring (Red eel goby)	80
Kiski (Coricasaborna)	77
Others	543
Total	2,643

Source: Myanmar Seafood Exports/CBI

In 2013, the country exported a total of 936 MT of frozen catfish worth US$ 1.012 million. Myanmar's share to total volume of world exports of catfish in 2013 was about 3%. The country was the 5th largest exporter of frozen catfish. Vietnam is the top supplier of frozen catfish globally.

Myanmar had the lowest price among the top 10 exporters of frozen catfish in 2013. At times, price of catfish in the local market is higher than the buying price in the export market. Some exporters of catfish have diversified into catfish aquaculture.

Table 10. Top Ten Exporters of Frozen Catfish in the World, 2013
Product: 030324 Frozen Catfish

Country	Volume (in MT)	Value (in Thousand US$)	Unit Price (US$/kg)
World	**28,827**	**54,350**	**1.89**
Viet Nam	15,623	26,350	1.69
China	4,442	10,311	2.32
Thailand	2,736	4,131	1.51
Indonesia	1,074	1,683	1.57
Myanmar	938	1,012	1.08
Netherlands	760	2,334	3.07
Belgium	590	1,674	2.84
India	585	671	1.15
Ecuador	384	458	1.19
Denmark	338	2,482	7.34

Source: Intracen

World imports of frozen catfish in 2013 reached 23,907 MT worth US$ 43.32 million. Top importer was Colombia followed by the Russian Federation. Russia is among the top markets of Vietnam for catfish. Other importers of catfish include the European Union, Cameroon, China, and Singapore.

Main export markets for Myanmar's catfish are China and Singapore. China's imports of frozen catfish increased from 672 MT in 2012 to 912 MT in 2014. On the other hand, imports of Singapore decreased slightly from 1,220 MT in 2012 to 1058 MT in 2013. Among the top importers of frozen catfish in 2013, Singapore had the lowest price at US$ 0.99 per kilogram followed by China at US$ 1.11.

Table 11. Top Importers of Frozen Catfish, 2013
Product: 030324 Frozen Catfish

Country	Volume (in MT)	Value (in Thousand US$)	Unit Price (US$/kg)
World	**43,317**	**23,907**	**1.81**
Colombia	11,161	6,525	1.71
Russian Federation	4,509	2,364	1.91
France	3,074	1,294	2.38
China	1,351	1,220	1.11
Singapore	1,050	1,058	0.99
Cameroon	2,102	1,010	2.08
Netherlands	1,946	935	2.08
Belgium	1,656	759	2.18
United Kingdom	1,650	728	2.27
Source: Intracen			

B. Domestic market

Since the majority of the households in Myanmar live along the four big rivers and in delta regions, the freshwater fish from the inland capture fisheries is a mainstay not only in the daily diet but also in trade. Myanmar households generally prefer freshwater fish to marine fish. According to FAO 2006 survey, fish account for about 22% of protein intake of Myanmar households. National average annual consumption of fish and fish products based on the same 2006 survey was 21.02 kilograms per capita. Inland species represented 31.5 % of fish consumption while marine species accounted for 23.5%. Fish paste (made of marine and freshwater fish) accounted for 45% of annual per capita fish consumption. Urban households eat more fresh fish than the rural populace. Dried fish are more accessible to rural households especially those in the dry zone than fresh fish. Freshwater fish is generally more expensive than marine fish species.

Section 5
SUPPORT MARKET

A. Financial services

1. The banking sector of Myanmar is made up of 4 state-owned banks and 21 semi-government and private banks. Based on the LIFT Study conducted in 2012 and the 2013 USAID funded study conducted by the Michigan State University and the Myanmar Development Resource Institute - Centre for Economic and Social Development (MDRI-CESD), only about 10% to 20% of the total population have access to formal financial services.

Table 12. Banks in Myanmar, 2014

State-Owned Banks	Semi-Government Banks	Private Banks
Myanmar Agricultural Development Bank (under Ministry of Agriculture)	Co-operative Bank (controlled by Ministry of Cooperatives)	Asia Green Development Bank (controlled by Htoo Group)
Myanmar Economic Bank (under Ministry of Finance)	Innwa Bank (controlled by Myanmar Economic Corporation, affiliated to Ministry of Defense)	Asia Yangon Bank (controlled by U Myo Paing)
Myanmar Foreign Trade Bank (under Ministry of Finance)	Microfinance Bank (controlled by Ministry of Cooperatives)	Ayeyarwady Bank (controlled by Max Myanmar Group)
Myanmar Investment and Commercial Bank (under Ministry of Finance)	Myanmar Citizen Bank (controlled by Ministry of Commerce)	First Private Bank (controlled by Public Ltd. Company)
	Myanmar Construction and Housing Development Bank (controlled by Ministry of Construction)	Global Treasure Bank (controlled by Livestock and Fisheries Associations)
	Myawaddy Bank (controlled by Union of Myanmar Economic Holding, affiliated to Ministry of Defense)	Kanbawza Bank (controlled by KBZ Group)
	Small and Medium Industrial Development Bank (controlled by Ministry of Industry)	Myanmar Apex Bank (controlled by Eden Group)
	Yadanabon Bank (controlled by Mandalay City Development Committee)	Myanmar Oriental Bank (controlled by 25 shareholders, Kyi Kyi Than being the major shareholder)

Table 12. Banks in Myanmar, 2014		
State-Owned Banks	**Semi-Government Banks**	**Private Banks**
	Yangon City Bank (controlled by Yangon City Development Committee)	Tun Foundation Bank (controlled by MGS Beverages Co., Ltd.)
		United Amara Bank (controlled by IGE Company)
		Yoma Bank (controlled by FMI Group)
	Banks that project can potentially work with to address constraints on access to financial services	
Source: GIZ 2013		

The Myanmar Economic Bank (MEB) is the country's largest bank in terms of outreach. MEB provides subsidized loans to other banks in order to enable them to serve specific target groups. The bank also facilitates and support trade activities in border areas.

The Myanmar Agriculture Development Bank (MADB) is the official financial services provider for rural enterprises. The bank offers a semblance of value chain financing with a focus on the rice sector. The types of loans extended by the bank can be divided into three categories: crop production loans, term loans, and development loans. Seasonal crop production loans cover major crops such as rice, groundnut, sesame, mustard, long cotton, jute, maize, sugar cane, and beans and pulses. The loans for the livestock and fisheries sector fall under the crop production loan. Crop production loans do not require collateral other than the collective liability of borrowers. Borrowers though must have saving deposits with the bank. To date, most of the borrowers in the fisheries sector are aquaculture enterprises. Term loans are extended to tea and coffee plantations. Development loans, on the other hand, are for the purchase of water pump sets, power tillers and tractors.

The Global Treasure Bank, which was formerly known as the Myanmar Livestock and Fisheries Development Bank (MLFDB), is a private bank operating within the framework of the Ministry of Livestock and Fisheries. It disburses loans to fish breeders, fish farmers, aquaculture entrepreneurs, and fishers, both inland and marine. Borrowers can be individuals as well as collective liability groups. Most of the bank's borrowers are aquaculture enterprises.

Generally, banks face the following challenges in providing finance to fishers and small enterprises in the fisheries sector:

a) High cost of funds to provide rural credit especially if the credits are uncollateralized

b) Challenges of verifying cash-flow records, credit history or financial capacity of small enterprises for banks to evaluate and mitigate lending risks

c) Nil or negligible cost benefit appeal to fund fragmented, small-holder and widely dispersed fishing businesses instead of other formal, well organized and more profitable businesses.

d) Lack of formal marketing contracts and collaterals to guarantee repayment

i) Limited understanding of the fishing sector to guide the development of financial products appropriate to the needs and cash flow of players

2. The UNDP Human Development Initiative has significantly contributed to the development of microfinance operations in Myanmar. In November 2011, the government adopted a new Microfinance Law. The new microfinance bill imposes maximum interest rate of 2.5% and minimum interest rate of 1.25% for micro savings (GIZ 2013). The bill also allows local and foreign investors to establish fully privately owned microfinance institutions (MFIs) and paved for the legalization of microfinance providers that were operating without any legal framework. The bill, however, has been pointed out by microfinance experts to contain the following flaws, which can undermine the development of a robust and vibrant market for financial services:

   - Low capital requirements for MFIs which led to the proliferation of small, weak, and undercapitalized providers. Between November 2011 and September 2013, a total of 166 organizations were granted licenses to operate a microfinance operations
   - Supervision is fragmented. Banks are under the supervision of the Central Bank of Myanmar (CBM), and cooperatives operating in the microfinance sector are under the control of the Ministry of Cooperatives. MFIs are supervised by the Microfinance Supervisory Enterprise, which also provides microcredit itself (Duflos et al. 2013).
   - Funding remains a key challenge for MFIs since they cannot tap re-financing from local and foreign financial institutions under the current rules and regulations. According to the United Nations Capital Development Fund (UNCDF), the demand for microfinance in Myanmar in 2013 was around USD 1 billion. The Microfinance Supervisory Enterprise reported in October 2013 that the total loan portfolio of the 116 licensed MFIs amounted to only USD 118 million. The financing gap is hence still wide with less than one-fifth of the potential loan market tapped (GIZ 2013).

There are a few MFIs who are working with fishing enterprises but current outreach is generally limited. LIFT, a multi-donor trust fund, provides funding to several MFIs. It works with the World Bank on the Financial Inclusion for National Development (FIND) project which will primarily support the Microfinance Supervisory Enterprise through capacity building for microfinance supervision, training of staff to perform supervisory functions, and financial literacy and awareness. It is also working with UNCDF on the MicroLead project, and on the Making Access Possible diagnostic of Myanmar.

Table 13. MFIs with some Links to the Fisheries Sector

MFI	Estimated No. of Borrowers	Aggregate Loan Porfolio	Geographic Coverage	Lending Methodology
PACT (UNDP)	400,000	$55,000,000	Ayeyarwady Delta, Dry Zone	Peer Group Lending
PACT (non-UNDP)	50,000	$2,000,000	Magway	Peer Group Lending
Save the Children/Dawn	20,000	$500,000	Yangon Division	Peer Group Lending
World Vision	10,000	$1,000,000	Yangon, Mandalay, Ayeyarwady	Peer Group Lending
Groupe de Recherche et d'Échanges Technologiques (GRET)	5,500	$500,000	Chin State	Village Credit

Source: 2013 USAID funded study on Rural Finance/ Michigan State University and MDRI-CESD

3. Pawnshops are among the more popular and accessible sources of credit among low-income individuals in the fishery sector. There are about 1,874 private owned pawnshops registered with the local government and 184 state-owned pawnshops. Collateral includes gold, jewelry, watches, and clothing. The loan value is usually equivalent to 50% to 65% of the forced-sale value of the item. For gold collateral, the loan can amount to up to two-thirds of the market value, and the monthly interest is set at 2-3% flat. For all other collaterals, the loan amount granted will be about 50% of the forced sale value of the item and the monthly interest rate is 15%.

   In Yangon, where license fee ranges from 5 to 20 million kyats, the repayment period is fixed by YCDC at four months and 10 days. In rural areas, the repayment period varies and license fee to operate a pawn shop ranges between 300,000 and 500,000 kyats.

4. For many of the resource poor small fishing vessel owners, the most accessible sources of production (e.g., for purchase and/or repair of gears and craft, operating capital especially after several days of low catch), consumption, and emergency loans (family member or when owner/crew gets sick) are the informal money lenders. Loans are available fast and when needed and mostly without the onerous collateral requirements of formal institutions. However, interest rate ranges from 5% to 20% and primarily depends on trust and social capital.

5. Fishing boat crews and workers in fishing enterprises generally depend on cash advances from employers to cope with emergency needs or to leave to their family while they are at sea. This undermines their bargaining position and puts them in a vicious cycle of debt. On the other hand, owners with limited capital carry the burden of providing credit which further constrains his/her ability to re-invest in the business.

6. Credit services flow from the downstream players who are at the top of the value chain to the upstream actors who are in lower rung. This has led to the dominance of "Patron-Client Relation" within the economy. The trader provides credit without any records and collaterals. Lending is normally for emergency purposes and for daily expenses when catch is low. Against these loans, the fishers pledge the first right over the catch to the trader. Many of the fishers are trying to escape the "sweet prison" by avoiding loans. Without loans, fishers can search for options to get a better price for their catch such as selling these themselves directly to households.
   The primary concern of traders is to secure regular and adequate supply of fish to satisfy their clientele and to ensure economies of scale. Some traders responded by investing in fishing assets and have these operated by fishers on a sharing basis. Others provide loans as a means of procuring fishes at competitive prices.

7. Based on various reports on financial inclusion in Myanmar, peer savings groups appear to be an informal financial tool although it seems to be not yet a practice among fishing communities. Peer savings networks are usually comprised of people from similar social networks, financial strata, and occupation. Table 15 presents some examples of peer saving groups in Myanmar documented by Proximity Designs in their report entitled Afford One, Eat Two.

Table 14. Examples of Peer Savings Groups in Myanmar

Group Type	No. of Members	Shares	Duration	Amount per Deposit Collection	Collection Frequency	Collection Process
Lashio Market Vendors	20	24	24 months	3,000 kyats (US$ 3)	Daily	Group Leader visits each market stall between 2pm and 4:30pm daily
Kalaw Street Vendors	60	93	15 months	5,000 kyats (US$ 5)	Every 5 days	During market day, (every 5th day) the group leader visits each shareholding vendor between 10am and 12 noon
Monywa Tuk Tuk Drivers	18	18	16.8 months	10,000 kyats (US$ 10)	Weekly	Group leader, who is also a tuk tuk driver, collects savings from member drivers every week at a convenient time for him.

Source: Afford One, Eat Two/Proximity Designs

B. Non-financial services

Players in the marine capture fishery industry access business development services through the following means:

1. **Informal:** Information, knowledge and advice are made available to fishers and other VC actors through social relationships. This could include information and advice on price, market and technology trends through social networks or mediation through traditional cultural mechanisms. An example of this is the informal on-the-job training provided by parents to their sons and daughters. The weakness though is that "elders" in the community are not generally aware of emerging good practices. On the other hand, they are very much knowledgeable on indigenous practices which are generally low-cost and environment friendly. Strengthening the capacity of recognized experts in the area would enrich the informal learning system.

2. **Embedded:** Services are provided within a buying or selling transaction, whereby the costs of the service provision form part of the overall cost calculation of the supplier, while the service user does not have to pay for service delivery. Embedded services are an added feature to the main business transaction.

   Example
   Fish Collection Center: Technical advice and guidance provided to fish suppliers on proper fish handling

3. **Fee-based services:** Services offered to enterprises as distinct services for which they pay a fee. Individuals and organizations offering services related to food safety and quality standards and occupational health and safety to fish processors/exporters in Myanmar are presented in Table 15. Processors and exporters though are more inclined to pay for services that will enable them to comply with EU and US export market requirements.

   According to the Business Development Services Market Assessment conducted by ILO in 2014, there are 5 to 6 private sector service providers in the area of entrepreneurship and small business management training services. Two of the training institutes, Myanmar Human Resources Management Institute and the Business Capacity Building Centre have recently started to offer Entrepreneurship and SME Management courses targeting medium-scale enterprises and youths seeking wage employment in the SME sector. The Centre for Vocational Training, ADRA, World Vision, and Mercy Corps also provide management training. Some microfinance providers offer training on basic book-keeping and financial literacy as part of their micro credit programs (ILO BDS Market Assessment).

Table 15. List of Identified Providers of Services related to Food Safety and Quality Standards and Occupational Health and Safety in Myanmar

Individual/Organization	Services
GlobalGroup Myanmar No. 146, 1st Floor, 47th Street, Botataung Township, Yangon, Myanmar	- ISO 9001 Quality Management Training & Assessment - ISO 22000 Food Safety Training & Assessment - Hazard Analysis Critical Control Points (HACCP) Training & Assessment - ISO 14001 Environmental Management Training and Assessment - OHSAS 18001 Occupational Health & Safety Training and Assessment - Good Manufacturing Practice (GMP) Training and Assessment
U Thein Htut	- ISO 9001 Quality Management Training & Assessment - Hazard Analysis Critical Control Points (HACCP) Training & Assessment - Good Manufacturing Practice (GMP) Training & Assessment
Advantages Co., Ltd.	- Good Manufacturing Practice (GMP) Training & Assessment

4. **Stand-alone Free Services:** These are generally provided by government agencies. The services are generally provided for free.

   Department of Fisheries (DOF)
   The DOF is responsible for the development of fishery sector and has the following key responsibilities:

   - Conservation and rehabilitation of fishery resources
   - Promotion of fisheries researches and surveys
   - Collection and compilation of fishery statistics and information
   - Extension services
   - Supervision of fishery sectors
   - Sustainability of fishery resources

Extension services which consist primarily of training are extended by the following training centers established by DOF:

- Gyogone Institute of Fishing Technology (Yangon Region)
- Pyapon Fisheries Training Center (Ayeyarwady Region)
- Upper Myanmar Fisheries Training Center (Sagaing Region)

In 2013-2014, forty fishery training courses were conducted on four topics, namely: Aquaculture, Fisheries Management, English and Computer Literacy, and China/ASEAN Market Access Requirements. The training had a total of 1206 participants.

Access to technical assistance and capacity building support for both DOF staff and players in the fishery sector is facilitated through partnerships with international development projects and programs.

Table 16. Training Courses Conducted by DOF Training Centers, 2013 - 2014

Course Title	No. of Sessions	No. of Participants	Geographic Areas Conducted
Aquaculture	33	944	Sagaing, Pyapon, Hlawgha
Fisheries Management	3	90	Gyogone, Sagaing, Pyapon
English and Computer Literacy	2	23	Gyogone, Sagaing
China/ASEAN Market Access Requirements	2	149	Gyogone

Source: Department of Fisheries

Table 17. Development Projects/Programs Implemented in Partnership with DOF

Project/Program	Funding Agency	Period	Area
Sustainable Small Scale Fisheries and Aquaculture Livelihood in Coastal Mangrove Ecosystem	FAO	June 2009 to 2014	Ayeyarwady Division
Small Scale Aquaculture Extension for Promotion of Livelihood of Rural Communities in Myanmar	JICA	2014 to 2018	Central Dry Zone
Bay of Bengal Large Marine Ecosystem Program (BOBLME)	World Bank, SIDA, NOAA, GEF, Norad	2010 to 2014	Coastal region of BOBLME member countries
Ayeyarwady Dolphin Research and Protected Area Management Plan	WCS	2007 to 2017	Areas along Ayeyarwady River in Mandalay and Sagaing Regions

Table 17. Development Projects/Programs Implemented in Partnership with DOF

Project/Program	Funding Agency	Period	Area
Capacity Building to Improve Market Access for Fish and Fishery Products	FAO	March 2012 to July 2014	Yangon Region
Improving Research and Development of Myanmar's Inland and Coastal Fisheries	ACIAR/World Fish Center	Dec 2012 to Nov 2016	Ayeyarwady Delta and Central Dry Zone
Chemical and Drug Residues in Fish and Fish Products in Southeast Asia	SEAFDEC/ Japanese Trust Fund	2013 to 2017	Tanintharyi Region and Rakhine State

Source: Department of Fisheries

Southeast Asian Fisheries Development Center (SEAFDEC)

The Southeast Asian Fisheries Development Center (SEAFDEC) is an autonomous inter-governmental body established in 1967. The mandate of SEAFDEC as endorsed by the 41st Meeting of the SEAFDEC Council is "to develop and manage the fisheries potential of the region by rational utilization of the resources for providing food security and safety to the people and alleviating poverty through transfer of new technologies, research and information dissemination activities".

SEAFDEC comprises 11 Member Countries: Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. The Center operates through the Secretariat located in Thailand and has four Technical Departments, namely: the Training Department (TD); the Marine Fisheries Research Department (MFRD); the Aquaculture Department (AQD); the Marine Fishery Resources Development and Management Department (MFRDMD); and the Inland Fishery Resources Development and Management Department (IFRDMD).

SEAFDEC conducts a wide range of training from technical aspects of fishing, fish handling, and sea safety for fishing vessels. Most of the training conducted by SEAFDEC in Myanmar was directed towards building the capacity of DOF to support the fishing sector.

Myanmar Consumers Union

The Myanmar Consumers Union is a non-profit organization and a member of Consumer International. The organization has been conducting awareness campaign on food safety during the recent years. The campaigns and training are conducted by volunteers.

Food and Drug Administration (FDA)/Department of Health

The FDA has been conducting training on food safety and Good Manufacturing Practices for various food establishments. Outreach, however, is limited due to resource constraints.

As can be seen above, government agencies take a lead role in the delivery of services. Historical experiences indicate that many of the publicly-funded support services experience pronounced financial constraints and inability to increase depth and breadth of outreach. It is common for service delivery to become dependent on external aid or government funding and to collapse when funding dries up.

Aside from the need to scale up access to extension services and resources needed to facilitate chain wide upgrading, it is equally important to facilitate the greater adoption of improved production and post-harvest practices among all players and workers in the chain. Demand for non-financial services does not exist in a form ready to be tapped. This implies the need to stimulate demand and acquisition of business development services and the subsequent application of new knowledge and skills gained in their day-to-day operations. Whether services are embedded or fee-based or even free, enterprises are more receptive to services with immediate impact on income. Resource poor enterprises are generally very risk averse resulting to low buy-in and low level of new technology and practices. It is, therefore, recommended that design and delivery of services should be linked with marketing/ market access and players' cash-flow schedules/ cycles, and demonstrations should be done to orient them on the benefits of technology vis-à-vis income generation potentials.

Section 6
ENABLING ENVIRONMENT

Below are the key issues that promote and/ or hinder the development of the freshwater capture fishery industry:

1. A review was conducted November 2011 on the Freshwater Fisheries Law (1991) by International Legal Consultant, Martin Tsamenyi, in behalf of FAO in the context of the Sustainable Small Scale Fisheries and Aquaculture Livelihoods in Coastal Mangrove Ecosystems project (GCP/MYA/010/ITA). The following were the key findings and recommendations that are relevant to the ILO Responsible Business Programme:

    - The Law was designed primarily to provide a framework for commercial exploitation of the fisheries and has very few modern responsible fisheries principles such as conservation and social considerations. This can be remedied by the incorporation of the principles enshrined in FAO Code of Conduct for Responsible Fisheries

    - The Freshwater Fisheries Law provided a basic framework, with the day-to-day management details to be filled in through subordinate legislation. Since 1992, only one set of Procedure, the Fresh Water Fisheries Procedure, was issued in July 1999. The content of the Procedure covered primarily procedures for application for the various categories of licenses, rights of lessees and licenses and financial matters. The lack of detailed implementing regulations can be addressed through the regular issuance of Procedures and Notifications on regular basis.

    - The introduction of comanagement can facilitate the effective implementation of existing sectoral legislation that requires policing and enforcement. Co-management will promote better identification of the user groups with the resource and, ultimately, a better conservation and compliance attitude.

2. Although there is still no provision in the Freshwater Fisheries Law or regulation/ directive that provide for fisheries co-management with communities, the LIFT project has been able to assist the communities in the Delta Region to gain access to designated parts of the fishery through the DOF declaring some tender fisheries areas as 'Special Management Areas (SMAs)'. This implies that the Freshwater Fisheries Law and all related notifications, directives, rules and regulations issued by DOF still apply but additional management measures may be introduced. Under this arrangement communities can be given exclusive rights to manage their fisheries resources within their village boundaries. The SMAs can be declared by the DOF to be governed by the communities with the assistance of and coordination from a project. (Annex A: Fisheries Working Paper, LIFT Project).

3. The demand for sustainable seafood is rising in developed countries like the United States and European Union. The imperative of moving towards more sustainable fishing practices that respect local ecosystems within broader landscapes is also increasingly becoming important in the light of climate change and pressure among consumers for buyers to be more accountable for social and environment responsibilities. To ensure that compliance to standards and market access requirements does not exclude artisanal fishers and micro businesses, reform in the delivery of extension services to facilitate compliance will require the adoption of a multi-provider model and market-based delivery mechanisms including partnerships with lead firms. Access to financial services and improved infrastructure are also important in complying with standards and sustainable production as a whole.

4. The Minimum Wage Act was passed in 2013, but to date, the minimum wage has not yet be been defined. The Act permits sector or industry minimum wages but it does not presuppose that approach. It could also be a single minimum wage, a metropolitan and rural minimum wage and other combination. According to the Act, the Myanmar government can implement a minimum wage index for different industries, which would be updated every two years.

   Myanmar has a range of laws related to labour; however, many of the laws are fragmented and outdated. While some are still applicable, the Government has commenced a reform program to update these laws to reflect changes in economic and work conditions in Myanmar. Positive improvements in work conditions can translate to increased productivity and, consequently, improved market competitiveness.

5. According to an article in a Guide to Doing Business in Myanmar (Volume 5/2013), employee turnover, especially at the entry level, is quite high in Myanmar. Pay is low and these positions require long hours of work. In an effort to reduce turnover, some companies in the fishing sector have begun offering long term employee recognition program and meal and transportation subsidies including training programs.

   The lack of vocational schools and providers in both the public and private sectors that offer training for food/fish handlers and workers in processing plants has contributed to the shortage of skilled workers and the marginalization of the labour force. Apprenticeship program seems to be also not a practice among companies and educational establishments. Since many of the working age population lack the necessary skills, they often have to start at the lowest rung of the employment ladder. Companies undertake the responsibility of training their workers.

Table 18. Average Monthly Pay of Workers in Myanmar, 2013

Position	Average Monthly Pay (US$)
Unskilled Labour (no experience)	70 - 120
Unskilled Labour (with experience)	120 - 320
Office Staff (no experience)	120 - 320
Office Staff (with experience)	200 – 500

Source: Sai Tip, The Labor Market in Myanmar (Guide to Doing Business in Myanmar (Volume 5/2013)

6. The Association of Southeast Asian Nations (ASEAN) and its six trading partners are targeting to sign this year the Regional Comprehensive Economic Partnership (RCEP), a free trade agreement that is expected to further open up new and bigger markets for local businesses. The end-goal of ASEAN economic integration is the full realization of an ASEAN Economic Community (AEC), wherein the region will be transformed "into a single market and production base, a highly competitive region, a region of equitable economic development, and a region fully integrated into the global economy." As such, when the AEC commences, it can be expected that the economies will aggressively open up given that barriers to trade – both tariff and non-tariff -- will be eliminated. Economies will be liberalized to achieve the goal of ASEAN becoming a single market and production base. On the other hand, this will increase competition among freshwater fish producing countries in the ASEAN region. This implies more than ever the need to improve price and market competitiveness of the freshwater fisheries sector in Myanmar.

Section 7
COMPETITIVENESS DIRECTIONS

A. Constraints and opportunities

To fully realize the economic potential of the freshwater capture fisheries subsector, there is a need to promote the broad-based responsibility for the sustainable harvest and marketing of fishery resources. There is a need to make livelihoods and employment more secure, so that the fishing communities themselves invest in improving the resource base and add to the value of the resources. Parallel to this, the industry needs to evolve from a predominantly domestic market orientation into one that supplies both domestic and export markets so as to promote greater opportunities for the generation of new employment opportunities, as well as, place pressure on the industry to comply with international standards that could also support a stronger adherence to decent work among inland fishing communities. For Myanmar to boost economic growth through fisheries, it must enter new markets and expand in its existing ones with high-quality fish products that meet international standards. Expansion of markets can most likely boost labour demand and facilitate the tightening of labour markets. A tightening of labour markets can generate competition for unskilled and semi-skilled labour which may result in higher wages and generally enhanced structural power for casual and seasonal wage workers. Larger scale and export oriented operations will likely create more jobs and pay more or provide better work conditions because of much lower proportion of costs as wages (economies of scale) and also because they may be more exposed to external scrutiny and potential reputational damage.

Table 19. Constraints and Opportunities

Opportunity	Constraint
Input Provision	
Improvement of skills and work conditions in ice distribution and retailing can contribute to reducing cross contamination, wastage, and improvement of chilling efficiency	Weak compliance to food safety standards and good labour practices in ice distribution and retail Dominance of workers that have had no access to proper training on OSH and hygienic handling of ice
Poor working conditions and unhygienic handling of ice can result in contamination, wastage and high production costs that negatively impact income generation capacities of players and workers. Unsafe ice will offset the preservative effect of the ice and can result to accelerated deterioration of fish quality. The precarious work conditions in the handling and distribution of ice pose safety risks and hazards to ice plant workers, users of ice, and the consumers. Implementation of occupational safety and health (OSH) can result in improved business performance and profitability among ice retailers in a number of different ways, including: - reducing sickness on-the-job - reducing costs associated with workplace accidents - reducing the costs associated with return-to-work processes	

Table 19. Constraints and Opportunities

Opportunity	Constraint
Input Provision	
- reducing labour costs associated with absenteeism and turnover - higher levels of employee productivity as a result of improved morale, motivation, commitment and/or engagement - more efficient work processes - better risk management - improving business reputation	
Improvement and modification of gears can contribute to fuel efficiency, safety, and in reducing overexploitation of inland water resources. SEAFDEC can be tapped to provide training of trainers in member countries	Lack of capacity among fishers to pay upfront for replacement gears Lack of awareness among gear suppliers and fabricators (including women) at the village level on current regulations of gears and evolving designs of gears aimed at improving selectivity Lack of valuation of tasks done by women related to gear fabrication, repair, and maintenance Lack of appreciation of cost benefits of complying with regulations on gears and on improving selectivity of gears

A common reaction to reduced catches is for fishers to reduce mesh sizes further. The fishing gears used tend to have small mesh sizes and are indiscriminate in the species targeted. Many of the fishers, gear suppliers, and fabricators at the village level are focused on development of gears aimed to increase production without careful consideration on its effects on fisheries resource base. This can be attributed to the lack of awareness on regulations on gears, low appreciation on the benefits of improving selectivity of gears, and limited exposure to technological developments focused on selective fishing and gears with less impact on the environment.

Purchase of gears almost always requires upfront payment. Most fishers do not have the financial resources to make significant lump sum investment nor access to formal financial institutions that can potentially lend them the money. In many cases, they approach informal money lenders who charge very high interest. This makes gear acquisition doubly expensive and increases pressure to increase intensity of production/harvest.

The activities of women in gear fabrication and/or repair are oftentimes either ignored or viewed as "supportive" or "insignificant" and their labour contributions seldom assigned monetary value. Lack of proper evaluation erodes their decision-making position. Women have significant influence on the behavior of family members and neighbors and this can be harnessed to promote adoption of eco-friendly gears.

Technical improvements in gears resulting in reductions in non-target catch can also contribute to improving downstream efficiency. It can, for example, reduce the time and efforts spent by women and men to sort the fish that has been caught.

Table 19. Constraints and Opportunities

Opportunity	Constraint
Fishing	
Sustainable fishing practices can help improve resilience to climate change resulting in increased productivity and better market access. Global buyers are increasingly sourcing only from suppliers certified to be sustainable. Traders and exporters have the strongest commercial incentive to ensure sustainable supply of fish to maintain operations at a profitable level.	Lack of access among fishers to services and resources that will enable them to adopt sustainable and climate smart fishing technologies Low appreciation on benefits of complying with sustainable fishing practices /Lack of business or enterprise management skills among fishers Weak implementation of occupational safety and health measures Limited utilization of women's ecological knowledge in fisheries management

The decline in catch both in terms of quantity and quality affects not only the fishers but all the players throughout the value chain including women employed in downstream processing and marketing. Avoiding and managing climate, environmental, and work risks are prerequisites for the industry to continue its upward trajectory. Healthy ecosystems and people are prerequisites for healthy fishing operations. The health of the inland water ecosystem drives value in two different ways: first, through the number of fish available for sustainable harvest, and second, through the relationship between this number and the costs required to find and harvest the fish. If the stock diminishes, there are less fish available to catch and fishing likely requires more effort in terms of travel to fishing grounds and time to search for fish. Similarly, climate change impacts contribute to endangering the livelihoods of women and men in the fisheries sectors and make them more vulnerable to climate-related hazards. In the medium term, non-compliance to sustainable and responsible fishing practices may exclude the participation of the industry in global value chains.

Women's knowledge of the inland ecosystem is an obvious asset in fisheries management but, to date has been underutilized. The organizational and collaborative abilities of women make them ideal partners in fisheries development and management initiatives. With some training and empowerment, women could participate in monitoring activities, particularly important in mitigating the impact of climate change. However, utmost consideration must be made that additional roles do not pose added work burden on women.

Current extension services/ service delivery modalities in the fisheries sector lack the depth and breadth of outreach. There is a lack of on-site providers to help fishers to improve their fishing practices. The indigenous knowledge of fishing communities can be gainfully integrated with modern scientific and technical know-how to evolve a package of sustainable fisheries management that will be acceptable and owned by fishers.

Many of the fishers lack the necessary skills and knowledge to manage their fishing operations as businesses. This lack of a business orientation can be attributed to the fact that many villagers are not self-driven entrepreneurs. Although not all are born to become entrepreneurs, acquisition of basic business management skills and the development of an entrepreneurial mindset among the growers will improve operations and profitability of fishing without compromising sustainability of inland water resources.

Poor working conditions have negative impacts on productivity. Injuries and illnesses affect the well-being of fishing families. Safety measures in artisanal fishing needs to be taken much more seriously and conscientiously. This calls for a break from the fatalism that is traditional in past and present generations of fishers.

Table 19. Constraints and Opportunities

Opportunity	Constraint
Trading	
Improving the ability of fishers and traders to comply with food safety standards can potentially increase supply for export marketing and reduce incidences of price reductions and postharvest losses Increasing chain wide operational efficiency reduces the cost of fishing and delivering fish through the supply chain, improving profit margins and thus improving the returns from fishing and trading as a whole for both women and men	Shortcoming in quality control and food safety practices and lack of knowledge in quality assurance among fish collection centers which limits their ability to also impose quality and food safety standards to their suppliers Lack of access to services and resources that will enable fishers and traders to comply with food safety standards and improve operational efficiency Limited understanding of issues relating to post-harvest storage and handling of fishery products

For Myanmar to boost economic growth through fisheries, it must enter new markets and expand in its existing ones with high-quality fish products that meet international standards. There has been an increased implementation of GMP and HACCP in processing plants especially among exporters. However, in many cases, these standards are not applied at the level of fishers/fishing crews, jetties/landing sites, and traders. Aside from the lack of know-how on food safety among fishers and intermediaries, absence of appropriate landing sites with basic facilities (shade, stainless sorting table and containers, etc.) also poses constraints in proper/safe handling of fish. For fishery products to pass the international food safety and quality standards, food safety compliance should start right at the time of harvest. The future of fish exports from Myanmar to developed countries will depend mainly on compliance with food safety standards, sustainable fishing, and other technical measures that are being made progressively more stringent by the major fish importing developed countries. Failure to meet these requirements can mean that fish can be banned from entering that market and a ban can mean that many people will lose business and jobs as a consequence. The lack of compliance to food safety standards among fishers and intermediaries can also mean being unable to participate in value chains that cater to markets outside of Myanmar.

The "all-in" procurement (flat price regardless of quality) practiced by intermediaries also does not provide sufficient incentives for players to upgrade practices and comply with food safety and quality standards. This practice contributes to the deterioration of quality of fish in two primary ways. First, it eliminates the possibility of using quality as a competitive strategy. Secondly, it fails to send price signals to players along the supply chain. Proper price signals would encourage production of quality fish.

Improving operational efficiency, quality, and sanitation in fish handling is critical to improving marketing opportunities as quality standards are becoming important requirements for trading fish across countries. Capacity building for all those involved in the value-chain is an important part of improving standards and quality.

Table 19. Constraints and Opportunities

Opportunity	Constraint
Processing	
Improved productivity can have a positive impact on the price competitiveness of processed fish products in the international market	High production cost due to low labour productivity and unstable power supply Lack of access to services that will help processing companies to improve OSH implementation and productivity
Given the high cost of power supply (due to dependence on generators), a short-term measure that fish processing companies can do to improve its price competitiveness is to significantly improve its productivity. Based on the 2013 McKinsey Global Institute Report, a worker in Myanmar adds only an average of US$ 1,500 of economic value in a year of work. Output per worker is only 70% of that in Vietnam in 2010, 20% of that in China and Thailand, and less than 15% of that in Malaysia. Myanmar's labour costs are comparatively low compared to Thailand and Vietnam, giving the country an opportunity to boost output in labour-intensive manufacturing sectors such as fish processing. Of particular relevance to artisanal processing companies especially those owned and operated by women is access to improved processing technologies that enhance efficiency, quality, and are safer to use. Likewise, low-cost measures to improve food safety of fish products produced by artisanal enterprises will enhance their competitiveness in the market and ensure safe food for their families and the consumers in general. Improving the capacity of artisanal and export oriented processing companies to implement measures to improve OSH in the workplace will contribute to improving productivity and the well-being of workers especially women who comprise majority of the workforce.	
Retail Distribution	
Clean and sanitary merchandising of fish can significantly help reduce postharvest losses and health hazards	Lack of access to services and infrastructure that will support the safe and hygienic handling and marketing of fishery products with female vendors the most affected
Areas for selling fish do not meet hygienically acceptable standards. This results not only in lower prices but also poses health hazards. There is limited understanding of the techniques and precautions needed to reduce the risk of sub-standard fish products, and the consequences of poor handling, both in terms of product value and that for human health. Current merchandising practices accelerate product deterioration and offer little assurance of food safety. There is a need to improve the range, scope and delivery of training and extension services in support of improvements to fish quality and food safety.	

Table 19. Constraints and Opportunities

Opportunity	Constraint
Enabling Environment	
A strong and effective Public-Private Partnership and harmonized understanding of standards will provide the platform to promote changes, innovations, and chain wide commitment towards building responsible fishery businesses	Inconsistent implementation and enforcement of standards (e.g., food safety, OSH) and regulations across all functions in the chain
Value chain upgrading is a collaborative undertaking. Because each attribute of the finished product originates from a particular point in the chain, the effectiveness of the entire supply chain is essential to the final product's success in the market. The lack of implementation measures on regulations and standards related to fisheries management, food safety and quality, OSH, and more importantly, the lack of awareness on existing standards and regulations make transactions less transparent while enabling some players in the chain to set their own standards securing an advantage in the producer-buyer relationship creating mistrust between value-chain participants. Therefore, establishing harmonized implementation measures on basic standards and regulations that govern the operations of fishery value chains will serve to both stimulate and facilitate improved market competitiveness and level the playing field within the value chain, which will benefit all players and help drive down costs.	
Pilots implemented and soon to be implemented by LIFT and DOF on co-management can potentially pave the way for the inclusion of a wider group of women and men in fishing communities in fisheries management Fishers in the same village know each other quite well and have had experiences of working together. Such 'natural–social constituents' can be harnessed to get them to work together	Existing fisheries management system stifles the development of a broad-based commitment to promote responsible fisheries Lack of adequate policy and legal frameworks to support co-management Weak capacity among fishers to organize themselves into structured groups/ Lack of experiences in formal organizational setting
The weak participation of majority of the players in the management of inland water resources has contributed to increasing incidence of unsustainable fishing practices and environmental degradation. Inclusion of fishing communities in fisheries management can strengthen governance infrastructure by creating responsible economic incentives for conservation and reducing the need for external enforcement. It should also, however, be recognized that for fishers to be effective partners of the government in co-managing inland water resources, there is a need for strong village-based organizations comprised by both women and men engaged in the fisheries industry. Fishers in the same village tend to help each other but there has been little initiatives to exploit opportunities with respect to bargaining power, access to credit and postharvest facilities, economies of scale, etc.	

B. Intervention Strategies and Approaches

Drawing on findings from the end markets and value chain analysis and the focal points of action identified by industry players and stakeholders, below are the proposed intervention strategies and approaches to improve market competitiveness of the freshwater capture fishery industry while simultaneously addressing constraints to decent work conditions and assuring the sustainability of freshwater resources.

Inputs

1. **Development of capacity of ice plants to provide training to their retailers on proper ice handling and OSH to ensure that ice supplied to intermediaries meets food safety and quality standards**

   a) Orientation and mentoring of ice plants on proper ice handling and OSH including assistance in formulating their capacity building program for their retailers. It is proposed that project provides an orientation to all interested ice plants in Pyapon and neighboring areas on proper ice handling and OSH but piloting of the retail and distribution capacity building program in Year 1 be done initially with 2 companies at the maximum. In-depth mentoring on OSH and proper ice handling will be provided to selected pilots.

   b) Development of training video materials and posters that ice plants can provide to their retailers. Program may provide initial supply of training materials and posters but subsequent replication should be borne by ice companies. Ice plants may also ask their retailers and distributors to pay for the materials at cost.

   c) Development of a recognition system (e.g. badges with ice plant branding) to signify that retailers have complied with the standards. It is suggested that the involvement of Consumer Union and Food and Drug Administration/ Department of Health, MFF, and DOF should be solicited in the development and implementation of the recognition system. The recognition system can be supported with a tri-media campaign to create awareness among vendors in wholesale and retail markets, consumers, and the ice supply chain.

   d) Assistance to one or two retailers to upgrade their stalls which can then be used as models. Program assistance may be in the form of counterpart funding for small equipment and protective gears for workers. It is proposed that stalls to be used as models should be located within the proximity of the landing sites/ wholesale market.

2. **Improvement of understanding of fishers of cost benefit of complying with regulations on gears parallel to improving their access to more efficient and selective types of fishing gears through skills upgrading of gear fabricators at the village level and promotion of linkages between suppliers of gear materials and fishing communities**

   a) Orientation of gear fabricators especially women and recognized expert fishers in Pyapon on more efficient and selective types of gears including presentation by suppliers of gear materials of their products and potential wholesale marketing arrangements

   b) Awareness and information campaign on cost benefits of using more efficient and selective gears which may be through demonstration and monitoring using control groups

   c) Village wide competitions in the development of more efficient and selective types of gears. Each entry should be made by both women and men. It is proposed that project provide the materials for the completion. Winning designs may be disseminated via posters and tarpaulins in strategic locations (e.g., landing sites, monasteries, fish collection centers).

d) Assistance to financial institutions and gear material suppliers including their retailers in the development of financing schemes aligned to cash flow of small fishing vessel owners. Project may also want to explore the Peer Savings Group mechanism particularly for materials that are not too expensive.

e) Explore the possibility of setting up a village-based enterprise managed by women which will specialize in the retail selling of gear materials, fabrication and repair of nets.

Fishing

3. **Development of local capacity to provide services that will enable fishers to adopt sustainable and climate smart fishing technologies and manage their fishing operations as sustainable businesses**

   a) Establishment of Village Learning Networks in the villages with facilitators (progressive female and male leaders in the villages) selected based on interest, experience, and leadership qualities. Facilitators will receive in-depth training on sustainable fishing, climate smart fishing technologies, sea safety/OSH, sustainable enterprise management, and gender sensitization. It is suggested that both husband and wife participate in the learning networks. Project support will consist of the following:

   - Adaptation of existing modules to Myanmar context and incorporation of behavior change interventions
   - Development of training system
   - Set of gears for hands-on training and which the group members may use on a rotating basis with portion of the catch allocated to cover costs (e.g., supplies, handouts, token for facilitators, etc.)
   - Training of facilitators
   - Organizational development support particularly during start-up phase

   b) Conduct of community level campaign on sustainable fishing and dissemination of success stories to evoke the desired behavior. This may be done in partnership with DOF, MFF, township administrators, and monasteries.

   c) Establishment of Fishery Resource Hub in monasteries and Fishery Training Center (Pyapon). This will primarily involve setting up a small area in the monastery where villagers can access copies of training materials, fishery references, gears from competitions, posters of their plans (from organizational development workshops), etc. Other support that project may provide in addition to IEC and reference materials would be a set of table and chairs, shelves, and boards.

Trading

4. **Upgrading of capacity of fish collection centers to act as mentors on basic food safety and proper fish handling to their suppliers and workers**

   a) Upgrading of capacity of Fisheries Training Center to provide training and mentoring support to the proposed Village Learning Networks and Fish Collection Centers on food safety and proper fish handling through trainors' training and provision of customized training modules and teaching aid materials.

   b) Development of capacity of two to three Fish Collection Centers to provide mentoring and coaching services to suppliers and workers. Project support may include:

   - Support in upgrading their operations to conform to minimum food safety requirements and OSH measures including provision of small equipment (sorting tables, clean containers, etc.)
   - Customization of training modules to fish collection operations and Myanmar context
   - Development of coaching and mentoring system
   - Mentoring during start-up of coaching sessions

Retail Distribution

5. **Improvement of access of vendors to services that would enable them to adopt better marketing practices parallel to ensuring that there are sufficient market-based incentives to facilitate upgrading**

   a) Training and development of a pool of providers consisting of progressive vendors/traders, market administration or market committee in Pyapon and the Myanmar Consumer Union.

   b) Adaptation of the existing training modules on the following topics to Myanmar context:

      - Food safety and quality (vending and intermediate processing)
      - Visual merchandising
      - Enterprise/financial management
      - Occupational safety and health

   c) Development and operationalization of training delivery and financial viability schemes. The following are the possible payment schemes to cover training costs (token/fees to trainors, supplies):

      - Cost of training (token/honorarium to trainers, supplies) bundled in stall payment for new entrants or payment for utilities for existing vendors
      - Minimal upfront fee + cost of training covered from mark-ups -- sale of packaging materials, apron, hair net, tables, etc.

   d) Upgrading of stalls/tables. This would involve the following interventions:

      - Assistance to fabricators in the design and development of low-cost tables and stalls that are visually appealing and compliant with food safety and OSH standards
      - To facilitate acquisition of upgraded stalls, the project may explore the following options: (i) Promote partnerships between companies that normally provide signage and tents as part of their marketing campaign (e.g., Oppo, Telenor, Coca-Cola, Myanmar Beer, etc.) and market administration; (ii) Forge linkages with banks and financial institutions; and (iii) Promote peer savings groups to facilitate purchase or upgrading of existing tables
      - Set-up of a model stall which will also be the venue for training

   e) Development of recognition system involving consumers and government agencies. This may be in a form of competitions (e.g., quarterly competition where consumers vote for "Clean and Safe Stall"). The recognition system should be supported with awareness campaign on food safety and OSH.

   f) Support to the conduct of a semi-annual or annual consumer feedback survey. The consumer feedback survey can serve a two-fold purpose: i) as basis for iterative planning; and ii) provide motivation for fish retailers to pursue and sustain upgrading. This may be done via a Dot Survey. It is simple but effective data collection method in which a limited number of questions are posted on an easel or board and consumers indicate their responses using colorful labels/dots. Results should be analyzed together with the retailers and other stakeholders. Positive results may be disseminated to the media to encourage other industry players to enroll in the upgrading initiative.

Processing

6. **Development of local capacity to commercially deliver productivity improvement program and related services to enterprises in the freshwater fisheries subsector with priority given to the processing companies**

   a) Training of providers and customization of modules to fishery and Myanmar contexts
   b) Technical assistance to MFF Yangon and universities in operationalization the deployment and of productivity program and related services
   c) Conduct of marketing campaign to stimulate demand for productivity program and related services

Enabling environment/interfirm relationship

7. **Development of a harmonized implementation measures of standards and regulations related to fisheries management, food safety and quality, and OSH in collaboration with MFF Pyapon**

   a) Participatory development of Implementation Measures/Emerging Good Practices on fisheries management, food safety and quality, and OSH

      - Technical assistance in the drafting and finalization of Emerging Good Practices
      - Organization of workshops and consultations to gather inputs and generate feedback
      - Support in getting the formal adoption of the Emerging Good Practices by industry stakeholders in Pyapon

   b) Conduct of campaign to disseminate Emerging Good Practices to all stakeholders. This may be done through forums and media publicity.

   c) Creation of an inter-institutional platform in Pyapon to strengthen knowledge sharing and coordinated actions including regular review of the Emerging Good Practices. Participants may include representatives of Pyapon freshwater fisheries subsector, MFF, township administration, donor agencies involved in freshwater fisheries related development programs, DOF, and other government agencies involved in the industry.

8. **Support the development of more inclusive and participatory forms of fisheries management that ensures environmental sustainability while allowing the fishery to meet social and economic goals**

   a) Facilitate the formation of one or two groups and provide organizational development support with a view of preparing them to pursue co-management of fishery resources
   b) Explore potential of supporting the groups to access fishery resources under a co-management scheme.
   c) Based on experiences, support the preparation of a policy paper on co-management in collaboration with LIFT Program

C. Proposed Action Plan

Table 20 describes the proposed sequencing of interventions and action plan designed to guide the project on the scope of interventions that can be potentially implemented in Year 1.

Table 20. Proposed Action Plan

Intervention	Month								Year 2
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Development of capacity of ice plants to provide training to their retailers and distributors on proper ice handling and OSH									
Orientation on proper handling of ice and OSH to all interested ice plants in Pyapon and neighboring areas									
Identification and selection of ice plant(s) to work with in piloting ice retailer capacity building program									
Development of video training materials and posters									
Mentoring of ice plants during start-up of capacity building program									
Development of recognition system									
Assistance to maximum 2 retailers in upgrading stalls to serve as models									
Dissemination of success stories									
Scaling up									
Improvement of access of fishers to more efficient and selective types of fishing gears									
Preliminary meeting and briefing/negotiations with gear suppliers									
Orientation of gear fabricators and fishers on more efficient and selective types of gears / presentation by suppliers of gear materials of their products									
Village wide competitions in the development of more efficient and selective types of gears.									
Dissemination of winning designs									
Development of financial products									
Explore the possibility of setting up a village-based enterprise managed by women which will specialize in the retail selling of gear materials, fabrication and repair of nets									

Table 20. Proposed Action Plan									
Intervention	**Month**								**Year 2**
	May	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
Development of local capacity to provide services that will enable fishers to adopt sustainable and climate smart fishing technologies and manage their fishing operations as sustainable businesses									
Selection of 2 pilot groups									
Organizational development support to selected groups									
Selection of learning facilitators									
Participatory development/adaptation of modules with learning facilitators									
Training of learning facilitators									
Mentoring during start-up implementation of learning sessions with pilot groups									
Development and implementation of campaign on sustainable fishing									
Establishment of Fishery Resource Hub									
Scaling up									
Upgrading of capacity of fish collection centers to act as mentors on basic food safety and proper fish handling to their suppliers and workers									
Customization of training modules									
Trainors' Training for staff of Fisheries Training Center									
Mentoring of staff of Fisheries Training Center in delivery of training for fish collectors									
Support to fish collection centers (pilots for delivery of coaching services to fishers and workers) in upgrading operations									
Development of coaching system/further customization of modules to Pyapon context									
Mentoring during start-up implementation of coaching sessions									
Dissemination of success stories									
Scaling up									

Table 20. Proposed Action Plan									
Intervention	**Month**								**Year 2**
	May	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
Improvement of access of vendors to services that would enable them to adopt better marketing practices									
Identification and selection of potential providers									
Adaptation of the existing training modules and development of training system									
Training of providers									
Assistance to fabricators in the design and development of low-cost tables and stalls that are visually appealing and compliant with food safety and OSH standards									
Development of schemes to facilitate stall upgrading									
Set-up of model stall									
Mentoring during start-up implementation of training									
Development and implementation of recognition system									
Conduct of a semi-annual or annual consumer feedback survey									
Replication/scaling up									
Development of local capacity to commercially deliver productivity improvement services to enterprises in the freshwater fisheries subsector									
Identification and selection of providers (Yangon)									
Customization of modules to fishery and Myanmar contexts									
Training of providers (Yangon)									
Assistance to MFF Yangon in the deployment and operationalization of services									
Conduct of marketing campaign to stimulate demand for services									
Explore market for services in Pyapon – can be potentially lodged with FTC or MFF(?)									
Scaling up									

Table 20. Proposed Action Plan									
Intervention	Month								Year 2
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Development of a harmonized implementation measures of standards and regulations related to fisheries management, food safety and quality, and OSH									
Preliminary draft of Emerging Good Practices									
Sensitization Workshop (inputs and feedback)									
Consultation Meeting with Stakeholders (including representatives of Yangon processors buying from Pyapon wholesalers)									
Presentation and secure approval of Emerging Good Practices									
Campaign to disseminate Emerging Good Practices to all stakeholders									
Creation of an inter-institutional platform to strengthen knowledge sharing and coordinated actions (Pyapon)									
Suppport the development of more inclusive and participatory forms of fisheries management that ensures environmental sustainability while allowing the fishery to meet social and economic goals									
Organizational development support to one or two groups (may be same group as in the Village Learning Network									
Explore potential of supporting the groups to access fishery resources under a co-management scheme.									
Policy paper on co-management scheme									

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