A STUDY TO UPGRADE THE LIFESTYLE OF FISHERMEN COMMUNITY IN MYANMAR

By

Pyone Mo Ei

THESIS

Submitted to
KDI school of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF PUBLIC POLICY

2010

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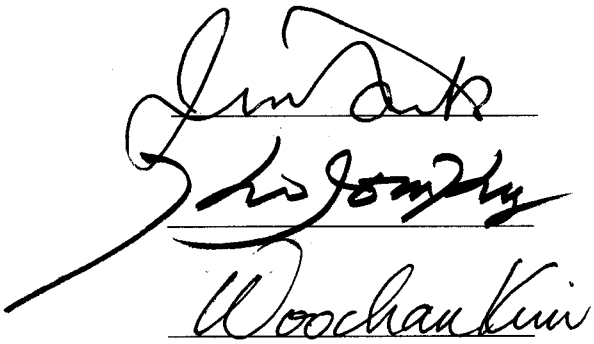

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ABSTRACT

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By

Pyone Mo Ei

Myanmar has plenty of natural resources and enough water resources. These precious resources perform well in country economy development. As a consequence annual growth rate of GDP is gradually increased year by year. Similarly fishery sector became sharply increased in finding the national income and support for the enough domestic consumption. The development of fishery sector has increased, however the rural communities depending on the fishery is still lag behind in development. This paper focuses on the development of lifestyle of this fishermen community in Myanmar. To give the transparency recommendations, a sample survey was implemented in the main fishery rural area and revealed the requirements and weak point of this rural community from this main fishery area. The major portions lags behind in development are education, social welfare and so on. The main objective of this study is to upgrade the lifestyle of rural fishermen community, exploring the weak points and their requirements through this study.

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First of all, I would like to give my special thanks to Korea International Cooperation Agency (KOICA) training center. I express thanks for supporting this scholarship program. Secondly, I would like to expand my thanks to Korea Development Institute (KDI) School for this wonderful academic year and treating us like their family. Thirdly, I am particularly indebted to Ministry of National Planning and Economic Development (MNPED) for this great opportunity. Ministry of Livestock and Fisheries must also be added in my acknowledgement. Without the provided information by the ministry, I can't imagine to complete my study.

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LIST OF ABBREVIATIONS

ALF	-	Academy of livestock and fishery science
BKD	-	Bee-keeping Division
DOLF	-	Directorate of Livestock and Fisheries
DOF	-	Department of Fisheries
EEZ	-	Exclusive Economic Zone
FAO	-	Food and Agriculture Organization
GDP	-	Gross Domestic Products
GPA	-	Global Programme of Action
LBVD	-	Livestock Breeding and Veterinary Department
LFME	-	Livestock, Feedstuff and Milk Products Enterprise
MDGs	-	Millennium Development Goals
MFF	-	Myanmar fisheries Federation
MIFAFF	-	Ministry of Food, Agriculture, Forestry and Fisheries
MLFDB	-	Myanmar livestock and fisheries development bank
MLF	-	Myanmar livestock Federation
MVC	-	Myanmar Veterinary Council
MVA	-	Myanmar Veterinary Association
PPS	-	Probability Proportional to Size
RS	-	Random Start
SRS	-	Simple Random Sampling
SI	-	Sampling Interval
UVS	-	University of Veterinary Science
VMS	-	Vessel Monitoring Systems

CHAPTER 1

INTRODUCTION

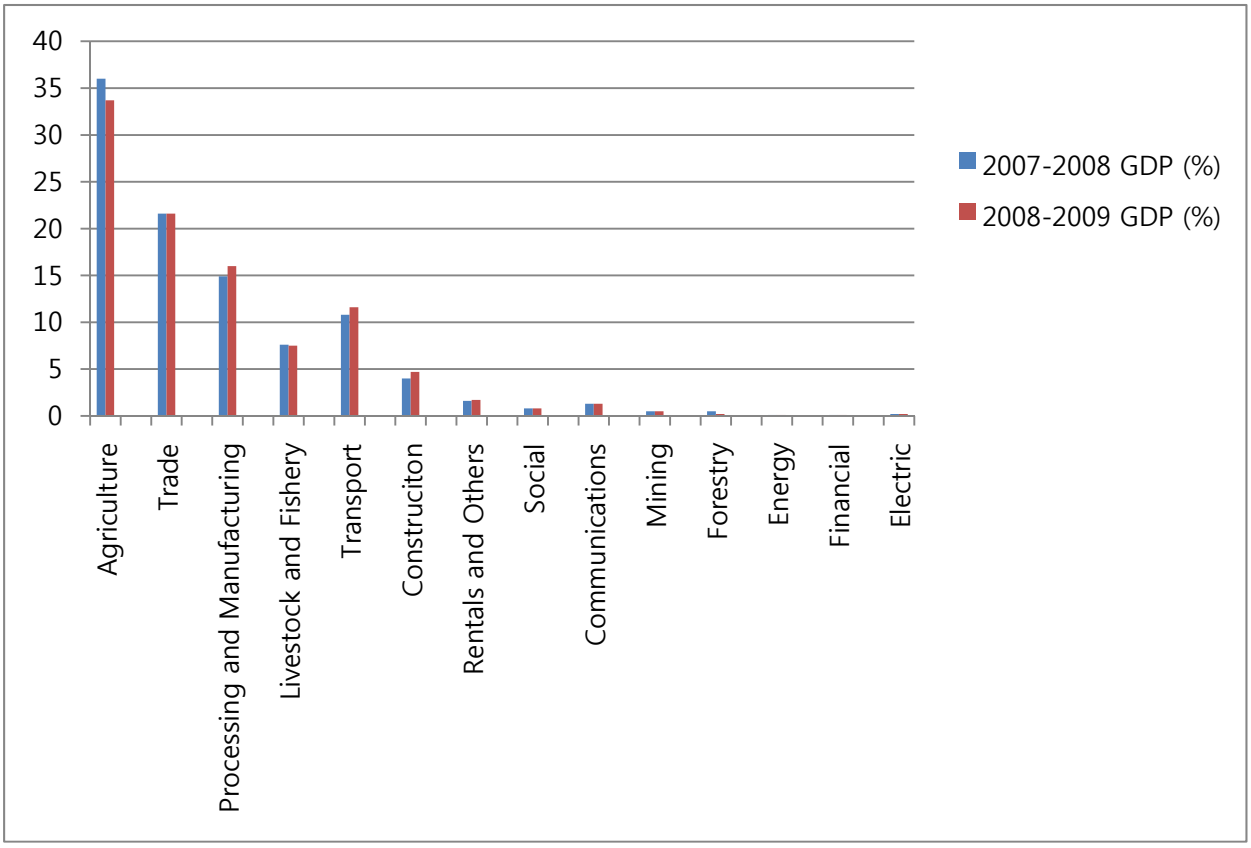
Myanmar is one of the agriculturally dependent countries, as she has adequate natural resources. In order to develop a country, natural resources as well as human resources are needed. Natural resources are given by nature and when combined with human force and their innovation, the result leads to the country development. Behind this development occurs the steady increase in social welfare and the living conditions of the citizen. In order to enhance the country development, these natural resources should be added with well-established policies.

Myanmar is enriched in arable agricultural lands, and fertile soil to cultivate various kinds of crops and vegetables. The sufficient land resources (total land area- 167,186 thousand acres) (CSO, 2008) and its fairly tropical monsoon weather are helpful to expand the agriculture sector. There are four main rivers flowing across Myanmar. Furthermore, other sub rivers, rivulet dams, reservoirs are dispersing around the country. All of these are sufficient enough to further the agriculture sector as well as the fishery sector.

The ratio of GDP includes three main components. These three components are goods, services and trade value. The former two includes other sub sectors such as agriculture, livestock and fishery sector, energy, electricity and so on. The following figure represents the GDP fulfillment by sectors for the years of 2007-2008 and 2008-2009. Owing to the data from Directorate of Livestock and Fisheries cited in Fishery Statistics (2008-2009) by Department of Fisheries (DOF), livestock and fishery sector perform as a fraction of country GDP development, with 7.6 percent in 2007-2008 and 7.5 percent in 2008-2009 respectively. Livestock and fishery sector provides more GDP percentage than the other sectors except agriculture, trade, processing and manufacturing, and transport sector. Therefore, it can be

said that livestock and fishery sector has become one of the important sectors in country economy development.

Figure 1.1 GDP Fulfillments by Sector



Source: Directorate of Livestock and Fisheries cited in Fishery Statistics (2008-2009)

This study is focused on the main players of livestock and fishery sector. The fishermen community consists of public servants, traditional fishermen, subsistence fishermen, the workers in aquaculture farms, cold store, etc. In this labor population, most of the people are working as workers on daily wages and contract workers. More detailed information will be provided in chapter 4 of this paper.

In this paper the chapters will proceed as follows. Chapter 1 is organized with introduction, literature review and research methods. Chapter 2 is composed of fishery sector in Myanmar. Chapter 3 describes fishermen community in Myanmar. Chapter 4 includes the

requirements and difficulties of Myanmar fishermen community. This chapter is conducted through the findings of a small sample survey and analyzing the roots of difficulties in fishermen community. Finally Chapter 5 ends this paper with recommendation and conclusion. This paper is expected to be regarded as a reflection of the status of fishermen community in Myanmar. By studying and analyzing the statistical data, it has revealed the requirements and necessities of the fishermen community in their daily life. After fulfilling their requirements, these workers can participate as a fraction of country economy development. This is the main idea of this paper.

1.1 Literature Review

This literature review covers with three portions. The first portion includes how fish and fish products are important for human beings. The second portion contains the advantage and disadvantage of using modern technologies in fishery industry and water resources management from depletion and overfish problem. Finally, this section concludes with the requirements of this community.

1.1.1 Basic and Essential role of Fish and Fish products

"Fish is highly nutritious, rich in micronutrients, minerals, essential fatty acids and proteins, and represents a valuable supplement to diets otherwise lacking essential vitamins and minerals." (FAO, 2007)

Water resources are renewable resources. In addition, fishery resources are also renewable. This results in the incline in the fishing industry. The state of world fisheries and aquaculture 2006 stated that the export value for fish and fish products had increased up to 16.5 billion in 1984 and to 75 billion in 2004 respectively. The rate showed the 51 percent growth compared to the rates which soared from 1994. Interestingly, these numbers pointed

out the fishery sector as a profitable business. On the other hand every citizen has a right to enjoy with water resources and fishing business of a country. These reasons demanded the fishery sector to play as a major role of the country economy development.

Let's move on to the current trend of people preferences. People preferences put a great effect on fishery sector "The need for simple meals that are ready to eat and easy to cook has thus become more important." (FAO, 2007) Due to the economic growth, people's income is also getting high. When their income has increased they have a wide variety of choices for their daily consumption. These choices consist of fish as well as other kinds of food. Besides the growth, people behavior and their life style have also changed.

Nowadays people are attempting to save time everywhere. In addition, the number of working women is relatively higher than the past decades. So, time is precious for human daily life. For their daily consumption, the status of being easy to cook and good for health has become their first priority. Fish can fulfill most of human requirements. Fish include enough proteins for human. It does not take time to cook. For those reasons, the consumption for fish has gradually risen. Per Capita consumption of fish in the world improved from 9.0 kg in 1961 to estimated 16.5 kg in 2003 (FAO, 2007). Depending on the human requirements and consumer preferences, the market trend is also changing. As a result the market for the fish and fish products is predicted to expand in the future.

In year 2001, United Nations Development Programme Millennium Development Goals, or MDGs, were designated. "Eradicate extreme poverty and hunger" is one of the goals from this program. To eradicate extreme poverty, people need income, and of course they need a job opportunity for their income. "Earth appears as a big blue ball from the space. Earth is the only planet in the solar system that has water. Nearly 70 percent of Earth's surface is covered by water" (Saddleback, 2008, p3). The fact that70 percent of earth is covered with water necessarily deduces that there are abundant and sufficient water resources

in the world. As already mentioned, water resources are generally taken to be renewable resources. Depending on these water resources, people can get an opportunity to do the business.

In order to achieve this goal, fishery sector can provide a particular way. The fishery sector can support three factors to achieve this goal. Firstly, fish and fishery products can provide humans with required proteins. Secondly, for this reason and consumer preferences, the market size for fishery sector has increased. As mentioned as before, the export trade value for the fish and fish products is increasing from time to time. If the market size grows, the benefit and profit from the fishery sector will also show an upward trend. Finally, due to the reason of renewable water resources and the market size of the fishery sector, people can create as many job opportunities as possible from the fishery sector. In these ways the fishery sector contributes the goal of "Eradicate extreme poverty and hunger" by earning the regular income from the fishing industry.

1.1.2 Technology in fishery sector and Water Resources Management

As a consequence of using modern technologies, in fishery sector can there be both advantage and disadvantage. The advantage is "Fishing technology developments are generally geared towards improving the efficiency and cost effectiveness of fishing activities or fish processing." (OECD, 2001, p117) Using the technologies in fishery industry can accelerate the fishing process to become active. However, by using these technologies, "These technologies increase the share of living marine resources that are potentially harvestable, and so have contributed to the overfishing of many fish stocks (OECD, 2001, p117)". Modern technology can necessarily lead to the problem of overfishing and depletion of fish stocks.

Nowadays, the number of the global population has steeply increased. In this current

year, the world population is estimated by the United State Census Bureau to be 6.8 billion. According to their expectation, in year 2050 the population will increase to 9.3 billion indeed (Infoplease, 2010). In fact, the consumption of fish and fish products has also increased. Surprisingly, the total world fisheries exporting are 131.1 million tonnes in the year 2000 and 141.6 million tonnes in the year 2005 accordingly. The total human consumption is 96.9 million tonnes in 2000 and 107.2 in 2005 respectively. The purpose of non-food use for fish and fish products are 34.2 million tonnes in 2000 and 34.4 million tonnes in 2005 according to the report of FAO in 2007. As a consequence of these factors, the percentage of exploiting and overfishing has increased. FAO monitored the fish stocks starting from 1974. According to these data the fish stocks were overexploited at 10 percent in 1974 and increased to the 25 percent from 1990 to present. This reason becomes a major challenge and threat to the fish stocks. That is the reason why all of the nations around the world pay attention to protect the fish stocks from depletion.

Here, another modern technology has been conducted in fishing industry: Vessel Monitoring System (VMS). According to the explanation from FAO regarding the VMS, in order to provide the fishing vessels with safely fishing activities, Vessel Monitoring System has been introduced, which is costly and mostly used by commercial fishing vessels. Each fishing vessel needs to register for VMS program. After registering, each vessel needs to install the VMS unit in their fishing vessel and this unit is in connection with the fishery monitoring agency. Depending on the allowable fishing species, the place of fishing for a particular fishing vessel is defined. After tracing from VMS unit, the monitoring agency can provide this fishing vessel with geographical information such as territorial boundaries, restricted areas and physical features. The fishing vessel can know their fishing vessel is operating in the allowable area or not. In addition through this system can support not only the vessel security but also the fishery workers' safety. Through this system can deter the

fishing vessels from illegal ways of fishing and the information from investigating the location of fishing vessels can also report the target area of fishing vessels. As a consequence, the monitoring agency can estimate if these vessels are working only for the allowable fish species or not. VMS can support the fishing industry to become effective. Currently, VMS program has been implemented in fourteen countries.

According to the (McGoodwinJames, 2001)"In their small-scale fishing communities the result can often reduce the abilities to purchase technologies that are badly needed for development, or which are merely needed for staying in business."

Under the small scale fishermen community includes the traditional fishermen and subsistence fishermen. The same author pointed out "Nearly 95 % of the world's fishers are small-scale fishers" (Safina, 1995 cited in McGoodwinJames, 2001). Lack of technology can increase the number of small scale fishery workers. As similarly as before, the number of daily workers can also increase, resulting from this lack of technology.

The same author (McGoodwinJames, 2001) highlighted that education is one of the lacking variables in this society. If this education variable is not working, other variables could not work well such as lack of knowledge and difficult to communicate with surrounding. That is the reason why education is the essential indicator to develop these societies.

1.2 Research Methods

The principal objective of this survey conducted was to study the economic status and requirements of fishermen community. Among the fishery areas in Myanmar, one of the major fishing regions; Ayeyarwady Division was selected as main domain area. Then according to the suggested from the authorize person of Department of Fisheries (DoF), Daw Nyein village tract in Phyar Pone township was a typical fishing village tract. To select a sample of fishermen's households in Daw Nyein village tract, two-stage probability proportional to size (PPS) sampling design with villages as first-stage units and fishermen's household in the village as second-stage units was adopted.

There were seven villages in Daw Nyein village tract. The required sampling frame was obtained from township administrative department of Phyar Pone twonship. Since village were large and differ considerably in the number of fishermen's households in the village, it was desirable to select them PPS sampling, size being the number of fishermen's households in the village. A sample of 5 villages was selected PPS, with replacement. From each selected village, a selection of 3 percent of fishermen's households was selected as a second stage of PPS. After selecting the household sample size for each village, the households are chosen with simple random sampling (SRS), without replacement. A total of 100 sample fishermen's households were selected. The sampling design and detail calculations were shown in Appendix A. An interview of these sample households was conducted using questionnaires and these questionnaires are attached in appendix B.

Through this process, the secondary research materials and sources are taken from published books, electronic databases and reputable research sources such as FAO Fishery Statistic. This study also includes international fishery industries websites such as National Federation of Fisheries Cooperatives and the Ministry for Food, Agriculture, Forestry and Fishery. For the Myanmar fishery industry, all of the data are taken from the official

publications, documents, CDs, and websites, the data of which are published from the related ministries.

CHAPTER 2

FISHERY SECTOR IN MYANMAR

2.1 Geographical Background

2.1.1 Basic Topography Facts

The Union of Myanmar is situated in Southeast Asia. The bordering country in the north and northeast portion is the People's Republic of China, while the Lao People's Democratic Republic and the Kingdom of Thailand are in the east and southeast respectively. Whereas the Andaman Sea and Bay of Bengal are located in the south of Myanmar, the People's Republic of Bangladesh and the Republic of India are located in the west. These mentioned topography facts are shown in figure 2.1. The area of Myanmar is 261,228 square miles (677,000 square kilometers) (CSO, 2008). This area can be divided into three portions. These portions are the western hill region, the central valley region and the eastern hill region. Seven states and seven divisions are located and composed in these three regions. As for the population in Myanmar, in the period of year 2007-2008, the total population is 57.50 million with an annual growth rate of 1.75 percent. The population for males is 28.58 million and that of females is 28.92 million (CSO, 2008).

Myanmar has three main seasons. These are the hot season, the rainy season and the cold season. The hot season runs from March to mid-May, the rainy season runs from the end of the hot season to October. The cold season runs from November to February. Myanmar does not have the extremely cold and hot weather. Usually Myanmar has a tropical monsoon climate.

Figure 2.1: Union of Myanmar

Source: Myanmar Fishery Statistics 2008-2009

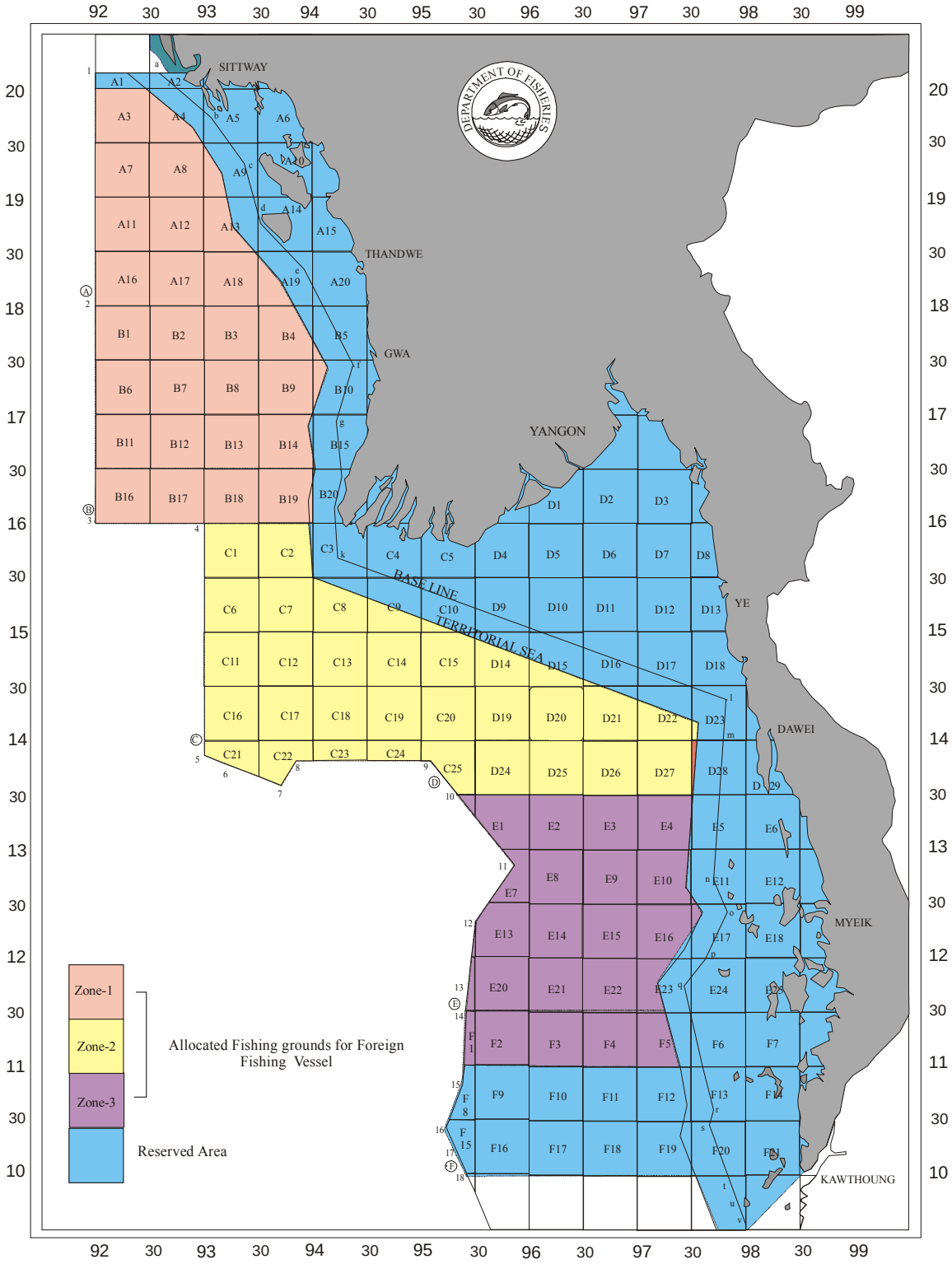
2.1.2 Geographical Circumstances for Fishery Industry

Myanmar has sufficient land and water resources, all of which are suitable for livestock and fishing industry. The vast amounts of water resources give strongly encouragement to the development of the fishing industry. This chapter will briefly introduce the basic water resources and participants of the fishing industry in Myanmar. The detailed functions, procedures and policies are described in the following chapters.

In order to illustrate the Myanmar fishing industry, the functions from Ministry of Livestock and Fisheries cannot be ignored in the fishing industry process. In year 2008-2009 DOF the Fishery Statistics book was published. After studying this Fishery Statistics (2008-2009) the following explanations of this chapter can be taken into account to show the readers how Myanmar fishing industry is doing. The coastal line of Myanmar started from the estuary of Naaf river to the Kawthaung. The length of coast line is approximately 1385 miles (2832 kilometers). The continental shelf is 228,781 sq kilometer from the base line. The sovereign right for Myanmar is 12 nautical miles from the base line and the Exclusive Economic Zone (EEZ[1]) is 200 perpendicular nautical miles from the base line to sea. The total fishing area is 486,000 sq kilometers including EEZ. Myanmar defines the continental shelf form the shore line until base line. Inshore fishing is allowed for citizens from the base line to the territorial sea. Offshore fishing for foreign fishing vessels are allowed from the territorial sea until EEZ area. The following figure shows the Myanmar coastal line and the fishing zone area.

[1] EEZ is defined for each country to manage their water resources. The distance for the EEZ is 200 nautical mile from the baseline to the sea. The coastal state has right to manage all of living and non living water resources within this limited area. (Oxford companion to ships and the sea, 2006)

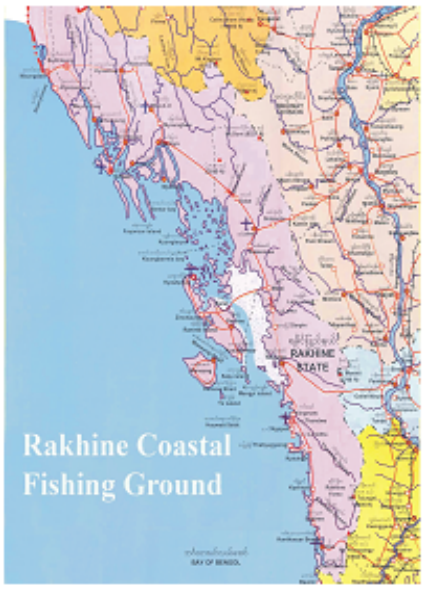
Figure 2.2 Myanmar Coastal Area and Fishing Zone



Source: Fishery Statistics 2008-2009

Alongside of this coastal area, one state and two divisions are located. According to the Myanmar Fishery statistics this coastal line can be divided into three parts for fishing ground. These are the Rakhine fishing ground, **Ayeyarwady** fishing ground and Tanintharyi fishing ground. These three fishing grounds are existed in Rakhine state, **Ayeyarwady** Division and Tanintharyi Division. In the above figure, zone 1 represents the Rakhine fishing area, zone 2 represents the **Ayeyarwady** fishing ground and finally zone 3 stands for the Tanintharyi fishing zone.

Figure 2.3 Rakhine Fishing Ground



Source: Fishery Statistics (2008-2009)

i. **Rakhine Fishing Ground**

The Rakhine fishing ground is located in the eastern portion of Myanmar. The length for this coastal line starts from Naaf River to Mawdin point and the covered area is 56,790 sq km.

Figure 2.4 Ayeyarwady Fishing Ground

Source: Fishery Statistics (2008-2009)

ii. **Ayeyarwady Fishing Ground**

This fishing ground is located in the Ayeyarwaddy region, the southern portion of Myanmar. The delta area of Ayeyarwaddy fishing ground is 152,038 sq km. Main rivers such as Ayeyarwady river, Sittaung River and Than Lwin River, flow down into the Ayeyarwady delta region.

iii. **Tanintharyi Fishing Ground**

Figure 2.5 Tanintharyi Fishing Ground

Source: Fishery Statisics (2008-2009)

This fishing ground is located in the south portion of Myanmar and covers from the south of Mottama up to the estuary of Pachan River. The main length of coast is 1200 km. This fishing ground consists of 800 islands, covering the area of about 181392 sq km.

These three fishing grounds are located beside the coastal area zone and helpful for marine fishery production development and the rural populations around these fishing grounds are highly dependent on the fishing industry.

2.1.3 Types of Fisheries

The fishing industry basically covers with two types of fisheries. These are Marine Fishery and Inland Fishery. Marine fishery includes inshore and offshore fisheries. Inland fishery also contains leasable fisheries, open fisheries and aquaculture fisheries. In 1954 aquaculture started in Myanmar. Aquaculture is farming fish, encouraging the fresh water fish and commercial fish seeds production. These aquaculture fish ponds are situated around the whole country and the total area of aquaculture ponds is mentioned in fishery statistic 2008-2009 and is 440779 acres in year 2008-09. Currently the paddy fish cum culture has become pervasive among the farmers and in 2007 there were 13,122 acres of paddy fish farm around the states and divisions.

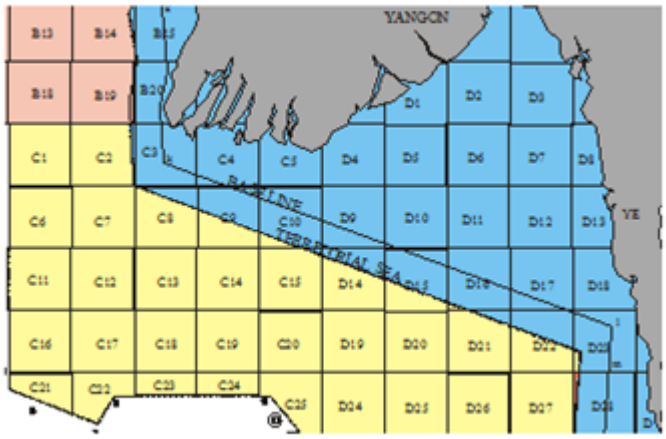
Inland fisheries are located in four main rivers, namely the Ayeyarwady River, Chin Dwin River, Sittaung River and Than Lwin River. The data from Myanmar Fishery Statistics (2008-2009) including natural lakes, ponds, sub-rivers etc. inland waters cover 8.2 million

hectares (82000 sq km) in which 1.3 million hectares (13000 sq km) is permanent and the remaining portion is a seasonally inundated flood plain area. Over this tremendous inland water body leasable fisheries, open fisheries and aquaculture fisheries are growing well.

Leasable fishery is being conducted on a natural flood plain. The working area is defined by DoF. DoF allows individual or groups to access the leasable fishery and access control with a license. They have a chance to land the fishery resources in their boundary area during the appropriate period. Open fishery is the process of catching fresh water fish in streams, ponds and rivers.

Inshore and offshore fisheries are considered in the marine fisheries. Inshore fishing boats can operate from the shoreline to 5 nautical miles in the northern area and 10 nautical miles in the southern area. Offshore fishery area starts from the end of the inshore fishery area to Exclusive Economic Zone EEZ. The limitations of the inshore and offshore fishery are as follows: In the case of inshore fishery, they allow both traditional and commercial fishing vessels with less than 30 feet and 12 horsepower (HP) engine. For the offshore fisheries, they allow the fishing vessels with more than 30 feet and 12 HP engine. Figure 2.7 can help the readers for clear understanding. From the shore line (the beginning of blue color) until the territorial sea is the area for inshore fishing industry. Traditional fishermen and the national fishing vessels have the rights to do the business in this defined area. However, the traditional fishing boat (non-powered) can only operate until the base line. Non-powered boats can face with the difficulty over the base line area due to the weather conditions, less technology materials and

Figure 2.6: Inshore and Offshore Fishing Industry



Source: Fishery Statistics (2008-2009)

the non-powered engine boats. The national fishing vessels (power boats) can work until the territorial sea line. Offshore fishing industry is allowed from the territorial sea line until EEZ. Generally, the fishing gears for the inshore fisheries are drift net, gill net and long line. For the marine fishery industries, it is allowable to use the trawl net and purse seine.

2.2 Policy Implementation by Ministry of Livestock and Fishery

The Ministry of livestock and fisheries actively participates in the process of policy implementation, natural resource management and quality fish seeds production. These three processes are major functions of Ministry of Livestock and Fishery. On the other hand it cooperates with private companies and non-government organizations (NGOs). The objectives of both public and private sector are to increase the production of fish and fish products, to fulfill the domestic consumption and so on.

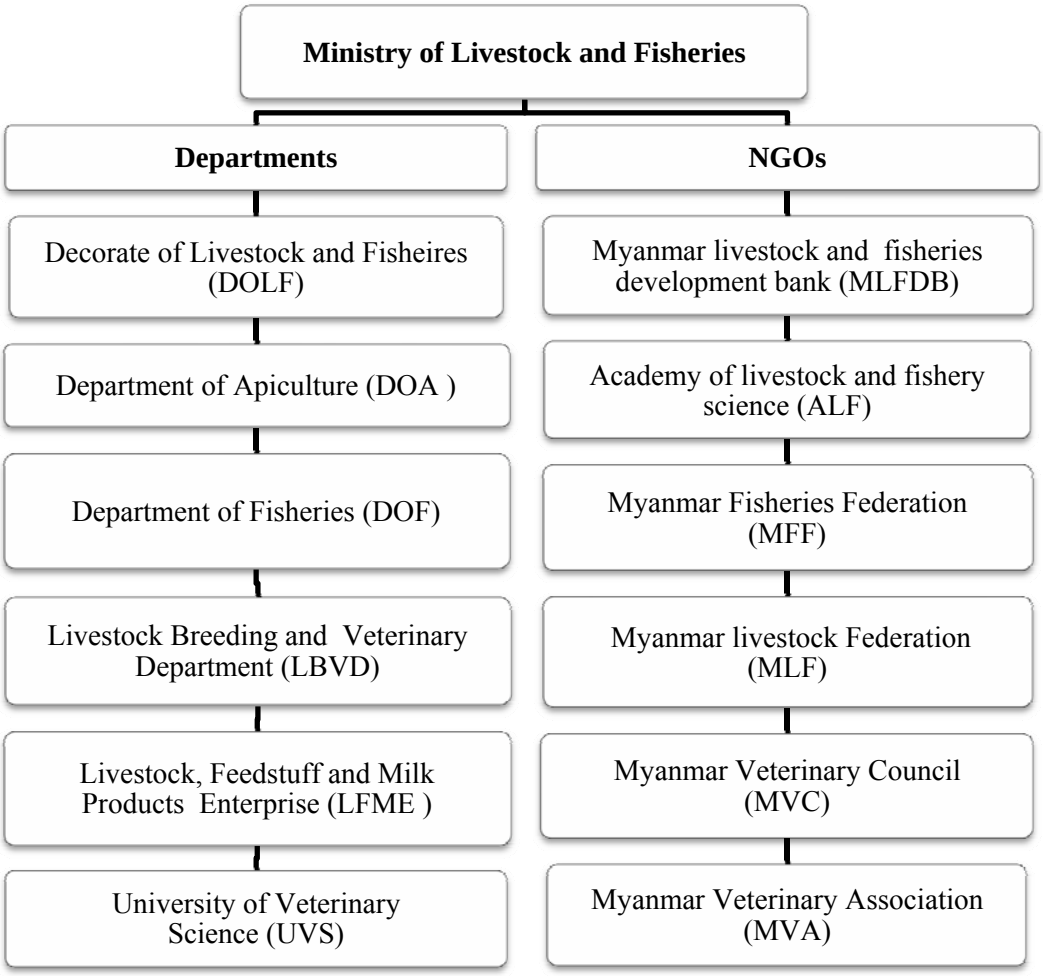
The policies and objectives of Ministry of Livestock and Fisheries are as follows:

1. To promote all round development in the livestock and fisheries sector.
2. To increase meat and fish production for domestic consumption and share the surplus with neighboring countries.
3. To encourage the expansion of marine and freshwater aquaculture.
4. To upgrade the socio-economic status of livestock and fisheries communities.

There are six departments under the Ministry of Livestock and Fishery. In order to achieve above policies and objectives, these departments have been assigned the tasks and responsibilities by the Ministry of Livestock and Fishery.

In addition there are another six NGO organizations which have cooperated with these six departments to speed up the function of livestock and fishery industry in Myanmar. These organizations are:

Figure 2.7: Organization Structure of Ministry of Livestock and Fishery



Source: Fishery Statistic 2008-2009

Among these six departments and six nongovernmental organizations Department of Fishery (DOF) and Myanmar Fisheries Federation (MFF) are directly involved with the process of fishery sector promotion. The detailed explanation regarding with these two organizations is described in the following sections.

2.2.1 Functions and responsibilities by Department of Fishery

This section is intended to give more information of the policies and plans currently carried out by the DoF.

The national policy on fishery sector are as follows ~

1. To promote all-round development in the fisheries sector;
2. To increase fish production for domestic consumption and share the surplus with neighboring country;
3. To encourage the expansion of marine and freshwater aquaculture;
4. To upgrade the socio-economic status of fishery communities.

The responsibilities and managements of DoF are

1. Conservation and rehabilitation of fishery resources;
2. Promotion of fisheries researches and surveys;
3. Collection and compilation of fishery statistics and information;
4. Extension services;
5. Supervision of fishery sectors;
6. Sustainability of fishery resources.

The national fisheries development plans under the DoF are as follows:

1. Planning for supporting to expansion of coastal aquaculture.
2. The Department of Fisheries initiated environment-friendly schemes in intensive shrimp farming, and is encouraging the private farmers;
3. Provide financial assistance and loans through "Livestock and Fisheries Development Bank".
4. Expansion of rice-fish culture program for development of rural area.
5. Three years' shrimp culture development plan (2^{nd} phase).
6. Planning for public awareness for conservation of fishery resources.

These policies reflect how the role of fishery sector is running in Myanmar. For the sake of the development of the fishery sector in Myanmar, natural resource management is also important. Via the natural resource management, quality fish seeds can be produced, fish

production can be increased and these will be enough for domestic consumption. Here natural resource management is important again.

As mentioned as before, via monitoring from FAO, fish stocks are faced with the overfishing problem. In order to combat the overfishing problem, the countries have been controlling the fishing activities by setting the functions such as Total Allowable Catch (TAC)[2] and license management.

In Myanmar, the rate of fish catching decreased after introducing the trawler fishing in 1970. The catching rate of shrimp in 2003 was only 34 percent in year 1997. The other commercial fish species also decreased by 50 percent in year 2008 (Khin Maung Soe, 2008).

To cover the decreasing rate of catching the fish stocks Ministry of livestock and fisheries encourage to maintain the natural resources and implement the natural resources management policies as follow.

1. Set up strategy to increase fish production by stocking fish and prawn seeds into dams, reservoirs and natural water bodies;
2. Lease holders have to hold fish seeds in pens, to release at the beginning of next season. In this way, there is a significant increase in fish production by such culture based capture system in Myanmar;
3. Promoting education programs related to conservation and rehabilitation of fisheries resources.

In order to rescue the fish stocks from decreasing, aquaculture system was introduced, which can promote the inland fishery culture. And also aquaculture farms perform as a cushion to be enough for the domestic consumption. Enforcing the modern technology can get the quality products and to relieve the water resources from depletion. Another resource

[2] "A fishery management approach to assign an annual quota that, if exceeded, will terminate the fishery for that year, the total allowable catch is set at a level to prevent a catch so large that the stock will be over fished." (McGraw-Hill, 2003)

management is restricting the fishing process during the spawning period. Time duration of spawning runs from June to the end of September. All of these above mentioned policies are intended to improve the Myanmar fishery sector.

"To upgrade the socio-economic status of fishery communities" is one of the national polices and intended to those people who are participating as a main player of fishery sector development. Other organization, which is closely related and working with DoF is Myanmar Fisheries Federation (MFF). This federation is impossible to omit from Myanmar fishing industry. The functions and responsibilities of MFF are as follows.

Myanmar Fisheries Federation (MFF) is the highest NGO commercial organization. The main objective of MFF is to develop the fishery industries while this association also performs as a medium between the government and the private sectors. There are also other associations under MFF. These associations are associated with MFF and participate to contribute to the fishery sector development. These associations include the Myanmar shrimp association, Myanmar fish farmer association, Myanmar fishery products processors and exporters association, Myanmar aqua feed association, crab entrepreneurs association and eel entrepreneurs association.

To speed up the fishery sector, cooperation is its main issue. MFF has actively cooperated with DoF and supported it in many ways. The functions of MFF (DOF, 2008-2009) are as follows:

1. MFF is able to support application made by its members to Department of Fisheries to undertake fisheries and aquaculture activities.
2. MFF also can recommend application to the Livestock and Fisheries Bank for loan application.
3. MFF has a good support from the government and can negotiate directly for members' benefits.

4. MFF also helps with negotiation of selling and harvesting of fish; and shrimp and working collectively.

At the same time MFF is trying to meet with its own objectives. In summary, the objectives of MFF are to exchange the information and knowledge through the seminars and meetings among the members. MFF places emphasis on meeting the objectives, policies and regulation in the process of promoting the fishing industry in Myanmar. Introducing and distributing the information regarding the technology among the members is of high importance. The first priority is to meet with domestic consumption and to share the surplus with the other countries. In this case MFF mainly focuses on producing the good quality fish products. All of the citizens have a chance to be a member of MFF. Through these objectives, MFF plays the role of fishery sector in the overall enhancement of the fishing industries in Myanmar.

2.2.1.1 Policy Implementation in Fishery sector by South Korea

Ahead to Myanmar fishery sector development, some policies and implementation from other ministries and organizations are highlighted under this section. The Ministry for Food, Agriculture, Forestry and Fisheries (MIFAFF) has established various kinds of policies for fishery sector development in South Korea. MIFAFF forces the private sector to produce more fishery products as well as agriculture products. MIFAFF implements agro-fishery functions to get the profit from both fishery and agriculture sector. Agro-fishery means parallel running of farming and fishing at the same time. When the farmers are planting the paddy, they put the fry fish into the cultivated land. The paddy plant and fry fish are growing at the same time. Finally the farmers can harvest both paddy and fish. Fish farmers can get two kinds of advantages at the same time. Also MIFAFF helps and encourages to investigate the market trend for each product produced by the private sector. The volunteer groups are

allowed to get visits to the remote region to create the flexible rural communities development. Funding section has increased for the enterprise and education.

These policies have highlighted some additional ideas to improve the fishery sector development in Myanmar. These policies emphasize the cooperation among the government, the private sectors and the workers. Government has developed policies, market investigation and research and development functions and allowed the private sector to do the business freely. It provides workers with financial transactions and fulfills their social requirements. Private sectors follow the rules, regulations and policies from the government and focus on developing the agriculture and fishery sector development. The workers from this area are directly connected with the private enterprises, and agriculture and fishery sector development is emphasized.

National Federation of Fisheries Cooperation (NFFC) stands for the fishery sector and fishermen community in South Korea. The main purpose of this organization is to support the fishermen communities in financial transaction. They offer social contribution programs, training programs, scholarship programs, and foreign crew programs for creating job opportunities. Also a mutual credit business system and insurance system have been established, as part of the "mutual assistance of fishermen where it pays special attention to increasing the production of the fishing industry as well as promoting its economic status by pooling and supplying funds" (NFFC, 1999-2008). A high compensation insurance system has been offered for fishermen. Main reason of this mutual credit business is to get benefit for sides, the development of fishery sector and the improvement of the fishermen community.

2.2.2 Private sector in Fishery Industry

In 1962, under the socialist economy system, commercial fishing was difficult to start. In 1970, People's Pearl and Fisheries Cooperation (PPFC) was formed and introduced with the commercial and fisheries exports (Khin Maung Soe, 2008). Since those days, the public and private sectors have been co-operating with each other in fishery industry. The private companies must have the approval from the DoF. Types of companies are different depending on their transaction in the market. This private sector involves fishery products factories, cold stores, ice plants, export, import companies, leasable fishery companies and fish farming companies.

Four hundred and nine private companies are working for exporting the fishery products. A total numbers of 84 cold stores are in process around the states and divisions. Three hundred and seventy two ice plants are currently working for marine products around the state and division. The number of ice plants and the location of these ice plants are shown in the following table;

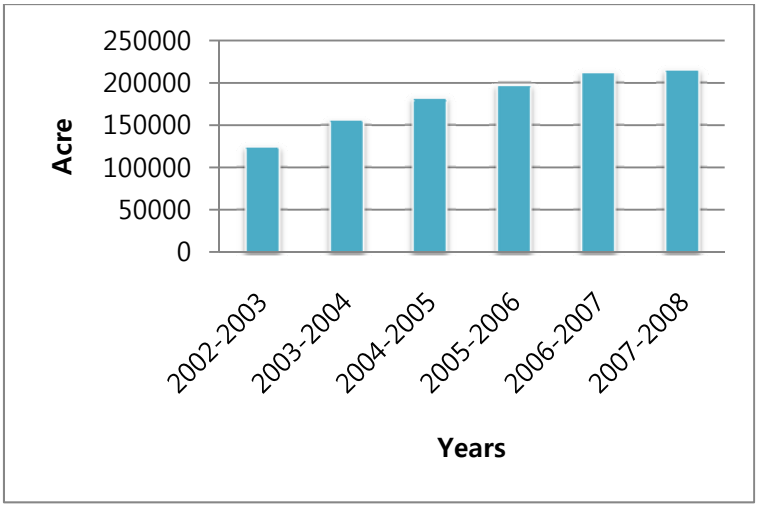
Table 2.1: Number of Ice Plants by State and Division

No.	State and Division	Number of Plants
1	YANGON	145
2	TANINTHAYI	42
3	RAKHINE	60
4	AYEYARWADY	75
5	MON	39
6	MANDALAY	8
7	SHAN	3
	TOTAL	**372**

Source: Fisheries Statistic (2008-2009)

For the fish farming process, the companies need to apply to DoF for land area. After defining the land area from DoF they can start their business. According to the fees, DoF charges every month. DoF provides those companies with technologies, advice and quality fish seeds. By cooperating among the private sector and DoF, the achievement is illustrated in the following figures;

Figure 2.8: Total Area of Aquaculture Ponds



Source: Myanmar Fisheries Statistic (2008-2009)

The process of leasable fishery is done with an auction system among companies and individuals. The leasable fishery areas are set on the natural flood plain and lakes. The DoF defines the area for each working area and distribute to the private individuals and organizations. The allowable time period for the working area is 1 year.

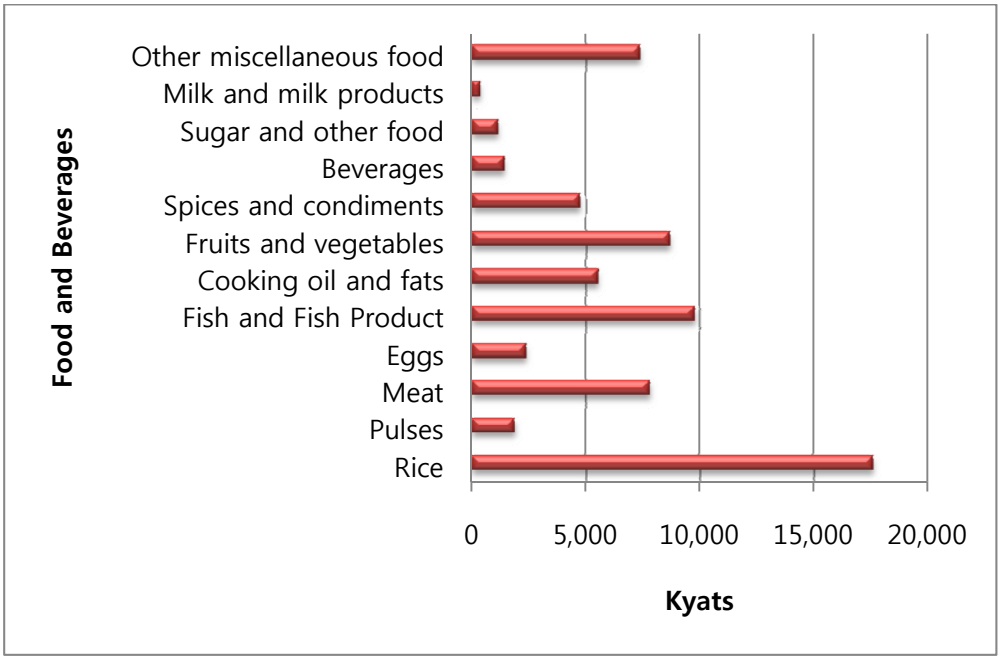
To sum up the above data, the involvement of private sector is playing an essential role in fishery sector of Myanmar. The government also allows the private sector participation in fishery sector progress. Through the co-operation of the private sector and the public sector, the development of fishermen community and economy is being accelerated. Private and public sectors are interdependent with each other, focusing on the progress of fishing industry in Myanmar.

2.3 Contribution factors from Fishery Sector

Fish and fish products are the daily dish for Myanmar household families. Households enjoy preparing the fish and fish products in various ways such as fresh fish, dried fish, shrimp paste, ngapi yay kyo (fish paste sauce) etc. The household expenditure of fish is higher than that of other protein products like meat and eggs.

The following figure represents the household expenditure on essential foods. In 2007, the expenditure of fish and fish products is followed as the second highest after the rice expenditure. According to consumer preferences, the fishery sector has become more important and has to improve the production of fish and fish products.

Figure 2.9: **Household Expenditure for Food and Beverages**

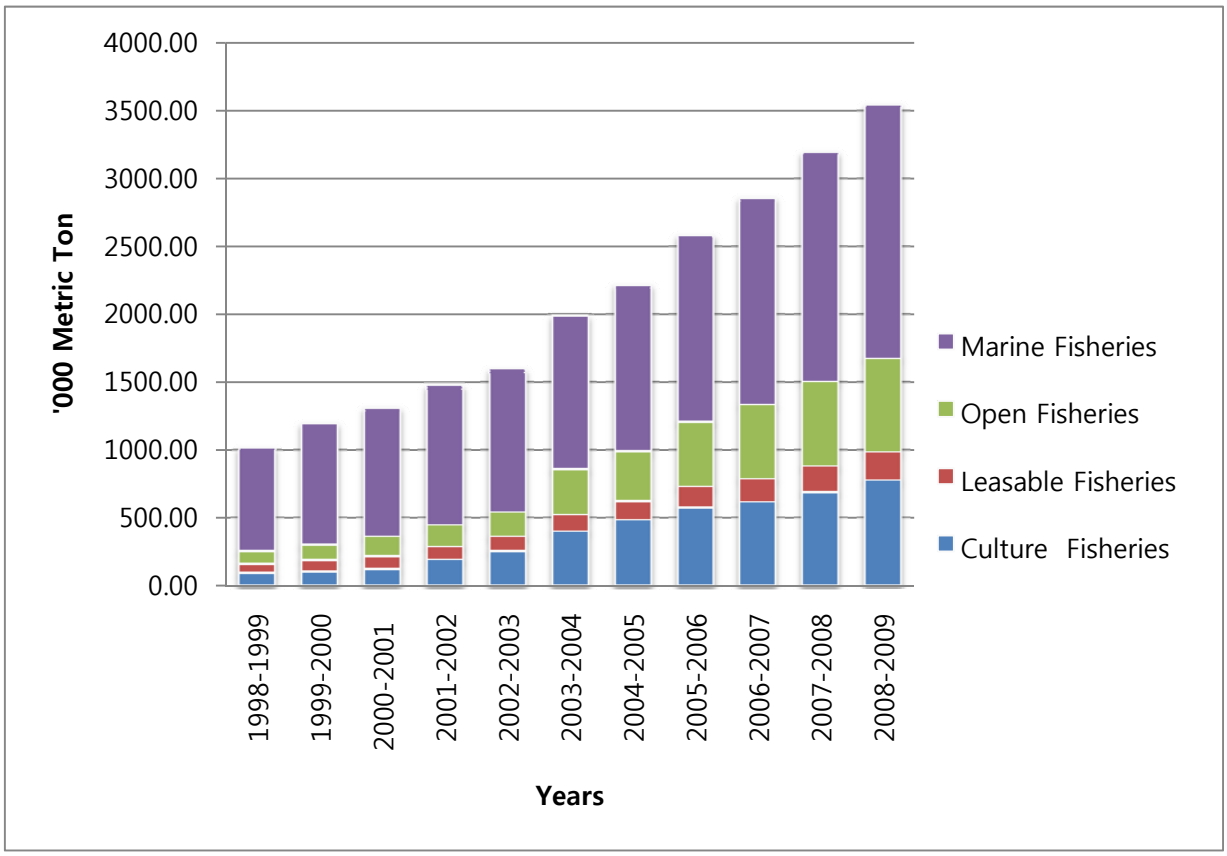


Source: Statistical Year Book 2008, Central Statistical Organization

The production of fish stocks has sharply surged under the sustainable natural resources, favorable weather conditions, actively encourage and support by government, harmonically cooperation between the government and non-governmental organizations and

participation from the private sectors. The following figure represents the production of fish by different types of fisheries. The production is increasing year by year as shown.

Figure 2.10: Fish Production by Type of Fisheries



Source: Fishery Statistics (2008-2009)

The main reason for promoting the fishery industry is to fulfill the domestic consumption and to share the surplus with neighboring countries. After promoting the total production of fish and fish products they have to be divided for the domestic consumption and export. Domestic consumption is the first priority in this sense.

The following table can represent fish supply per capita.

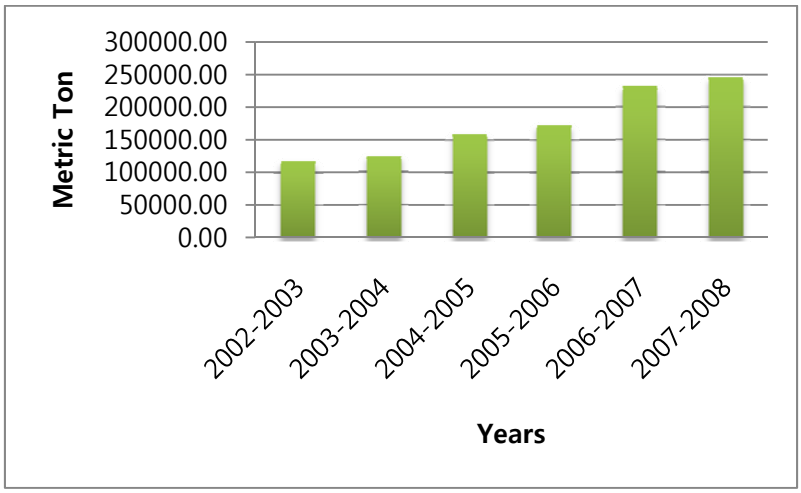
Table 2.2: Per Capita Fish Supply by Year

Year	Population Million	Production Metric ton	Per Capita Supply (Kg)
1997-98	46.4	912672	18
1998-99	48.16	1011178	18
1999-00	49.13	1195797	22
2000-01	50.13	1309832	23
2001-02	51.13	1474459	25
2002-03	52.18	1606240	26
2003-04	53.23	1986960	33
2004-05	54.31	2217470	36
2005-06	55.4	2581783	41
2006-07	56.57	2840238	44

Source: Fishery Statistics (2008-2009)

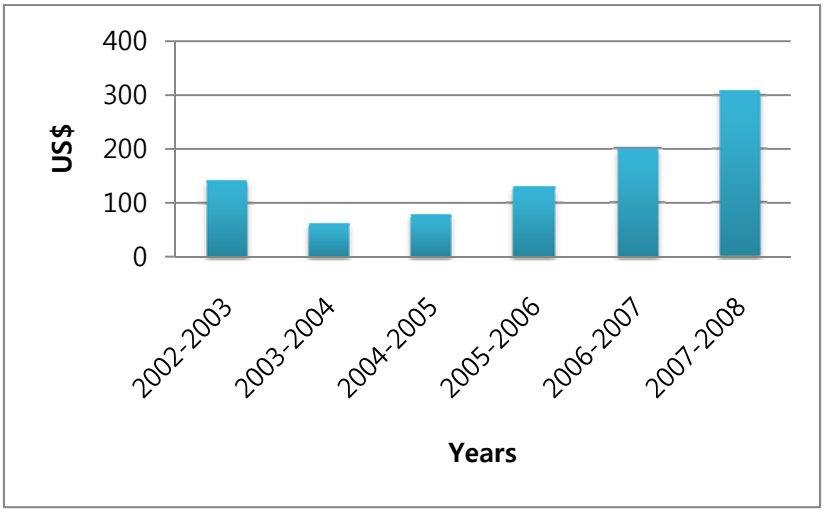
The above table shows the growth in population alongside the growth in production and supply per capita. Consumer preferences and enough production for human consumption are driving forces for the fishery sector to become the contributor in the development of the country's economy. After fulfillment for human consumption, the rest of production is used for export. This is another powerful factor to develop the fishery sector. The following figures represents the export of fishery products and value earning the US $ by exporting the fishery products.

Figure 2.11: Export of Fishery Products



Source: Fishery Statistic (2008-2009)

Figure 2.12: Fishery Products Export by US Dollar



Source: Fishery Statistic (2008-2009)

The above explanation highlighted the current trend of fishery sector in Myanmar. The geographical situation supports the fishing industry to do well and help to extend the fishery sector in the future. From this point of view, it is necessary to give the information regarding the policy implementation by the Ministry of Livestock and Fisheries. Through these policies, the readers can understand how Myanmar's fishery sector develops year by year. After introducing the current fishery sector's functions this is the time to present the fishermen community in Myanmar. This community is the background with the main players

of the Myanmar fishery sector. To complete and achieve the policy implemented by the government, the functions of the participants in this sector are important. If the participants cannot follow these laid down policies due to their economic status and their social requirements, these policies as well as this sector is likely to fail to develop in the right way.

To implement the policies in correct way, the authorize organizations needs to encourage the main workers and players of this sector. In this sense, the authorized person needs to know and tries to understand what kinds of uncomfortable factors can force them to delay in development. By reducing and adjusting these uncomfortable factors, this sector can speed up in the right way.

For this reason, this paper needs to place a more in-depth look at the fishermen community of Myanmar. The following chapter is to explain the readers on how Myanmar fishermen community is working in the fishery sector and what kinds of instruments are required for their lifestyle development.

CHAPTER 3

FISHERMEN COMMUNITY IN MYANMAR

"During the prewar period the fisheries revenue was approximately 7.5 % of the annual total land revenue, and provided employment to more than 70,000 (55,000 permanent and 16,000 temporary) fisheries workers in the early 1930s" (U. Khin, 1948 cited in Khin Maung Soe, 2008). Since 1930, the fishery sector has supported the country's revenue and created opportunities for the citizens. The vast natural resources have allowed the people to enjoy their life.

3.1 Labor Participation in Fishery Sector

In Myanmar, fishermen societies or communities disperse through the coastal areas and most of the population living in those areas is directly or indirectly involved in the fishery industry.

Basically the fishery workers can be divided as follows;

(i) Inshore fishery workers

(ii) Offshore fishery workers

(iii) Fishery workers working in fish, shrimp and leasable fishery farms

(iv) Fishery workers working in ice plants and cold storage

Additionally, the official staff, technicians, professionals and owners of vessels, machine operators from factories are also included in the labor force for fishery industry.

In Myanmar, a labor force survey was conducted by Ministry of Labor in 1990. According to this survey data, labor participation by industry and occupation are illustrated in following tables 3.1 and 3.2. In these tables, the labor force in agriculture, hunting, forestry and fishing industries exceeds the other industries, with a total of 56.47 percent, or more than

half of the total labor force out of 100 percentage. The percentage of labor force by occupation is shown in Table 3.2. The number and percentage ratio of these tables can show the readers to get a general scope of how Myanmar people emphasize on agriculture, hunting, forestry and fishery industries. Most of the people are working for these industries.

The following facts can be extracted from the following tables.

i The number of labor (6,024,000) under the industry of agriculture, hunting, forestry and fishery is greater than the other industries.

ii A few numbers of professional workers (14,000) are working for the skilled agricultural and fishery workers (3,480,000).

Accordingly, the statistical data from DoF expressed in 2008 that there were 887,026 full time workers, 923,800 occasional workers, 606,097 part time workers and 785,000 status unspecified workers, totally 3,201,923 workers, working in the fishery sector.

Apparently a few numbers of full time workers are in fishery industry and the rest of the workers are occasional, part time workers and status unspecified workers. The full time workers include the professionals, supervisors and foremen from aquaculture ponds, export and import factories, ice plants and cold stores. Full time workers are measured with regular income and reasonably supported by the office or other international organizations. The remaining statistic highlighted the daily/temporary workers. These workers are working for daily and short time period on daily wages. The workers are working at the leasable fisheries, working at the aquaculture ponds on daily wages and fishing through the inland and marine fishing to solve their daily consumption. These kinds of workers are working as part time workers in the fishery industry. Part time workers receive daily wages, selling the commodities for their daily livelihood and consumption and exchanging goods in-kind among the people, mainly in the rural areas.

Table 3.1: **Distribution of Employed Population by Occupation and Industry 1990**
(Labor Force Survey, 1990) (By Industry)

(in Thousand)

Industry	Agriculture Hunting, Forestry and Fishing	Mining and Quarrying	Manufacturing	Electricity Gas and Water	Constr-uction	Wholesale and Retail Trade and Restaurants and Hotels	Transport, Storage and Commun- ication	Financial Institution	Community, Social and Personal Services	Activities not Adequately Defined	Total
Total	**6024.10**	101.70	1212.40	18.90	281.10	1686.70	403.30	28.50	824.50	86.50	10667.70
%	**56.47**	0.95	11.36	0.18	2.64	15.81	3.78	0.27	7.73	0.81	100.00

Source: Myanmar Data 2007, Central Statistical Organization

Table 3.2: **Distribution of Employed Population by Occupation and Industry 1990**
(Labor Force Survey, 1990) (By Occupation)

(in Thousand)

Occupation/	Legislators and Senior Officials and Managers	Profess-ionals	Technical and Associ-ate Profess-Ionals	Clerks	Services Workers and Shop and Market Sales Workers	Skilled Agricul-tural and Fishery Workers	Craft and Related Workers	Plant and Machine Operator and Assemb-lers	Elemen-tary Occupa-tion	Total	%
Agriculture, Hunting, Forestry and Fishing	3.70	0.00	13.50	16.90	0.70	3480.30	87.00	24.90	2397.10	**6024.10**	**56.47**

Source: Myanmar Data 2007, Central Statistical Organization

After introducing the modern technology and promoting the exports in the fishery sector, factories and other commercial organizations have emerged in the fishery industry. The trend of the working behavior and occupations has also changed, as the fishery sector develops together with contracted jobs and daily workers in factories and plants. As a result the number of job opportunities and temporary workers can increase.

Additionally official staffs have to take the responsibility of official transactions, implementation of ministry's plan and policies, quality fish stocks production, cooperating with other ministries and external organizations and preparation of official documents. According to the 2006-2007 fisheries statistical data, there were 110 fishery township officers scattered in 370 townships around the country. Their tasks and responsibilities are to collect the fishery statistical data and at the same time they have their own official tasks also.

The informal interview with the official staff from DoF was conducted. Based on this informal interview the following explanations are out. In order to work at a fishing vessel individuals or groups of fishing workers they have to contact with vessel owners or fishing companies. The companies arrange a fishing license for both of vessels and workers, as well as the company supports them with fuel, fishing gears and ice for the vessels. The processes of salary payment for fishing workers are handled through a contract. The duration for a fleet is 70 days. Here again can occur the temporary / daily workers. At least 5 vessels are working together in each fleet for the sake of increasing the work volume. The restrictions on fishing volumes for catching are written down in the fishing license. The head of vessel has the responsibility to follow the rules and regulations mentioned in the license and manages the crew members.

3.2 General Findings in Main Fishery Area

Myanmar has seven states and seven divisions. In these states and divisions, some of the places, especially in some of delta and coastal regions, are suitable to expand the fishery industry as well. The following table includes a state and two divisions, composing 8 million people. The main fishing ground of Myanmar has been already introduced in Chapter (2). For this reason these states and divisions have become the target area for researching of this paper. Table (3.4) shows that urban population and the rural population are 1.2 million and 6.7 million respectively. Most of the rural populations are involved in the fishing process. However, in these following states and divisions, not only the rural populations but also the urban populations are participating in fishing activities.

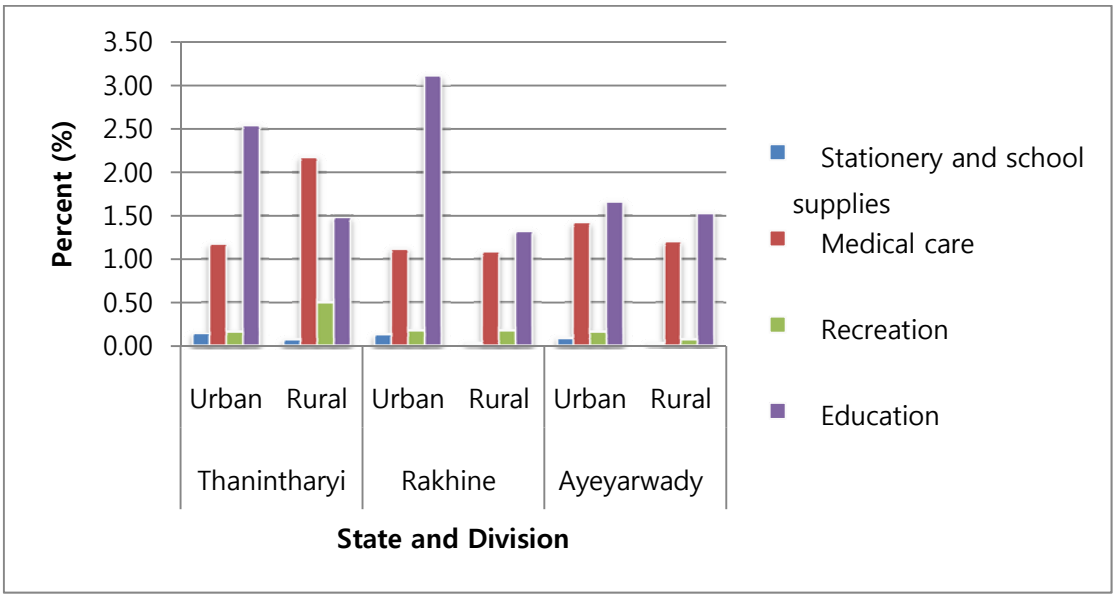
Table 3.3 Urban and Rural Population in Main Fishery Area

State and Division	Total ' 000	Urban ' 000	Rural ' 000
Tanintharyi Division	914	216	698
Rakhine State	2046	304	1742
Ayeyarwady Division	4994	742	4252

Source: Statistical Year Book (2008)

After presenting the population in both rural and urban areas of the main fishery industry, it is essential to look closely at their household expenditures. Amongst these household expenditures, education, medical care, stationary and school supplies and recreation expenses are included as the non-food household expenditures. These expenditures perform as basic expenditures to upgrade the living standard of every community. After comparing these expenditures for both urban and rural area of the main fishing region, the results are shown in the following figure.

Figure 3.1: Essential Non-Food Household expenditure in Main Fishery Area



Source: Statistical Year Book (2008)

According to the table 3.3, the number of rural populations is higher than the urban population. However, when comparing the expenditures of these households', the expenses of rural households are less than the urban households. The expenditure for medical care is not too much different. Sometimes the rural area has a higher percentage of expenditures on medical expenses than the urban area. For this condition, even if they use their income for daily consumption, income fluctuation can cause the social difficulties. They can only focus on their daily consumption instead of using their income for health manners. From this sense, imbalance of calories can occur, which can force the rural households to increase their expenses on medical process. In this income fluctuation matter, basically the weather condition and physical conditions are high possible reasons for the fluctuation of their income. If the weather condition is not favorable to the fishermen from the cases of storms in the sea or heavy rain etc, these are major obstacles for fishery workers from earning their income.

Another thing is that if their physical condition, such as sickness, is not good for their work, their income and their expenditure will be affected.

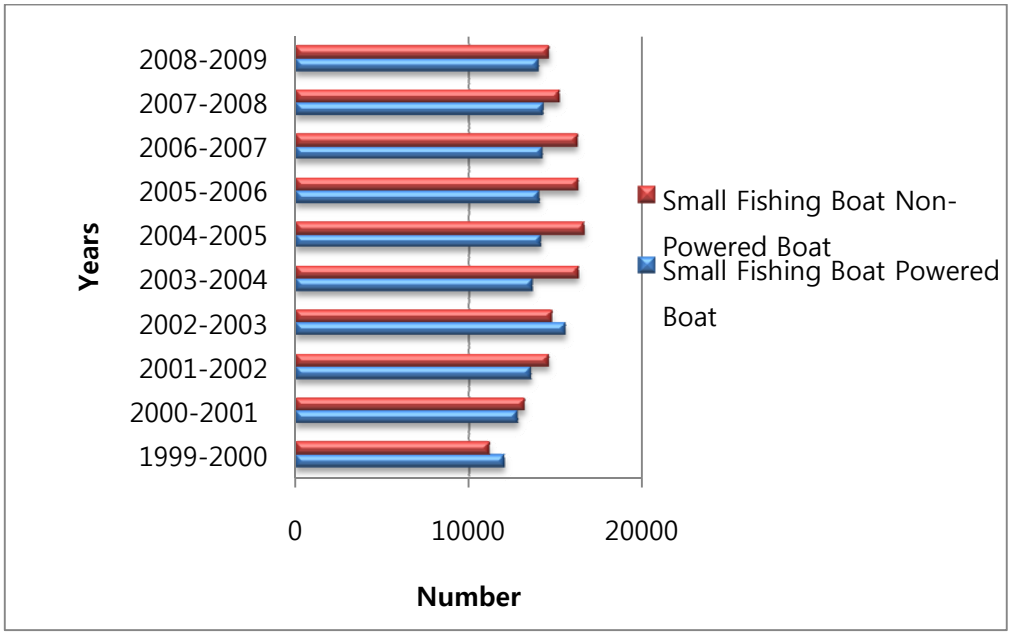
The expenditure for recreation on this graph is as seen in low percentage. Their recreation consists of celebrating the traditional occasions such as donation ceremony, water festival, novitiate ceremony etc. Instead of these recreation processes, most of their expenditures are going to their consumption and medical expenses in rural area. Moreover, the stationery and school supplies are a little bit high in urban area. In rural area, the percentage is almost flat with Y axis. It can be concluded that expenditures for the stationery and school supplies are rare in rural areas such as Rakhine state and Ayeyarwady division. On the other hand, the cost of education is a huge gap between the urban and the rural communities. This figure gives the basic requirements of the rural communities in Myanmar. Consequently, the requirements of the fishermen community from this rural area are highlighted. Some of the reasons for the gap of expenditure between the urban and the rural areas are as follows: it cannot be denied that expenditure is relying on income; if income is high, the household can increase their expenses on foods as well as recreation purposes, education and so on and so forth.

Here, another statement comes out. It is necessary to compare the household situation of both the rural and the urban. The people from the rural area have rare opportunities to choose the occupations except regular work such as cultivation and fishing. Urban families have a better chance to find the jobs than the rural population. According to their rank of education, according to their professional fields, good opportunities are within the reach of these people. Many numbers of factories, companies, shops, government offices and international organizations are the places where they can earn and increase their income. The urban population has possibility to grab these opportunities. As a result, their income is high and the household expenditures is also high. Lack of information, conservative society, the

condition of being difficult to transmit the information to these regions are major obstacles of the lag behind the urban region.

In addition, commercial fishing boats and non-commercial fishing boats are included in the following figure. Commercial fishing boats are working with power and non-commercial fishing boats are non-power. Small scale fishery workers include subsistence, traditional workers and rural fishing community. Mostly, small scale fishery workers are working with non-powered boats and non-powered boats were used more than powered boats during the years from 2003 to 2009. Apparently in this fishery sector most of the workers are small scale fishery workers and still lack in technology requirement for this community.

Figure 3.2: Small Fishing boats by type of Powered and Non-Powered



Source: Fishery Statistics (2008-2009)

As mentioned as before, the fishery sector is one of the important sectors in Myanmar. And also the working community in this industry is important. The above explanations have pointed out how fishery workers are conducting in fishery sector. By targeting three main fishing regions, the basic requirements are already expressed. In order to

give more detailed information for this community and to know exactly what types of requirements are needed for their community, small sample survey was implemented in this main area. The next chapter is to show the findings from this field survey, their weak points and how the roots of these weak points affect this community.

CHAPTER 4
REQUIREMENTS AND DIFFICULTIES OF MYANMAR FISHERMEN COMMUNITY

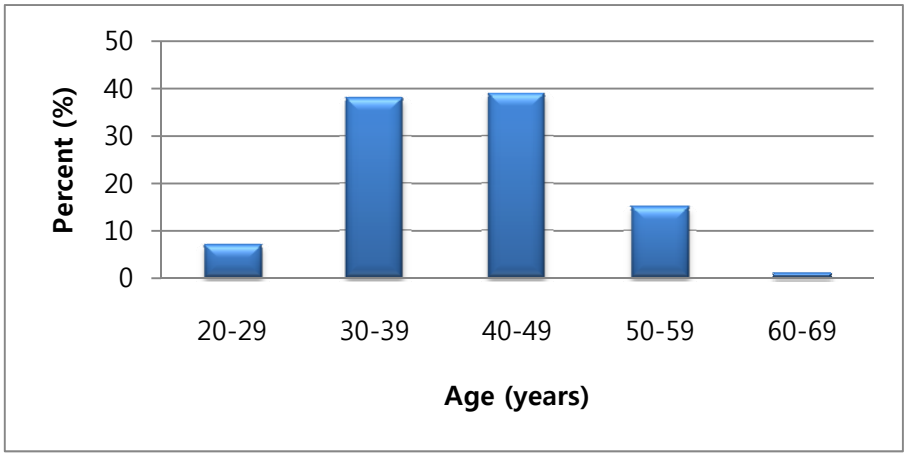
To know the basic requirements of the fishermen community, the simplest field survey in Ayeyarwady division, the Daw Nyein Village tracts located in Phyar Pone distinct, has been conducted. The major subsistence occupation in this place is fishing. All of the populations are involved directly or indirectly in the fishing activities.

4.1 Field Survey and Analyzed Results

The survey started on 23 March 2010 and finished on 30 March 2010. The sample questionnaires forms are attached in the appendices section. Among these households only 100 were selected for the sample survey. This main idea of this survey is to highlight the importance of fishermen community in Myanmar. Particularly this survey spotlighted the education, medical care and the requirements accessories in their working life.

Within 100 households, 91 male and 9 female household heads are working in the fishery sector. The age distribution is shown in the following figure;

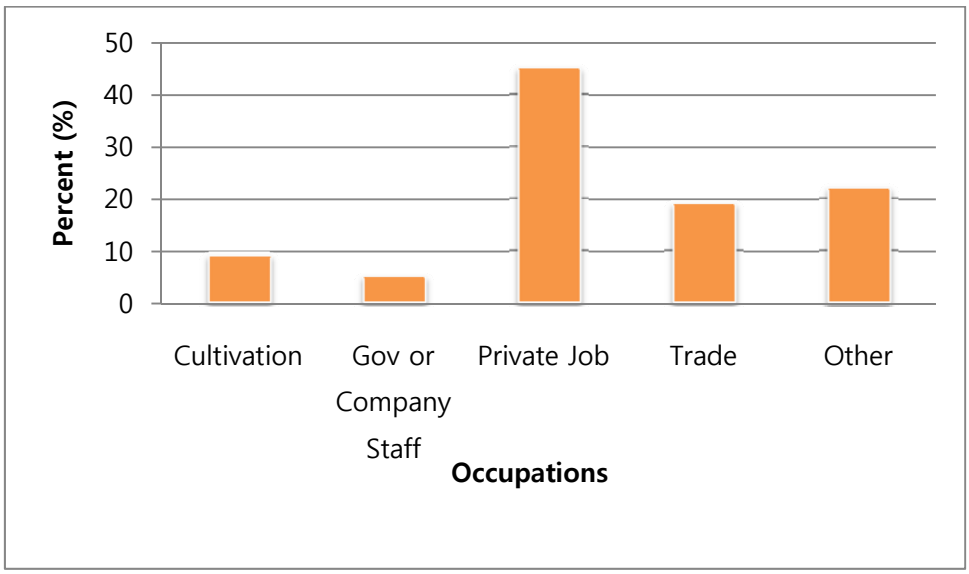
Figure 4.1: Age Distribution in Fishery Industry



Source: Field Survey

The age limit in this fishery sector is between 20 years and 69 years of age. Mostly the age limits of between 40 to 49 people are working in the fishing industry. The average household size is 5.4 and all of the 100 households are in the fishing process. Seventy nine percent of households are choosing fishing industry only for the reason of regional economy. Four percent of households are in the cultivating process and the rest of 17 percent of workers, they have no chance to choose the other occupation. Another question is whether they want to change their jobs if they have a chance to run other kinds business. The results then emerged.

Figure 4.2: Other types of Occupations

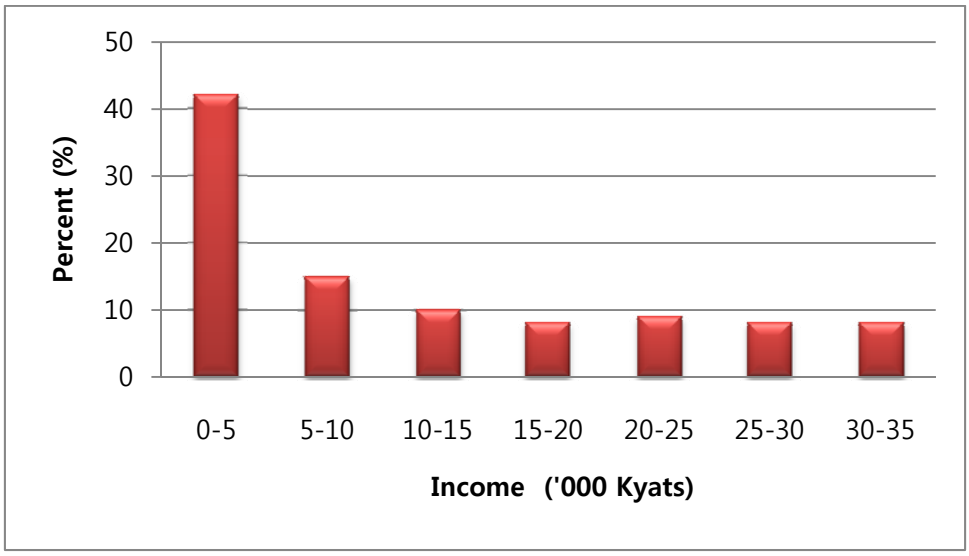


Source: Field Survey

There were 9 percent of people who wanted to choose cultivation as their other occupation and only 5 percent were interested in the government or company staff. Most of the people totally 45 percent of workers wanted to do the private business such as boat owner. Nineteen percent of people wanted to participate in the trade process. In this trade process includes trading the regional products to other villages and cities. Finally, 22 percent of people did not have an idea to change other occupations.

Among this various income range, the daily average income is shown in the following figure. During the income rage from 0 to 5000[3] Ks per day is frequently found out in this survey. Depending on their skills and types of jobs, their daily income differs. The figure for this is as follows:

Figure 4.3: Daily Income



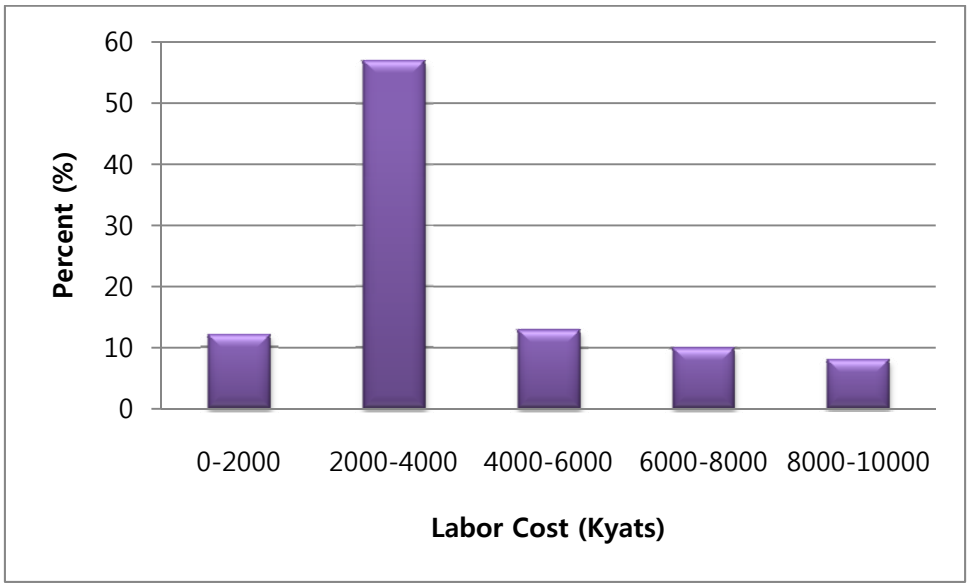
Source: Field Survey

After enquiring their daily income, this income is enough for their consumption. From the survey result, 55 percent of households are well enough for their consumption. However the rest of 45 percent is still not enough for their daily consumption.

From the collected data, all of the households in these areas are doing the fishing business with daily workers rather than the family members. So, their daily income is not only for their consumption. From their daily income they need to subtract for daily labor cost. The labor costs for these workers are as follows.

[3] Exchange Rate: 1 US $ ≈ 1,000 Ks

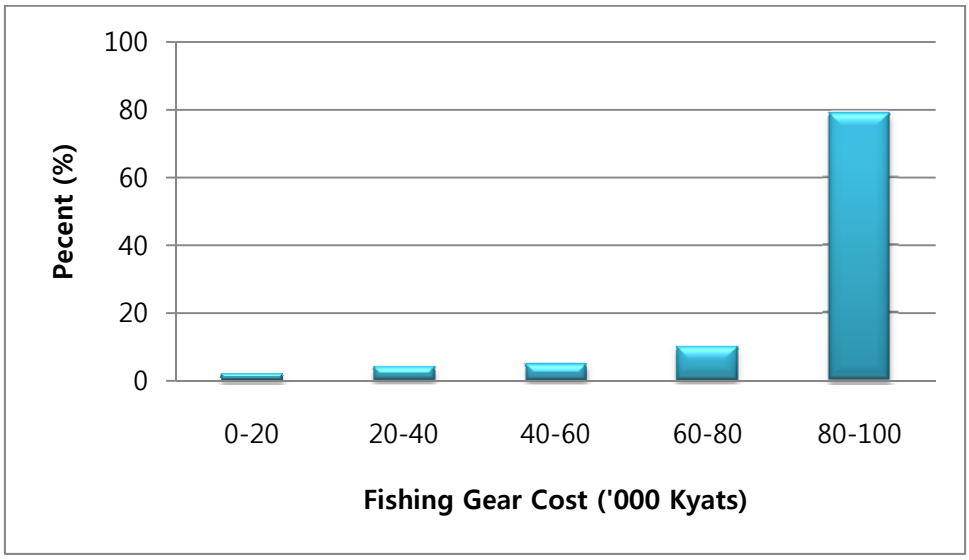
Figure 4.4: Labor Cost



Source: Field Survey

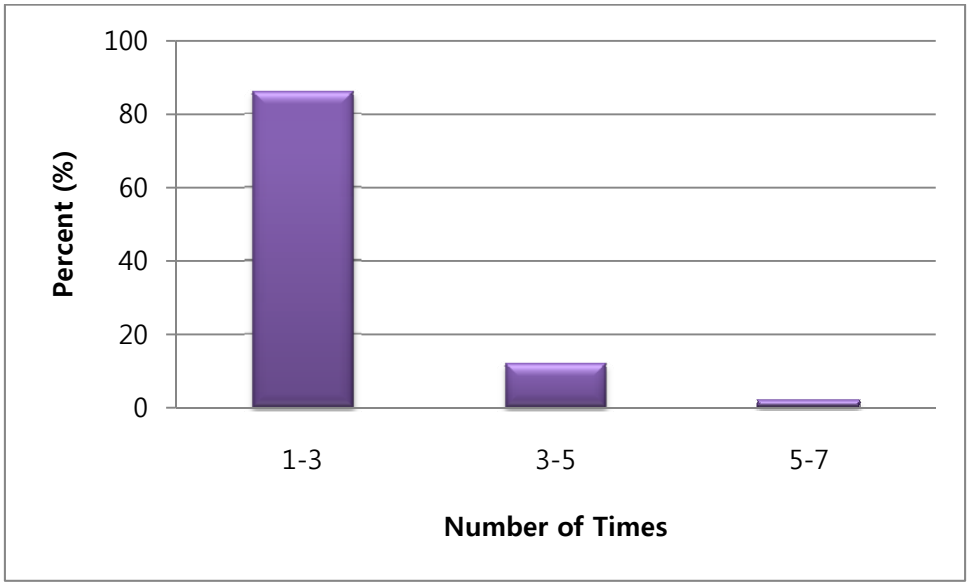
From this above figure, a large number of workers are working within 2000 Ks to 4000 Ks of wages per day. The wages are varying from one to another based on their skills. This point can reflect their daily income. According to these survey data, in this area, there are not a large number of professional workers. The official staff from DoF has said that the average daily wages for each professional worker is over 5000 Ks through informal interview. The maximum daily wage for professional workers is 10,000 Ks. Alternatively these workers are permanent workers in the fishery industry. So typically these labors are temporary / daily workers. Another interesting point is buying the fishing gears or materials. The cost of the fishing gears and number of times buying these fishing gears are shown in the following figures.

Figure 4.5 Cost of Fishing Gears



Source: Field Survey

Figure 4.6 Number of times buying Fishing Gears



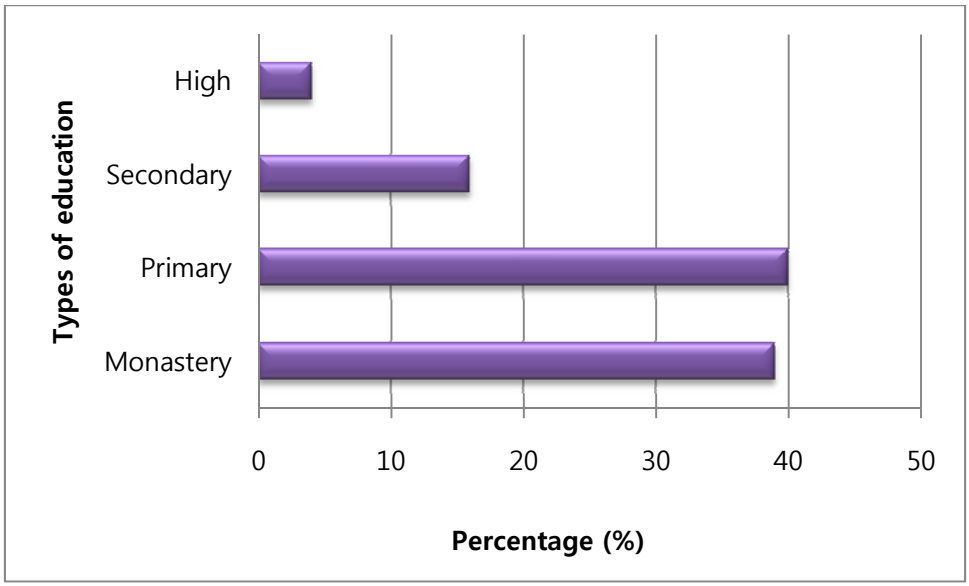
Source: Field Survey

From their daily income after subtracting the cost of labor and their consumption here is another type of cost needed to extract again. Ninety eight percent of households are using the fishing net and the other 2 percent is using long line fishing gears. Nearly 85

percent of household can buy the fishing gears only 1 to 3 times. According to the oral survey, 90 percent of the families say that the cost of the fishing gears are expensive when they compare with their daily income. For this reason they can buy the fishing material between 1 to 3 times during a year.

Under this education status, it is going to represent the education status of the household head, number of students in each household and the expenses for the education. First of all, 99 percent of household heads is are in literacy and the rest of only 1 percent is in illiteracy. The type of education they studied is as follows;

Figure 4.7: Types of Education studied by Household Head

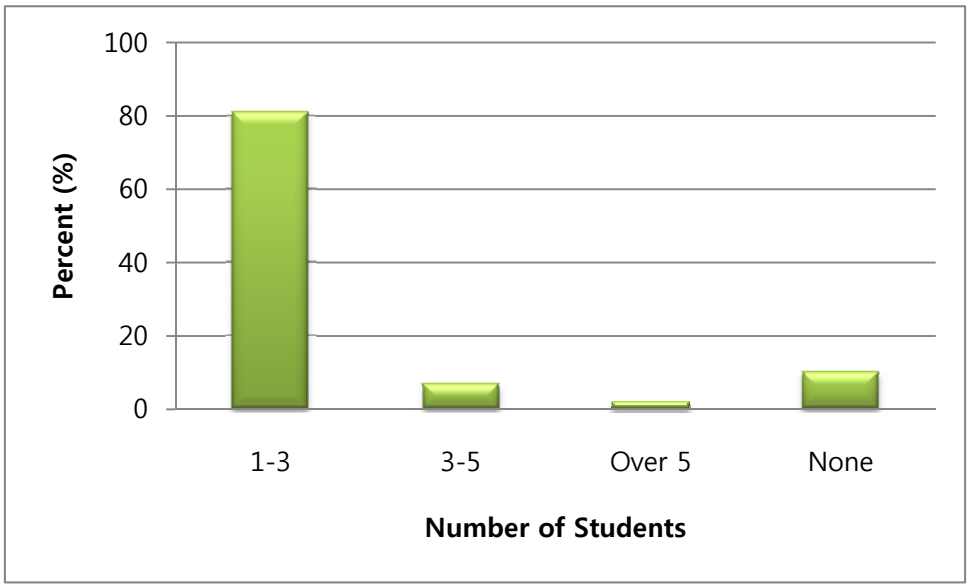


Source: Field Survey

In this figure, higher percentage is in monastery education and primary education. Just only a few families have secondary and high school education status. These statistical data can show that in this community occurs lack of encouragement to education activities.

After studying the household head's education, the current education status of these households and the numbers of students in these households are shown in the following figure. The number of students in these households is as follows;

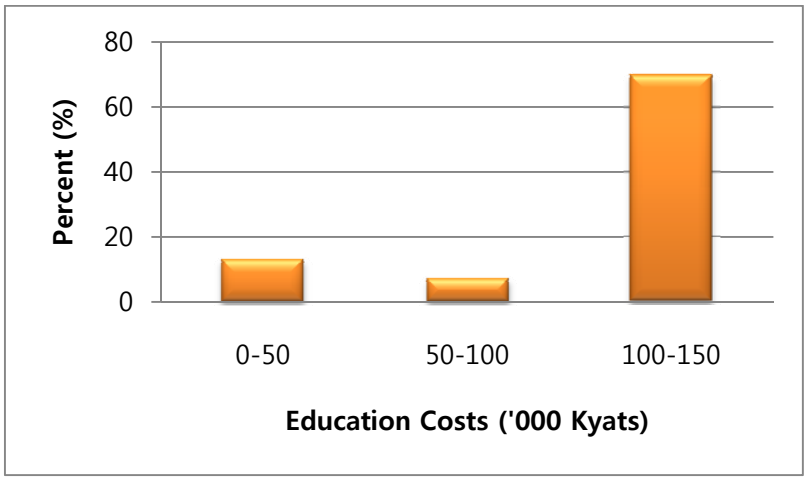
Figure 4.8: Number of Students



Source: Field survey

Based on the collected survey data the average number of students was 1.01 person for each household. This is the small number of students among the 100 households. The education expense of most of the households is between the range of 100,000 Ks to 150,000 Ks. The average expense for the education is 100,000 Ks per annum. Figure 3.1 shows the difference on education expenses between the urban and the rural areas. The rural area is quite lower of education expenses than the urban area. The survey data also reflected that education expenses were fewer amounts in this rural area. From these results, it can be assumed that instead of using their income in the education purpose, most of their incomes are flowing to their daily consumption.

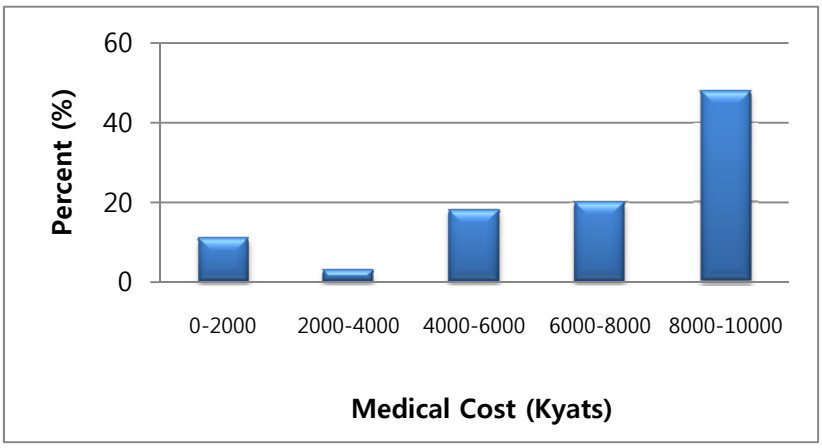
Figure 4.9: Cost of Education



Source: Field Survey

Regarding the medical care status, 83 households have taken the hospital/clinical treatment. Only 17 households had taken the traditional medical care treatment. From this data, most of these households paid attention to their medical care treatment system. The expenses for medical care per month are illustrated in the following bar chart;

Figure 4.10: Medical Expenses



Source: Field Survey

In this area, nearly 50 percent of households used the expense between 8,000 Ks to 10,000 Ks monthly as medical expense. This number of medical expense highlighted again

the data from figure 3.1. The similar situation occurred at this figure. The medical expenditure of rural area is higher than the urban area. From oral interview to these households, they revealed the information that sometimes they face with income fluctuation due to the unexpected social difficulties. The weather condition and uncomfortable physical feeling, for example, can pose a negative impact on their daily income. At this moment the direction of their income can affect their consumption. Depending on their amount of income the number of dishes, the amount of calories and the types of meals can be different. These situations have forced the rural communities to increase their expenses on medical purpose.

According to the findings from this survey data, some of the difficulties facing in this community need to be highlighted. The people in this area are willingly to change from their current job to another occupation. They meet with difficulties in the changing process. Lack of finance and technologies cannot give a favor to them to change to other occupation.

In the case of finance transaction, most of the people are working during the range of 0 to 5000 Ks per day as daily workers. This is their average daily wage and physical uncomfortable issues enable to cause income fluctuation. Income fluctuation can affect the daily consumption. Consequently the medical expenses are also high instead of using in education and recreational purposes. The bar chart of Education status has said that the standard of education in this area is not too much high. Generally all of these households put an emphasis only on solving their daily income together with their daily consumption. For this reason, while they are studying, these people are spontaneously engaged in work. Therefore, good quality of education status cannot occur in this region. To resume the income fluctuation, the main reason is that this community is highly relying on the fishing industry. Previously it has been indicated that most of them are familiar with daily wages. Their physical uncomfortable factors and the condition of being difficult to find the job can affect their daily wage. Through this step, income fluctuation can occur. Once more, income

fluctuation can put drawback to their consumption, health care system and finally to their income again.

For the sake of easy transaction in their fishing business, question number 21 was created. The aids from the government or other international organization were accepted by 15 households and the rest of 85 households did not receive that. The number of times received by 14 households is 1 to 3 times and only a household received the aids for between 3 to 5 times. These kinds of aids are needed to improve the fishermen community development as well as the fishery sector development. Types of aids needed from the households are as follows: 97 percents of households wants the financial and material supporting and the other 3 percent of households wants technology supporting. At the other comments section, 40 percent of households need loan and financial transaction. Sixty percent needs both financial and fishing gears. Higher cost of fishing gears is imbalanced with their income. This is other difficulty for this community. DoF distributes the fishing gears to private companies. These private sectors, fishery companies, provide again these fishing gears to their vessels. And they fill up the extra fishing gears from their own financial transaction. As a fishermen community in rural area, they cannot directly contact with these companies. They are struggling the whole day for their income. Thus they have a rare chance to communicate with other people and organization outside their community. That is the reason why they need to buy their fishing gears by themselves. Due to this reason, fishermen community suffers from the high cost of fishing gears.

All of these mentioned above are findings from the fields survey conducted at the Ayeyarwady Division. After attempting to explore the difficulties and requirements of fishermen community, it is necessary to point out the roots of problems and constrains.

4.2 The Root Causes and Obstacles of Difficulties

According to geographical situation, the rural communities are looking for their livelihood. Plenty of natural water resources can increase the number of workers in the fishing industry. All of the people alongside of coastal region and delta region take part in the fishing industry as for their regional economy. This is only the way to get income. This is one of the main reasons why people are choosing the fishing business as their daily subsistence. This situation is already created by nature for these communities.

However, some of the people in this industry do not want to do the fishing business in their whole life. Beside of the economic growth, all of the people are seeking for the better occupations, lifestyle and income. Similarly, the fishermen community wants to change from their current occupation to others to get more income. However, they do not have a chance to change to other occupations. The main reason is financial difficulty. Even though the whole day long they are working, most of their income is for their consumption. They cannot find the ways to come out from the daily workers. The whole day long these workers are struggling for their daily income and daily consumption. Nearly half of the rural fishing workers are not enough for their consumption with their income. Most of the rural fishing communities are facing with similar problems. Permanent workers also face with financial problems to change to other occupations. The obstacles are due to the lack of transportation, far away from the large cities, less communication, poor media transmission, shortage of time to observe their surrounding; these factors have pushed the fishermen community far away from development.

Previously, a large number of fishery workers are working for their fishing activities with non-power boats and fishing gears such as long-line and fishing nets. Nowadays the technologies using in working environment become developed. Similarly the technologies and materials using in the fishing industry are also developed such as purse seine, trawl, drift

net and so on. At the same time the cost of fishing gears also increase. This kind of improvement in fishery sector is reflecting the rural fishermen community from the inconvenient way. According to the owing of power boats, non-power boats, types of fishing gears using in working environment can cause the status of their income to differ. Their income is not enough to buy such costly power boats and modern fishing gears. This is the major obstacle to speed up their work volume and their income. In these ways, they are circulating poorly in their daily working life. Here also financial transaction is the root of their difficulties.

The education status in rural communities is lower than the urban communities. Rural communities rely on the monastery education system rather than general education system. When they are growing up, the rural communities only focus on daily consumption. So, most of the people in this community do not encourage education due to their required daily income. They must need to help in their parent jobs and finally they are far away from school life. When they are far away from studying, this community becomes isolated from the other environment. When following the roots of this problem, the key reason is financial problem again. After analyzing the data from Myanmar CD-Room 2006 and field survey data, the major roots of problems, obstacles and the affected area are summarized and are shown in the following Table. 4.1.

Table 4.1 Analyzed the Difficulties of Myanmar Fishermen Community

No.	Difficulties Description	Roots of Problem	Obstacles	Affected Area
1	Education	- Helping to parent's job since they were young	- Financial	- Occupation - Knowledge - Difficult to adapt with new environment, new technologies
2	Opportunities	- Lack of information - Far away from the major cities - Poor media transmission - Lack of education - Isolated from the other environment	- Financial	- Income
3	Income	- Emphasis on daily income - Can't come out from daily working life - No chance to adapt with new occupation - Social uncomfortable	- Financial	- Living standard
4	Extend business	- Lack of information - No confidence to communicate with strangers	- Financial - Technology	- Income

Source: Analyzed Survey Data (Previous and Current)

After knowing the difficulties, obstacles and roots of the problems, it needs to be considered which types of solution methods can eliminate, reduce and solve these difficulties. These are going to be explained in the recommendation and conclusion section of this paper.

CHAPTER 5

RECOMMENDATIONS AND CONCLUSION

According to the previous chapters, due to the carefully laid down policies and actively cooperation among public and private sectors, the fishery sector is steadily developed year by year. In this place, the people who are participating in the process of policy implementation are important as major players. Thus, it is important to create a reasonable and enjoyable environment for them. Enjoyable environment can accelerate the velocity of work. This can help to improve the country's economic development within a short time period.

In the case of Korea, there is not a vast amount of natural resources. Thus human capital, built through high education and a hard working labor force are the primary factors of the Korean economic development. Based on this precious human capital and combined with development policies, they produced the labor intensive products after 1960 for export to other countries (Scitovsky, 1990). After this basic step, Korea approached step by step to the other economic policies such as heavy and chemical industry project and finally Korea achieved the rapid economy development.

In the case of Taiwan, the focus was on creating equivalence between the rural area and urban area by constructing the factories and transferring the small firms to the rural area in an attempt to improve the rural and urban area at the same time (Scitovsky, 1990). The difference in income, expenditure and lifestyle between urban and rural area became balanced. This kind of shifting business is another force to balance the development between urban and rural community.

In Myanmar, there are plenty of natural resources, and especially enough water

bodies. The number of active workers, according to the 1990 labor force survey in the employed population is 58.04 percent. Thus, the unemployed population is 2.52 percent, with the total labor force by 60.56 percent of the population (CSO, 2008). Labor force survey was conducted by Ministry of labor at 1990. In this survey, the economically active population was divided by urban and rural area. Rural residences (8,264,000) is a higher number of people than the urban residents (3,085,000), and most of these rural area residents are familiar with farming, cultivating and fishing, due to the availability of land, water resources and beneficial weather situation.

However, most of the rural dwellers are subsisting on their daily income and most of their income is flowing to their daily consumption rather than education and recreation purposes. Field survey has already extracted these facts. To relieve this situation the requirements are to upgrade the education, health, and infrastructure in the remote areas.

To promote the particular area is similar to cooking. The goal is to get a delicious dish. The important thing is the combination of ingredients in an appropriate way. Similarly, the goal of this paper is upgrading the lifestyle of people in rural fishermen society and country's economy development. The ingredients are policies, cooperation, fishery cooperatives and social elements.

i. First Ingredient (Policies)

Former chapters have already reviewed the rules, regulations, and policies from the Ministry of Livestock and fisheries and MFF. There are also international fishing policies from other ministry and intergovernmental organization such as South Korea. These policies, such as the agro-fishery implementation approach from the MIFFA, should be upgraded to the Myanmar in the fishery sector. In Myanmar, rural communities are alternatively working on cultivating and fishing. These industries have their seasonal periods for good cultivating

and good harvesting. Myanmar has already introduced the paddy-cum fish culture similar as agro-fishery methods. So the government should encourage this method to get more and more benefit from both fishery and agriculture sector. And also the government should promote this method by providing more technologies and funding to all fishing communities especially to the rural fishery workers due to the lack of knowledge comparing the urban community.

Another policy recommendation is training. The training program is important for both fishery workers and official staff because the official staff from Ministry of Livestock and Fisheries need to support the updated technologies and other requirements of fishery workers. That is why the Ministry of Livestock and Fisheries should designate both domestic and oversea training programs for official staff. The government should promote and advance the training program to get professional official staff for the fishery sector development. Previous figures and tables have already stated that the numbers of skillful workers are lack in the fishery industry. Also the fishery workers are interested in other occupations such as private jobs, trading, company / official staff. In order to join these occupations in actively, the authorized organizations need to distribute the required information to rural communities. On the other hand, if the official staff can implement these workers demand by giving the training programs, it can increase the job satisfaction and can create the enjoyable job environment for the workers.

Ministry of Livestock and Fisheries totally needs to participate in the process of policy implementation. In the national policies of Ministry of Livestock and Fisheries, it has been already stated to develop the living standard of fishermen community. The findings from the field survey can help to implement the required policies for this community. These results can be added and fulfill their essential necessities. It can cause the time saving and directly effect to the target area. When fulfilling their requirements, it needs to approach systematically. In this sense, DoF concerns directly. DoF should conduct the wide survey for

fishermen community to cover all of the main fishing regions. Based on the size of survey, the results can differ. From the large survey, other requirements can emerge in details. After understanding their requirements, DoF requires to report and negotiate with ministry of Livestock and Fisheries and MFF to support their requirements as much as they can. If their requirements in effectively are reasonable such as technology, financial the process should be continued. Here also, in order to support the technology requirements as the ministry should offer the education scholarship program for the official staff. It is expected to work well to arrange the departmental training program and exchange the knowledge and their understanding among the official staff. After finishing the training program, DoF should allocate these official staff to all of the states and divisions. After 3 months, the advanced training program should be organized again. In this training program, they need to discuss their experiences and difficulties faced in their working area. And then they have to try to find the ways to solve the requirements and difficulties of fishermen community and fishery sector. After the advanced training program, the official staffs need to apply again, this discussed solution method in their working region. This is the best way to upgrade the fishermen community and fishery sector during a short time period.

By inviting the foreign skillful professionals from other countries' fishery sector to give the seminars, it is expected to conduct short and long training programs related with natural resource management, modern aquaculture farming, modern technologies using in the ice plants and cold stores and so on. And also it is necessary to exchange the knowledgeable point of views of fishing functions between two countries. Through this understanding the authorized organization needs to seek the development of fishery sector in Myanmar.

ii. Second Ingredient (Cooperation)

The second essential ingredient to execute these policies is collaboration between the government, private entities and the citizens. The government has already allowed the private companies and entrepreneurs to take part in country's economy development. In this point, private sectors can contribute the fishery sector development by creating job opportunities. For example, in the case of Taiwan, some small businesses are moved from the urban sites to rural areas. This can help to create job opportunities for the rural population. As in Taiwan, some small existing companies or new entrepreneurs in Myanmar should move to the rural sites, and focus on the major products of this area. If they have a good aspect for their business, there will be a great benefit for both sides. By harmonizing among the public sector, private sector companies and citizens, it can cause largely beneficial to the economy.

To implement the cooperation among these parties, when the companies apply the fishing license to DoF, DoF should prepare the detailed explanation session to the company employer from each company regarding the extinct species, threatened factors of modern technology to the fishery resources, overfishing problem and so on. To update the latest technologies and other additional announcement for the fishery resources making the quarterly meeting or distributing the journal to those companies can affect the fishery sector. After understanding, as a second stage the private companies should offer the job opportunities to the rural community near with their allowable fishing zone by DoF. Redistributing their understanding and knowledge from DoF to the rural fishermen community is the effective way to manage the natural water resources and can support their business to do well. Beside of DoF, MFF should encourage the private companies and itself to communicate and motivate the rural fishery workers more to participate in fishery sector development.

For private companies, they should avoid communicating the rural fishermen community via the fish brokers. From the field survey, 98 percent of rural households are

selling their fish through fish brokers instead of direct selling to companies. As MFF and DoF focus to eliminate the fish brokers in the process of selling and buying fishery products. Fish brokers perform as a third party between the fishermen community and private companies. It can cause less benefit to rural communities. Like in Korea, it is essential to open the chance to rural communities to communicate with private companies directly. When the private companies got the close ties with the rural community, it is easier to extend their business not only the fishing business but also producing the regional products and farming the fish stocks in this rural region. This is also best practice to help the rural fishermen community to communicate with outsiders and the number of job opportunities can increase. The income fluctuation problem also can be relieved through this private sector participation.

iii. Fishery Cooperatives

Currently in fishery sector, MFF and other associations have already existed. The financial transaction is only supported by the Myanmar livestock and fisheries development bank and small loan program from each township. High interest rate is charging from the small loan program. For this reason, rural fishermen communities face with financial difficulty and it is not easy to get the loan for their business. Currently it is Myanmar approach to give more opportunity to the private sector such as private banks. After implementing these processes, the rural communities as well as the entire citizens will have chance to get the loan with low interest rate like public banks. If there are private banks, more organizations can emerge, cooperatives culture and market size can expand in fishery sector. According to the survey result, the fact of being not enough in financial resources is one of the major problems. The private banks can help them to escape from this problem.

As an example, Myanmar has three main fishing zones which contain villages, districts, townships, states and divisions. The cooperation should be implemented for each

village, township, district, state and division. The fellow members should collect skillful and active people from these main fishing areas. It will encourage to be in large numbers of cooperatives. Then, the huge benefit can be expected through these cooperatives. By encouraging the young and effective people from the major fishing zone, the cooperatives will become alive and can perform the major portion of fishery sector development because the cooperatives members are already familiar with fishing business. By polishing and giving the chance to them, the development of cooperative members, public sector, private sector can be significant and finally this achievement can reflect to fishery sector.

Emerging these cooperatives, the fishery workers can easily get updated information from time to time. The fishery members are grouped based on their working area and these groups are linked with each other. It can cause the close relationship among fellow members and eliminate the isolation of fishermen community from other society. Through these cooperatives, the following advantages can occur. Supporting with each other, providing with financial transaction and exchanging experiences can relieve the income fluctuation while team work can eliminate the isolation with other society, and finally development is seen in applying technology and providing with the working materials.

Furthermore, the rural fishermen community can hand over the experience from senior people to younger generation through these fisheries cooperatives. In this way, these experiences can distribute not only to one place but also among the cooperative members. The experiences from the older people are precious and useful to apply in their daily working life. In the fishery industry there is a large number of traditional fishermen. If they can pass their working experiences on to their next generation, this is useful and can eliminate the unnecessary barriers for new generations. For example, traditional weather forecasting and traditional fishing methods can be very helpful for new fishermen generation. The authorized groups such as MFF, government and fisheries cooperatives should arrange the field trips for

the rural communities to visit to the other cities and villages in the form of field excursion to take a look on other villages' fishing and livelihood occupations. The purpose is to exchange their traditional fishing experiences and other subsistence experiences. Accomplishing these things from fisheries cooperatives and other organizations can help to eliminate the fish brokers and can help to increase the fishermen regular income and also can help to upgrade the fishery sector positively.

iv. Final Ingredient (Social elements)

The final and central ingredient is social elements. These social elements include infrastructure, education and motivating the citizens. This is a basic necessity for every situation. Under infrastructure, communication and transportation are included. If there is a poor transportation and communication system, it is difficult to transmit the information, and this can cause the isolation of society. Under these social elements, education is one of the crucial elements for every society. Education is the window to see the environment. Though education, people can adapt to any new situation.

To implement the social welfare program in this rural fishermen community the suitable way is to complete the transportation and communication system first. For example the Tanintharyi and Rakhine fishing grounds are far from the major cities of Myanmar. Also the transportation and communication is difficult. However, after shifting the private business to those areas the transportation can begin to develop. As for private companies, in order to do their business, these private sectors can negotiate with related ministries and can manage the suitable transportation system for this remote region. At least these companies can operate their business with closely located cities. From this point of view the rural community becomes familiar with other occupations and fishermen community can get more chance to shift from one occupation to another. This can allow the fishermen community to get more

benefits and become flexible to communicate with their environment. To create the happy environment everyone should have job satisfaction, enough income, and good shelter and secure health system.

Also it needs to improve the education system in rural region. Primary school, middle school, high school education systems should be promoted consistently. These requirements can be fulfilled by combining between the government and the private sector. Education is at the heart of this enjoyable environment. At least, everyone should be familiar with his or her basic education system. The survey result does not show the percentage of illiteracy ratio. However, the rank of education is not too much high. The government organizations and nongovernmental organizations and volunteer groups should co-operat in this process. Like NFFC, they should arrange the scholarship programs for the rural families, as it is needed to support them with stationery and other materials for education. The government must persuade all of the household families from rural areas to allow all of their children to attend school. Of course, to attend the school happily, their household needs enough income. If these basic requirements can be fulfilled by combining government and private sector, the education status of this region become high. And the rural community can get more advantage through this education. Education can help them to maintain the natural resources management and also it will be easy to guide the use of technologies so that they can avoid the misuse of modern technologies and can help the country economy development.

v. Financial Transaction

Fields survey has revealed that nearly 97 percent of households need financial transaction and fishing materials. Other 3 percent needs technological providing. As for a government, they should increase the loans to entrepreneurs and other people who are interested in the fishery industry. Loans with low interest rate stand as the biggest favorable

factor to those people, who are interested in fishing industry. From the side of Myanmar livestock and fisheries development bank, they should extend the number of branches in both urban and rural regions.

To sum up, DoF should put their emphasis not only on the quality control section but also on investigating the market trends for the products. Harmonically cooperation between government, private sectors and civilian are main factors for country economy development. In any country's economy development, human lifestyle and their knowledge cannot be omitted and must be included. To upgrade the lifestyle of rural communities, Myanmar should promote the more programs for education, social welfare, job training and creating the job opportunities. The better utilization of the resources is the best way to improve the economy. Myanmar has enough natural resources and enough labor force. By combining these elements with educated people, hard workers, and better policies, no one can deny that the country economy will develop more and more.

APPENDICES

Appendix A

Sampling Method

Stage 1:

The Sampling Procedure of Selecting the Villages by using PPS

Sr. No.	Village Name	Number of Household	Cumulative Frequency	Random Number	Selected Villages
1.	AgHlaing	405	405	400	AgHlaing
2.	Khar Pyat	1172	1577	1176	Khar Pyat
3.	KaManTar	193	1770	-	
4.	ThaYetPinSeit	252	2022	1952	ThaYetPinSeit
5.	DawNyein	349	2371	-	
6.	PatPywe`	376	2747	2728	PatPywe`
7.	AhLae`Su	1131	3878	3504	AhLae`Su
Total		**3878**			

Calculating Method

Sampling Interval (SI) 3378/5 = 776

Random Start (RS) = 400

To choose the five villages, the random numbers are :
RS = 400
RS + SI = 1176
RS + 2SI = 1952
RS + 3SI = 2728
RS + 4SI = 3504

Stage 2:

Selected Sample Size for each Village

Sr. No.	Selected Villages	Number of Households	Sample Size (3 % of Total Household)
1.	AgHlaing	405	12
2.	Khar Pyat	1172	35
3.	ThaYetPinSeit	252	8
4.	PatPywe`	376	11
5.	AhLae`Su	1131	34
Total		**3336**	**100**

Appendix B

Sample Survey Form of Fishermen Community in Myanmar

Province / District	- ----------		Name	-	----------
Township Name	- ----------		Age	-	----------
Village Name	- ----------		Male/Female	-	----------
Total Number of People	- ----------		Household Head/ Dependent	-	----------
Total Number of Household	- ----------		Marital Status	-	Marriage / Single
			Household Size	-	----------

1.How many types of subsistence job do you have for a year?

① Fishing ② Cultivating ③ Fishing & Cultivating ④ Other

2. Why did you choose for fishing?

① Traditional ② Regional Economy ③ No Choice for other occupation

3. If you have other opportunities, which type of job do you prefer?

① Cultivating ② Government/Company Staff ③ Private job- Boat owner

④ Trade of regional goods ⑤ Others

4. Which one is your first priority for fishing?

① For Income ② For daily consumptions ③ To exchange with other commodities

④ Others

5. Which season is the main for fishing during a year? How many months do you spend only for fishing activities?

① The hot Season ② The rainy season ③ The cold season ④ The whole year

6. Which types of materials do you use for your fishing? Are these materials convenient and comfortable to use or not?

① Fishing Net ② Long Line ③ Other (Please write down in detail of fishing method)

7. Fishing materials are

① Bought ② Made myself ③ Others

8. How much do you spend the cost for buying the fishing materials?

① 0 up to 20,000 ③ 20,000 up to 40,000 ④ 40,000 up to 60,000 ⑤ 60,000 up to 80,000 ⑥ 80,000 up to 100,000 ⑦ Other

9. How many times did you buy the fishing materials within a year?

① 1 to 3 times ② 3 to 5 times ③ 5 to 7 times ④ Other

10. How did you sell the catching fish?

① By Myself ② Through fish broker ③ Direct selling to fish company ④ Others

11. How much is your daily average income?

① 0 up to 5,000 ② 5,000 up to 10,000 ③ 10,000 up to 15,000 ④ 15,000 up to 20,000 ⑤ 20,000 to 25,000 ⑥ 25,000 to 30,000 ⑦ 30,000-35,000

⑧ No Income

12. Does the daily income meet for your daily expenses or not?

① Yes ② No

13. Labor Conditions

① With family members ② With daily workers

14. If you hire daily workers, how much do you pay for them? (Daily Expenses)

① 0 up to 2,000 ② 2,000 up to 4,000 ③ 4,000 up to 6,000 ④ 6,000 up to 8,000 ⑤ 8,000 up to 10,000 ⑥ Other

15. What types of diseases do you frequently suffer from?

① Ill ② Others

16. Types of Treatment

① Traditional ② Clinic/Hospital ③ Others

17. How much do you spend for medical fare?

① 0 up to 2,000 ② 2,000 up to 4,000 ③ 4,000 up to 6,000

④ 6,000 up to 8,000 ⑤ 8,000 up to 10,000 ⑥ Other

18. Location of clinic/ hospital- Is it far from the home or not?

① Far ② Near ③ Others

19. How much do you use for clothing accessories?

① 0 up to 5,000 ② 5,000 up to 10,000 ③ 10,000 up to 15,000

④ 15,000 up to 20,000 ⑤ 20,000 to 25,000 ⑥ 25,000 to 30,000

⑦ 30,000-35,000 ⑧ Other

20. Education status of fishermen

① Literacy ② Illiteracy

What types of education system did you study in past?

① Monastery Education ② Primary School ③ Secondary School ④ High school ⑤ Others

How many students do you have in your family?

① 1 to 3 ② 3 to 5 ③ Over 5 ④ None

How much do you spend for their education a year?

① 0 up to 50,000 ② 50,000 up to 100,000 ③ 100,000 up to 150,000

④ Other

21. Did you accept loans or aids from government or other international organizations?

① Yes ② No

How many times did you receive?

① 1 to 3 ② 3 to 5 ③ Over 5

22. Which types of aids do you prefer for your works?

① Financial support ② Technology support ③ Other

23. Other comments and recommendations.

Appendix C

Frequency Tables from Sample Survey

Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Female	9	9.0	9.0	9.0
Male	91	91.0	91.0	100.0
Total	100	100.0	100.0	

Household Head

	Frequency	Percent	Valid Percent	Cumulative Percent
1*	100	100.0	100.0	100.0

***** All of the respondents are household head.

Marital Status

	Frequency	Percent	Valid Percent	Cumulative Percent
Single	2	2.0	2.0	2.0
Married	98	98.0	98.0	100.0
Total	100	100.0	100.0	

Types of Occupations

	Frequency	Percent	Valid Percent	Cumulative Percent
Fishing	100	100.0	100.0	100.0

Reason for Choosing

	Frequency	Percent	Valid Percent	Cumulative Percent
Traditional	4	4.0	4.0	4.0
Regional Economy	79	79.0	79.0	83.0
No Choice	17	17.0	17.0	100.0
Total	100	100.0	100.0	

Job Opportunities

	Frequency	Percent	Valid Percent	Cumulative Percent
Cultivating	9	9.0	9.0	9.0
Government/Company Staff	5	5.0	5.0	14.0
Private Job	45	45.0	45.0	59.0
Trade	19	19.0	19.0	78.0
Others	22	22.0	22.0	100.0
Total	100	100.0	100.0	

Reason for Fishing

	Frequency	Percent	Valid Percent	Cumulative Percent
Income	54	54.0	54.0	54.0
Daily Consumption	46	46.0	46.0	100.0
Total	100	100.0	100.0	

Main Season for Fishing

	Frequency	Percent	Valid Percent	Cumulative Percent
Summer	40	40.0	40.0	40.0
Cold	3	3.0	3.0	43.0
The whole year	57	57.0	57.0	100.0
Total	100	100.0	100.0	

Types of Fishing Gears

	Frequency	Percent	Valid Percent	Cumulative Percent
Fishing Net	98	98.0	98.0	98.0
Long Line	2	2.0	2.0	100.0
Total	100	100.0	100.0	

Fishing Gears (Buy / Made by myself)

	Frequency	Percent	Valid Percent	Cumulative Percent
Buying	99	99.0	99.0	99.0
Make Myself	1	1.0	1.0	100.0
Total	100	100.0	100.0	

Cost of Fishing Gears

	Frequency	Percent	Valid Percent	Cumulative Percent
0 up to 20,000	2	2.0	2.0	2.0
20,000 up to 40,000	4	4.0	4.0	6.0
40,000 up to 60,000	5	5.0	5.0	11.0
60,000 up to 80,000	10	10.0	10.0	21.0
80,000 up to 100,000	79	79.0	79.0	100.0
Total	100	100.0	100.0	

Times of Buying

	Frequency	Percent	Valid Percent	Cumulative Percent
1 to 3 times	86	86.0	86.0	86.0
3 to 5 times	12	12.0	12.0	98.0
5 to 7 times	2	2.0	2.0	100.0
Total	100	100.0	100.0	

Ways of selling

	Frequency	Percent	Valid Percent	Cumulative Percent
Myself	3	3.0	3.0	3.0
Fish Brokers	92	92.0	92.0	95.0
Company	5	5.0	5.0	100.0
Total	100	100.0	100.0	

Daily Income

	Frequency	Percent	Valid Percent	Cumulative Percent
0 up to 5,000	8	8.0	8.0	8.0
5,000 up to 10,000	30	30.0	30.0	38.0
10,000 up to 15,000	12	12.0	12.0	50.0
15,000 up to 20,000	12	12.0	12.0	62.0
20,000 up to 25, 000	13	13.0	13.0	75.0
25,000 up to 30,000	10	10.0	10.0	85.0
30,000 up to 35,000	15	15.0	15.0	100.0
Total	100	100.0	100.0	

Enough for Daily consumption or not

	Frequency	Percent	Valid Percent	Cumulative Percent
Enough	55	55.0	55.0	55.0
Not Enough	45	45.0	45.0	100.0
Total	100	100.0	100.0	

Labor Condition

	Frequency	Percent	Valid Percent	Cumulative Percent
Daily Workers	100	100.0	100.0	100.0

Labor Cost

	Frequency	Percent	Valid Percent	Cumulative Percent
0 up to 2,000	12	12.0	12.0	12.0
2,000 up to 4,000	57	57.0	57.0	69.0
4,000 up to 6,000	13	13.0	13.0	82.0
6,000 up to 8,000	10	10.0	10.0	92.0
8,000 up to 10,000	8	8.0	8.0	100.0
Total	100	100.0	100.0	

Frequently occur disease

	Frequency	Percent	Valid Percent	Cumulative Percent
Ill	100	100.0	100.0	100.0

Ways of Treatment

	Frequency	Percent	Valid Percent	Cumulative Percent
Traditionally	17	17.0	17.0	17.0
Clinic/Hospital	83	83.0	83.0	100.0
Total	100	100.0	100.0	

Medical Expenses

	Frequency	Percent	Valid Percent	Cumulative Percent
0 up to 2,000	11	11.0	11.0	11.0
2,000 up to 4,000	3	3.0	3.0	14.0
4,000 up to 6,000	18	18.0	18.0	32.0
6,000 up to 8,000	20	20.0	20.0	52.0
8,000 up to 10,000	48	48.0	48.0	100.0
Total	100	100.0	100.0	

Distance of Clinic / Hospital

	Frequency	Percent	Valid Percent	Cumulative Percent
Far	83	83.0	83.0	83.0
Near	17	17.0	17.0	100.0
Total	100	100.0	100.0	

Expenses for Clothes

	Frequency	Percent	Valid Percent	Cumulative Percent
0 up to 5,000	2	2.0	2.0	2.0
5,000 up to 10,000	8	8.0	8.0	10.0
10,000 up to 15,000	10	10.0	10.0	20.0
15,000 up to 20,000	15	15.0	15.0	35.0
20,000 up to 25, 000	13	13.0	13.0	48.0
25,000 up to 30,000	22	22.0	22.0	70.0
30,000 up to 35,000	30	30.0	30.0	100.0
Total	100	100.0	100.0	

Education Status of Household Head

	Frequency	Percent	Valid Percent	Cumulative Percent
Literacy	99	99.0	99.0	99.0
Illiteracy	1	1.0	1.0	100.0
Total	100	100.0	100.0	

Types of Education

	Frequency	Percent	Valid Percent	Cumulative Percent
Monastery	39	39.0	39.4	39.4
Primary	40	40.0	40.4	79.8
Secondary	16	16.0	16.2	96.0
High School	4	4.0	4.0	100.0
Total	99	99.0	100.0	
Illiteracy	1	1.0		
Total	100	100.0		

Number of Students

	Frequency	Percent	Valid Percent	Cumulative Percent
1 to 3	81	81.0	81.0	81.0
3 to 5	7	7.0	7.0	88.0
Over 5	2	2.0	2.0	90.0
None	10	10.0	10.0	100.0
Total	100	100.0	100.0	

Education Expenses

	Frequency	Percent	Valid Percent	Cumulative Percent
0 up to 50,000	13	9.0	9.0	9.0
50,000 up to 100,000	7	7.0	7.0	16.0
100,000 up to 150,000	70	74.0	74.0	100.0
Total	100	100.0	100.0	

Aids (Accept or Not)

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	15	15.0	15.0	15.0
No	85	85.0	85.0	100.0
Total	100	100.0	100.0	

Number of times

	Frequency	Percent	Valid Percent	Cumulative Percent
1 to 3	14	14.0	93.3	93.3
3 to 5	1	1.0	6.7	100.0
Total	100	100.0	100.0	
Not Accept	85	85.0		
Total	100	100.0		

Requirement aids

	Frequency	Percent	Valid Percent	Cumulative Percent
Financial	95	95.0	95.0	15.0
Technology	5	5.0	5.0	100.0
Total	100	100.0	100.0	

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