

INCEPTION REPORT



Mymensingh Pond Fish Sub-sector

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Development Wheel

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Executive Summary

There have been enormous development projects in Bangladesh since its independence. All were aiming at reducing poverty, increasing literacy rate, balancing gender discrimination, ensuring health, and developing infrastructure. Sustainable livelihood for Poor Producers (SLIPP) is a project which is consummately distinct in its approach (Business Development Services approach) of implementation. SLIPP is funded by the European Commission (EC) and implemented by Traidcraft Exchange (TX) and Development Wheel (DEW) with an overall objective to reduce poverty among poor and marginalized communities in Mymensingh and Netrokona Districts by increasing income and employment opportunities. To achieve this objective, TX/DEW adopts Market Development approach where four sub-sectors have been selected through a scoping visit. Mymensingh fish is one of the selected sub-sectors. This report reveals the current Mymensingh fish market situation – demand-supply, current practices, operating mechanism, market dynamism, value chain actors, service market situation, relevant government policies and the constraints and opportunities. At the end the report suggests some interventions to address the constraints and opportunities.

Bangladesh is crisscrossed by about 230 rivers. Besides, canals, beels, ponds, haors and baors enrich the water body of the country. Fish are both captured and cultured here. Fresh water fish production amounts to 1,848,735 MT in the FY 2005-2006 of which 956,686 MT is captured and 892,049 MT is cultured. Mymensingh produced 24364 MT that year. Cumulative average growth rate of fish production in Bangladesh from 1996 to 2005 is 8.11%.

The pond fish sub-sector in Mymensingh can be distinctly divided into three parts in terms of development – (1) Valuka and Trishal, (2) Muktagaccha, Fulbaria, Fulpur, Sadar and Gouripur and (3) Goforgaon, Nandail, Haluaghat, Ishwargonj and Dhobaura. The fish sub-sector is characterized by the following attributes:

- 100% of the ponds and other water bodies of this region are perennial.
- All varieties of fish are not cultivated equally in all places of the district.
- The predominant species is pangus preceded by carps, tilapia, and Thai koi.
- Cultivation of pangus is declining due to increasing production cost.
- Mymensingh exports fish to other districts.
- In the fish sub sector women involvement is very low.
- Taking lease of lands for fish farming is in practice.
- Producers mainly are the decisive ones among the others actors. It is them who mainly decide what to produce and how much to produce.
- Trustworthy relationship exists among fingerling traders and table fish farmers.

- The sector is growing - both vertically and horizontally.
- Commercial orientation is present that is people cultivate fish in order to sell.
- Farmers and nurseries have been improving their cultivation techniques by following 'learning by doing' strategy, rather than embracing modern practices.
- Fish feed mills exist locally that crushes feed ingredients and prepare feed.
- Hatcheries' output has persistently increased over last few years but spawn quality failed to improve.
- Fingerling market has ensured robust growth of nursery business.
- Family members usually assist in day-to-day management.
- Selling production at farm gate to baparis/fishermen is the most common scenario.

The major actors of this sub-sector are input seller (420), hatchery (76), nursery (1500), table fish farmer (91831), spawn trader (300), fingerling trader (500), wholesaler (450) and retailer (500). The service providers are arotder (91) and feed crusher (89). There are seven channels of supply chain of fish sub-sector in Mymensingh each having its own distinction of transaction. The strengths of this sub-sector are water availability, less frequent visit of flood and lease practice. The opportunities are huge unmet national demand, average increase in fish productivity, introduction of high productive and new varieties and unused and less intensively cultivated ponds. The weaknesses are lack of knowledge of marginal farmers on modern input and cultivation technique, import of fingerling of pangus, low investment capability of hatcheries, nurseries and small table fish farmers. The threats are that outside hatcheries are highly competitive and possess efficient distribution channel. So they can play with price.

There are twelve constraints related to technology and product development, market access, inputs, policy, service provision and finance. Besides, three opportunities accompany them. These constraints and opportunities can be addressed through eleven interventions under the broad umbrella of four strategies. The interventions will aim, by the year 2012, to achieve productivity increase by 60%, sales increase by at least 30%, income increase by 20%, and employment generation by 20%.

After having done an extensive sub-sector study, it is found that not all upazilas are equally potential for intervention. Based on three criteria - (1) presence of marginal farmers, (2) growth potentiality and (3) resource availability (ponds etc.) - five upazilas of Mymensingh are highly eligible for the interventions to be implemented. They are Fulbaria, Sadar, Nandail, Fulpur and Muktagaccha in descending order.



Definitions

Fishery Sector: Fishery sector includes Marine fish, Inland Captured fish and Inland Cultured fish.

Marine Fish: Marine fish are captured from sea. It includes fish, crab, shell, mammals etc.

Inland Fish: Inland fish includes all fishes that are either captured or cultured within any country's geographical boundary that excludes the marine fish.

Inland Captured fish: Fishes that are captured from natural water bodies like rivers, big lakes and water bodies not being cultivated commercially are called Inland Captured fish. This also includes flood plains.

Inland Cultured Fish/ Fresh Water Fish Farming: Fishes that are commercially cultivated in closed and open water bodies are called Inland cultured fish. It includes large water bodies like beels, canals, baors and ponds, rice fields, single-crop lands etc. Shrimp falls under this category, which can be grown either in brackish water or in sweet water.

Commercial Fish Farming: Mass production of fish in aquaculture systems, and marketing of it in domestic or foreign markets for the purpose of generating profit.

Commercial Fish Pond: The aquaculture ponds facilities, used for commercial production of fish, for the purpose of generating profit.

Pond Fish: Ponds are man-made water bodies, which have generally a defined boundary. There are two types of ponds, seasonal and perennial. Seasonal ponds retain water for a certain period of time in a year whereas perennial ponds hold water round the year. Rice field and single-crop lands are also included in pond fish sector. In low land rice fields, fishes are often commercially cultivated with rice cultivation. And in case of single-crop lands, farmers cultivate fish since they are capable to produce crops only in few months of a year and the land holds water during rest of the year.

Brood Fish: The parental breeding flock, both males and females, which are used to produce the 'seed' of the cultured organism (fish-fry, shrimp post-larvae, etc) for stocking the aquaculture facility.

Fry/ Spawn: Fish larvae upon hatching from eggs.

Fingerling: It is the later stage of fry/spawn having the size of usually a finger and the weight of usually 60-100 gram.

Table Fish: It is the stage of fish when it is captured and goes to the dining table of man for being consumed. Table fish of different species vary from one another in terms of size and weight and of course taste and price.

Hatchery: A hatchery is a facility where eggs are hatched under artificial conditions, especially those of fish or poultry. It may be used for ex-situ conservation purposes, i.e. to breed rare or endangered species under controlled conditions; alternatively, it may be for economic reasons (i.e. to enhance food supplies or fishery resources). In short, hatchery is the aquaculture production stage in which crop organism hatches from eggs and grows to stocking size.

Nursery: The first production stage in fish farming, nursing fry (about 1.0 gram) to fingerling (60-100 gram).

Aerator: A machine used for aeration of aquaculture ponds and tanks.

Polyculture: A food production system, which grows several species simultaneously in the same space. In aquaculture, it is growing multiple aquatic organisms in the same water body.

Working Capital: Funds required fulfilling the gap between creditors and debtors of an operation.

Growth rate of Fish: It is added biomass per unit time, measured as gram per day. The value varies as a function of fish species, fish size, culture conditions and feed.

Carp: It is a common name for various fresh water fishes of the family Cyprinidae which is a very large group of fishes that dominates the fish faunas of Eurasia and North America. Some consider all cyprinid fishes to be carp and the family Cyprinidae itself is often known as the carp family. In colloquial use, however, carp usually refers only to several larger cyprinid species such as Cyprinus carpio (common carp), Carassius carassius (Crucian carp), Ctenopharyngodon idella (grass carp), Hypophthalmichthys molitrix (silver carp), and Hypophthalmichthys nobilis (bighead carp). Carp have long been an important food fish to humans. Each female carp is able to lay up to 80,000 eggs.

Acronyms

<i>SLIPP</i>	Sustainable livelihood for Poor Producers
<i>EC</i>	European Commission
<i>TX</i>	Traidcraft Exchange
<i>DEW</i>	Development Wheel
<i>FGD</i>	Focus group discussion
<i>MT</i>	Metric Ton
<i>HYV</i>	High yielding varieties
<i>COGS</i>	Cost of Goods Sold
<i>NGO</i>	Non Government Organization
<i>SWOT</i>	Strengths, Weakness, Opportunities, Threats
<i>DAE</i>	Department of Agriculture Extension
<i>BRAC</i>	Bangladesh Rural Advancement Committee
<i>BAU</i>	Bangladesh Agriculture University
<i>MSME</i>	Micro Small Medium Enterprises
<i>DoF</i>	Department of Fisheries
<i>BFRI</i>	Bangladesh Fish Research Institute
<i>MAEP</i>	Mymensingh Aquaculture Extension Project

1.0 INTRODUCTION

Bangladesh is a riverine country with large number of freshwater resources, both natural (rivers, beels, haors) and man-made reservoirs (ponds, lakes). In addition, the country has a large continental shelf area in Bay of Bengal. Long coastline also ensures the regular flow of brackish water in vast areas. All these information tell us that fish plays a very important role in the daily life of many people in Bangladesh. Lower price compared to other animal protein sources (chicken, beef, and mutton) and traditional affinities for fish have made it the premium source of animal protein (63% of animal protein intake) for our vast population. Currently cultured fish (pond, rice field, and small and medium open water bodies) meets the major portion of this huge demand.

Culture of fish has been developed in last two decades through introduction of exotic high growth species, increased commercial orientation, improved cultivation technique and management, and enhanced capacity of market players. This development has been translated into the improvement of livelihoods of vast poor associated with this sector through increase in income. However, fish culture is still at nascent stage in many regions of the country and the opportunity to increase productivity prevails overwhelmingly in entire Bangladesh.

1.1 Background

Sustainable livelihood for Poor Producers (SLIPP) is a project funded by the European Commission (EC) and implemented by Traidcraft Exchange (TX) and Development Wheel (DEW) with an overall objective to reduce poverty among poor and marginalized communities in Mymensingh and Netrokona Districts by increasing income and employment opportunities. To achieve this objective, TX/DEW adopts Market Development approach where four sub-sectors have already been selected through a scoping visit and field research to those districts to improve their competitiveness. One of the major criteria for the selection of these sub sectors addresses the involvement of poor people in those sub sectors.

Mymensingh fish sub-sector emerged as one of the four potential sub-sectors through the scoping process. Now to identify the key constraints and opportunities that are hindering the growth of the sub sector and also barring the poor producers/farmers from actively and effectively taking part in the market system, an in depth sub sector (fishery) study has been conducted. The study has also identified service provisions and made assessment of those

services. The project aims to develop/build the capacity of selected service providers so that they can efficiently and effectively render their service to the poor producers/farmers. This sub-sector study, in a way, is the second step to achieve the overall objective of the project.

1.2 Objectives

The broad objective of the SLIPP project is to alleviate poverty in Mymensingh and Netrokona. The specific objectives of the sub-sector study for fishery in Mymensingh are as follows:

- To clearly understand the value chain of selected sub-sector and identify bottlenecks
- To understand the market dynamics of the sub-sector
- To understand the policy environment and to identify policy related constraints
- To clearly understand the business services required to overcome the bottlenecks and the supply – demand gap analysis in the business service market.
- To identify the constraints and the opportunities within the sub-sector
- To design intervention plan for facilitating growth and competitiveness in the sub-sector
- To increase the capacity of the staff of the Implementing organization Development Wheel

1.3 Methodology

The research applied a mix of the secondary literature review, questionnaire survey, focus group discussion (FGD), key informants interview. The overall research work was completed as outlined below.

The overall research was carried out in the following steps as

- Team Orientation
- Scoping visit to the field
- Secondary literature review and study tools development
- Field research
- Analysis and report preparation
- Validation workshop
- Project promotion workshop

The above-mentioned steps are discussed in details—

1.3.1 Team Orientation

The very first step was to orient the research team about the study objective and train them accordingly. A consultant conducted a two-day orientation for the study team that covered the sub-sector study methodology, value-chain mapping, identification of constraints and opportunities and also commercially viable solutions and service assessment techniques. Group work and different exercises were adopted in the orientation to let the researchers develop their knowledge on the study approach in a short time. The orientation not only helped the team develop their knowledge on sub-sector study but also facilitate the research process to achieve the objective.

1.3.2 Scoping Visit to the Field

The next step was to provide a practical orientation of the study team with the field reality and select two sub-sectors based upon the following criteria depicted in the table below.

Table 1: selection criteria for sub-sector in the project area

Selection Criteria	Example of types of information that may be used
Outreach	<ul style="list-style-type: none"> - Estimates on the number of enterprises for each type of firm in the sub-sector (input suppliers, producers, wholesalers, retailer etc.) - Average firm size (employees) for the different types of sub-sector firms - Average salary (monthly wages) for employees in different types of sub-sector firms
Market Demand and growth potential	<ul style="list-style-type: none"> - Opinions and data from key informants on market trends and sub-sector competitiveness - Information from existing statistics/studies (taking validity of this information into account) - Examples of businesses that have problems meeting demand - Comparisons within the region (based on opinions from key informants of market information)
Significance of Forward and Backward Linkages Among Domestic Market Actors	<ul style="list-style-type: none"> - Description of the different kinds of transactions that take place among domestic market actors in the sub-sector - An estimate of the volume and number of these transactions between firms - Availability of raw materials

Service provision	-Need and gap of business service provisions -Existing service providers and their capacity
Government priority	-Different government project and promotional initiatives -Favorable government policy
Participation of Women	- Estimate of the number of women who are self employed, own businesses or work as employees in the sub-sector (should include participation at all levels of the sub-sector)
Environmental Scanning	- Describe the macro-environmental factors and assess the impact and importance of the various environmental factors.
Technological assessment	- Technology is one of the major areas of intervention that can directly aid in development of the sub-sectors of concern. General importance of and demand for technological intervention will be assessed.
Duplication of work	- Presence of other similar project in the study areas - Extent of similarity

Source: Proposal for Sub sector study

Based on the above, the results were presented in the following format as in table 4. Furthermore, the rank scale was from 1-5 based on Likert type interval scale to increase the sensitivity in the analysis. This process is described in the later section (Section 1.4).

The outcome of the scoping visit was two sub-sectors selected from each area making four sub-sectors altogether. The study team spent three days in Mymensingh and Netrokona and gathered necessary information to select the sub-sectors. Meeting key informants, visiting market places and few informal FGDs enriched the knowledge base of the study team on the pre-selected sub-sectors to narrow them down to four sub-sectors for two areas according to the criteria.

1.3.3 Secondary Literature Review

After the selection of the sub-sectors, different secondary literature were collected and reviewed to develop a general idea on the sub-sectors and the study area. Information was collected on fish farming, vegetable cultivation and duck farming in Bangladesh and also in Mymensingh and Netrokona. Books, brochures, leaflets, manuals from public and private sources and files (soft copies) of various formats from internet were collected prior to developing the study tools.

1.3.4 Study Tools Development

The tools for field investigation, survey and interview with the key informants were designed. The tools were five questionnaires in Bangla as

- Key Informant Questionnaire
- Demand side Assessment of BDS
- Supply side Assessment of BDS
- Market Assessment Questionnaire 1
- Market Assessment Questionnaire 2

The sampling framework was also refined and the coordination, quality control mechanism, and data handling procedure were developed and finalized.

1.3.5 Field research

The next phase was the field research where the study team investigated the sub-sector dynamics, their constraints and opportunities, commercially viable solutions and their sustainability. Before going to the field, the team was given an orientation on the sampling framework that is the questionnaire for different sub-sector actors. The study team sat together each evening to de-brief and share their experiences. This was essential to ensure minimal error and updating. The field research was carried out in the following way.

- ***Stakeholder interview:*** Primary and secondary stakeholders were identified and underwent in-depth interviews through pre-designed questionnaire guide. One hundred and one such interviews were carried out for the fish sub-sector. The stakeholder list covered producers, processors, input suppliers, output market players, service providers from both private and public and different relevant development project personnel. For broadening the knowledge, key informants were identified and underwent in-depth interview.
- ***Focus Group Discussion:*** Three FGDs were carried out for fish sub-sector comprising the same group of people – one for producers' group and two for output market actors. The FGDs helped to streamline the constraints and opportunities in the relevant sub-sector context.

Five questionnaires were used as the guideline for information collection through interviews and FGDs with different value chain actors of fish sub-sector.

Table 2: Interview with different value chain actors of Mymensingh fish sub-sector

Questionnaires	Respondents	Number Of Respondents	Types (1 = Interview 2 = In-depth Interview 3 = FGD)
Key Informant Questionnaire	DFO, UFOs, Farm Managers, BAU Teachers, DANIDA Project Officer	11	1, 2
Demand side Assessment of BDS	Table Fish Farmers	14	1
Supply side Assessment of BDS	Nursery Owners, Input Sellers	20	1
Market Assessment Questionnaire 1	Hatchery Owners	04	1
	Nursery Owners	08	1
	Table Fish Farmers	19	1, 2, 3
Market Assessment Questionnaire 2	Input Sellers	21	1
	Arotiders	2	1, 3
	Wholesalers	1	1
	Retailers	2	1, 3
	Fingerling Traders	2	1
Total	-	104	-

Source: Sub-sector Study, Mymensingh, 2007

- **Visited areas:** Of the 12 upazilas of Mymensingh district, the sub-sector study team visited 10 upazilas. The visited upazilas are: Valuka, Trishal, Muktagaccha, Fulbaria, Fulpur, Sadar, Gouripur, Goforgaon, Nandail, and Ishwargonj. Remaining 2 upazilas – Haluaghat and Dhobaura – were excluded.

Table 3: Log of sub-sector study visit

Date	Visited Upazilas
18/08/07	Muktagaccha
19/08/07	Fulbaria, Gouripur
20/08/07	Valuka, Trishal
21/08/07	Sadar, Gouripur
22/08/07	Ishwargonj, Fulpur
23/08/07	Nandail

Source: Sub-sector Study

1.3.6 Analysis and report preparation

This very phase of research includes analysis of the findings from the field survey and presenting in this very report.

1.3.7 Validation workshop

There had been two day-long validation workshops in Mymensingh and Netrokona both attended by stakeholders as different value chain actors as farmers, input (feed, seed, spawn, fingerling, medicine) sellers, wholesalers, and retailers, different local NGO personnel, local GOB personnel, a BAU Professor and officials and staff from both Traidcraft and DEW.

Validation workshops, held on November 19, 2007, in Mymensingh covered dissemination and verification of the findings in the fish and vegetable sub-sector. Validation workshops, held on November 20, 2007, in Netrokona covered dissemination and verification of the findings in the duck and vegetable sub-sector. No major changes in the findings were found during the validation workshops. This indicates towards the efficiency of the field survey and analysis.

1.3.8 Project promotion workshop

On November 28, 2007 a workshop namely *“Project Promotion and Consultation of Study Findings Workshop”* was held at national level in Dhaka. This was attended by different value chain actors of four sub-sectors, national NGO personnel, National GOB personnel, University Professors, consultants, Traidcraft and DEW officials and a representative from European Commission.

The workshop was aimed at sharing the findings to the audience, identifying deviations of the findings, if there would be any, and seeking any constructive suggestion regarding the implementation of the project.

1.4 Justification of Selecting Mymensingh Pond Fish Sub-sector

The sub-sector study found that fish cultivation is strongly present in seven of the upazilas of Mymensingh district. Rest of the upazilas has already stepped into fishery and the sub-sector is moving forward. Mymensingh comprises of twelve upazilas namely Sadar, Gouripur, Ishwargonj, Muktagaccha, Fulpur, Fulbaria, Trishal, Valuka, Goforgaon, Nandail, Haluaghat and Dhobaura. Because of some geographic favor and external intervention of DANIDA and Department of Fisheries, Government of Bangladesh, fishery has seen a vast development in

this district but this vast development is limited to only Trishal and Valuka. Though these two upazilas are the icons of fish cultivation in Bangladesh, the district has the productivity level of 3.4. The highest productivity is 3.9, which goes to Barisal.

The sub-sector (Fishery) study in Mymensingh was followed by the scoping visit, which had the objective of selecting two sub-sectors from the district. Fishery and vegetable farming came out to be the first and second respectively among all other sub-sectors. Fishery has the maximum outreach, market demand and growth potential, service provision, and government priority, least duplication of work and significant forward and backward linkages.

Table 4: Weighted Score of the Selected Sub-sectors in Mymensingh

Sl.	Sub-Sector Criteria	Weight (%)	Fish		Vegetable	
			Score (1-5)	Weighted Score	Score (1-5)	Weighted Score
1	No. of MSEs	20	5	100	5	100
2	Market Demand & Growth Potential	20	5	100	5	100
3	Significance of forward-backward linkages	15	4	60	5	75
4	Service provision	10	5	50	5	50
5	Government Priority	10	5	50	4	40
6	Participation of women	5	3	15	4	20
7	Environmental issues	5	4	20	4	20
8	Technological issues	5	5	25	5	25
9	Duplication of work	10	5	50	3	30
	Total			470		460

Source: Scoping Visit Report, Mymensingh, 2007

Reasons for selecting fish sub-sector can be pointed out here as:

1.4.1 Big outreach (No. of MSMEs involvement)

According to Department of Fisheries (DoF), 91851 farmers are currently involved in fish farming. However, this number only includes those who cultivate fish in seasonal and perennial ponds. Farmers that practice integrated fish farming in rice field are not included in this number. If included, the number will be more.

1.4.2 High growth potential

Study shows that greater Mymensingh is still at growing stage and it has ample opportunity to grow both vertically and horizontally.

Potential for horizontal expansion

Horizontal expansion means increase area coverage under commercial farming. There are marginal farmers who buy fingerlings and just leave them in the pond to grow on their own. They do not know about modern fish cultivation technique. Besides, more and more farmers are turning their crop cultivable lands into ponds for fishery. Thus there is a huge opportunity for horizontal expansion.

Potential for Vertical Expansion

Productivity is low in case of marginal farmers. Though high productivity prevails with the large farmers of Valuka and Trishal, Micro and small fish farmers of other upazilas suffer from low productivity. So, vertical expansion that is production per hectare is sure to increase.

1.4.3 Opportunity for increased income

By and large, farmers practice crop cultivation, livestock etc. besides fish farming. According to a survey it is found that fish farming provides the greater portion of income (42%), with other major sources - crops (20.4%), business (23.5%), poultry (2.5%) and dairy (1.45%).¹ The survey also outlines that farmers are aware of higher return in fish than traditional cropping. Also, Fish is less vulnerable to natural calamity than crops.

1.4.4 Water availability in Ponds

Water level remains almost the same throughout the year in Mymensingh. High water level and less iron content have paved the way for fishery. There are seasonal ponds also seen in Ishwargonj and Haluaghat where rice and fish are cultivated together in the same field keeping the water level high enough for the fish.

1.4.5 Demand-Supply gap

Mymensingh has exported 107856.80 MT fish to other districts in the year 2006 (Data of 2006-2007, collected from District Fishery Officer). However, there is still unmet demand at the national level.

¹ Alam, Ahamsul (2001), 'Production, accessibility and consumption patterns of aquaculture products in Bangladesh' – Findings is revealed from a survey in Mymensingh region

Table 5: Demand Supply Gap

Year	Production	Consumption	Export
2006-2007 ²	175887.80	68031.00	107856.80

Source: District Fisheries Officer

1.4.6 More forward and backward linkages

This sub sector includes a good number of forward and backward linkages that create the provision for more people to take part in the industry. In other words, it carries the potential of more employment generation.

1.4.7 Easy to enter the business

The barrier to enter the business is low. Key input to start fish farming is fingerling, which is, these days, being carried to farmers' door by traders. And thus a poor farmer can start fish farming. Although it is not a very commercial approach, but this practice has initiated fish farming among many people. And after seeing the economic return, they start farming more commercially.

1.4.8 Other natural water bodies

Other natural water bodies like haor, baor, beel – are also used for commercial cultivation of fish. Although this has been in practice in Valuka only, it can be extended for MSEs through cooperatives in other upazilas like Haluaghat and etc.

1.4.9 Strong presence of marginal farmers

Farmers having pond size of maximum 60 decimal are defined as marginal ones in this sub-sector study of Mymensingh. There are number of marginal farmers in Muktagaccha, Fulbaria, Fulpur, Sadar and Nandail, where lie both constraints and opportunities to address.

Finally, considering all the findings from scoping and sub-sector study, it is just enough to work with fish sub-sector in Mymensingh.

1.5 Limitations

Some limitations impede this report to be one of the finest ones. Time, manpower and money are the ever-scarce resources that should not be considered as limitations. Nonetheless these resources to some extent shape up

² Data of previous years could not be collected.

the quality of the sub-sector study. However, they were very well managed. The limitations that affected the study are –

- Unavailability of sufficient secondary information
- Communication blockade due to road damage and flood
- Travel time increased during the study as the fish farmers locate in clusters throughout the district.
- Though the sample was taken from all over the district, its size was too small with respect to the total number of the actors – 18 of 91831 fish farmers, 10 of 1500 nurseries, 4 of 76 hatcheries, 6 of 420 input sellers, 2 of 91 arottders, 2 of 500 fingerling traders, and one actor each from 89 feed millers, 500 retailers and 450 wholesalers.
- The study was more of qualitative than quantitative which emphasizes more on understanding the market system than focusing on numbers like ratio of sample size and population. This instigated to use the judgmental view of analysis.

2.0 POND FISH SUB-SECTOR IN BANGLADESH

2.1 The History and Commercial Evolution

The country has long been dependent on captured fish from inland water resources to meet the demand for fish. However, since 1980s fish production from inland water resources started to decline, chiefly for over fishing as well as erection of several dams, increased use of pesticides in agriculture, industrial wastes, soil erosion etc. These over-exploited inland capture water bodies are also perceived as not sustainable for increased production and not commercially viable due to frequent flooding. Therefore fish culture in inland fish resources (especially in ponds and tanks) reveals as the only option to meet the growing demand of increasing population. Increased investment in marine fishery capture could be the other option. However, except Hilsha, people in our country prefer freshwater fish. Even Hilsha is perceived as freshwater fish. And, marine fisheries are mostly consumed as dry fish in few selected regions, while the rest are exported to other countries.

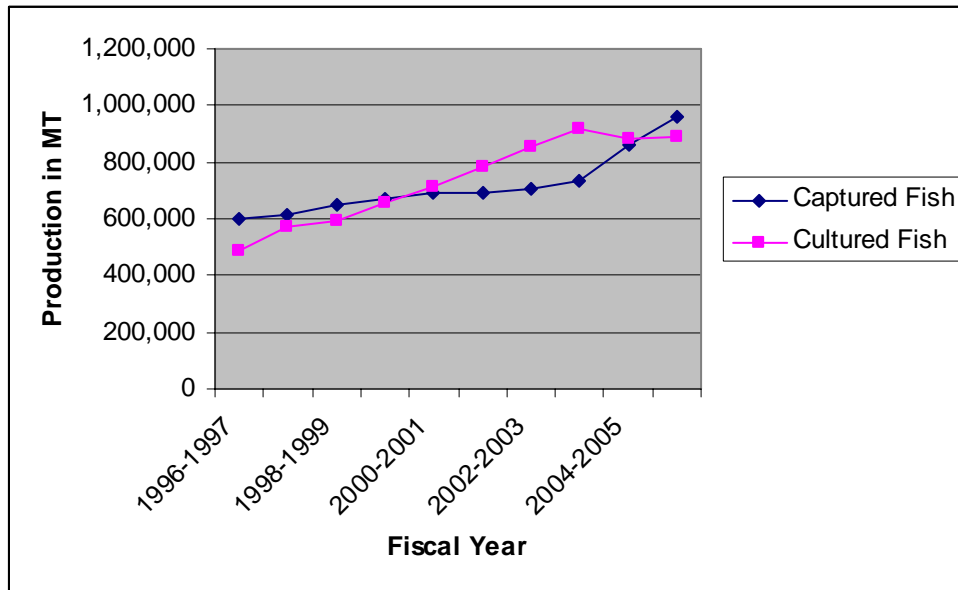
The country with the financial assistance of various multilateral donors, financial institutes, NGOs and development agencies started to emphasize on the development of aquaculture - fish culture in pond and tanks. Necessary infrastructure development (especially hatcheries), technology transfer, skill building of fish farmers, and introduction of exotic high yielding varieties were the early strategies. They started to prove their effectiveness and cultured fish production started getting its momentum. At the end of 1990s, total cultured fish production exceeds total inland capture fisheries. According to World Fish Center report, fish production over the period of 1991-92 to 1998-99 grew at a rate of 7.09% per year, while production of cultured fish from ponds has grown at 15.32% rate per year.

Table 6: Fresh water fish production

Year\Source	Captured (MT)	Cultured (MT)
1996-1997	599,900	485,864
1997-1998	615,949	574,812
1998-1999	649,418	593,202
1999-2000	670,465	657,120
2000-2001	688,920	712,640
2001-2002	688,435	786,604
2002-2003	709,333	856,956
2003-2004	732,067	914,752
2004-2005	859,269	882,091
2005-2006	956,686	892,049

Source: Department of Fisheries, 2005-06

Figure 1: Fresh water fish production



Source: Department of Fisheries, 2005-06

The figure shows that in the fiscal year 1999-2000, production of cultured fish superseded that of captured fish and since then it had been increasing until 2004-2005. Capture of fish from beel, Kaptai Lake and flood land has increased sharply and culture of fish in flood land has also increased in the last two fiscal years and exceeds the production of cultured fish. Besides, flood water severely hampered the production pond farming. This can be considered as anomaly of normal trend.

2.2 Fish Sub-sector and Bangladesh Economy

Currently, the total market size of Bangladesh fish sub-sector is 15456 crore taka (US\$ 2273 Million). The following box shows some of the vital statistics of fish sub-sector in Bangladesh.

Table 7: Fish Sector in Bangladesh Economy (2004-05)

Sector GDP	Tk. 15456 Crore (Current Price)
Share of GDP	5% (Constant Price)
Sector growth rate:	
Compared to last year	3.65% (Constant Price)
CAGR for 1999-2005	1.3% (Constant Price)

Export (2003-04):	Tk 2363.47 Crore (0.54 Lakh MT)
Growth in Export: (Compared to last year)	21.7% (in value), 14.3% (in volume)
Employment:	12 million (7% of total population)
No. of Hatcheries:	696 in Private, 112 in Public

Source: Bangladesh Economic Review 2005 & 2006

The following table shows the total production of fish from different sources in Bangladesh in the fiscal year 2005-2006. It also shows the productivity of different sources and the share (percentage) of total production.

Table 8: Annual total catch & area productivity, 2005-2006

Sector of Fisheries	Water Area (Hectare)	Total Catch (Metric Ton)	% of Catch
A. Inland Fisheries			
(i) Capture			
River & Estuaries	1,031,563	137,859	
Sundarbans *		16,423	
Beel	114,161	76,365	
Kaptai Lake	68,800	7,548	
Flood Land	2,832,792	718,491	
Capture Total	4,047,316	956,686	41.09%
(ii) Culture			
Pond & Ditch	305,025	759,628	
Baor	5,488	4,498	
Shrimp Farm	217,877	127,923	
Culture Total	528,390	892,049	38.31%
Inland Total	4,575,706	1,848,735	79.39%
B. Marine Fisheries			
(i) Industrial Fisheries		34,084	
(ii) Artisanal Fisheries		445,726	
Marine Total		479,810	20.61%
Country Total		2,328,545	100.00%

Source: Department of Fisheries, 2005-2006

Table 9: Productivity of Fish over time

Year	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
Capture Total	0.17	0.17	0.18	0.18	0.21	0.24
Pond & Ditch	2.02	2.25	2.47	2.61	2.48	2.49
Culture Total	1.35	1.49	1.62	1.73	1.67	1.69

Source: Bangladesh Economic Review, 2005, DoF, 2004-2005 & 2005-2006

Table 8 shows that in general productivity of fish has been increasing over the years. However, there had been a decline in cultured fish due to decline in pond and ditch production in the year 2004-2005. Again the very next year has seen an increase in productivity of cultured fish. On the other hand, productivity in captured fish has constantly been increasing though very lower than that of cultured fish.

2.3 Major Species and Leading Areas

Fish farmers' commercial orientation has increased over time. However, this statement is more appropriate for the top ten key fish culture regions of the country due to their long orientation with fish farming, modern hatcheries, and behavioral attitude of risk bearing. They are currently working as mentors and guiding the future of other regions (about species and cultivation technique). Presently practiced species of these regions are depicted in the following table. These species are presented according to their respective share in regional production.

Table 10: Major leading areas and leading species

Rank	District	Major Species
1	Chittagong	
2	Commila	Carp, Pangas, Kai, Bata, Mono sex Telapia, Rupchanda
3	Noakhali	
4	Dinajpur	Carp (Except Katla), Shorputi, Telapia
5	Mymensingh	Pangas, Carp, Kai, Mono sex Telapia
6	Bhola	
7	B.baria	
8	Jessore	Pangas, Carp, Mono Sex Telapia, Kai, Bata
9	Bogra	Carp, Pangas, Bata, Mono Sex Telapia
10	Barisal	

Source: Bangladesh Fisheries Research Institute, Mymensingh,
Department of Fisheries, 2005-06

The rank is according to the volume of fish production both in open water bodies and in closed water bodies.

Table 11: Comparison of fish production and productivity among several districts

District	Pond Area	Cultured Production	Total Production	Productivity	Unit
Barisal	5452	20994	23198	3.9	MT/ha
Chittagong	12599	46014	55723	3.7	MT/ha
Dinajpur	6956	24899	28322	3.6	MT/ha
Bhola	6273	22870	25056	3.6	MT/ha
Jessore	6026	21887	21887	3.6	MT/ha
Commila	10738	38948	45326	3.6	MT/ha
B.baria	6412	22549	25355	3.5	MT/ha
Mymensingh	7064	24364	27166	3.4	MT/ha
Bogra	6337	21016	24226	3.3	MT/ha
Noakhali	9201	28542	32733	3.1	MT/ha

Source: Department of Fisheries, 2005-2006

Carp (Indian and Exotic) are the most important species in cultured fish production. Carp production contributes about 78% (in volume) of total freshwater fish production in the country.³ Major carps, according to their respective share, are Ruhi, Silver carp, Catla, Mrigel & Grass carp. However, some striking difference exists in species selection among regions. Such as, in technologically advanced fish cultured regions, currently Pangas is the most popular species due to its higher return and fast growth. Similarly, Thai koi, Monosex telapia, Golda/prawn Bata etc are also getting more and more area coverage in those areas.

2.4 National Demand-Supply Scenario

Present consumption of fish does not necessarily represent the market demand, as it is suppressed due to less availability of fish. Also, against the minimum requirement of 35 grams of fish per capita per day (in balanced diet), current availability is 28 grams. Constant price increase of other animal protein substitutes (chicken, beef, mutton) are also contributing to this swelling demand. Therefore still significant gap exists in the market. The inclination toward freshwater fish has transcended this crisis as a thriving opportunity for pond fish farmers. At present, some Ruhi and Catla fish are imported from Burma/ Myanmar to meet our local demand. However, consumers prefer locally produced carp, chemical free, fresher than imported ones though the latter one is cheaper.

³ World Fish center website on Bangladesh (shrimp is excluded from calculation)

2.5 Market Size and Growth of Pond Fish

In 2003-04, total market size of Pond Fishery was Tk. 4566 crore, approximately 31.2% of total fisheries market size.⁴ Statistics of five-year period (1999-2005) reveals that growth in pond fishery sub sector (except shrimp) was 6.13% per year, while total fishery sector growth was 5.93% per year.⁵ Both increase in productivity and increase in area coverage attribute to this growth. Currently 3.08 million fish farmers practice cultured fish in ponds and tanks.

Table 12: Growth scenario of Bangladesh

Growth scenario for Bangladesh	
CAGR of Total Fish Sector from 1999-2005	1.3% (Constant Price) (in value)
CAGR of Total Fish Production (MT) from 1999-2005	5.93% (in volume)
CAGR of Pond fish production (MT) (Except Shrimp) from 1999-2005 ⁶	6.13% (in volume)
CAGR for production(MT) per hectare of pond fish from 1996-2005	8.11% (in volume)

Source: Bangladesh Economic Review 2006

2.6 Increasing Yield Trend in Pond Fish

In the process, fish farmers' knowledge and skill level are improved and they started more intensive cultivation. Constantly rising fish yields also help the fish farmers to practice more capital-intensive production (by use of additional inputs, especially feeds, growth hormones, medicines and other pond related chemicals). Lead (progressive) farmers in advanced regions also started monoculture fish farming with exotic high yielding varieties.

Table 13: Production per hectare growth rate of freshwater cultured fish (Pond fishery)

	96-97	98-99	2000-01	2002-03	2004-05	2005-06
Production of Cultured Fish (MT/hectare)	1.65	2.04	2.53	3.06	3.08	1.13
Cumulative average growth rate (1996-2005) = 8.11 %						

Source: Calculated from Department of Fisheries data

⁴ Calculated from DoF 2003-04 data

⁵ Growth is calculated based on Volume

⁶ As low production per hectare is common for new entry ponds, total sector growth is found less than the production per hectare growth rate.

The decline in last year's growth might be of the reason that the total water area of cultured fish has been considered the same over the two years. Capture of fish from beel, Kaptai Lake and flood land has increased sharply and culture of fish in flood land has also increased in the last two fiscal years and exceeds the production of cultured fish. Besides, flood water severely hampered the production pond farming.

3.0 FISH SUB-SECTOR IN MYMENSINGH

3.1 Background/History

Mymensingh is a district of mostly high land. A large river Brahmaputra flows right through it. Besides, other 33 rivers have been contributing to the siltation process for centuries. Siltation process heightened the river basins. Now flood visits only some parts of it. That's why most of the crops grow well in this district. For decades, Mymensingh has been one of the prominent rice and jute producing districts of Bangladesh. Now things have changed. A vast area of Jute/Rice fields has turned and still turning into ponds for fishery. It has now become more renowned as a pond fish producing zone.

In 1989 DANIDA appeared in Mymensingh and in adjacent six districts. Department of Fisheries of Bangladesh and DANIDA jointly started the project named Mymensingh Aquaculture Extension Project (MAEP). MAEP is one of the most successful development programs in Bangladesh and stands as an international development achievement of first order.

The MAEP activities included development of hatchery and nursery, extension of pond polyculture production system, support and training to input suppliers and market development. All these activities could not bring the whole district under the same umbrella. Only Valuka and Trishal Upazila could see the difference of DANIDA intervention. Marginal farmers scarcely exist there. But this is not the gross picture of the district. Seeing the success of MAEP, farmers of other upazilas started venturing into pond fishery. No intervention of any project exists there to resolve the constraints and make the MSEs better off. However, it can undoubtedly be said that MAEP made a kick start of development in Mymensingh through pond fishery, which can be taken further through some smart and thoughtful intervention.

3.2 Present Market Scenario

Mymensingh fish sub-sector includes different actors as hatchery, nursery, table fish farmers, hawkers, arotders, wholesalers, retailers, input sellers, transport (truck) owners, fishermen, BAU, FRI, other service providers. It also includes the water bodies, infrastructure and interrelation among the actors. Below are the data at a glance on Mymensingh fish sub-sector.

Table 14: Fishery of Mymensingh – At a glance (2006-2007)

Title	Number	Unit
Total fish farmer	91851	Persons
Total fishermen	15106	Persons
Fish feed mill	89	
Commercial	08	
Small	81	
Fish Arot	71	
Fish haat/bazaar	398	
Ice factory	50	
Total no. of private pond & tank	110027	
Total area of private pond & tank	12900.22	Hectare
Total production of private pond & tank	38561.33	MT
Total no. of private commercial fish farm	1611	
Total area of private commercial fish farm	3115.30	Hectare
Total production of private commercial fish farm	47586.00	MT
Total no. of private hatchery		
Carp & Pangus	73	
Shrimp	3	
Total production of private hatchery		
Carp & Pangus (spawn)	82819.00	Kg
Shrimp (PL)	4.80	Lac
Total no. of private nursery		
Carp	455	
Thai Pangus	97	
Thai Koi	27	
GIFT	25	
Monosex Telapia	19	
Shorputi/Rajputi	243	
Total production of private nursery		
Carp	64.26	Crore
Thai Pangus	47.30	Crore
Thai Koi	2.40	Crore
GIFT	0.78	Crore
Monosex Telapia	1.16	Crore
Shorputi/Rajputi	21.10	Crore
Total production of fish	175887.80	MT
Total demand of fish	68031.00	MT
Total surplus of fish	107856.80	MT

Source: Data collected from District Fisheries Officer

3.2.1 The Upazilas

Valuka and Trishal upazila of Mymensingh have turned out to be the upazilas of large-scale fishery characterized by modern technology, improved service market, competitive input selling market and lease culture. Seventy to eighty percent of the inhabitants are somehow related to fishery.

Muktagaccha, Fulbaria, Fulpur, Sadar and Gouripur have already embraced fishery as one of their livelihoods. Though burdened with many problems, there are number of hatcheries, nurseries and ponds coupled with input sellers and service providers. More people are coming into this business very rapidly. Marginal farmers are higher in number among the newcomers as they have seen that fish farming is more profitable than cultivating crops on land. Few of the new entrants of the last ten years have become either medium or large-scale farmers with their resources and profits. Seeing their success some others are getting interest in fishery.

Goforgaon, Nandail, Haluaghat, Ishwargonj and Dhobaura are also stepping toward fishery. Flood, iron content in water, water-level, lack of proper knowledge etc. are impeding fishery growth in these upazilas.

3.2.2 Market Dynamics

Hundred percent of the ponds and other water bodies of this region is perennial. This excludes the fields of rice-fish polyculture cultivation. As the under ground water level is very high, water in the water bodies never dry up even in the winter and summer. Besides, iron content in water is low, so fish cultivation in this region is very suitable throughout the year.

The predominant species is pangus because of its fast growth rate and cheaper price, which makes it attractive to the low-income customers, who constitutes the majority of the market, and thus resulting in high volume sales. Other important species of the area include carps, Thai koi, monosex tilapia, GIFT, prawn/golda, puti and piranha.

Cultivation of pangus is declining though it is the predominant species in Mymensingh. Pangus cultivation is becoming less profitable since price of feed and feed ingredients are soaring. Though this is the picture of this year, the sub-sector study found that a number of MSEs are determined to switch to other species of fish from the very next season.

Mymensingh exports fish to other districts as Dhaka, Barisal, Sylhet, Tangail, Manikgonj, Rajbari, Rangpur, Dinajpur, Chittagong, Sirajgonj, Khulna, Kustia, Madaripur, Narayanganj, Kishorgonj, Brahmanbaria, and Pabna meeting its internal demand. However, it imports inland captured fish from Netrokona.

As fish production is increasing, demand for spawns and fingerlings are also increasing. Local hatcheries and nurseries can't meet the local demand. So, the gap is met by importing spawns and fingerlings, most of which are pangus and few are carp. And the quality of imported ones is also better than the local ones. The price is also higher for the imported spawns and fingerlings. Spawns and fingerlings are mainly imported from Adamdighi upazila of Bogra district. Local hatcheries mainly produce spawns of indigenous and exotic carps. Therefore, the demand for spawns of pangus is met by importing from Adamdighi of Bogra.

In the fish sub sector women involvement is very low. They are basically involved in feed preparation and feeding, security, netting, neat weaving. Most of them are family members.

Taking lease of lands for fish farming is in practice. Some poor people, who cannot afford to cultivate fish on their lands, lease out their ponds or lands for fish farming. In Valuka some affluent people take lease of beel and other large water bodies for fish farming.

3.3 Demand – Supply Analysis

3.3.1 Demand Side

Total amount of fish needed to fulfill the demand of Mymensingh is 68,031 MT (2006)⁷. People here consume more of cultured carps as rui, katla, mrigel, and silver carp, Thai koi, telapia, puti and captured indigenous fish as carps, koi, taki, shing, magur, hilsha etc. Demand for pungas in Mymensingh is very low as consumers and retailers complain that pungas contains more oil, which reduces its taste. However, pangus is the cheapest fish (BDT 55–65 per kg) among the large ones, so this is preferred to all to low income groups. This means, whatever pangus comes to the local market gets sold out. On the other hands, table fish farmers prefer to cultivate pangus fish because it is more profitable, though pangus cultivation has become less profitable now as the price of feed and feed ingredients are soaring, and it can be cultivated 2-3 times in a year.

3.3.2 Supply Side

Total amount of fish produced in Mymensingh is 175,887.8 MT (2006)⁸. Fish farmers produce here pangus, rui, katla, mrigel, silver carp, Thai koi, telapia (GIFT and monosex), Rajputi, shorputi, shrimp, and even piranha.

⁷ Source: Data collected from District Fisheries Officer

⁸ Source: Data collected from District Fisheries Officer

Table 15: Percentage of Fish Species in Mymensingh

Species of Fish	Share of Cultivation (%)
Pangus	60.00
Carps (rui, katla, mrigel, silver carp)	35.00
Thai Koi	2.00
Telapia (GIFT and monosex)	1.50
Shrimp	0.20
Puti (Rajputi and Shorputi)	0.50
Others	0.80
Total	100.00

Source: Fish Sub-sector Study, Mymensingh, 2007

3.3.3 Demand-Supply Gap

As Mymensingh produces a lot more than its demand, it has surplus that is exported to other districts in Bangladesh. A total of 107,856.8 MT⁹ is left as surplus and exported to Dhaka, Barisal, Sylhet, Tangail, Manikgonj, Rajbari, Rangpur, Dinajpur, Chittagong, Sirajgonj, Khulna, Kustia, Madaripur, Narayangonj, Kishorgonj, Brahmanbaria, and Pabna meeting its internal demand.

Mymensingh has more demand for cultured and captured carps and other inland captured fish. A good amount of captured fish (indigenous fish) is imported from Jaria and Mohongonj of Netrokona district.

3.4 Operating Mechanism and Other Issues

3.4.1 Driving Dynamics

Fish production in Mymensingh varies from upaziala to upazilla and also through varieties. Large and medium table fish farmers mostly produce pangus as they can afford the huge feed cost of it whereas the small and marginal farmers mostly cultivate carps as they need not feed heavily. Small and marginal farmers are familiar with this carp cultivation. Besides, carps need comparatively less care and attention than pangus. Therefore, this small and marginal farmers' part carp production of Mymensingh pond fish sub-sector is producer driven.

The increase of cost of ready feed and feed ingredients made small farmers and medium farmers think about giving up pangus cultivation. The sub-sector study found few farmers in Mymensingh Sadar upazila who have already shifted to Thai koi and tilapia cultivation from pangus. Seeing them, some of their neighboring farmers are encouraged to follow them the next year.

⁹ Source: Data collected from District Fisheries Officer

Although consumers have demand for koi and tilapia, this sudden increase in their supply is not determined by the consumers. This increase in supply of koi and tilapia is producer driven.

Pangus is a very tasty fish of river, which has been cultivated for several years. At the very beginning the inception of it was producer driven. Gradually people started loving it and the demand for it rose higher. Thus price of it increased and it was then considered to the food of the rich people. The then pangus farmers enjoyed high profit margins. Seeing their profits, other fish farmers and even crop farmers started pangus cultivation. Gradual increase in supply of pangus decreased its price, which now even poor people can afford to take. Now it has become a buyer driven fish.

3.4.2 Influence of different actors

Analyzing the influence and power of different actors on defining key features and characteristics of the value chain reveals that the actors play different important role in the process.

In the market, a great number of input selling companies (feed, fertilizer, chemicals and pesticides) are engaged through their distribution channel. They play a vital role in pond fish sub-sector. Increasing trend in fish cultivation attracted entrepreneurs to invest in feed production, which made the feed market competitive. Therefore, they have less influence over the chain.

Producers mainly are the decisive ones among the others actors. It is them who mainly decide what to produce and how much to produce. Only the large scale farmers and some medium farmers care about market demand. They take information from their wholesalers (paikers) and produce accordingly. On the other hand small and marginal farmers do what they know best keeping in mind how much they can invest.

3.4.3 Critical Issues

The most critical issue in any market is the demand and supply, which is the core of any market system. There is still unmet demand for fish in the national level. Mymensingh is one of the districts that is exporting fish to other districts of the country. The most influencing factor that made it possible is the favorable environment (high underground water level, water presence throughout the year, less iron content in water, less occurrence of flood) of cultivating fish. One very important factor was the intervention of DANIDA here. The MAEP of DANIDA could not affect throughout the district. Only Valuka, Trishal and Muktagaccha are direct beneficiaries of this project. So now the most critical issue is inception of another intervention, which would work with the small and marginal fish farmers to mobilize them for further growth for themselves as well as the sub-sector.

3.5 How the Sub-sector is moving forward

People are turning their cultivable and fallow lands into ponds. Table fish cultivation is not only penetrating to previously uncultured ponds, but also to open water body (beel, haor etc) and single-cropped low land. Fish cultivation in rice field is also gaining momentum among farmers.

The sector is growing - both vertically and horizontally. The number of marginal and small farmers are increasing (i.e. poor corn producers are either excavating ponds or leasing in ponds) and existing fish farmers are increasing their pond numbers (*horizontal growth*), which is increasing the demand for fingerlings. Thus the number of nurseries and hatcheries is increasing to meet up the increasing demand (*vertical growth*). New hatcheries are being built to enter into the market; existing ones are investing in capacity, product quality and new products, which indicate towards increased competition. Nurseries are in endeavor to increase production (thus increase their capacity utilization); spreading out rate is also high - people having ponds are rushing towards this segment. This means that some table fish farmers buy more spawns than they need and keep them for some time to resell when their demand is very high. Thus the number of nurseries has increased.

Commercial orientation is present. People have been entering in this sub-sector as they found it suitable for their livelihood. In some Upazilas, risk loving people started fish farming sometime and then seeing their profit others found interest. Small investment, traditional and thus easy cultivation practice, low risk, and high profit margin were the alluring factors. However, the scenario in investment and profit margin has changed since the expense of feed and feed ingredients has gone high up in last year. Examples of modern, improved and intensive cultivation is also present among the value chain actors. Valuka and Trishal are in the leading position in Mymensingh. Large-scale modern fish farms along with modern services as disease diagnosis are available there.

Farmers and nurseries have been improving their cultivation techniques by following 'learning by doing' strategy, rather than embracing modern practices. Therefore productivity has increased only marginally in last few years. Some farmers received training from varying sources as National Youth Training Academy, and training arranged by other organizations and institutions.

All varieties of fish are not cultivated equally in all places of the district. Previously, about 5-6 years ago, carps were mostly cultivated. Now pangus is dominant in most places because it can be grown fast if highly fed and cultivated very densely. Since the price of ready feed and feed ingredients of pangus have risen sharply and still are rising, micro and small table fish farmers are gradually moving and thinking to move to telapia and koi cultivation due to their short life span and quick return.

Fish feed mills exist locally. In some upazilas like Muktagaccha and Valuka, fish feed are prepared locally using modern technology in automatic and semi-automatic mill. In automatic mills, feed is not required to dry up, whereas, it is required in semi-automatic mills. Fish farmers buy their feed ingredients and give to the crushers (mills). They receive ready fish feed in the form of thick noodles. Then the noodles are broken into pellet form and later on dried up to feed the fish.

Hatcheries' output has persistently increased over last few years but spawn quality failed to improve. Almost all the hatcheries collect brood fishes from different table fish farmers and/or other regions especially from Bogra (Only pangus' brood and spawn is collected from Bogra.). Then they rear them. In most cases, those brood fish are inbred. One reason for not collecting inbreed-free brood fish is - unavailability. On the other hand, they have less financial motivation to collect good quality brood fish since demand for spawn is high. But demand for good quality spawns is rising, for which few nurseries prefer to import it from other regions. It poses a threat for the existing hatcheries. Few hatcheries are trying to develop their spawn quality, but still, good quality brood fish is unavailable.

Large hatcheries usually hire technicians from Bogra and Jessore in contractual basis. Required chemicals and other inputs are available in the region.

Fingerling market has ensured robust growth of nursery business. There has been an increase in demand for fingerlings as table fish farming has increased (Horizontal growth). This has given rise to the number of nurseries. Sourcing of spawns of carps for fingerling from local hatcheries has increased. Nurseries are purchasing locally produced spawns more for three reasons: (i) cheaper price, (ii) almost no transportation cost, and (iii) there are examples that local hatcheries are selling in credit to increase customer base. On the other hand, good market demand has increased the price of fingerlings.

Trustworthy relationship exists among fingerling traders and table fish farmers. Small and medium table fish farmers are the major customers of fingerling traders. They find it more cost-effective to buy from fingerlings traders for their small requirement and also find it convenient to get them in their doorstep. Traders, sometimes, provide fingerlings on credit to ensure their sales. There are large fingerling traders who import fingerlings from Bogra to sell in physical fingerling market or to small fingerling traders. Sometimes they also take orders from large farmers.

Family members usually assist in day-to-day management. Small farmers generally perceive fish farming as an additional income source besides cropping. However, increased income is gradually changing their perception and tempting for more intensive cultivation.

Selling production at farm gate to baparis/fishermen is the most common scenario. However, proximity to the physical fish market is the decisive factor. Medium and large farmers always prefer to sell through physical market. Selling at reasonable price is not a problem.

3.6 Actors in the Sub-sector

At present, about 95757 people are engaged in the close water fish sub sector of Mymensingh. The vast majority (91831) of these people are table fish farmers, around 95.90%, who produce table fish from fingerlings. The rest are engaged in hatcheries, nurseries, trading, wholesaling and retailing. A few play the role of suppliers in providing necessary inputs for fish cultivation. In addition there are around 30346 people who work as employees in hatcheries, nurseries, table-fish firms, input selling shops, arots and feed mills.

Table 16: Overlays of the Actors

Functions of Actors	No. of Actors	Avg. No. of Employees	Employees Involved	People Involved	% of Actors	% of People Involved
Table Fish Farming	91831	0.25	22958	114789	95.90	91.03
Hatchery	76	8	608	684	0.08	0.54
Spawn Trading	300	0	0	300	0.31	0.24
Nursery	1500	4	6000	7500	1.57	5.95
Fingerling Trading	500	0	0	500	0.52	0.40
Input Sales (Feed & Medicine)	420	1	420	840	0.44	0.67
Arot	91	2	182	273	0.10	0.22
Feed Mill	89	2	178	267	0.09	0.21
Wholesaling	450	0	0	450	0.47	0.36
Retailing	500	0	0	500	0.52	0.40
Total	95757		30346	126103	100.00	100.00

Source: District Fisheries Officer, Mymensingh and Fish Sub-sector Study, Mymensingh, 2007

3.6.1 Input Suppliers

Input sellers include Feed, lime, fertilizers, medicine, chemical, PG, and tools sellers. Total number of fish related input sellers in the region are about 420.

- Ready and packed fish feed are available throughout the region. Mustard oil cake, rice police, maize husk etc. are the common feed

ingredients. Feed ingredients are sold both in separate shops and in grocery shops.

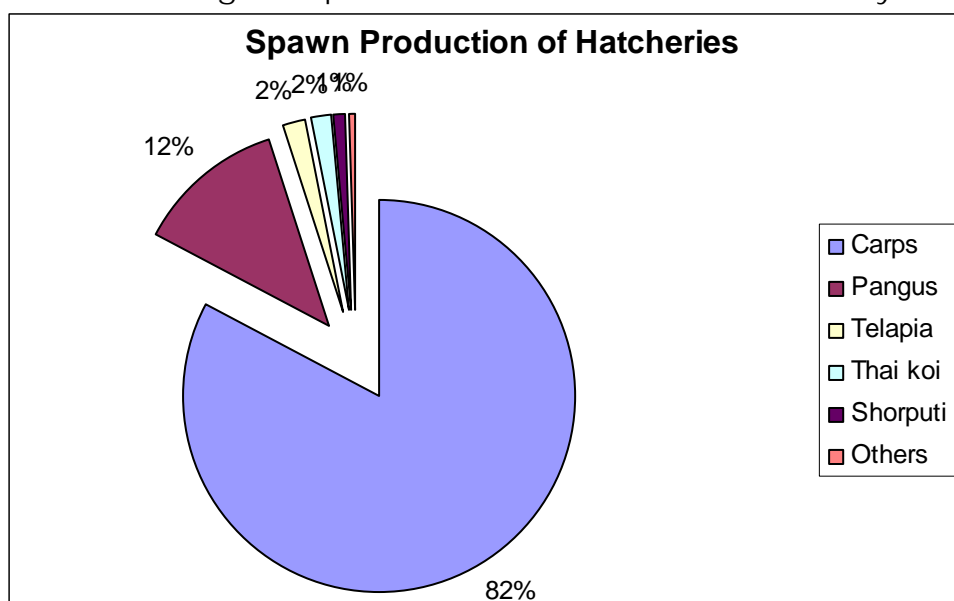
- Necessary fertilizers are procured from agricultural fertilizer sellers and chemicals are found in poultry/livestock medicine shops and agricultural pesticides shops.

3.6.2 Hatchery Owners

There are 73 private and 3 government hatcheries in Mymensingh. The Sub sector Study found that the hatcheries produce spawns of carps (82%), pangus (12%), telapia (2%), Thai koi (1.5%), shorputi (1%) and others (0.5%).

Local hatcheries keep their own stock of brood fishes. They collect brood fishes from outside Mymensingh. Local hatcheries mostly depend on BFRI and Bogra hatcheries for technology transfer and hiring technicians. Only pangus technology is sought from Bogra, the rest are sought from BFRI.

Figure 2: Percentage of Spawn Production of hatcheries in Mymensingh



Source: Fish Sub-sector Study, Mymensingh, 2007

3.6.3 Spawn Traders

Spawn traders, known as 'lineman', exist throughout the district. They act as the local dealer of outside hatcheries and get commission on their sales volume. They not only collect order from nurseries but also undertake various promotional programs to market their spawns. They also offer short duration credit facility, ensure home delivery of spawns, and sometimes replacement for damaged or low quality. Better qualities of spawns than the local hatcheries enable them to influentially operate in the market.

3.6.4 Nurseries

There are about 1500 nurseries currently engaged in fingerling production in Mymensingh.

Table 17: Nurseries in Mymensingh

Nursery Size	Area Size (in Decimal)	Share in total No. of Nurseries (%)
Large	>100	60
Medium	60-100	30
Small	<60	10

Source: Sub sector Study

Large and medium sized nurseries usually cultivate 4 to 6 times in a year. Large nurseries are found following appropriate and scientific pond management and cultivation techniques. They use modern and packed feed; the traditional feeding practice and proportion is satisfactory. Large and medium nurseries sell majority of their production to large fingerling traders. This helps them receive large cash at a time and also the pond is ready for reuse without any delay.

Small nurseries produce fingerlings 3 to 4 times in a year. They source spawns from local hatcheries. They are found less quality sensitive and asserted high mortality rate of spawn as the crucial constraint. Their pond management and cultivation technique is poor. They sell their produced fingerling through small fingerling traders (patil party).

3.6.5 Fingerling Traders

Fingerling traders can be disaggregated in two categories - large traders and khuchra (small) traders/ patil party/ lineman. They are called patil party as they ferry the spawns in large patils, which are mainly used for cooking food.

Large traders import fingerlings, mainly pangus, in bulk amount from Bogra, and sell those to small fingerling traders, large nurseries and large table fish farmers. Nurseries stock the fingerlings in ponds and sell to small traders and table fish farmers from there. There are about 500 fingerling traders currently operating in the region. Small traders (patil party) buy fingerlings from large fingerling traders and also from local nurseries, and sell them to table fish farmers.

3.6.6 Table Fish Farmers

About 91831 fish farmers are involved in table fish cultivation in Mymensingh. Micro, small and medium table fish farms are mainly run by family labors. About one of every four table fish farms keeps a labor to look after the farm. This means about 22958 external labors are involved in table fish farming (See table 16).

Table 18: Table Fish Farmers in Mymensingh

Table Fish Farmers	Farm Size (in Decimal)	Share in total no. of Table Fish Farmer (%)
Large	>151	10
Medium	101-150	15
Small	61-100	25
Marginal	<60	50

Source: Mymensingh District Fisheries Officer and Sub sector Study

Large table fish farmers usually cultivate pangus 3 times and carp one time in a year. They let the carps grow larger. They keep some of the stock of pangus till next summer because fish do not grow much in winter. So the small and medium farmers sell out their fish intending not to increase further cost. After the winter the price soars higher since the fish are scarce and larger in size. The large fish farmers were found maintaining satisfactory level in pond management and cultivation technique. In most of the upazilas, table fish farmers use balanced feed – either packed or prepared. Most large farmers source fingerlings directly from local nurseries or large fingerling traders. Some other large farmers source fingerlings by themselves from Bogra.

On the other hand, medium sized farmers cultivate 2 times in a year. However, they are widely found using much higher fingerling density to get higher production. Pond management and cultivation technique is disappointing.

Most of the small size farmers cultivate three times in a year. Some of them purchase ready feed from the feed sellers in credit. When the amount payable becomes large, the feed sellers pressurize the farmers to pay the amount. Finding no other way to feed the fish, farmers sell their not-so-grown-fish and pay them. Thus they do not get good price for their untimely sold fish. Moreover, the density of their fish per decimal is very high as they have small pond size or few ponds. So, their productivity remains at very low level.

Some small farmers buy feed ingredients from different feed ingredient stores and give them to the feed crushers/ feed millers to crush to make ready feed for fish. Some small farmers buy fingerlings, do not provide them balanced feed and keep them in the pond about a year. They sometimes sell some of the fish when in need of money. Thus their fish do not grow much i.e. their productivity is very low. Therefore, they do not get better price for their fish.

Item	Cost (Tk.)	Remarks	Calculation
Lease of pond	2500	Tk 200 per decimal (Cultivates 2 times a year)	(Tk 200*25 dec)/2
Pond preparation (Lime and cowdung use)	120	Lime 5 kg @ tk 16; Cowdung 80 kg @ tk 0.50	Tk 16 * 5 kg and Tk. 0.50 * 80 kg
Fingerling (Pangus)	20000	buys from fingerling trader @ tk 2 per 3-inch piece with 400 pieces per decimal	25 dec*400 = 10000 fingerlings * Tk 2
Feed		With mortality rate of 15%, 8500 fingerlings survive; considering FCR 1:1 (in practice) it requires 12750 kg of feed if each fish becomes 1 kg	
Nursery	24500	Per sack contains 25 kg of ready feed *50 sack	Tk 490*50
Starter	50000	Per sack contains 25 kg of ready feed*100 sack	Tk 500*100
Grower	66000	Per sack contains 25 kg of ready feed*150 sack	Tk 440*150
Finisher	91350	Per sack contains 25 kg of ready feed*210 sack	Tk 435*210
Medicine	2000		
Employee (Family labor)	25000	2 family laborers used for 5 months; avg. salary Tk. 2500/month	2*5*2500
Cost of Goods Sold (COGS)	281470		Per unit cost is (281470 / 8500) = Tk 33 piece
Selling price	340000	Average pangus price is 40 taka	8500 * 40 Tk
Net Operating Income	58530		

Unit cost= Tk. 281470/8500= Tk. 33/kg (or per piece)

Unit selling price= Tk. 40/kg (or per piece)

Profit margin= (40-33)/40= 17.50%

3.6.7 Arotders

Arotders act as commissioning agents by providing space for buying and selling of fish. Upon receiving fish, they grade it and call for auction among the traders and retailers. There are about 91 arotders in the region. Well of arotders

pay carp producing large farmers in advance so that they come to their arot for selling fish. Besides, they keep good contact with some wholesalers so that they also come to their arot with the fish bought from fish farmers. They usually charge Taka 3 to 5 as commission.

3.6.8 Wholesalers

Wholesalers purchase fish in large amounts from the table fish farmers and sell it to arots either in Mymensingh or in other districts. As Mymensingh is a net exporter of fish, most of the wholesalers come from other districts as Dhaka, Sylhet, Tangail, Sirajgonj, and Narayangonj. They keep good contact with the table fish farmers. Most of them take transports to the farm gate and bear the expense of carrying.

Wholesalers profit depends on the supply of fish into a particular arot. If supply is high, the auction price falls thus decreasing the profit margin of the wholesalers.

Item	Cost (Tk.)	Remarks	Calculation
Table fish (Pangus)	340000	The same amount bought from table fish farmer	8500 * 40 Tk
Transportation	3000	Avg fish size is 475 gm; 8500*0.50 kg = 4250 kg i.e. 4.25 ton, which requires a 5-ton truck costing Tk 3000	
Commission to arot	18810	An average of 4% commission to the arotder	
Labor	1200	3 labor needed for loading and unloading @ Tk 200	3*2*200
Cost of Goods Sold (COGS)	363010		Per unit cost is (363010/8075) = approx. Tk 45
Selling price	444125	Mortality rate while transportation is 5%; Average pangus price is 50 taka	8075 * 55 Tk
Net Operating Income	81115		

Per unit cost – Tk 45

Per unit selling price – Tk 55

Profit margin= (55-45)/55= 18.18%

3.6.9 Retailers

There are about 500 fish retailers in Mymensingh. They usually buy fish in markets from wholesalers through arots and retail those to consumers at various bazaars and hats.

Item	Cost (Tk.)	Remarks	Calculation
Table fish (Pangus)	17325	One retailer does not buy 8550*0.475 = 4061 kg fish alone. He buys an average of 150 kg i.e. about 315 fish	315 * Tk 55
Transportation	200	To the bazar by van	
Space rent in bazar	30	Tk 20 per day; Average selling period of 315 fish is 1.5 days	Tk 20 * 1.5 days
Ice	100	To chill out the fish to keep fresh	
Cost of Goods Sold (COGS)	17655		Per unit cost is (17655/315) = Tk 56
Selling price	21105	Average pangus price is 67 taka	315 * 67 Tk
Net Operating Income	3450		

Per unit cost – Tk 56

Per unit selling price – Tk. 67

Profit margin= $(67-56)/67= 16.40\%$

3.6.10 Feed Crusher

There are about 89 feed crushing mills in Mymensingh. Table fish farmers collect various feed ingredients as Rice husk, Wheat husk, Chewoa shutki (fish, frog, snake), Oil cake, Meat ball, Calcium, Vitamin, Soya bean etc. and bring to the feed millers in order to crush them to prepare feed.

Establishment cost of a crushing mill is about Taka 25000. Crushers' charge Taka one for one kg crushed feed. A small size mill requires one labor costing Taka 100 per day. Most of the crushers keep a permanent employee for the mill.

3.7 Channels and Sub-sector Map

The sub-sector map shows eight channels through which the value chain actors of the fish sub-sector of Mymensingh are interconnected. All the channels have input sellers, wholesalers, arotders and retailers in common, that is why they are excluded from the description of the channels.

Channel 1: Local Hatcheries, Local Nurseries, Small Fingerling Traders, and Table Fish Farmers

Most of the local hatcheries of Mymensingh produce spawn of carp's species. Spawns of carps count 75%. Carps include Ruhi, Katla, Silver Carp, Grass Carp and Common Carp. Besides spawns of carps, local hatcheries also produce 13% spawns of pangus. Local nurseries purchase spawns of these carps for cash; practice of credit sell is present but only if the two parties have very good and long term relationship. After having reared the spawns for about two-four weeks, the nurseries sell them to table fish farmers who might be small, medium and large in size.

Channel 2: Local Hatcheries, Local Nurseries cum Table Fish Farmers

The characteristics of this channel are almost the same as channel 1. The only anomaly is that there are nurseries who also cultivate table fish. These nurseries are of two types. One type has their own nursing ponds and they do not sell fingerlings rather release them into other table fish cultivating ponds. This type of nurseries cum table fish farmers are medium or large ones. The other type sells some of their fingerling to other table fish farmers. They are small to medium ones. Mainly carps and pangus are transacted through this channel.

Channel 3: Bogra Hatcheries, Spawn Traders, Local Nurseries, Small Fingerling Traders, and Table Fish Farmers

The sub-sector study found that production of pangus is 13% of the total production of spawn whereas cultivation of pangus is 60%. So the rest of the demand is met by importing spawns from Adamdighi upazila of Bogra district.

Spawn traders play a vital role here. They buy spawns of pangus from Bogra hatcheries and carry them up to the nursing ponds of local nurseries. Some local nurseries care about good quality of spawns, so they buy imported ones with higher price than that of local ones. Then through small fingerling traders table fish farmers get fingerlings of pangus. Since small table fish farmers are quality insensitive because of their ignorance about the importance of quality spawn in final production, they do not bother which spawn (local or Bogra) they are purchasing. This means the fish farmers who buy fingerlings through this channel are quality sensitive.

Channel 4: Bogra Hatcheries, Spawn Traders, and Local Nurseries cum Table Fish Farmers

This channel is almost the same as channel 3. It is different from the previous one in the way that spawn traders of pangus sell spawns to some nurseries who also cultivate table fish. These nurseries cum table fish farmers are medium to large ones. The medium ones sell most of their nursed fingerlings to other small table fish farmers. They keep some the fingerlings for their own further table fish farming. The large ones use most of their fingerling for their own ponds. Rest of the fingerlings they sell to small scale pangus farmers through fingerling traders.

Channel 5 (Pangus Small Scale): Bogra Nursery, Large Fingerling Trader, Small Fingerling Trader and Table Fish Farmer

This is a channel of small scale pangus cultivation. Some large scale fingerling traders buy pangus fingerlings from Bogra nurseries and carry those to Mymensingh and sell them to small fingerling traders who then sell to small scale pangus farmers. Quality of fingerlings of pangus in this channel is higher as they come from Bogra.

Channel 6: Bogra Nursery, Large Fingerling Trader, and Table Fish Farmer

This channel is almost the same as the previous channel. The only difference is here the table fish farmers of pangus are of large scale. They have built up rapport with large fingerling traders and they order them beforehand of certain amount of fingerlings for their ponds.

Channel 7: Local Hatcheries, Local Nurseries, and Table Fish Farmers

As mentioned earlier that tilapia is cultivated 1.5% of total production of table fish in Mymensingh. Spawn production of tilapia in Mymensingh hatcheries is 4%. Local nurseries buy spawns of tilapia from local hatcheries and then sell to table fish farmers who cultivate tilapia.

Thai koi is cultivated 2% of total production of table fish in Mymensingh. Spawn production of Thai koi in Mymensingh hatcheries is 4%. Local nurseries buy spawns of Thai koi from local hatcheries and then sell to table fish farmers who cultivate Thai koi.

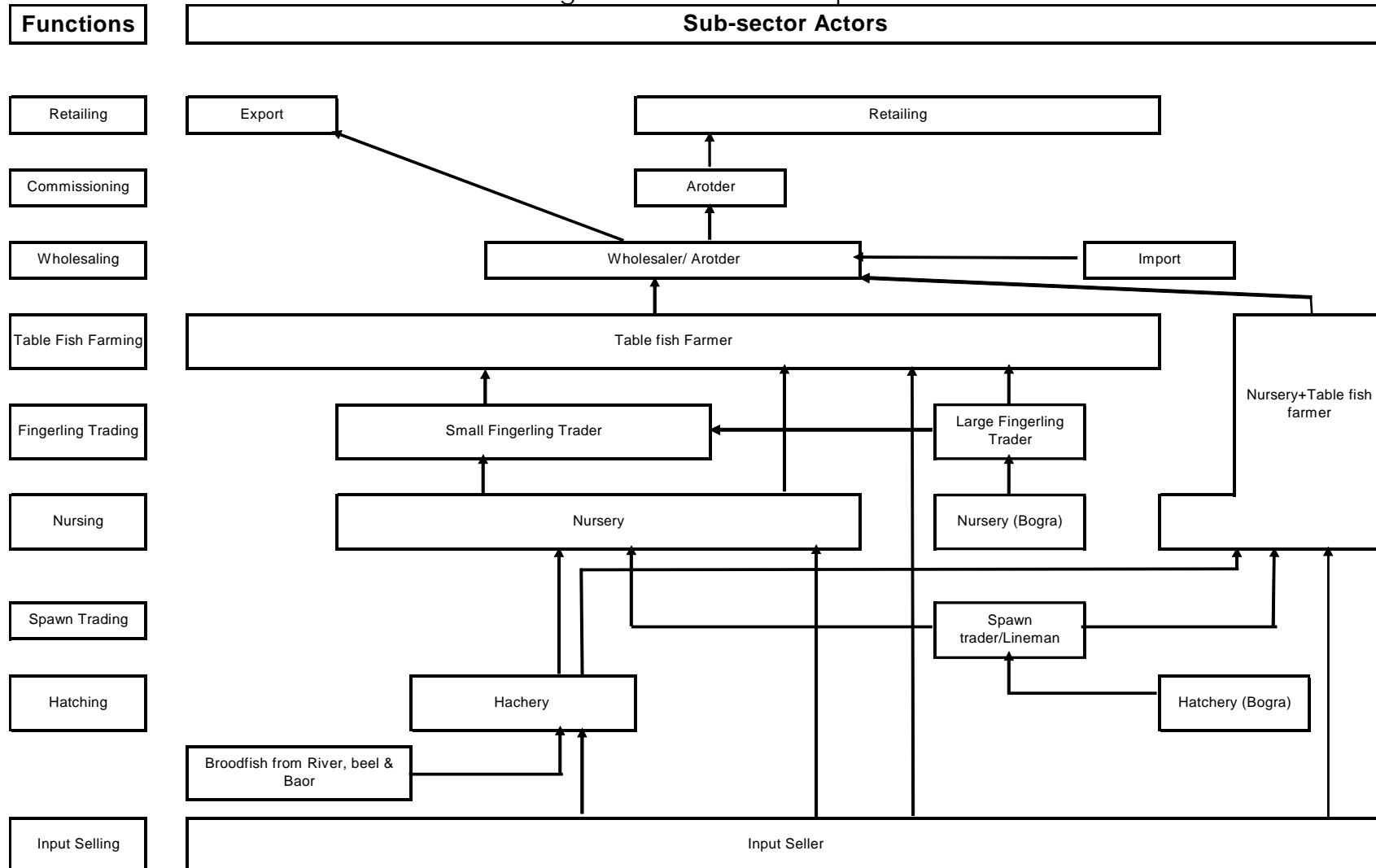
Here is the table for taking a quick look at the channels of Mymensingh fish sub-sector those have pretty different characteristics.

Table 19: Characteristics of the Channels

Characteristics	Channels						
	1	2	3	4	5	6	7
Actors	LH	LH	BH	BH			LH
			ST	ST			
	LN	LN+TFF	LN	LN+TFF	BN	BN	LN
	SFT		SFT		LFT	LFT	
TFF	TFF	TFF	TFF	TFF	TFF	TFF	
Major fish	Carp + Pangus	Carp + Pangus	Pangus	Pangus	Pangus	Pangus	Koi + Tilapia
Source of spawn	Local	Local					Local
Quality of spawn	15%-25% mortality rate	15%-25% mortality rate	10%-15% mortality rate	10%-15% mortality rate	10%-15% mortality rate	10%-15% mortality rate	15%-25% mortality rate
Size of nurseries	Mainly medium to large	Mainly large	Mainly medium to large	Mainly large	Mainly medium to large
Quality of fingerling	Low	Low	Medium to high	Medium to high	High	High	
Size of fish farmers	Marginal to medium	Mainly large	Small to medium	Mainly medium to large	Small to medium	Large	Mainly medium to large
Feed and fertilizer usage	Low to medium	Medium to high	Low to medium	Medium to high	Low to medium	High	Medium
Labor intensity requirement				Medium	Low to medium	High	Medium

Source: Sub sector Study

Figure 3: Sub-sector Map



Source: Sub-sector Study Mymensingh, 2007

3.8 Cross-cutting Issues

3.8.1 Gender issue

Engagement of women in this sub sector is mostly in feed preparation and providing to the own nearby ponds. However, no example is found where women are hired to prepare and provide feed. This is because medium- and large-scale farmers employ males for 24-hour security purpose who also do the feed preparation and providing job. On the other hand, small fish farms do not hire any labor let alone engagement of any woman.

3.8.2 Ethical business practice

The sub-sector study found no use of harmful chemicals in pond fish cultivation.

3.9 Competitiveness Analysis (SWOT)

Competitive analysis shows the competitiveness of something in terms of its internal and external factors. Strengths and Weaknesses are the internal factors, whereas Opportunities and Threats are the external factors. This analysis is also called SWOT analysis.

Table 20: SWOT Analysis

<p><u>Strengths</u></p> <ul style="list-style-type: none"> • Availability of water • No flooding • Large farmers are knowledgeable and already practice intensive cultivation • Lease practice is common, which enables high productive farmers to acquire more ponds 	<p><u>Weaknesses</u></p> <ul style="list-style-type: none"> • Marginal farmers lack knowledge on modern input and cultivation technique • Fingerling of pangus are imported • Low investment capability of hatcheries, nurseries and small table fish farmers
<p><u>Opportunities</u></p> <ul style="list-style-type: none"> • Huge unmet national demand • Average fish productivity can be increased through increasing that of small and marginal fish farmers • Introduction of high productive and new varieties • Unused and less intensively cultivated ponds 	<p><u>Threats</u></p> <ul style="list-style-type: none"> • Outside hatcheries are highly competitive and possess efficient distribution channel. So they can play with price. • Outside hatcheries possess strong rapport with local large nurseries

3.10 Constraints and Opportunities

Constraints are the problems that are impeding the sub-sector from growing further and opportunities are the issues that yet to achieve or address. So both constraints and opportunities call for identification and analysis for designing intervention plans.

3.10.1 Constraints

Hatchery related constraints

- 1. Unavailability of quality brood fish leads to inferior quality spawn, with high mortality and slower growth rate of fingerlings and table fish, which eventually results in low productivity for both the nurseries and table fish farmers**

High demand of spawn, especially from the quality insensitive small nurseries and small table fish farmers, enabled local hatcheries to continue usage of immature brood fish for spawn production. Why immature brood fish usage continues to prevail? From demand side - since most hatcheries' skill level regarding spawn production are very poor, large number of brood fishes are damaged in each season for poor handling. Local hatcheries also produce significantly less amount of spawn from each brood because of this poor skill level. So, it increases their brood fish cost and insists them to continue using immature fishes. Therefore it could be assumed that current demand for quality brood fish is very marginal.

Sub-sector study found that some hatcheries thought to import improved brood from other districts. But the distance and the cost in the transportation of brood made them reluctant. However, this finding tells that if skill of hatcheries can be improved, considerable demand for quality brood fish would be generated in the market. On the contrary, the distance case demonstrates that brood fish transportation require careful technique which are costly. So, to cater probable future high demand and facilitate the usage of quality brood fish, there is enough scope to initiate brood fish production business in the region. Linking the hatcheries with other proximate brood banks could also solve this problem.

Collection of spawns from inbred brood fish is one of the major causes of low quality spawns. This is the case of breeding through fish which have same predecessor or parents. If this process goes on the successor fish become genetically weak that results in high mortality rate, low growth rate and less taste. Scientific studies found that fish from inbred and immature brood

demonstrated around 20% less growth rate than fish produced from inbred free broods. So, this lacking is undermining not only the productivity of hatcheries but also the productivity of nurseries and table fish farmers and decreasing their profitability.

The sub-sector study also found that some carps (rui and katla) are crossbred. This is causing serious damage resulting in weaker future species. Also the crossbred spawns grow slowly and their mortality rate is high.

2. Hatcheries lack appropriate knowledge and skill on spawn production techniques that leads to less amount and inferior quality spawn production, thus resulting in low productivity of hatcheries, nurseries and table fish farmers.

Almost all hatcheries in Mymensingh have started their operation by hiring technicians. In this case, they preferred to hire those technicians who have worked in Bogra or Jessore hatcheries. Bogra or Jessore hatcheries are well known for producing premium quality spawn/fry in the northern and southern part of Bangladesh respectively. Some owners expressed that before hiring they have crosschecked whether that people have truly worked in the specified hatchery. But as the season started, they started to reveal that the hired technicians, in most cases, are not sufficiently skilled. Further investigation explored that most of these self-claimed technicians were mostly engaged as helping hand for the technicians or cleaners in their previous hatcheries. So, currently there is no trustworthy process to know about who are the quality technicians, their skill level and also the hiring cost.

Hatchery owners also did not find any skilled people, private organization, NGO or government organization that could have provide necessary knowledge and train them with necessary skills for quality spawn production.

3. Hatcheries lack appropriate brood rearing and hatchery management skill that leads to low productivity for hatcheries.

In all regions, the hatchery owners chiefly manage the brood rearing and hatchery management activities. But since the local hatchery owners lack of the necessary knowledge about appropriate brood management and other hatchery management related techniques, they are unable to embrace good practice and thus remains at low competitive level.

Besides, hatcheries follow some ways that lower their productivity and ultimately affect table fish farmers. They use immature brood for collecting spawns repeatedly and use a single brood several times. This practice results in low quality spawns

Another consideration concerning stocking is pond size and also to maintaining the principle of density of rearing brood. Fish in smaller ponds (1 to

5 acres) have better spawning success than fish in larger ponds. This may be due to fewer male and female contacts or reluctance of the fish to come to the feed area in a larger pond. Also, fish in clear ponds seem to spawn better than fish in turbid pools. Moving brood fish to a recently filled pond prior to spawning improves spawning success. Very poor spawning success results when brood fish remain in the same pond for successive years.

The sub-sector study also found that hatcheries maintain poor sanitation system, which also harms spawn production.

Nursery related constraints

According to sub sector map, this nursery-related constraint directly affects fish farmers.

- 3. Poor knowledge of nurseries on pond management and appropriate cultivation techniques results in low productivity and inferior quality fingerling production, which also negatively affect the productivity of table fish farmers.**

This constraint is justified for almost all small sized and some middle sized nurseries. They use lime in less than the prescribed quantity and do not take necessary steps to increase oxygen content in water. They also lack knowledge about appropriate fry release density and fry transportation from one pond to other.

Most of the nurseries lack in knowledge on pond preparation, water purification, water drainage system, quality control of spawns, and usage of chemicals harmful for environment.

Why are all small and some middle-sized nurseries facing this constraint? Sub sector study revealed that (i) the national youth centers overwhelmingly emphasize on table fish farmer cultivation, and (ii) Government and NGOs fish extension projects have almost excluded fingerling cultivation techniques, the new entrants in nurseries are in worried situation because currently there is no source to learn about improved fingerling cultivation practices.

Table Fish Farmer Related Constraints

Mymensingh is holding the fifth place in fish production but its table fish farmers still face some constraints. These table fish farmer-related constraints directly affect fish farmers most of which are small in size.

- 4. Lack of knowledge and skill on appropriate cultivation techniques, usage of modern inputs and pond management of table fish farmers' results in low productivity.**

People have entered into this business witnessing high profit than other agricultural crops with limited labor. But most of them don't have the perception that even a little more attention and a little more investment on pond preparation, balanced and appropriate amount of feed, diseases diagnosis and its management could at least double the profit.

It has been found and became evident that the marginal farmers of Mymensingh are less productive compared to other progressive regions of Mymensingh as Valuka and Trishal. One of the main reasons of this low productivity is poor farming knowledge and improper use of various inputs (feed binder, growth promoter, chemicals and medicines etc.). Moreover, inputs other than feed are not that much available in all places.

Input Related Constraints

According to sub sector map, these input-related constraints directly affect almost all table fish farmers in the region.

- 5. Unavailability and insufficient supply of modern inputs and tools (pond management chemicals, growth promoters, medicines, aerator, and feed binder) is restricting the nurseries and table fish farmers from using these modern inputs and technologies and thus impedes to achieve higher growth rate.**

Modern input as ready feed is available in all upazilas of Mymensingh. But pond management chemicals, feed binder, Vitamins, growth promoters, some medicines and aerator are not available in all the upazillas of Mymensingh. Even most micro, small and medium farmers are not aware of the use of them.

Most farmers practice high density fish cultivation but do not know how to rear them properly. They do not have appropriate knowledge on feed quantity, ratio of feed preparation ingredients. Farmers lack on diagnose diseases and its treatment. As a result, their cost of production is increasing, total production is decreasing.

Major underlying reason for this unavailability may be that input companies lack the information about the probable market size of these inputs. They may also find that distribution and marketing cost are significant which is restricting them to invest, promote and make available the modern inputs. Thus it restricts nurseries and farmers to use of modern inputs.

Finance Related Constraint

- 6. Unavailability of soft loan for the fish farmers impedes their growth to enter or expand their business.**

Krishi bank and other formal financial institutes have own agricultural loan package for the farmers. In addition of that NGOs are also providing credits to their beneficiaries for income generating activities. But from the farmers

point of view, these formal institutes have long and complicated procedures to follow, which do not attract farmers to avail the facility. Farmers are also reluctant to get loans from bank for their poor service. Thus most of the farmers are depended mainly informal sources i.e. local mohajon with high interest rate. That causes poor farmers not getting desire profit and loses interest for growth of fish cultivation.

Service Market Related Constraints

7. Input sellers lack in knowledge on the usage of feed, medicine and other inputs results weak services for the farmers to increase productivity.

Though the number of input sellers has increased significantly, the level of knowledge of input usage has not increased considerably. If they are familiar with it, they can disseminate it to the farmers who come to buy from them. This will also increase their business.

Usually, input sellers sell feed, fertilizer, chemicals and medicines related to fish cultivation to farmers. Farmers ought to go to the retail shop for purchase their necessary inputs. That is why, relations between farmers and input sellers are very friendly. Inputs sellers usually provide services as embedded to farmers. Nevertheless, this is not up to the expected level. Few input sellers visit fields of the farmers. In general they provide information sitting in shop.

Input sellers procure inputs either directly from different input companies or the distributors of that company. But these companies and distributors do not provide them with sufficient information that they require to sell and resell their products. Therefore, the input sellers can not help that much to their customers.

8. Lack of skilled or quality service providers results in low productivity of the table fish farmers.

Fish Research Institute (FRI), Department of Fisheries (DoF) and NGOs are working in Mymensingh district for development and extension of fish production. The farmers do have limited access to the government departments. So they are not attaining the services from them. NGOs do provide credit along with the training service to the beneficiaries. This service is not reaching to mass. Moreover, they are mostly project oriented rather market. Private input companies are mostly focusing on product selling rather than providing information. Companies do not have extension programs to reach the farmers. The marginal farmers of Mymensingh mostly depend on resourceful farmers for getting information. But these resourceful farmers also lack knowledge on usage of modern inputs, disease identifications etc. That is why the productivity of the marginal fish farmers of Mymensingh is low.

Other constraints

9. Lack of role of local, national and international companies for the marginal farmers' in local market system resulting low productivity.
10. Lack of awareness of fish farmers on the fish policy restricts them to attain the benefits.
11. Lack of government cordiality and support results in weak implication of fish policies (Brood stock, cross breeding etc.).
12. Lack of coordination of fish farmers of capturing fish results in lower price for their fish.
13. Lack of knowledge of nurseries and table fish farmers on the correct information of the sources of spawns and fingerlings.

3.10.2 Opportunities

1. **Strong local demand and export possibility (national market) enables introduction of various new fish species (Thai Koi, Deshi Magur, Monosex Tilapia, Prawn etc.).**

Currently pangus and carps are cultivated in different proportions by almost all farmers. Some are cultivating other varieties too. The sub-sector study found that farmers have a negative notion on pangus as its profit is fast decreasing. They are likely to shift to other varieties as Thai Koi, Deshi Magur, Monosex Tilapia, GIFT, Golda, etc.

2. **Promotion of fish culture in rice field in perennial and low land areas**

Farmers living in communities with a limited area of cultivated land and with a limited surplus gained from cash crops. There is possibility of fish culture in rice field at Mymensingh. Rice field is a rich and productive biological system which can produce a crop of aquatic organisms, both plant and animal, for human consumption in addition to rice. This practice already prevails in Mymensingh district. And the cost benefit statistics are quite attractive. As a result, if promoted, rice fish culture will supply more fish and increase the income of small farmers significantly.

3. **Vegetable cultivation on the banks/embankments of ponds.**

Farmers can earn good profit with little investment in vegetable cultivation along the pond banks. Micro and small farmers can increase their income considerably adopting this technique. Land along the pond banks do not require much fertilizers and pesticides for the cultivation of winter vegetables. The land need only weeding regularly.

Table 21: Constraint Matrix

Category	Constrains / Opportunity	Commercially Viable Solutions (potentials)	Service Providers
Technology and product development	Hatcheries lack appropriate knowledge and skill on spawn production techniques that leads to less amount and inferior quality spawn production, thus resulting in low productivity of hatcheries, nurseries and table fish farmers	Improving the knowledge of hatchery owners/technicians on hatchery management and appropriate spawn collection techniques through hatchery expert/research institutes.	FRI DoF Individual experts Technicians
	Hatcheries lack appropriate brood rearing and hatchery management skill that leads to low productivity for hatcheries.	Improving the knowledge of hatchery owners on brood management, brood stock through hatchery expert/research institutes.	FRI DoF Individual experts Technicians
	Poor knowledge of nurseries on pond management and appropriate cultivation techniques results in low productivity and inferior quality fingerling production, which also negatively affect the productivity of table fish farmers.	Improving the knowledge of nursery owners on pond management and appropriate cultivation techniques through hatchery expert/research institutes/Department of Fisheries. Improving dissemination of information on cultivation techniques and usage of inputs to the nurseries through chemical, medicine and feed sellers	FRI DoF Hatcheries, Input sellers Resource framers

	Lack of knowledge and skill on appropriate cultivation techniques, usage of modern inputs and pond management of table fish farmers' results in low productivity.	<p>Improving dissemination of information on cultivation techniques and usage of inputs to the fish farmers through medicine and chemical and feed sellers.</p> <p>Improving dissemination of information on cultivation techniques and usage of inputs to the fish farmers through Fingerling traders and Nursery owners.</p> <p>Improving the cultivation practice and adopting new varieties through public bodies and related institutes.</p>	DoF Nurseries NGOs Input sellers Resource framers.
	Promotion of fish culture in rice field in perennial and low land areas	Creating awareness among the farmers of integration of fish culture with rice through common body (producers group) and stakeholders.	
	Vegetable cultivation on the banks/embankments of ponds	Creating awareness among the farmers through common body (producers group) and stakeholders.	
Market Access	Lack of coordination of fish farmers of capturing fish results in lower price for their fish.	Facilitating the formation of a common body (producers group) to make them understand and act according to the market demand and supply situation.	
	Lack of knowledge of nurseries and table fish farmers on the correct information of the sources of spawns and fingerlings	Creating awareness among the nurseries and the table fish farmers about the benefit of good quality spawn and fingerlings and facilitate dissemination of required information to them properly	

	Strong local demand and export possibility	Creating awareness among the farmers about the local demand and facilitate to establish linkage with higher market.	
Inputs	Unavailability of quality brood fish leads to inferior quality spawn, with high mortality and slower growth rate of fingerlings and table fish, which eventually results in low productivity for both the nurseries and table fish farmers	Developing a channel for quality brood fish. Establishing linkage with quality brood banks /suppliers.	Government Hatcheries, Brood Farmers.
	Unavailability and insufficient supply of modern inputs and tools (pond management chemicals, growth promoters, medicines, aerator, and feed binder) is restricting the nurseries and table fish farmers from using these modern inputs and technologies and thus impedes to achieve higher growth rate.	Improve the availability of quality inputs through strengthening the retailers' network up to union level by working with private input companies	Input Companies, Input Sellers.
Policy	Lack of awareness of fish farmers on the fish policy restricts them to attain the benefits.	Creating awareness of the fish farmers on fish policy and facilitate of getting the benefits through the common body.	DoF(Department of Fisheries),
	Lack of government cordiality and support results in weak implication of fish policies. (Brood stock, cross breeding etc.)	Promoting a platform for the MSEs and policy makers for communicating with each other so that MSEs can accrue benefits from government policies	DoF (Department of Fisheries),

Service provision	Input sellers lack in knowledge on the usage of feed, medicine and other inputs results weak services for the farmers to increase productivity.	Increasing the knowledge of input sellers through input companies.	Input Companies
	Lack of skilled or quality service providers results in low productivity of the table fish farmers.	Strengthening the linkage between the weaker market and the developed market of Valuka and Trishal.	
	Lack of role of local, national and international companies for the marginal farmers' in local market system resulting low productivity.	Raising awareness of the input companies about the potential input market in Mymensingh.	
Finance	Unavailability of soft loan for the fish farmers impedes their growth to enter or expand their business.	Facilitate to establish linkage with financial institutes. Advocacy/lobbying with financial institutes of getting soft loans through common body.	Banks, NGOs, Informal Sources

Source: Sub-sector Study

4.0 A CASE STUDY

Name :Akram Uddin Rial
Age :30 years
Address :Gondhorbopur, Muktagaccha,
Mymensingh
Type of Business :Fish farming and fish feed selling
Number of Ponds :05
Total Area :55 kathas

About twelve years ago, affluent farmers in Muktagaccha embraced fish farming commercially. Seeing their success and profit margin, other farmers started converting their crop field fields into ponds. Gradually rice and other crop cultivation were decreasing. The number of increasing ponds in that area resulted in water blockage during rainy season. Besides, irrigation system was being hampered severely.

Then finding no other way to survive, Akram Uddin Rial's father excavated a pond in one of his paddy fields. It was the year 2000. He at that time had hardly any knowledge on fish farming. Taking help from other resource farmers, he cultivated carps there and at the year-end he received good amount of profit. Since then he never had to look back. With the profit he made, he excavated another pond next year and gradually increased up to 5 two years ago.

Akram Uddin Rial took over the business from his father in the year 2002. He was then studying Bangla (Hons.) at Anando Mohon College, Mymensingh. As an educated one he wanted to take the opportunity to make money from his father's business. So he attended a training course by National Youth Training Academy (NYTA) on fishery, stepped into his father's business and kept on increasing the number of ponds. By the end of 2005, he invested in fish feed business. He got the dealership of Quality Fish Feed Ltd. He has a target of 150 tons to sell per month. For that he often buys jointly with retail feed sellers. He sells both in cash and in credit, with Taka 20-25 more if in credit.

Earlier Akram's father cultivated only carps, locally named as Bangla fish. Akram could swim with the mainstream of the lead fish farmers. He started cultivating mainly pangus because of its fast growth rate and market demand. Besides, pangus could be sold 2-3 times a year resulting in higher profit. He buys fingerling jointly with other farms. Now-a-days the cost of ready fish feed has increased though it is not affecting his fish farm. He enjoys the purchase cost of feed from the factory.

When Akram's father started this business, he had only an old house of two rooms, no sanitary latrine, and no boundary fence around homestead, two cows for ploughing and mostly ill fed. Now he has a brick building of four rooms with sanitary latrine, a brick boundary wall around the homestead, an ox and three milk-giving cows, a cycle for him and a motor cycle for his son Akram and better food everyday.

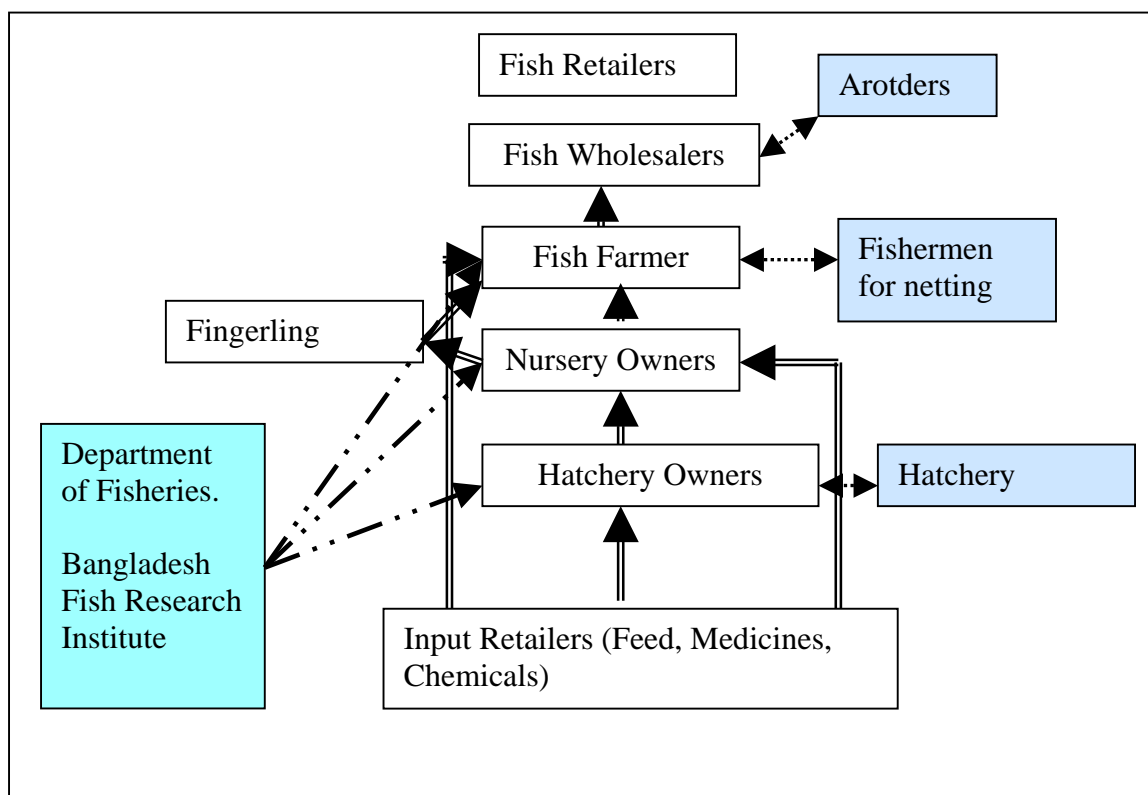
5.0 SERVICE MARKET ASSESSMENT

In the service market system, table fish farmers, nurseries, hatcheries and input sellers are in the demand side as they need information regarding their production and selling. They need information and/or service on pond management, fish cultivation technique, feed preparation, proportion and dosage, new technology, disease diagnosis and finance. On the other hand, there are various service providers around this sub-sector and most importantly value chain actors also provide wide range of services to their forward linkages mostly as embedded services. In this context, capacity of these service providers plays a pivotal role for the growth of the enterprises at different level of value chain.

The demand and supply situation for different services will be analyzed in the following segments. Dynamics of service market will be analyzed around the value chain actors of the sector, since services need and demand varies from actor to actor; this variability is evident in terms of their nature, availability, optimality and so on so forth. Therefore, in the following segments of the chapter, first of all different services each value chain actors need to grow will be identified and then existing suppliers of these services will be analyzed in terms of their capacity, quality and availability to gauge the efficiency of the service market around the value chain in the sub-sector in consideration.

Commercial fish farming has come a long way in Mymensingh region. The revolution started back in 1989 when international donor agency DANIDA in conjunction with GOB initiated the effort through various activities in the region. Because of donor effort and high profitability of fish cultivation spread gradually to several upazilas. At this stage, commercial cultivation in this region has reached to semi-intensive level and need for various services are quiet different from other areas and this sets the context for further analysis of the service markets.

Figure 4: Service market Scenario



5.1 Services in Fisheries Sector in Mymensingh

5.1.1 Fish Farmer

Farmers are the ultimate producers of the value chain, these producers have a strong backward linkage with nurseries and have a forward linkage with the traders and others buyers. They receive services from number of sources and most cases these services are embedded services. Farmers buy fingerlings from nurseries and fingerling traders and feed, medicine and chemicals from input sellers. The sub-sector study identified the services fish farmers need and required services are mostly in the form of information, knowledge and skills:

Appropriate proportion of fish and variety: Farmers need wide range of information and knowledge on different aspects of fish cultivation and one of the basic information is related to optimum proportion of fish in different layers. Field experience suggests that most of marginal and small farmers do

not have that appropriate knowledge on this issue. Albeit this is very basic information, some of them get this information from nurseries and fingerling traders only if they ask them. The other sources of this sort of information are DFO and input retailers. However, none of these sources are efficient enough to provide much needed essential information like this. Because of the limited capacity of input retailer and lack of proper incentive on the part of DFO, farmers lack such information.

Pond management: Before starting fish cultivation, the pond has to be prepared properly to ensure the best environment for the fish. The pond has to be of certain dimension (length, width and depth); lime, fertilizers, and other chemicals are to be used to ensure fertility and destruction of poisonous elements and predator fish.

While cultivation is going on, supply of oxygen has to be ensured for the fish to breathe properly. Water has to be purified for better and fast growth and low mortality rate. Most of the farmers lack in these pond management knowledge. They get some of the information from DoF, resource farmers and input sellers which are very limited and at times either not timely or of less quality.

Disease diagnosis: Diseases are common to fish but hard to identify. Timely and proper identification of diseases is an imperative to protect the production. Delay in identifying diseases always proves to be too costly for the farmers. Most of the farmers lack knowledge and information on diseases identification and necessary precautionary preventive or curative steps. In general, DoF, input sellers and resource farmers are currently providing this service to the farmers with certain limitations. The government source is inefficient in providing such information to the farmers, since they lack the capacity to reach large number of farmers along with unclear incentive to do so. On the other hand, input retailers' knowledge on these issues is also limited and they fail to provide this service effectively to the farmers. The resource farmers also in most cases have limited capacity and lack proper knowledge on disease identification and preventive measures.

Appropriate feed and proportion: Not all feeds are appropriate for all varieties. Besides, feed ingredients are to be mixed in certain proportion in order to get the best out of it. In Muktagaccha, crushing feed mills developed with the increase in fish cultivation in that region. Farmers use this product because of its cost competitiveness compared to ready feed. Farmers collect feed ingredients from different stores, take it to the crushing mills and get wet or dry mixture feed. But they hardly have proper knowledge on proportion of different feed ingredients. As a result, they fail to realize the potential to the fullest, though they receive some information from govt. officials, they are again limited and not timely like any other services.

Finance: Since fish farming in Mymensingh has reached to semi intensive level, investment need is much higher among the fish farmers of this region compared to those of other regions. MSE fish farmers suffer from severe financial problems. For them timely availability of credit and high interest rate is huge challenge. Mainly in cultivating pangus they cannot afford to buy fish feed for the whole season. So they buy it on credit from the feed sellers. As the amount of credit goes higher, the feed sellers keep on exerting pressure to pay back. Helpless farmers then sell partly or totally their production at much lower price to pay back.

MSE fish farmers are the least cared segment of fish sub-sector. They do not get proper services, as mentioned above, from neither public nor private sector. Their productivity level remains low as they are devoid of these services.

Limited DoF workforce is unable to visit fields to solve the problems of fish farmers all the time. Fish farmers always complain about their unavailability and not getting timely solution of their problem related to fish production. Nurseries and fingerling traders themselves lack proper knowledge and information on various technical aspects of fish cultivation, let alone providing information to the fish farmers. But some smart and skilled nurseries know well and share information with the farmers. Feed sellers to a little extent provide information on the dosage of feed, mainly for Pangus. Other input sellers provide information on the usage of the input they sell. However, they

don't have proper information on appropriate dosage of different inputs required for fish cultivation.

As a whole, the service market around the fish farmers are weak and most cases either non-existent or less functioning. This inefficiency is partly due to the fact that the service providers lack the capacity to provide services as well as the need of the fish farmers are not translated into demand so that they are ready to pay price for the service. This is a perfect case of weak market where lack of effective demand is inhibiting the growth of service provider and on the other hand in absence of capable service provider, effective demand has not been created.

5.1.2 Nurseries

Nurseries buy spawns from hatcheries, nurture them up to fingerlings stage and sell fingerlings to either fingerling traders or table fish farmers. They are the immediate backward linkage of the fish farmers and they provide the most important input to the farmers and can be one of the most important sources of information for them. At the nursery level the nursery owners need services and information on –

Pond management: Production activity at nursery level is very critical. Pond management at the very first step is an essential part of the nursery business as pond preparation, pond maintaining, spawn and fingerling shifting to other ponds, chemical use are the critical steps in spawn rearing. The nursery owners receive very little service from hatchery owners along with spawns. The alarming point is that the nurseries at times do not realize the need for such services.

Appropriate proportion of spawn and variety: Stocking spawns in the ponds is another pivotal step in fingerling production because at this stage stocking density, proportion and types of different varieties is very important. Timing and technique of releasing spawn is another step that requires care and attention. Though the hatchery owners provide nursery owners with some information, information are in most cases insufficient and not appropriate that result in high mortality of spawn at nursery level. Different govt. institutions

provide training on fish cultivation but none of these trainings are nursery focused; rather information on nursery related issues come as part of fish cultivation and mostly the information are incomplete.

Disease diagnosis of spawns and fingerling: At nursery level the spawns are more vulnerable and prone to diseases. The nursery owners however, lack appropriate knowledge and information on disease diagnosis and preventive measures. They receive information and service on this aspect from numbers of sources like DoF, input retailers. In most cases, the services are inefficient partly because the service providers lack the capacity to provide accurate information on disease diagnosis and suggesting preventive measures.

Appropriate feed for different varieties and proportion: At nursery level application of proper feed for different spawns stocked in the ponds is very important, since the appropriate application of feed ensure proper growth of the spawn to the fingerling. Like any other services, awareness and knowledge about the need for appropriate feed is missing among the nursery owners. Moreover, absence of proper service provider, mostly in the form of information provider, worsens the situation and impedes growth of this sector

Experience from the sub-sector study suggests that a very few of the nurseries are getting these much needed information from DoF, BFRI, and hatcheries. But they are not satisfied with the much needed information they get. Some of them are not even aware of the services they need. As competition exists among the nurseries, they do not share information and technical know how with competitors and out flow to the table fish farmers.

5.1.3 Hatcheries

In fisheries value chain hatcheries play the most critical role as they supply the first input in the chain. In terms of technical difficulty, hatcheries are the most technically intensive level in the fisheries value chain. Activities at this level warrant significant level of skill and technical know how of the process. Hatcheries keep their own broods to collect spawns and sell them in bulk to nurseries. In the hatcheries from brood rearing to egg collection and

hatching, to accomplish tasks hatchery owners need skilled technical person; otherwise it may result in high mortality rate of hatched eggs to low quality spawns. Therefore, need for various services at hatchery level are more sophisticated and technically demanding. From field experience during the sub sector study, services need of the hatcheries can be broadly categorized into three types:

- **Infrastructure Management:** Infrastructural set-up in hatcheries plays an important role in their operation. There are different technical aspects in setting up a hatchery. Hatchery owners lack proper knowledge on the technicalities of designing the infrastructure of the hatcheries like water flow, hatching tubs.
- **Brood management:** Brood is the basic input to egg collection and hatching. Quality brood is the most important input in producing spawn. The hatchery owners lack knowledge on features of quality brood, brood rearing, brood density and mix of different varieties, feed ingredients, proportion and timing, disease diagnosis etc. During the sub sector study, it was found that most of the hatcheries owners do not perceive the importance of brood management and there is no such proper service provider who can help them on these issues. Therefore, poor brood management is creating an inherent problem in the whole value chain.
- **Spawn production:** Spawn production is the most technical part in hatchery operation. Starting from PG push to hatching, each and every step is so technically intensive that only an expert can ensure quality spawn production. Currently these services are being rendered by individuals, some of them are trained institutionally and some of them developed somewhat skill through trial and error.

Hatcheries do not get any such services from DoF because they don't have specific technical expertise on these issues. They mostly rely on FRI. Sometimes they hire experts from FRI or other institutes or even freelancers to serve them. Sometimes they hire technicians from other hatcheries or different districts for some technical purposes as egg collection and spawn production.

Cost of hiring trained experts is high and thus most of the time they are reluctant to do so. Technicians cannot serve up to the expected level as they over state their qualifications before being hired. The level of satisfaction of the hatcheries regarding information and services to them is very low. The hatchery owners lose their confidence over the technicians and they perceive themselves as an expert and start performing these tasks.

5.2 Supply-Side – The Service Providers

According to the nature of the services, four types of service providers were identified- (a) People involved in fish farming e.g. hatchery, nursery, and fish farmer (b) People selling inputs e.g. feed, chemicals, fertilizers, fingerling traders etc. and (c) Government and NGOs. (d) Consultancy firm and individual consultant

5.2.1 Department of Fisheries

The Department of Fisheries being a government institution is supposed to provide public benefit service. This institution is mandated to provide information on various aspects of fish cultivation so that the actors in this sector can overcome different challenges and can grow. The need of services in the aforementioned segments is supposed to be satisfied by the officials of these institutions. This institution, however, lack the capacity in terms of human resource and other facilities to serve the need of the farmers, nursery owners and hatchery owners. They cannot offer their service to wider enterprises though they have the technical capacity to do so.

5.2.2 Bangladesh Fisheries Research Institute

BFRI has been playing a vital role in the advancement of fisheries in the region. This institution is the pioneer in research and development of this sector. BFRI organizes different training program to develop the skill and capacity of the enterprises and individuals. Trainings offered by this institution, however, are not need based and not responsive to the needs of the enterprises of this sector. This institution is technically most capable but their services are very limited. New technologies and services developed by this

institution cannot be taken to the enterprises. This institution also lacks the capacity to promote its services among the market players in fisheries sector.

5.2.3 Hatcheries

Hatcheries can provide embedded services to its client mostly in the form of knowledge and information on different aspects of nursery operation. Hatcheries however are reluctant to provide information to the nurseries on spawn carrying, nurturing, and other spawn-fingerling related issues. They provide so only if they are asked. Some hatcheries even lack in that knowledge let alone providing to nurseries.

5.2.4 Nurseries

Nurseries lack in knowledge on pond management, density of the spawns, so that they can not provide right information to the fish farmers, it ultimately lower production at marginal level. Besides, they do not care that much about fingerling traders and fish farmers. Though they are their ultimate customers, they do not care as fingerling has huge demand.

5.2.5 Input Sellers

Input sellers buy Feed, Medicine, Balanced feed, Fisheries equipment) from different companies or distributors. These companies and distributors provide them with the promotional information that they need to sell and resell their products. Therefore, the input sellers have very limited capacity to provide much needed information on various technical aspects of fish cultivation. There are however, exceptions and few retailers exist who actually can provide service to their clients and interestingly enough they have best business in their vicinities.

5.2.6 Fingerling Traders

They buy fingerlings from nurseries and sell to fish farmers at their farm gate; they are basically the sales agents of the nurseries. They only care about reaching fingerling safely to the farm gate. They don't care to provide service or information to fish farmers on technicalities of fish farming. This is the case

partly because they lack the technical capacity to provide such services and partly they fail to appreciate the benefits of providing embedded service.

5.2.7 Resource Farmers

They are the lead farmers in Valuka, Trishal, or in this region. They are resourceful and more adoptive to new technologies. Their technical know how on fish cultivation is better and they dare to experiment new things on their projects. They are often very much helpful to the poor farmers in providing information and their effort is mostly motivated by social acclamation. Farmers ask for their service when they face any difficulty and trouble regarding fish cultivation. In absence of stronger incentives their services are mostly inconsistent and depend on their attitude and will.

5.2.8 Technicians

Technicians are the most important professionals for a hatchery. They are supposed to be experts on egg collection and spawn production. Very few of them, however, have formal training. Most of the technicians work as an assistant to an expert and even before learning the techniques, they claim themselves as expert technicians. Thus they fail to serve in accordance with the expectation of the hatchery owners.

5.2.9 Formal and Informal Money Lenders

To solve the credit problem of fish farmers Government initiated few programs to provide credit facilities to them. Government banks have low-interest rate loan programs for the fish farmers. But the procedure of getting that loan is cumbersome. Different kinds of paper works as ownership proof, irregularity, mismanagement, corruption etc. made it almost impossible for the poor fish farmers to acquire a loan. Other NGOs are reluctant to lend money in fishery as fish farmers need a large amount of money for a particular season and the pay back period is longer; generally the whole season. There are village mohajons (money lender) who lend money at a very high interest rate. Farmers sometimes, without better options, borrow from them. Borrowing money from them eventually lowers the profitability of fish farming.

5.3 Conclusions on the Service Market

Irrespective of size, the hatcheries, nurseries and fish farmers need various services. Field experiences suggest that there lie different problems on the demand side of services. The value chain actors in some instances fail to realize the need for service; in other instances they need the service but either they are not ready to pay for the service or they don't know the source of service. Moreover, the value chain actors expressed their dissatisfaction about the quality of the service that they are currently availing. From the demand side, this market can be characterized as the market which has a high awareness of the need for quality information on pond management and fish cultivation techniques. These awareness, however, is not translated into need or effective demand. On the other hand from the service providers in most cases lack the capacity of provide such technical services. Moreover, to many of the service providers the incentive of providing such service is not very clear and they fail to identify their market and demand of their services. As a result, in the context of semi-intensive fish cultivation, the service market is performing inefficiently at sub-optimal level.

This market is the classical weak market situation where the service users are not really ready to pay for the services and eventually the service providers don't find this market lucrative enough. Therefore, innovative steps should be taken to promote the embedded service and service provision firstly from and to the value chain actors. Once the value chain actors get the benefit of using such services, they will eventually get habituated in paying for the transactional services. At the same time, some ground-breaking initiatives should be taken to improve the public benefit service.

6.0 POLICY RELATED ISSUES

Policy is a set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of achieving them within a specified situation where those decisions should, in principle, be within the power of those actors to achieve.¹⁰ Thus, policy making is a process, and not simply a choice. Performance of businesses is affected by wide range of variables, both internal and external. The internal factors are constituted of production efficiency, backward linkage and skilled manpower and so on so forth. The external factors include social, political, legal issues. Therefore, growth of any sector or business to a large extent depends on the nature of business environment. The business environment is guided by policies. Policies not only control or guide the relationship between or among the sectors but also relationship within the sector. The policy environment has therefore both sectoral and cross-sectoral role to play.

Different studies have shown that there exists a positive correlation between business growth and conducive policy environment and fisheries is no different. For the fisheries sector policy framework contributes to the development of new species, new technologies, improving the efficiency of the value chain actors through training and most importantly there are certain domain where government has to play a vital role in determining the rule of the game for the greater good of the sector.

The subsequent segments national fisheries policy will be reviewed to identify effectiveness of these sets of policy frameworks in creating an enabling environment so that fisheries especially commercial fish cultivation can grow at a faster rate. The discussions will also aim at identifying the weakness in policy formulation as well as executing or implementing which eventually impedes growth of the sector in the region.

6.1 Policies Related to Fish Sub-sector

The role of fisheries resources in the national economy is very important. There are many obstacles to the development of the fisheries sector. These are, Conservation of fisheries resources, various natural calamities and man-made problems, lack of proper management and technically skilled manpower and lack of funds. Besides these, lack of a national fish policy was one of the important causes for slow development of this sector. In 1998 GOB

¹⁰ William Jenkins in Policy Analysis: A Political and Organizational Perspective (1978)

developed National Fisheries Policy to provide a clear direction and set strategy for developing the sector.

6.1.1 Objectives of the National Fisheries Policy

The objectives of the National Fisheries Policy are:

- Enhancement of the fisheries production
- Poverty alleviation through creating self-employment and improvement of socio- economic conditions of the fishers
- Fulfill the demand for animal protein
- Achieve economic growth through earning foreign currency by exporting fish and fisheries products
- Maintain ecological balance, conserve biodiversity, ensure public health provide recreational facilities

6.1.2 Legal status of the National Fisheries Policy

All the government and autonomous organizations, multi-national institutions, various non-governmental organizations, voluntary organizations, and persons who are working within the geographical territory of Bangladesh for the development of fisheries resources, harvesting and preservation, export-import or other businesses, related to the fisheries sector will be included in the National Fisheries Policy.

All the water bodies suitable for fisheries production and their fisheries resources and conservation, development and management will be under this policy.

6.1.3 Range of the National Fisheries Policy

In order to provide a strong base of the development process of fisheries resources in an integrated way, proper attempts should be imposed on the following aspects:

- Policy for procurement, preservation and management of fisheries resources of the open water bodies
- Policy for fish culture and management in closed freshwater bodies
- Policy for culture of shrimps in coastal regions
- Policy for exploitation, conservation and management of marine fisheries resources

Other related fisheries policies are:

- Establishment of hygienic fish landing centers
- Transportation and marketing of fish
- Processing and quality control of fish
- Export of fish

- Policy for fisheries education
- Policy for fisheries extension
- Policy for fisheries research
- Organizational facilities for fisheries sector
- Policy for fisheries environment
- Policy for fisheries credit
- Policy for fisheries co-operatives

6.2 Policy Related Constraints

The lone national policy reviewed in the above section try to focus on various aspects of development of fisheries in Bangladesh. The policy document has been prepared long before the PRSP has been in place, yet the major thrusts of the policy are largely consistent with the MDGs as well as the strategies and future policy priorities of agriculture and rural development policy matrix suggested in the PRSP. The policy aims at improving the sector by developing extension services, conserving the environment, developing the research facilities and co-operatives. The first and foremost impression gathered from the policy review is that the document is too broad and not specific and most importantly the policy in most cases is not need based. The caveats of the policy are highlighted in the following segment.

Too focused on capture fish: Albeit the consistent growth of culture fish and its contribution to economic development, the national fisheries policy has focused too much on capture fish. The policy was not formulated on the basis of the need of the sector players and therefore, does not provide a systemic outlook to the development of production, efficiency and market linkage for the value chain actors.

Lack of monitoring and control mechanism: Problem related to brood production and brood management has two different perspectives. In the policy documents government has not provided any kind of strategic guideline to develop brood banks both at public and private level. As a result, availability of quality brood fish is arising to be a major constraint to the development of the sector. Moreover, government has no system of monitoring and control on brood fish breeding. Some carp fish are crossbred, which is a threat to those species and also for the ultimate consumers. Uncontrolled and unplanned breeding of different varieties is posing a serious threat to the bio-diversity of the country and development of the sector is seriously threatened. Lack of clarity regarding the variety development is alluring enterprises to breed various harmful varieties like Piranha. This phenomenon is noteworthy especially in the context of Mymensingh, since the farmers in the region are more advanced than other parts of the country they tend to experiment with new varieties and eventually they may start cultivating harmful varieties.

Weak quality control mechanism for fish feed: The demand for fish feed among the fish farmers are increasing as they are shifting more towards intensive fish cultivation. On the other hand there is no such quality standard in the market set by the government. The companies are taking up this opportunity to market non-quality fish feed. The farmers are buying available feed in the market without caring much about the quality. They are not sure of the amount and proportion of the nutrients and of the quality. Eventually the cost borne by the farmers are not resulting into higher productivity.

Lack of clarity in credit policy and utility policy: There is no provision of soft loan for the fish farmers. They suffer from acute capital problem, which compel them invest less and mostly, sell their undersized immature fish for paying feed sellers. During the sub sector study it was found that fish farmers are paying electricity bill at commercial rate, which increases the cost of production and ultimately burdens the poor farmers.

Lack of coordination among government agencies: There is no coordination among LGED, Land Office and DFO in case of leasing. Therefore, complications arise for the lessee. A lessee might need a pond or any land for a long time for the betterment of his business. As there is no coordination among the abovementioned concerns, the lessee suffers heavily.

7.0 MARKET DEVELOPMENT STRATEGY

7.1 Introduction

Analysis of Mymensingh fish sub-sector demonstrates that it is growing. However, the growth is asymmetric as two upazilas (Valuka and Trishal) enjoy higher growth rate and rest of the upazilas do not.

Valuka and Trishal have reached the peak of fish cultivation with modern technology but the other upazilas could not do so. So the intervention plans will be focusing rest of the ten upazilas where the target groups, the MSEs, are located. Valuka and Trishal will be incorporated for establishing market linkage. The intervention plans would ensure involvement of a huge number of poor farmers and service providers, increase in their sales and income, increase in employment, more sustainable business and livelihood.

7.2 Working Area

It has been discussed earlier in chapter 1 about the justification of selecting pond fish sub-sector in Mymensingh. After having done an extensive sub-sector study, it is found that not all upazilas are equally potential for intervention. Based on three criteria – (1) presence of marginal farmers, (2) growth potentiality and (3) resource availability (ponds etc.) – five upazilas are highly eligible for working in this sub-sector. They are Fulbaria, Sadar, Nandail, Fulpur and Muktagaccha in descending order.

The sub-sector study found Valuka and Trishal having the highest productivity and use of modern technology. Therefore, any intervention would barely render any impact on those upazilas. Haluaghat and Dhobaura could not be covered during the sub-sector study. However, information collected from secondary sources and market suggests that intervention would have less impact than some other upazilas. Ishwargonj is mainly a nursery prone and Gouripur is a hatchery prone area. So they are not also highly potential area for any intervention.

Table 22: Area Potentiality Matrix for Fish Sub-sector in Mymensingh

Upazila	Ranking in terms of Criteria			Total Score	Area Potentiality
	Presence of Marginal Farmers	Growth Potentiality	Resource Availability		
Valuka	12	12	12	36	12
Trishal	11	11	11	33	11
Muktagaccha	5	5	3	13	5
Fulbaria	2	1	4	7	1
Fulpur	1	3	5	9	4
Sadar	4	2	2	8	2
Gouripur	7	7	6	20	7
Goforgaon	8	8	7	23	8
Nandail	3	4	1	8	3
Haluaghat	9	9	10	28	9
Ishwargonj	5	6	8	19	6
Dhobaura	10	10	9	29	10

Source: Sub-sector study

7.3 Vision

Vision:

By the year 2012, The MSEs of Mymensingh pond fish sub-sector will achieve –

- Productivity increase by 60%, from current 2.4 to 3.4 MT per hectare
- Sales increase by at least 30%,
- Income increase by 20%, and
- Employment generation by 20% (about 1.5 persons per one hectare pond area).

Mymensingh is now holding the fifth position in total production of fish in Bangladesh and the eighth position in productivity which is 3.4 MT per hectare. Current productivity of the marginal pond fish farmers is 2.4 MT per hectare. Whereas productivity for the large fish farmers is 7.5 MT per hectare.

There also will be other considerable positive impact like improvement of nutrition and also poverty alleviation, if the proposed interventions are rightly materialized.

The main reason why DEW's intervention will bring a difference is that current capacity utilization is still at low level and huge unmet demand exists in those upazila markets. The vision has chiefly included the MSEs that are currently engaged in cultured fish production with pond fishery sub sector. It means that market will experience faster growth rate by engineering systemic changes that would improve its productivity and production. Adaptability attitude of actors in primary stage to change and incorporating new technologies will act as lubricating factor in achieving this target.

7.4 Strategies

To achieve the vision stated above, DEW will resort five broad strategies. There might be several interventions under each strategy. The interventions, however, are suggested by analyzing the present market situation. Since market situation changes and market development approach is flexible in its nature, the interventions may also change in time to comply with the changes.

Strategy 1:

Make fish related modern and better inputs and services available to the MSEs

Strategy 2:

Make the MSEs capable to act jointly/by groups

Strategy 3:

Link the MSEs with the technologies and the services of the leading areas of the district (Valuka and Trishal)

Strategy 4:

Establish public private partnership in introducing new varieties and improved practice.

7.5 The Intervention Plan

Intervention plans are constructed based on the strategies.

7.5.1 Strategy 1

- 1. Improving dissemination of information on cultivation techniques and usage of inputs to the fish farmers through medicine and chemical sellers***

Fish medicine, vitamin and chemicals have a different distribution channel than feed. Like feed sellers' knowledge improvement, medicine and vitamin companies can provide training to their retailers to embed information to the farmers.

2. Improving dissemination of information on cultivation techniques and usage of inputs to the fish farmers through feed sellers

Input sellers have a transactional relationship with farmers. But their poor knowledge and also lack of motivation are impeding the flow of information to the farmers. Feed company/s can improve the knowledge base of their retailers and also motivate them to provide embedded information to increase sales.

3. Improving dissemination of information on cultivation techniques and usage of inputs to the fish farmers through nursery owners

Nursery owners provide different information regarding cultivation techniques to the fingerlings traders and farmers. Since they lack in proper knowledge, the information provided to the fingerlings traders and farmer are often poor and sometimes harmful. Improving their knowledge can solve this problem so that they can embed good quality and updated information.

4. Improving the availability of quality inputs through strengthening the retailers' network up to union level by working with private input companies

This can be facilitated by preparing the business potential and financial feasibility calculations and projections for each union and sharing this with the prominent input companies. In addition, SLIPP can assist the companies in developing the knowledge base of these new retailers to further increase the interest of companies in expanding retailer network. Also, the feed companies will be assisted to undertake awareness activity on feed usage benefits among fish producers.

7.5.2 Strategy 2

5. Facilitating the formation of a common body (producers group) to make them understand and act according to the market demand and supply situation.

Marginal fish farmers now sell their fish to the retailers. To link them with the market, understand the market demand-supply situation and act accordingly a common body constituting the primary stakeholders will be facilitated to form. A common body can take the lead in this regard. To carry out the intervention some activities will be followed like: Identify existing Associations/influential primary stake holders, arrange meetings to understand their needs and future plans, observe their activities after the meetings (to assess their buy-in), arrange vision workshops, assist them in implementing the planned activities that comes out through vision workshop.

7.5.3 Strategy 3

6. Establishing linkage with the service providers and the input sellers of Valuka and Trishal

Fish sector is moving forward, not only in Mymensingh but also in the whole country. This forward movement was supposed to be comparatively faster in case of Mymensingh. Linking underdeveloped upazilas with developed upazilas and districts, research institutes can keep this sector updated with new technologies. Valuka and Trishal have proceeded further than other upazilas of Mymensingh. Various service providers and input sellers can be linked up with the MSEs of other upazilas so that the latter get better inputs and services.

7. Strengthening the linkage between the weaker market and the developed market of Valuka and Trishal

Valuka and Trishal have strong market system, which can be idol for the weaker markets of other upazilas. Fish producing MSEs of those areas will be benefited when there will be strong linkage with the developed market system.

8. Creating awareness among the farmers about the local demand and facilitate to establish linkage with higher market.

Fish producing MSEs now produce not knowing the market situation let alone think of the higher market. They will be made aware about the local demand and facilitated to establish linkage with the higher market.

7.5.4 Strategy 4

9. Improving the cultivation practice and adopting new varieties through public bodies and related institutes

Marginal farmers do not care that much about the variety and quality of the fingerling they purchase. They just buy and release the fingerlings into their ponds. Improved technologies like proper pond management, better fish feeding and rearing process etc. will be disseminated to the MSEs. Their cultivation practice will be improved by introducing new varieties to them through DoF (Department of Fisheries), nurseries, and resource framers.

10. Creating awareness among the farmers of integration of fish culture with rice through common body (producers' group) and stakeholders

Introduction and adoption of new technologies like fish farming in rice fields, vegetable farming on the bank of pond etc. will be popularized among the fish farmers. Public bodies like Department of Fishery, Fish Research Institute.

11. Creating awareness among the farmers through common body (producers' group) and stakeholder

Micro and small pond fish farmers lack in awareness of the proper way fish farming. They will be made aware of it through a common body like a producers' group which will be formed beforehand. The members of the group will be sharing their knowledge and experiences among themselves in order to increase their own expertise.

Table 23: Priority setting of interventions

Sl.	Interventions	Contribution in			Ranking
		Productivity	Profitability	SME outreach	
1	Improving dissemination of information on cultivation techniques and usage of inputs to the fish farmers through medicine and chemical sellers	Medium	Medium	Medium	6
2	Improving dissemination of information on cultivation techniques and usage of inputs to the fish farmers through feed sellers	High	High	High	2
3	Improving dissemination of information on cultivation techniques and usage of inputs to the fish farmers through nursery owners	High	High	High	1
4	Improving the availability of quality inputs through strengthening the retailers' network up to union level by working with private input companies	Medium	Medium	High	4
5	Facilitating the formation of a common body (producers' group) to make them understand and act according to the market demand and supply situation.	low	Medium	High	7
6	Establishing linkage with the service providers and the input sellers of Valuka and Trishal	Medium	Medium	Low	10
7	Strengthening the linkage between the weaker market and the developed market of Valuka and Trishal	Low	High	Medium	8
8	Creating awareness among the farmers about the local demand and facilitate to establish linkage with higher market.	Low	Medium	Medium	11
9	Improving the cultivation practice and adopting new varieties through public bodies and related institutes	High	High	Medium	3
10	Creating awareness among the farmers of integration of fish culture with rice through common body (producers' group) and stakeholders	Medium	Medium	Medium	5
11	Creating awareness among the farmers through common body (producers' group) and stakeholders	Medium	Medium	Medium	9

8.0 CONCLUSION

Mymensingh pond fish sub-sector renders ample opportunity to intervene at different points of the supply chain. Several constraints clog up its growth both vertically and horizontally. Besides, there are some opportunities that can be addressed to enhance the growth of this sub-sector. Sustainable development of the pond fish sub-sector will be possible if the services needed by the hatcheries, nurseries and table fish farmers are provided by relevant private sectors. It would be the aim of the SLIPP project to facilitate the sustainability of the business services that would aggravate the growth of this sub-sector.

The beauty of Market Development approach lies in its flexibility to accommodate the changes within the market. The study shows that Mymensingh has huge potential in pond fish sector and a number of interventions mentioned above can act as the stimulant to turn that potential into reality. But obviously, according to the change of the market situations, new interventions may come up and at the same time, some proposed interventions might drop down with a view to meeting the objectives of the SLIPP project.

Annexure

Key Informant Questionnaire

মাছ সাব-সেক্টর বিষয়ে অভিজ্ঞজনের জন্য প্রশ্নমালা

নাম		প্রতিষ্ঠান	
পদবী/পদ			
ঠিকানা		উপাত্ত সংগ্রহকারী	
ফোন		তারিখ	

1. What are the programs do you run through your organization/project(s)?

১) আপনার প্রতিষ্ঠান কি কি কার্যক্রম পরিচালনা করে থাকে?

2. Who are the clients/beneficiaries of your program(s)?

২) কারা সাধারণত আপনাদের কার্যক্রমে অংশগ্রহণ করে ও তার মাধ্যমে উপকৃত হয়?

3. What are the specific program and activities of your organization/project(s) related to Pond Fishery subsector in Mymensingh?

৩) ময়মনসিংহের মাছ চাষ সম্প্রসারণ ও উন্নয়ন বিষয়ক বা মাছ চাষীদের জীবনযাত্রার উন্নয়ন বিষয়ক কি কি কার্যক্রম আপনারা পরিচালনা করেন?

4. What are the major constraints for the growth of Pond Fishery subsector in Mymensingh?

৪) আপনার মতে কোন কোন সমস্যা ময়মনসিংহের মাছ চাষ সম্প্রসারণ ও উন্নয়নে বাধা হিসেবে কাজ করছে?

5. What will be the solutions to overcome those constraints? Who can be the potential service provider to solve these constraints?

৫) এই সমস্যাগুলো কিভাবে সমাধান করা যায়? কে কিভাবে এই সমাধানে অংশ নিতে পারে?

6. What are the opportunities in Pond Fishery subsector in Mymensingh?

৬) আপনি কি সামনে নতুন কোন সম্ভাবনা দেখতে পাচ্ছেন? কোন কোন ক্ষেত্রে? কিভাবে?

7. What are the policies of Government and/ other organizations that are facilitating the growth of Mymensingh Pond Fishery subsector?

৭) সরকারের ও অন্যান্য প্রতিষ্ঠানের কোন কোন নীতিমালা/পলিসি মাছ চাষ উন্নয়নে ও সম্প্রসারণে অবদান রাখছে? ময়মনসিংহের ক্ষেত্রে সেটা কি প্রযোজ্য হচ্ছে?

7. What are the policies of Government and/ other organizations that are hindering the growth of Mymensingh Pond Fishery subsector?

৮) সরকারের ও অন্যান্য প্রতিষ্ঠানের কোন কোন নীতিমালা/পলিসি মাছ চাষ উন্নয়নে ও সম্প্রসারণে প্রতিবন্ধকতা হিসেবে কাজ করছে?

9. Who else can give us valuable information regarding Pond Fishery subsector of Mymensingh?

(Record the name and address of other key informant)

৯) ময়মনসিংহের মাছ সাব-সেক্টর বিষয়ে আর কে কে ভাল তথ্য দিতে পারবে? (তার নাম ও যোগাযোগের ঠিকানা)

Note: Try to collect secondary information (report, Brochure etc.)

উল্লেখ্য: যত বেশী সম্ভব রিপোর্ট ও তথ্য ভিত্তিক পুস্তিকা সংগ্রহ করতে হবে

Questionnaire for Assessing Supply Side of BDS

DĒi `vZv		DcvĒ msMĀKvi x	
`vb/ w/Kvov		e`emvi aiY e`emvi eqm	
‡Uwj ‡dvb, ‡ gvevBj , B- ‡gBj		KZ Rb Kgx [©]	`vqx: A `vqx: cwi ewi K:

১. পণ্য উৎপাদন/ বিক্রয়ের ক্ষেত্রে সাধারণত আপনি কি কি ধরনের সেবা/ সার্ভিস/ পরামর্শ প্রদান করেন?
২. আপনার সেবা/ সার্ভিস/ পরামর্শ প্রদানের ধরন বিবরণ করুন।
 - কাকে
 - কতজনকে (সিজন)
 - কখন (সময়কাল - সিজন কোন সময় সাধারণত সেবা দিতে হয়)
 - কোথায় (স্থান - নিজ ব্যবসাস্থলে/ নিজে গিয়ে)
 - অন্যান্য
৩. আপনার মত এই এলাকায় আর কারা এবং কতজন এই ধরনের সেবা/ সার্ভিস/ পরামর্শ প্রদান করেন? (নাম, ঠিকানা, ফোন)
৪. আপনি সাধারণত কিভাবে এই ধরনের সেবা/ সার্ভিস/ পরামর্শ প্রদান করেন? (Fee/ Embedded/ Free) Fee হলে কত?
৫. সেবা প্রদান করতে যে খরচ হয় তা আপনি কিভাবে তুলে আনেন? (পণ্যের মূল্য থেকে/ প্রজেক্ট থেকে/ ঋণ কার্যক্রম থেকে/ অন্যান্য)
৬. সেবা দিতে গিয়ে আপনার/ আপনাদের সাধারণত কি কি ধরনের সমস্যা হয়? ব্যাখ্যা করুন।
৭. এই সব সমস্যা কিভাবে সমাধান করেন?
৮. এই সব সমস্যা সমাধানে আপনার কোন পরিকল্পনা আছে? থাকলে ব্যাখ্যা করুন।
৯. আপনার সেবার মান কি অন্যদের চেয়ে ভাল? হলে কেন/ কিভাবে? (দাম/ মান/ সেবা দেয়ার পদ্ধতি/ অন্যান্য)
১০. কাস্টোমার বাড়ানোর জন্য আপনি কি কি সুবিধা দেন? (বাকীতে বিক্রয়/ ভাল মান/ মাঠে গিয়ে ক্রেতার সমস্যা দেখে আসেন/ অন্যান্য)
১১. আপনার সেবার মান আরও বাড়াতে হলে কি করা উচিত বা কি ধরনের সহযোগিতা আশা করেন? ব্যাখ্যা করুন।

Questionnaire for Assessing Demand Side of BDS

DĒi`vZv		DcvĒ msMĠKvi x	
`vb/ w/Kvbv		e`emvi aiY e`emvi eqm	
‡Uwj ‡dvb, ‡ gvevBj , B- ‡gBj		KZ Rb Kgx [©]	`vqx: A`vqx: cwi ewi K:

১. আপনার ব্যবসায় পরিচালনার জন্য কার কার কাছ থেকে কোন ধরনের সেবা/ সার্ভিস/ পরামর্শ নিয়ে থাকেন?
(নাম, ঠিকানা, ফোন)
২. আপনি ঐ সমস্ত ব্যক্তি/ প্রতিষ্ঠানের কাছ থেকে কি কি বিষয়ের জন্য কি কি ধরনের সেবা/ সার্ভিস/ পরামর্শ নিয়ে থাকেন?
৩. আপনি কেন সেবা/ সার্ভিস/ পরামর্শ নিয়ে থাকেন? (সহজে পাওয়া যায়/ পরামর্শ কাজে লাগে/ কম দাম/ উৎপাদন বাড়াতে / বিক্রী বাড়াতে/ অন্যান্য)
৪. এই সেবা/ সার্ভিস/ পরামর্শ কিভাবে, কখন, কোথায় নিয়ে থাকেন? (পরামর্শ গ্রহণের পদ্ধতি, স্থান ইত্যাদি)
৫. সিজনে এই সমস্ত ব্যক্তি/ প্রতিষ্ঠানের কাছ থেকে কত বার এই সেবা/ সার্ভিস/ পরামর্শ নিয়ে থাকেন?
৬. আপনার মত এই এলাকার আর কতজন এই সেবা/ সার্ভিস/ পরামর্শ নিয়ে থাকেন? (তাদের সংখ্যা ও % হার)
তাদের সেবা/ সার্ভিস/ পরামর্শ নেবার কারণসমূহ আপনার জানা আছে কি?
৭. এই সেবা/ সার্ভিস/ পরামর্শের জন্য বিনিময়ে কিছু দিতে হয়? হলে কিভাবে? ব্যাখ্যা করুন।
৮. এই সেবা/ সার্ভিস/ পরামর্শ পেয়ে কি আপনি সন্তুষ্ট? সন্তুষ্ট হলে কেন/ সন্তুষ্ট না হলে কেন না? (মূল্য/ গুণগত মান/ সার্ভিস দেবার পদ্ধতি/ যোগাযোগ সহজ/ অন্যান্য)
৯. আপনার মতে কিভাবে এই সব সেবা/ সার্ভিস/ পরামর্শ আরও উন্নত করা যায়?
১০. যদি কোন সেবা/ সার্ভিস/ পরামর্শ কারও কাছ থেকে না নিয়ে থাকেন তবে তা কেন নেননি? ব্যাখ্যা করুন।
১১. আপনার ব্যবসায়ের উন্নয়নের জন্য যদি এই ধরনের সেবা/ সার্ভিস/ পরামর্শ জন্য টাকা দিতে হয়/ খরচ করতে হয় , তবে কি আপনি এই সেবা/ সার্ভিস/ পরামর্শ নিবেন? যদি হ্যাঁ হয় তবে সেক্ষেত্রে সেবা/ সার্ভিস/ পরামর্শ কিভাবে, কখন, কোথায় কি মানসম্পন্ন সেবা/ সার্ভিস/ পরামর্শ নিতে চান?)
১২. এই সব সেবা/ সার্ভিস/ পরামর্শের মূল্য কত হলে ভাল হয় বলে আপনি মনে করেন?
 - সাধারণ চাষ পদ্ধতি/ বিক্রী বিষয়ক পরামর্শ :
 - রোগবলাই নির্ণয় ও এর প্রতিকার :
 - প্রশিক্ষণ :
 - অন্যান্য বিষয় :

Market Assessment Questionnaire 1

gqgbwmsn AÂtj i gvQ Pvl
mve±m±i we±k±Y gj `vqY wbt` PkKv - 1

Zwi L:
n`vPvi x

e`emvi ai Y: eo gvQ Pvl x, tcvbv gvQ Pvl x ,

DĒi `vZv		DcvĒ msMhKvi x	
`vb /wKv bv		e`emvi eqm	
†Uwj †dvb, †gvevBj , B-†gBj		KZ Rb Kg ^x	`vqx: A `vqx: cwi ewi K:

e`emv cwi Pvj bvi eYĒv

<u>eQi</u>	<u>wewbtqvM</u>	<u>†gvU weK†gjt`</u>	<u>LiP</u>	<u>Avq</u>

wK wK gvQ Pvl K†i b (kZKiv nvi) :
(hZ tekx Z` thvMvo Kiv hv†e ZZ fv†j v)

GKK bv th\$ _ Aswk` wii †Zji e`emv, e`vLv Ki`b:

GB e`emvq Avmvi Ges Pwj †q hvevi Kvi Y:

<p>7. How do you determine the price for your table-fish/fingerlings/spawns? 7) ctY'i `vg Avcbw wk fvtē wbarfb Kti b?</p>		
<p>8. What do you do to promote the sale of your table-fish/fingerlings/spawns? Which species of fish/fingerling are most demanded? Why? 8) ctY'i wewu evotbvi Rb` wk wk cšv Aej wb Kti b? Ab`iv G e`vcvfi wk cšv Aej wb Kti b? tkvb ai tbi cRwzi gvQ /ti b/tcvbvi Pwn` v metPtq tekx? tkb?</p>		
<p>কার কাছ থেকে কিনেন এবং কার কাছে বিক্রয় করেন প্রতি ধাপে মূল্য সংযোজন উল্লেখ করুন প্রতিবার চাষের জন্য (Please mention the value addition in Taka for per kg) Try to be precise and if possible get the percentage of total actors that practice alike him.</p>		

<p>TECHNOLOGY/PRODUCT DEVELOPMENT (চর্চা / CY` Dbqb)</p>		
<p>1. What kind of technical and mechanical tools do you use and why? How do you know the production processing techniques and tools? From whom do you get these information/acquire these skills? 1) Ercv`b /wi mtqi tfti Avcbw wk wk ai tbi cxwz ,chp` I hbI cwiZ e`envi Kti b? tkb Kti b? GB me cxwz ,chp` I hbI cwiZ e`envi tkv_v t_tk wk tLtb?</p>		
<p>2. Is there any equipment / production technique that you know would improve your business? (If yes, explain) 2) bZb tkvb chp` /cxwz Avcbvi wk tkvb avi bv AvtQ,hv Avcbvi Ercv`b/wepq epxtZ mnvvh` Ki tZ cvfi ?</p>		

<p>3. What have you done recently to improve the quality of table-fish/fingerling/spawn? Or, introduced any new varieties? How do you learn that?</p> <p>3) eZgvtb Pvl /weµq c×wZ ev bZb tKvb cRwzi t¶¶t Avcb wk wetkl tKvb c×wZ /chj³ /hšcwZ /tKškj e`envi Kti tQb? Kti _vKtj Zvi e`envi tKškj m`utK Avcb Kvi KvQ t_ tK tRtbtQb?</p>		
<p>4. What new skills and inputs you believe are required to improve your business? From where you can get this?</p> <p>4) e`envi evotbvi Rb` wk wk chj³, tKškj /c×wZ l DcKiY` iKvi AvtQ etj gtb Kti b? G_ wj tKv_vq t_ tK cvl qv thtZ cvti etj Avcb gtb Kti b ?</p>		
<p>5. How do you ensure the quality/standard of table-fish/fingerling/spawn? What do you do to ensure that?</p> <p>5) tµZvi Pwn` v Abhvqx Avcb wk Fvte gvQ/tcvb/ti bj_ bMZ gvb i¶v Kti b ? Avi G_ bMZ gvb Avcb wk Fvte wvōZ Kti b?</p>		

INPUT SUPPLY e`e`v mµvš-Z`ej x		
<p>1. What inputs do you use? (Traditional feed/ modern feed/ fertilizers / rotenone/ water management chemicals / lime etc.) Where do you learn this practice?</p> <p>1) wk wk EcKib e`envi Kti b ? (%j , cQ_vMZ /AvaybK c`vtKURvZ Lv` , Pb, tivtUbb, wcl, cwlb wei×Kib, tKwgK`vj , JIa, wFuwgb) G_ wj miWK/cwi gvbMZ e`envi m`utK Avcb Kvi KvQ t_ tK Z` ev cvgk`bb ? (tKb ?)</p>		
<p>2. From whom do you obtain these inputs? Purchase in cash or credit? Do you get info on new methods/inputs from these providers?</p> <p>2) Kvi KvQ t_ tK GB EcKib_ wj mvavi bZ wk t_ v_ tKb (bM` , evKx,` ¶UvB) ? EcKib wetµZvi v wk Avcbv` i tK AvaybK ev bZb gvQ /tcvb/ti byPvl c×wZ ev bZb DcKi tbi h_v` e`envi m`utK Z` w` tq mnvvh` Kti b ?(tKvb tKvb t¶¶t)</p>		

<p>3. What are the constraints to getting them? (Explain) Are you satisfied (in terms of cost, availability, quality, delivery, frequency) with the inputs that you get? 3) ECKi b wKbvi mgq wK wK mgm"vq co#Z nq ? ECKi tbi , bMZ gvb, `vg, mgqgZ cvl qv GBme wcltq wK Avcbw mšp?</p>		
<p>4. Have you ever tried or heard of modern inputs? (Explain) 4) Avcbvi wK bZb tKvb wcltq ECKi b m#utK@Rvbw AvtQ ? e"vL"v Kti b </p>		
<p>5. Have you ever purchased inputs together with other business? Explain. 5) GKv bw wKtb , KLbl wK thš_fvte tKvb wKQz wKtb#Qb? (n"u/bv - e"vLv Kip)</p>		
<p><i>MANAGEMENT & ORGANIZATION (e"e"vcbv I c#Zövb mšmš-Z_`vej x)</i></p>		
<p>1. Do you manage all aspects of your business? If no who manages what? (Production management/supervision, purchasing, inventory holding, accounting / finance, marketing / promotion, sales, business plan) 1) Avcbw GKvB wK e"emv t" Lvtkvbw Kti b ? Ab" Avi tK tK e"emvq mnthwMZv Kti _vtK? (ECKi b tKbv, Lvevi `Zix, Lvevi t" qv, ZÉyeavb, wnmve ivLv, eivRvi RvZKi b, e"emv cwi Kí bv) e"vL"v Ki"b (mgm"v)</p>		
<p>2. Are females involved in your business? Please be specific on the activities they are involved in? (pond preparation, buying fingerlings/inputs, applying inputs, harvesting, etc.)? 2) Avcbvi e"emvi tKvb tKvb c#uqv mvt_ gvnj vi v h# ? (cKi c#Z, tcvbv tKbv, Lvevi %Zix, Lvevi t" qv, ZÉyeavb, gvQ aiv) (Ab"vb" mgm"v)</p>		
<p>3. Do you get anything done by others (who is not directly involved with your farm) for your business? If yes, why do you do that? 3) cY" Ercv`b /wepq c#uqv wK evBti i Ab" tKD h# AvtQ, th Avcbvi e"emvi mvt_ mi vmi m#u,3 bv? hw" _vtK ,Zvntj tKb Avcbw Atb"i mnvqZv w#t"Qb?</p>		

<p>4. What management skills would you like to acquire to enhance your business? 4) e'emv evotbvi Rb" e'e'vcbv nel qK wK wK fvj Avb _vKv DvPZ etj Avcbw gtb Kti b ? Avcbvi Avb evotbvi c0qvRb Avt0 wK ? (থাকলে সেটা কোন ক্ষেত্রে)</p>		
<p>5. Please specify the wages you pay to the labor (male and female)? Please specify the activities against each wage. 5) ktgKt` i (gij v l c+1) cwi KktgK</p>		
<p>FINANCE (A_vqb mspvš-Z_`vej x)</p>		
<p>1. What sources (formal or informal) have you approached for loans? What is the arrangement for getting loans? What problems do you face in these arrangements? 1) Avcbw wK wbtRi UvKvq e'emv Kti b ? bv Kti _vKtj Avcbw tKv_vq Kvi Kvt0 cwrRi Rb" wMtqt0b ? wKfvte avi wbtqt0b ev tKb avi cvb bvB ? wKi Kg mgm'vi m\$xb ntqt0b ? e'vL'v Ki b </p>		
<p>2. Is working capital or cash flow (collecting receivables) a problem? Explain the reasons. 2) e'emv cwi Pvj bvq cwrR ev bM` UvKvi wK tKvb mgm'v Avt0? (Kvi b e'vL'v Ki "b) mgvavb Ki t0b wKfvte ?</p>		
<p>POLICY (bxiZgvj v mspvš-Z_`vej x)</p>		
<p>1. Are there any that are constraints to businesses like yours (tax, VAT, licensing, standards others)? Or any beneficial policies that is or was in operation? 1) e'emv cwi Pvj bvq mi Kvi x bxiZgvj v m\$uK Avcbvi wK tKvb avi bv Avt0? i e, f'vU, wbeUbcT BZ'vw e'emv m\$uK bxiZgvj vi t'it' Avcbw wK tKvb mgm'v teva Ki t0b ? wKsev mi Kvi x tKvb bxiZ wK Avcbvi e'emv cwi Pvj bvq mnvqK nt"0 ? e'vL'v Ki "b</p>		
<p>2. What policies or regulations do you think are needed to support businesses like yours? 2) e'emv cwi Pvj bvq l m\$cnvi tb tKvb tKvb wbgKvbp mnvqK fvgKv ivLtZ cvti etj Avcbw gtb Kti b?</p>		

OPERATING ENVIRONMENT (e'emvi cwi tek msµvš-Z_vej x)		
<p>1. What are the biggest constraints that your business or those who buy from or sell to you face in areas such as road, electricity, water, telephone, communication, warehouse, marketplaces, etc.?</p> <p>১) অবকাঠামোগত সমস্যা ব্যবসার বৃদ্ধিতে কিভাবে বাধাগ্রস্ত করছে? (বিদ্যুৎ, পানি, টেলিযোগাযোগ, গুদাম, বাজার, অন্যান্য)</p>		
<p>2. In your view what can be done to address these problems? 2) GB mgm'v, wj wkfvte mgvavb Kiv thtZ cvti etj Avcwb gtb Kti b ?</p>		
TRADE ASSOCIATIONS (e'emvqK mwgwZ msµvš-Z_vej x)		
<p>1. Do you belong to any network or trade association? (Name & address of the association) 1. Avcwb wk tkvb mwgwZi mvt_ hys? (mwgwZi bvg l wkvbv)</p>		
<p>2. What are the main functions and benefits of the association? What else can be done through association to improve the business? 2) mwgwZ wk wk KivR Kti _vtK ? mwgwZi m` m` nI hvq wk j vf nt`Q ? mwgwZ Avcbvt` i e'emv evovtbvi Rb` wk wk Kitz cvti?</p>		
ESRB ISSUES (mvgwRK l e'emvqK bwxZgvj v / `wqZteva msµvš-Z_vej x)		
<p>Household engagement, Female employment and wage level: (Cwi evti i AskMhb, gunj v kigK wbtqvM, cwi kigK)</p>		
<p>Environmental issues related to chemical inputs: (need to be specific) Do you know about any kind of harmful effects of chemicals on your produce? If yes, who informs? cwi tetki Eci ivlvqbK Eckitbi cfve : ivlvqbK Eckib e'envti i dtj wk tkvb mgm'v t` Lv w` t`Q ?</p>		
<p>Ethical business practice: mwK fvte bwxZgvj v gtb e'emv Kivi tqtI mgm'v wk wk ?</p>		

3 Major constraints/opportunities of this business:
Avcbvi g†Z GB e`emvi cãvb wZbiU mgm`v /m`tebv

3 Main constraints/opportunities of the sub- sector:
Avcbvi g†Z GB mvetm±†i i cãvb wZbiU mgm`v / m`tebv

Market Assessment Questionnaire 2

গগগব্বমসন AÂtj i gvQ Pvl
mve†m±i we†k mY gj `vqY wb†` †k Kv - 2

Zwi L:

e`emvi aiY: DcKiY we†µZv, †R†j , †cvbv e`emvqx (nKvi) , `vbxq gvQ e`emvqx, eo †ecvi x, AvoZ`vi , Lpiv gvQ we†µZv, e*W gvQ mi ei vnKvi x

DËi`vZv		DcvË msMñKvi x	
`vb /wKvbv		e`emvi eqm	
†Uwj †dvv,†gvevBj , B-†gBj		KZ Rb Kgx [©]	`vqx: A`vqx: cwi ewi K:

e`emv cwi Pvj bvi eYb

eQi	we†b†qvM	†gvU weK†gjj`	খরচ	আয়	eQ†i KZ evi
2007					
2006					
2005					

Av†M wK wK Rv†Zi / ai†Yi gvQ/ †cvbv/ †ib/ Pvl K†Zb ev DcKiY we†µx K†Zb (kZKiv nvi) :
(hZ tekx Z` thvMvo Kiv hv†e ZZ f†j v)

GLb wK wK Rv†Zi / ai†Yi gvQ/ †cvbv/ †ib/ Pvl K†ib ev DcKiY we†µx K†ib (kZKiv nvi) :

GB e`emvq Avmvi Ges Pwj †q hvevi Kvi Y :

ebiv	mgmiv / mtebv	mgmiv / mtebv msikemwfm
Market Access (tePv tKbv msμvš-Z_vej x)		
<p>1. Avcbvi ctY'i gj tμZv Kviv ? (tμZvi ai b , tμZvi Ae`vb ,BZ`w`) tKb Zviv Avcbvi KvQ t_tK cY` (gvQ/ tcvbv/ ti b/ DcKiY) μq Kti ? Avcbvi tgvU e`emvi KZ Ask gvQ msμvš? (DcKiY weμZvi Rb`)</p> <p>(tmevi ai b thgb ,avti weμμ,weμμi mvt_ Z_` c0 vb ,Pvlxi cKti cwi`k0 ,weμtqvEi tmev ,BZ`w`)</p>		
<p>2. Avcbvi wK tKvb gμnj v tμZv AvtQ ? hw` _vtK ,Zvntj Zvt` i bvg, tckv (gvQ Pvlx/ tcvbv Pvlx /ti b- Pvlx) Ges wKv bv ej p </p>		
<p>3. tePv tKbvi tqt bMt` bv evKxtZ weμμ Kti b ? e`vL`v Ki`b evKxtZ weμμ Ki tj wK mrvavi b ggt` i tPtq tekx `vtg weμμ Kti b? (tKb ? e`vL`v Ki`b)</p>		
<p>4. cb` wKfvte cwi` enb Kti b ? tePv tKbvi tqt cwi` enb LiP tK enb Kti ?</p>		
<p>5. ctY'i μggj` / weμggj` Avcbv wKfvte wbarPb Kti b? e`vL`v Ki`b</p>		
<p>6. MZ wZb eQt i Avcbvi ctb`i `vg wK i Kg tetotQ ev KtgtQ? tKb tetotQ ev KtgtQ ? (Kgc tqt wZbwU c0vb ctb`i wZb eQt i i gj` msM0 Ki tZ nte) e`vL`v Ki`b</p>		
<p>7. evRvti wK Avcbvi ctY'i (,DcKi b,gvQ,tcv bv /ti b) ht`_IV Pwin` v AvtQ ? (e`vL`v Ki`b)</p>		
<p>8. Avcbv wK bZb tKvb wetkl` cb` tePv-tKbv Kti tQb / tmev w` tQb ? e`vL`v Kti b tKv_v t_tK GB cb` / tmev m0K avi bv tctqtQb ?</p>		
<p>5. Pwin` v chvB njj I tKb tμZv tekx tekx cwi` gvfb wKbtQ bv ev tekx `vtg wKbtQ bv ? Avcbv tKb Avcbvi e`emv m0c0vi b Kti tQb bv ? (e`vL`v Ki`b)</p>		
<p>10. MZ wZb eQt i Avcbvi ctY'i Pwin` v tKgb wQj ,tetotQ bv KtgtQ? (wZb eQt i i Z_` msM0 Ki`b, e`vL`v mn)</p>		

<p>11. cY'i wev evov#bvi Rb" wK wK cšv Aej #b Ktib ? tKb Ktib?/ tKb Ktib bv? (e"vL"v Ki"b)</p>		
<p>μq I DcKiY mieivn msμvš- Z_ "ej x</p>		
<p>1. Avcb tKv_v t_#K wK wK ai#bi DcKiY ev cY" msM#h/ μq Ktib ? tKb I Lvb t_#K msM#h Ktib? DcKiY ev cY" msM#hni t#t#t tKvb „i"ZcY"cwieZ# G#m#Q ? (gvb, `vg,)</p>		
<p>2. How do you purchase, in cash or credit? 2. tKbvi t#t#t bM#` bv evK#Z tK#bb ?</p>		
<p>3. Are there any constraints to getting them? Explain? Are you satisfied (in terms of cost, availability, quality, delivery) with the products that you get? 3. wKbvi mgq wK wK mgm"vq co#Z nq ? c#b"i „bMZ gvb, `vg ,mghgZ cvl hv GBme weI tq wK Avcb mšy- ó ? (e"vL"v Ki"b)</p>		
<p>4. How do you ensure the quality/ standard of your product? 4. Avcb wKfv#e Avcbvi cY"i (EcKi b/gvQ/tcvb/ti b) „bMZ gvb i #v Ktib ?</p>		
<p>5. Have you ever purchased inputs together with other partners? Explain. 5. GKv bv wK#b , KLbI wK thš_ fv#e tKvb wKQz wK#b#Qb? (n"vu/bv - e"vL"v Ki#b)</p>		
<p style="text-align: center;"> কার কাছ থেকে কিনেন এবং কার কাছে বিক্রয় করেন c#Z av#c gj" m#thvRb Etj #Ki"b c#Zevi Pr#I i Rb" </p> <p>Diagram the forward and backward linkages of the firm. (Please mention the value addition in Taka for per kg). Try to be precise and if possible get the percentage of total actors that practice alike him.</p>		

BUSINESS/PRODUCT DEVELOPMENT (e'emv I cY' Dbq b msµvš-Z_vej x)		
1. How do you know about modern or improved inputs/process/varieties? 1. Avcb wKfvte AvaybK DcKib ,cRwZ I c×wZ m×tÜ Rvtbb ?		
2. Do you know any modern/improved inputs/varieties to expand your business? 2. bZb tKvb AvaybK DcKib ,cRwZ I c×wZ m×tÜ Avcbvi wK tKvb avi bv AvtQ, hv Avcbvi e'emv ep×tZ mrvh" Ki tZ cvti ?		
3. What have you done recently to improve your product like introduction of modern inputs/varieties, traded and advised farmers about that? (Explain) 3. eZgvtb Pvl /weµq c×wZ ev bZb tKvb cRwZi t¶t¶ Avcb wK wtkl tKvb c×wZ /cby³ /hšcwZ /tKškj e'envi Kti tQb? Kti _vKtj, Zvi e'envi tKškj m×tK Avcb Kvi KvQ t_tK tRtbtQb?		
4. How the companies support or promote new products in your channel? 4. bZb cb" weµi t¶t¶ tKvµwb AvcbtK wKfvte mntwWZv Kti ?		
5. What new products and skills do you need to improve your business? 5. e'emv evotbvi Rb" wK wK bZb cY' ,cby³, tKškj /c×wZ I DcKiY` iKvi AvtQ etj gtb Ktib? (e'vL"v Ki"b)		
POLICY (bµwZgvj v msµvš-Z_vej x)		
1. Are there any policies or regulations that are beneficial to business like yours? 1. mi Kvi x tKvb bµZ ev wbggKvbp wK Avcbvi e'emv cwi Pvj bvq mrvqK nt"Q ? e'vL"v Ki"b		
2. Are there any that are constraints to businesses like yours (tax, VAT, licensing, standards others)? 2. e'emv cwi Pvj bvq mi Kvi x bµwZgvj v m×tK Avcbvi wK tKvb avi bv AvtQ? i é ,f"vU, wbeÜbcĀ BZ" w` e'emv m×tK bµwZgvj vi t¶t¶ Avcb wK tKvb mgm"v teva Kti tQb (eYb"v Ki"b)		
3. What policies or regulations do you think are needed to support businesses like yours? 3. e'emv cwi Pvj bvq I m×cñvi t b tKvb tKvb wbggKvbp mrvqK fwgKv ivL tZ cvti etj Avcb gtb Ktib?		

OPERATING ENVIRONMENT (e'emvi cwi tek msµvš-Z_vej x)		
<p>1. What are the biggest constraints (road, electricity, water, telephone, communication, warehouse, marketplaces, etc.) of your business?</p> <p>1.AeKvWtgvMZ mgm'v e'emvi eµx†Z wKfvte eravMÖ' Ki †Q ?</p> <p>(we`r,cwb,tUvj thvMvthvM, `vg,erRvi ,Ab'vb`)</p>		
<p>2. In your view what can be done to address these problems?</p> <p>2.GB mgm'v ,uj wKfvte mgvavb Kiv th†Z cv†i e†j Avcwb g†b K†i b ?</p>		
TRADE ASSOCIATIONS (e'emvi miµwZ msµvš-Z_vej x)		
<p>1. Do you belong to any network or trade association? (name & address of the association)</p> <p>1.Avcwb wK †Kvb miµwZi mv†_ h†? (miµwZi bvg l wKvbv)</p>		
<p>2. What are the main functions and benefits of the association? What else can be done through association to improve the business?</p> <p>2. miµwZ wK wK KvR K†i _v†K ? miµwZi m`m` nI hvq wK j v†/ ¶µZ n†"Q ? miµwZ Avcbv†` i e'emv evov†bvi Rb` wK wK Ki†Z cv†i ?</p>		
<p>ESRB Issues</p> <p>(mvgwRK l e'emvµqK bµxZgvj v / `wqZ†eva msµvš-Z_vej x)</p>		

3 Major constraints/opportunities of this business:
Avcbvi g†Z GB e`emvi c†vb wZbiU mgm`v /m`vebv

3 Main constraints/opportunities of the sub-sector:
Avcbvi g†Z GB mve†m±†i i c†vb wZbiU mgm`v / m`vebv