CHAPTER-1

INTRODUCTION

1. Introduction:

Fishery is one of the most promising sectors of agriculture and allied activities in India. This sector was officially recognized as a significant allied agriculture sector in the country during the first five year plan 1951-1956. It plays an important role in socio-economic development of the significant proportion of the people in the country and considered as a good income and employment generator.

Fishery in India has a long history. Kautilyas Arthashastra (321-300 B.C) and King Soneswaras Manasoltara (1127 A.D) each refer to fish culture. For centuries, India has had a traditional practice of fish culture in small ponds in eastern India. Major portion of productivity was made in the state of west Bengal in the early nineteenth century with the controlled breeding of carp in bundhs. Fish culture or fishing practice received important attention in Tamil Nadu as early 1911. Subsequently, states such as Bengal, Punjab, Uttar Pradesh Baroda, Mysore and Hyderabad initiated fish culture through the establishment of fisheries department. (*JSTOR , 2013)*

1.1. Fishery Sector:

A fishery is a unit engaged in raising or harvesting fish which is determined by some authority to be a fishery. According to the Food and Agriculture Organization (FAO), a fishery is typically defined in terms of the "people involved, type of fish, area of water, class of boats, method of fishing, and function of the activities or a combination of the earlier features" The definition includes a combination of fish and fishermen in a region, the latter fishing for similar species with similar gear types.

Fisheries in India can be broadly classified into capture and culture fisheries. The capture fisheries cover the fisheries of rivers and their tributaries, seas, big lakes

and reservoirs where fish are harvested without sowing seeds. Culture fisheries cover ponds, lakes, reservoirs, swamps etc, seeds are sown, nursed to proper size and are harvested *(Status and scope for fisheries, Shodhganga).*Dutta.et.al, (2010) have also mentioned that the fishing activities run in terms of the nature of harvesting. Fish can be either captured or cultured. Culture involves a business process that takes care of growing fish involving investments in production and subsequent harvesting. Obviously, investments in production – both in terms of physical resources and time – are proportionately higher than that in harvesting. Capture involves no investment in production with almost the entire investment concentrated in harvesting efforts. The production efforts are carried out by nature. The country fishing activities are still dominated by "capture fisheries".

Capture fishery refers to fishing in open and free waters like rivers, where the fishing depends on the natural fish stock. The Brahmaputra and the Barak river systems constitute capture fisheries in the state. The Brahmaputra River run through the Assam valley from the east to the west for a distance of 730 km. Large numbers of tributaries (about 47), both from the north and the south feed the Brahmaputra during its course. In its initial course of 530 km till Guwahati, the Brahmaputra has a steep slope and strong surface and under current. This makes commercial fishing difficult with the existing indigenous or traditional methods of fishing. The remaining 230 km from Guwahati to Dhubri is exploited commercially for fishing. The river Barak go up in the Japfu peak and run south-west for 100 km parallel to two ranges lying on both sides and then turns first to the north and then to the west through the Cachar plains. There are thirteen tributaries; six from the south and seven from the north join the Barak during its course. Commercial fishing is adapted across the entire river. Some of the good fish species in the world are found in the Brahmaputra such as the Indian major carps (Labeo rohita, Labeo ralbasu, Catla catla and Cirrhinus mrigala) and catfishes (Wallagoattu, Silondia silondia, Pangasius pangasius, Aorichthys seenghala, Bagarius bagariusand Ompok bimaculatus.) **(Pisciculture in Assam-Shodhganga)**

The present study specially focuses on the natural river and beel fisheries of the study area where huge numbers of fishermen are involved under the various

government registered Co-operative societies, Self Help Groups and some Non Government Organizations.

1.2. Features of Fishery Sector:

The fishery is a sunrise sector. This sector has a higher growth rate than other agriculture and allied sectors. Fish production is a biological phenomenon. It is an important part of pisciculture. At present pisciculture plays a vital role in agriculture sector. The healthy seed gives healthy production. The fish production depends upon the entire environment of the water bodies where fish can get opportunities for breeding. The main features of the fishery sector are mentioned below.

- The fishery is agriculture allied sector.
- The sector is a good source of livelihood for the rural people.
- It provides nutrition to the people.
- It generates employment opportunities.
- From this sector some ancillary units and fish based industry grows.

1.3. Fishery Industry:

According to the American heritage dictionary of English language the fishery industry means

- The occupation or industry devoted to the catching, processing or selling of fish, shellfish or other aquatic animals.
- A place where fish are caught.
- A fishing business
- A hatchery for fish
- The legal right to fish in specified water or areas.
  (*American Heritage® Dictionary of the English Language, 2016*)

1.4. Fisherman and Livelihood:

John Kurien defines fishermen as that class of people who earn their main source of livelihood by actually, actively being involved in the process of catching

fish using non-mechanized means of production. Prasad defines a fisherman as a person who may culture or capture fish or process or market the same and Bailey defines a fisherman as one using a fishing craft. The state government of Assam defines the fishermen of the scheduled caste and mimal community (Bangali Muslims) as actual fisherman or hundred percent fishermen who know properly do the fishing in the river, beel fisheries and ponds and tanks.

According to International Federation a Livelihood is a means of making a living. It covers people capabilities, income, assets, and activities required to secure the necessities of life. Ellis (2000) give a definition of livelihood that includes activities, assets, and importantly, access that together determine the ways in which individual or families make a living. Fishery is also one of the important economic activities of the people in the rural area. The fisheries of the country provide livelihood to an estimated 10 million people and Assam fishery sector also provide livelihood to the significant numbers of rural people. It is considered as a powerful income generator in the country and state.

1.5. A Glimpse of Fishery Sector in Assam with Reference to River and Beel Fishery:

Assam, the queen of land of North East Region, is proud of its availability of natural resources. The state is the second largest and most popular state in the region. It is geographically divided into three regions vizi) The Brahmaputra Valley ii) The Hill Zone and iii) The Barak Valley. Basically the people of these zones depend on agriculture and allied sector like the natural fisheries also play a vital role in the socio-economic development of the rural people in the state. **(Bora Chetia and Bania, R. 2014).**

The fisheries of Assam cover beels, rivers, reservoirs, swamps, low lying areas and ponds and tanks. Many individual fishermen are also doing fish culture by making pond in their individual land. The natural fisheries of the state are organized by the State Government. These are government registered and they are run by cooperative societies, SHG's and NGO's. Mainly the natural fisheries are divided into

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two categories i.e. beel fisheries and river fisheries. These two types of fisheries are shortly stated in the following.

1.5.1. Beel Fisheries:

Beels are wetlands which constitute vitally important fishery resource.**(aquafind.com)** These are the most productive inland water systems in the state. The state has the maximum number of beel fisheries, mainly associated with the rivers Brahmaputra and Barak. Locally known as beels, they are mostly oxbow lakes, back swamps. Various types of small and big species of fish are produced in the beel fisheries. Most of the beel fisheries have internal link with the river fisheries and some beel fisheries have no link with the other beel and river fisheries. The beel fisheries are naturally created in the state. The people of the rural area in the state are involved as fishermen in the beel fisheries. Most of beel fisheries are government registered and some are not. The non-registered beel fisheries are conducted by the local authorities (village organization).

1.5.2. River Fisheries:

River or tributaries are called river fisheries. These are free and floating. The riverine fisheries are a part of inland fisheries where the fish are captured by fishermen directly from the different rivers. The state has the main river Brahmaputra besides Barak and their numerous tributaries. These two rivers and their tributaries are recognized by the state government as river fisheries. Apart from the riverine resources the state is also gifted with beels which are extensive water sheets connected to the mighty river Brahmaputra, Barak and their tributaries.(**Riverine fisheries in India- article library**) **www.yourarticlelibrary.com-fish**

1.6. Statement of the Problem:

The present study is an attempt to examine the course of development of fisheries in the state because a huge chunk of rural people are involved in these fisheries and they get opportunity for livelihood. Though a lot of research work has

been done about biological aspects of fish farming, very little attention has been paid to its socio-economic aspects. The focus of the present study is therefore being to fill this lacuna, and to throw more light on the socio-economic aspects of development of fish culture in Assam.

Fish is a staple food for the people of Assam. In the state majority of the population consumes fish, which acts as substitute for vitamin and calorie deficiency of people in the society. The state is lagging backward with traditional fish culture, poor production of fish, lack of fisheries conservation rule of the government and poorer income to the fishermen.

The state has been chronically confronting short supply in fish products. The increase in size of the population of the state in each decade the demand for fish and fish product has been increasing. Although fish is considered as main food item but the state has not been able to self sufficient for fish production. The state having about 3.93 lakh hectare of water area, where beel fisheries and pond& tank fisheries occupies about 1.40 lakh hectares, shortage of fish production has been an acute problem(Department of fishery 2013-2014). However, in spite of having large fishery resources and potential in the state, its contribution to the national inland fish production is very less (about 6.55%).Despite the speedy advancement in the technology of fish culture and subsequent increase in production per unit of water in other parts of the country, fish culture in rural Assam by and large has remained traditional. On the other hand, most of the swamps and low-lying areas, rivers and tributaries of the state have not been properly used and conserve for fish culture and gainful employment of the voluminous unemployed and underemployed youths.

It is worthwhile to mention that the fishermen belong to the rural areas of the state and they have been confronting many problems in fisheries development. The basic problems are i).absence of proper financial support ii) natural iii) marketing iv) sickness v) illiteracy of the fishermen vi) absence of technical knowhow on the part of the fisherman and sustainable technologies for fin and shell fish culture, vii) inadequate support of the government viii) absence of fish export market and network and transportation problem. Besides the cooperative societies,

self help groups and various NGO's are playing a vital role for running the government registered fisheries. They are also faced by different problems for developing this sector.

Considering the above background of fishery sector it has been felt that a study focusing on the problems encountered by the fishermen need to be undertaken. Thus, the present study has been undertaken to examine the problems and prospects of fishery sector for the development of the economy in the state.

1.7. Objectives of the Study:

The main objectives of the study are-

    i. To study the present status of fishery sector in Assam.

    ii. To analyze the socio-economic status of the fishermen in the registered fisheries.

    iii. To examine the various policy measures by the Government for sustain the fishery sector in the state.

    iv. To identify the problems of fishery sector in the study area.

    v. To identify the prospects of fishery sector in the state.

Objective i): To study the present status of fishery sector in Assam.

The objective defines the present status of fishery sector of the state. It studies the fisheries potentialities, production of fish status, consumption of fish, management of fisheries, fishing technique and Government supports. In order to examine the present status of fishery sector in the state some comparison has been made with the fishery sector in the country. The objective has been pursued by using the both primary and secondary source of data collection, the Union and State Government report, report of some government agencies, Directorate of fisheries report, district gazetteer, different survey reports and various web sites.

Objective ii): To analysis the socio-economic status of the fishermen in the registered fisheries.

The objective of the study analyzes the socio-economic status of the fishermen in the registered fisheries. The fishermen are the respondents of the study and they are the members or shareholders of the sample registered fisheries which have been run by the particular fishery Cooperative societies, SHG (self-help group) and NGO (Non Government Organization).The study has analyzed in details on the socio-economic factors of the respondents. The aim of the objective has been fulfilled by collecting primary data.

Objective iii): To examine the various policy measures by the Government for sustain the fishery in the state.

The third objective of the study finds out the various policy measures of the government for sustains the fishery sector in the state. The study examines the Union and State Government policies and schemes for development the fishery sector and particularly the Government schemes of the study area have been observed. Also the role for implementing the various schemes and policies by district fisheries department, financial institutions and different organization has been discussed in the study. Most of the secondary information has been taken for meeting up this objective.

Objective iv): To identify the problems of fishery sector in the study area.

This objective of the study is to identify the various problems faced by the fishery sector in the study area. The fishery sector of the state has been facing many problems since long time. Different problems in different times have affected the growth of fishery sector. The problems of the sector have been identified by collecting the primary data.

Objective v): To identify the prospects of fishery sector in the state.

This objective has been met up by studying many research papers, articles, reports, thesis and many books .Visiting the beel fisheries and river fisheries of the study area were the main source for knowing many things regarding the fishery sector. Many prospective issues came into the light from the interaction of the respondents of the particular cooperative societies, self-help groups and non-

government organization of the registered fisheries which helped to solve the objective.

1.8. Research Questions:

i. Is there any change in livelihood pattern of the fishing community?

ii. Is the co-operative society playing a major role in Assam fishery sector than the SHG and NGO?

Questions verification:

Question i): Is there any change in livelihood pattern of the fishing community?

The first question of the study is verified from the analyzing process of occupational structure of the fishermen or shareholders of the particular registered fisheries. As per this verification of the query the result has been able to achieve through the primary data.

Question ii): Is the co-operative society playing a major role in Assam fishery sector than the   SHG and NGO?

This query is also met up from analyzing the role of fisheries cooperative societies, self-help groups and non-government organization in the study. Mainly the fisheries cooperative societies, self-help groups and non-government organization has major role for running the registered fisheries in the state. This query has been verified through primary data.

1.9. Hypotheses:

i. Flood has positive role for the growth of fishery sector in Assam.

ii. There is no wide variation in terms of problems faced by the fishermen of the selected district.

Hypotheses verification:

Hypothesis i): Flood has positive role for the growth of fishery sector in Assam.

The hypothesis that "Flood has positive role for the growth of fishery sector in Assam" has been tested by chi square between the districts and fish production.

Hypothesis ii): There is no wide variation in terms of problems face by the fishermen of the selected districts.

The hypothesis that there is no wide variation in terms of problems face by the fishermen of the selected districts has been tested with chi square test, Spearman's rank correlation and ANOVA.

1.10. Methodology:

1.10.1. Method of the Study: The study is explorative in nature.

1.10.2. Universe of the Study: The study covers the registered river and beel fisheries in the three districts of the state where significant numbers of fishermen are involved as shareholders in the fisheries cooperative societies, self-help group and non-government organization. These organizations (registered) run the registered beel and river fisheries under the management of State Government. The three districts of the state in the study are respectively Sivasagar, Nagaon and Cachar which have been selected on the basis of the following justifications.

i) Geographical set up or location distinctions:

On the basis of geographical set up or location distinctions these three districts are selected. The Sivasagar district is situated at the upper Assam, it represents from the Brahmaputra Valley and upper Assam. The Nagaon district is situated in the middle Assam and it represents from the Brahmaputra Valley. The Cachar district is situated in the southernmost part of Assam is one of the oldest districts. This district represents from the Barak Valley.

ii) Numbers of registered fisheries and their shareholders in the selected area:

The study area is selected on the basis of the numbers of registered fisheries and their shareholders. The three districts have good numbers of registered fisheries. The Sibsagar district has 32 nos. of registered fisheries which has large numbers of registered fisheries in the Upper Assam. The Nagaon district has also large number of registered fisheries and their shareholders. It has 52 nos.of fisheries and the Cachar district has 81 nos. of registered fisheries which is the highest number of natural fisheries in the study area.

iii) Significant amount of revenue in the registered fisheries

On the basis of the significant amount of revenue in the registered fisheries, the three districts are selected because these districts of the state from different location distinction have been able to give significant amount of revenue to the State Government of Assam. They are playing an important role in the state economy.

1.10.3. Source of Data Collection:

Both primary and secondary sources of data are used in this study. The primary data has been personally collected from the selective sample registered fisheries (river and beel) which is run by the fisheries co-operative societies; self-help groups and NGOs .The persons who are the actual fishermen/shareholder (the govt. fishery department certify the person as actual fishermen who knows the fishing activity properly) of different strata involved in this sector. The total number of sample fisheries (beel& river) from the three sample districts is selected on the basis of random sampling for field observation and data collection in depth study. The total numbers of 415 nos. shareholder/ fishermen are closely involved in the sample fisheries that have been interviewed from the sample districts of the state.

The secondary data has been collected from various sources, such as reports from the Food and Agriculture Organization (FAO), Union Government report of agriculture and aquaculture, report of Planning Commission, Union Government of India, report of NABARD and other financial institutions, report of fishery

department in the State Government of Assam, district gazetteer, census report, official records, newspapers, journals, thesis, research articles and various websites.

1.10.4. Sample Arrangement:

The sample of the study is systematically arranged from the field survey. This arrangement has been made in the following table No.1.1

Table No.1.1.Selection of Sample for the Study									
Districts	Registered beel fisheries	Registered river fisheries	Nos. of sample fisheries(30 % of beel and river fisheries)		Total nos of sample fisheries	Total fishermen/ share holder/ members of the respective registered beel fisheries	Total fishermen /share holder/ members of the respective registered river fisheries	Total fishermen of the Beel and River fisheries	Total sample fishermen 30% of the total fishermen
			beel fisheries	river fisheries					
1	2	3	4	5	6	7	8	9= 7+8	10
Sivasagar	23	9	7	3	10	105	420	525	159
Nagaon	40	12	12	4	16	192	176	368	111
Cachar	38	40	12	12	24	176	304	480	145
Total	101	61	31	19	50	473	900	1373	415

Source: Primary survey

The above table No. 1.1 shows the details of sample selection for the study. The column no.1 shows the study area from where the data or information has been collected. Column 2 and 3 shows the total of existing registered river fisheries and beel fisheries of the three districts of the state that comes to 162. Column 4 and 5 display the number of sample of beel and river fisheries for the study, which is

selected by taking 30 percent of total beel and river fisheries respectively in each districts. The column number 6 shows the total fisheries selected as a sample for the study that 10, 16, 24 fisheries (both beel and river fisheries) from Sibsagar, Nagaon and Cachar district respectively. The total sample of fisheries comes to 50.

The selection of fishermen is done by taking 30 percent of the total fishermen in river and beel fisheries in the respective three districts. The column 7, 8 and 9 shows the total number of fishermen in beel fisheries, river fisheries and the grand total of fishermen (beel and river fishermen together) of all the three districts. The last column shows the sample of fishermen for the study that comes to 415,which has been obtained by taking 30 percent of the grand total fishermen selected randomly from each of the three districts respectively (Sibsagar=159,Nagoan 111 and Cachar = 145,the total sample comes to 415).

1.10.5. Treatment of the Data:

After collecting data, the data has been properly classified, processed, tabulated, analyzed and presented with the help of statistical tools such as average, percentage, bar diagrams, pie diagrams. For evaluating the both hypothesis the Likert five scale points are used. The five points are strongly agree (5 point), agree (4), undecided (3), disagree (2) and strongly disagree (1).Besides a strong examination has been done on the both hypothesis with the help of chi square test, rank correlation and ANOVA.
A good explanation has been given on the study with the help of SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis. The SWOT analysis involves for identifying the strengths and weaknesses and examining the opportunities of the study.

1.10.6. Tools of the Study:

The questionnaire is used as the main tool of the study. A structured questionnaire has been distributed directly to the respondents in the study area for collecting the data.

1.10.7. Chapterisation:

The chapter has been designed systematically on the basis of objectives of the study. The study has divided into 9 chapters excluding bibliography and other related appendix and photograph parts. The design of the chapters has been planned as given bellow.

Chapter- 1: Introduction

This chapter includes the general introduction, statement of the problem, objective of the study, methodology and chapter planning, utility and limitation of the study.

Chapter-2: Review of literature

This chapter includes the review of literature which is related to the study. In this chapter national, international and regional level of literature has been reviewed.

Chapter-3: The Present Status of Fishery Sector in the State

This chapter includes the present status of fishery sector in the state.

Chapter-4**:** Profile of the Study Area

In this chapter the study area is briefly discussed on the basis of secondary sources

Chapter-5**:** Socio-Economic Status of the Fishermen in the Fishery Sector.

This chapter is examined on the socio-economic status of the fishermen in the study area.

Chapter-6: Role of Co-operative societies, SHG's and NGO's in fishery sector of the study area

This chapter is observed on the role of fisheries cooperative societies, SHG's and NGO's in the particular registered fisheries in the study area.

Chapter-7: Problems and Prospects of Fishery Sector in the Study Area

Different problems of the fishery sector of the study area are examined in this chapter and the chapter has studied about the prospects of fishery sector in the study area.

Chapter-8: Various policies and schemes implemented by the government to sustain the fishery sector in the state.

Various schemes and policies of the Union and State Government in India on the fishery sector are studied in this chapter. Especially the schemes and policy of the state government in Assam has examined in the chapter.

Chapter-9**:** Findings, Suggestions and Conclusion.

The last chapter has included in the summary of the findings, suggestions and conclusion. It also points out main results and indicates future research of the study.

Besides bibliography; Appendix, some Government orders and photograph are separately included in this chapter.

1.11. Utility of the Study:

The study has been considered as a pioneering study in the state of Assam. The research work of fisheries (natural and government registered) in the state is very limited. It is also expected that the study will be informative for the people associated with fishery sector and the policy makers for formulating policies. The study also intends to hold a clear picture of the socio-economic life of the fishermen which is expected to be helpful to explore the problems associated with this sector. It is also believed that the findings of the study shall help the academia to understand the problems of development of fisheries of the state; the policy makers to formulate policy actions and legislation to eradicate inequality and/or age long poverty, if any, of the fishermen community.

1.12. Limitation of the Study:

Although there are many aspects to study about the fishery sector in the state, it is not possible to cover all dimensions of this sector within a very limited time. The study cover the period from the last decade and it examines entirely about the government registered beel and river fisheries. The study has some limitations, such as

non-availability of suitable data relating assessments or no good data recording process of fishermen, lack of clear Governmental policies and programmes pertaining to fishery management. Also lack of sufficient literature with lack of policy orientation to sustainable fishery management makes problems in developing a theoretical base.