SHGs and Cooperatives in the Fishing Sector: An Inclusive Development Option for the Fisher folk of Kerala

Thesis submitted to the

Cochin University of Science and Technology

for the award of the Degree of

Doctor of Philosophy

Under the Faculty of Social Sciences

by

Rajeev B
(Reg. No. 3966)

under the guidance of

Prof. (Dr.) D. Rajasenan

Department of Applied Economics
Cochin University of Science and Technology
Kochi – 682022

May 2015

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by

Rajeev B
Research Scholar
Department of Applied Economics
Cochin University of Science and Technology
Kerala, India
Email: rajeevbhaskars@cusat.ac.in

Supervising Guide

Prof. (Dr.) D. Rajasenan
Professor
Department of Applied Economics
Cochin University of Science and Technology
Kerala, India
Email: rajasenan@cusat.ac.in

Department of Applied Economics
Cochin University of Science and Technology
Kochi – 682022, Kerala, India

May 2015

DEPARTMENT OF APPLIED ECONOMICS
COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
KOCHI – 682 022, KERALA, S. INDIA

Dr. D. Rajasenan
Professor

Phone: 0484 – 2577566
Email: rajasenan@cusat.ac.in

Date: 14/05/2015

Certificate

This is to certify that the Ph.D. thesis entitled **"SHGs and Cooperatives in the Fishing Sector: An Inclusive Development Option for the Fisher folk of Kerala"** submitted by Mr. Rajeev B is a record of bona fide research work carried out by him under my supervision and guidance in the Department of Applied Economics in partial fulfillment of the requirements for the Degree of Doctor of Philosophy of Cochin University of Science and Technology. The thesis has not formed the basis for award of any degree, diploma, associateship, fellowship or other similar title of any other University or Board and is worth submitting for the award of Doctor of Philosophy under the Faculty of Social Sciences of Cochin University of Science and Technology. I also certify that all the relevant corrections and modifications as suggested by the audience during the pre-synopsis seminar and recommended by the Doctoral Committee of the candidate have been incorporated in the thesis.

D. Rajasenan
Supervising Guide

Declaration

I hereby declare that the dissertation entitled **"SHGs and Cooperatives in the Fishing Sector: An Inclusive Development Option for the Fisher folk of Kerala"** is a record of bona fide research work done by me under the guidance of Prof. (Dr.) D. Rajasenan, Department of Applied Economics, Cochin University of Science and Technology, and that it has not previously formed the basis for the award of any degree, diploma, aasociateship, fellowship or any other title of recognition.

Rajeev B

Acknowledgement

As my PhD work has come to its culmination stage, I would be happy to endorse my acknowledgment to those who have given me their invaluable support and time in helping me to frame this thesis. I have been associated with my Supervising Guide, Dr. D. Rajasenan, Professor, Department of Applied Economics, and Director, Centre for the Study of Social Exclusion and Inclusive Policy (CSSEIP), Cochin University of Science and Technology (CUSAT), since March 2010 in connection with the PhD and other Major Research Project related works. I was fortunate enough to be part of his research team at CSSEIP and gained immensely working in various projects at the Centre. The thesis is the outcome of his constant encouragement and meticulous supervision which helped me to submit my thesis adhering to his time frame. I am indeed indebted to him for his faith in entrusting me the works of his various Research Projects funded by various agencies at the CSSEIP in the same and related areas and allowing me to use the data collected as part of these projects.

I am thankful to the Head, the faculty members, the librarian and non-teaching staffs of the Department of Applied Economics, CUSAT for their timely support and cooperation.

I thank District Managers of Matsyafed from Kozhikode, Malappuram, Ernakulam, Thrissur, Alappuzha and Kollam, for facilitating the field survey. I also thank the officials of Matsyafed Head Office, CMFRI and Department of Fisheries, for providing me with the required secondary data. I extend my gratitude to the fishers for their sincere co-operation and sparing their valuable time during my field visits and sample surveys.

I acknowledge the support extended by Dr. R. Mahesh, Senior Urban Economist, Ministry of Housing, Kingdom of Bahrain, Dr. M. S. Jayakumar, Assistant Professor, Department of Sociology, University of Kerala, Dr. Binu P. Paul, Associate Professor, Christ University, Bangalore

and Ms. Sunitha A. S., Research Associate, CSSEIP, CUSAT during the initial stages.

I thank my colleague Mr. Bijith George Abraham, Research Associate, CSSEIP, for his diligent support and valuable suggestions during various stages of my work.

I thank the CSSEIP office staffs Ms. Rakhi V. V and Ms. Sarojini I. K for their secretarial helps. I also acknowledge the support rendered by my fellow researchers Mr. Suresh P. R and Dr. Raghul Subin, Assistant Professors, Kerala University of Fisheries and Ocean Studies (KUFOS) during my thesis submission stage. I extend my thanks to Mr. Rajesh R and Mr. Ben Rois Jose for their cordial wishes.

My family has always stood with me and motivated me during this long endeavor for which I am profoundly indebted to them. My parents Mr. R. S. Bhaskaran and Mrs. Radhamani Bhaskaran; my uncle Mr. R. S. Chandran and my aunty Mrs. Krishnaveni Chandran have been encouraging me and praying for me from the very onset for completing this task.

I dedicate the thesis to my beloved Grand Mother, the late Smt. Kalavathy Ramdas Shetty.

Above all I thank God!

Rajeev B

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ABBREVIATIONS

ADAK	Agency for Development of Aquaculture
ANOVA	Analysis of Variance
CMFRI	Central Marine Fisheries Research Institute
DADF	Department of Animal Husbandry, Dairying and Fisheries
DFID	The Department for International Development
FAO	Food and Agriculture Organization
FDWCS	Fishermen Development Welfare Cooperative Societies
FGT	Foster-Greer-Thorbecke
FIRMA	State Fisheries Resource Management Society
FISHCOPHED	National Federation of Fishermen's Cooperatives Ltd
FWS	Fishermen Welfare Societies
GDP	Gross Domestic Product
HCI	Head Count Index
IFDP	Integrated Fisheries Development Project
INP	Indo Norwegian Project
KFWB	Kerala State Fishermen's Welfare Fund Board
KIFF	Kerala Independent Fishermen Federation
KMFRA	Kerala Marine Fishing Regulation Act
KMO	Kaiser-Meyer-Olkin
KSMTF	Kerala Independent Fish Workers Federation
KSPB	Kerala State Planning Board
LC	Lorenz Curve
LPG	Liquefied Petroleum Gas
MF	Micro Finance
MISS	Matsyafed Input Security Scheme
MMUCS	Marianadu Malsya Ulpadaka Cooperative Society
MUCSs	Matsya Utpadaka Cooperative Societies
NBCFDC	National Backward Classes Development and

	Finance Corporation
NCDC	National Cooperative Development Corporation
NIFAM	National Institute of Fisheries Administration and Management
NMDFC	National Minorities Development and Finance Corporation
NSDP	Net State Domestic Product
NTB	Non-Tariff Trade Barriers
OBM	Out Board Motor
PGI	Poverty Gap Index
PRA	Participatory Rural Appraisals
SAF	Society for Assistance to Fisherwomen
SHGs	Self Help Groups
SLI	Standard of Living Index
SPGI	Poverty Severity Index
TEAP	Tsunami Emergency Assistance Project
TEAP	Tsunami Emergency Assistance Project
TRP	Tsunami Rehabilitation Programme
UNDP	United Nations Development Programme

Chapter 1
Introduction

1.1 Background of the Study

The marine fishing sector in Kerala has manifold roles to play; such as poverty alleviation, employment and livelihood security, food and nutritional security to the poor coastal households. This sector has undergone drastic changes with the advent of globalization. Hence the traditional fishers form the most deprived communities in the state who are left out of the overall development process. Mechanization in the 1950s opened up the sector a great deal as it began to attract people belonging to non-fishing community but nonetheless this has also resulted in a new form of conflicts-space and species between the traditional and mechanized fishers. But the brunt of the problem now is resource depletion which *inter alia* resulted in the poverty and exclusion of the traditional fishers who have no other source of living.

Employment in this sector is seasonal in nature and technological advancement has made fisher folk more marginalized from the mainstream society due to income inequality and livelihood insecurity. The new social nesting in the form of SHGs through cooperatives has been effective in safeguarding the livelihood security of the fisher folk. The SHGs have a greater role to play as the estimated fall in demand for marine products in international markets will result in reduction in employment opportunities in

fish processing, peeling, etc. The existing skill of the fishers will not help them to gain employment when the sector is going for high level of technological advancement. Hence, it is important to derive an effective strategy linking institutional set up in the fishing sector to the SHG framework so as to usher in more employment opportunities. Moreover, this will also help them to protect from the winds of change owing to globalization and technological development for tailoring the concept of effective inclusive development in the fishing sector.

1.2 An Overview of the Fisheries Sector

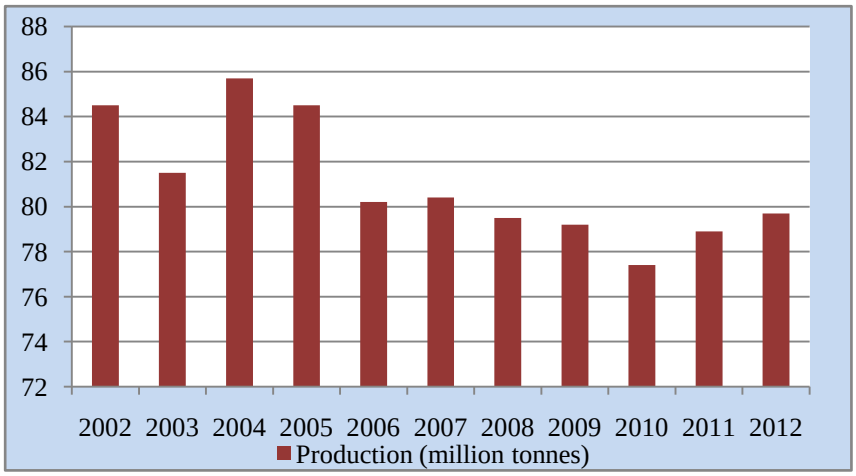
Here a synoptic picture of the Global, Indian and Kerala marine fisheries is analysed. It also includes a brief sketch of the institutional framework and the cooperative movement in the fisheries sector.

1.2.1 Global Fisheries Sector

Globally, the marine fisheries sector aids in poverty alleviation and also provides employment and livelihood security to the coastal households. FAO (2011) highlights the importance of this sector as it is pivotal in alleviating poverty, ensuring livelihood, food and nutritional security; the sector also provides direct employment to the tune of 34 million people. It is also estimated that the world per-capita fish consumption has increased from an average of 9.9 kgs in 1960s to 19.2 kgs in 2012. The sector provides employment to around 5 percent of the total worldwide employment in the agricultural sector. Fish exports and trade are pivotal in determining the foreign exchange reserves of nations as 200 countries reported export fish or fishery related product (FAO, 2014). The share of developing countries in

fish exports has 54 percent in terms of value and 60 percent in terms of quantity and net fisheries exports of the developing countries have also shown an increasing trend during the recent decades (FAO, 2012). There has been a tremendous increase, both in terms of quantity and value, in the share of developing nations in fish production during 2013. Global marine fish production has shown a stupendous growth trend during the period 1950-2013. Out of the 18 major fish producing countries, 11 are from Asia with an annual average catch of more than one million tonnes each during 2002-2012. China is the major fish producing and exporting country in the world. Global fish production during 2002-12 is shown in Figure 1.1. From 84.5 million tonnes in 2002, the marine fish production reached a peak of 85.7 million tonnes in 2004 and then declined to a lowest point of 77.4 million tonnes in 2010. As per the FAO 2014 data, the fish production during the year 2012 stands at 79.7 million tonnes.

Figure 1.1 Global Marine Fish Production

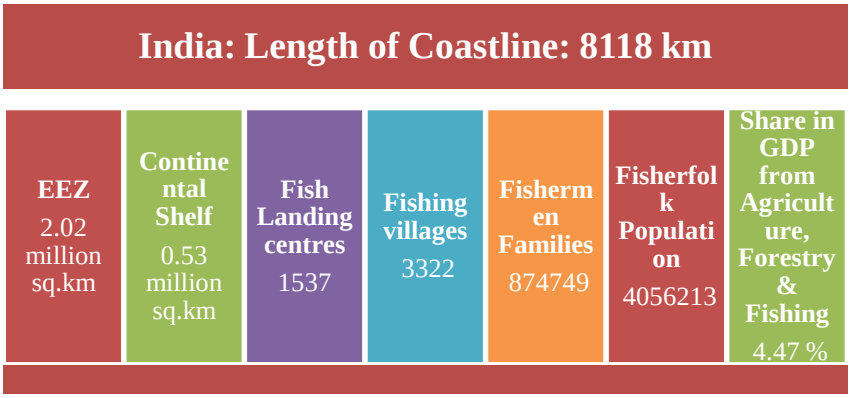


Source: Worked out from Appendix 1.1

1.2.2 Indian Marine Fisheries

India has a share of 5.43 percent in the global fish production and is one among the 18 major fish producing countries in the world with a total coastline of 8118 km with 1537 fish landing centres and 3322 fishing villages. As per the Fisheries Profile of India (2013), the marine fisheries sector in the country provides livelihood security to 874749 households with a total population of 4056213. Total numbers of crafts as per the Marine Fisheries Census 2010 are 194490 (Director of Fisheries, 2014). The sector's contribution to the country's GDP and foreign exchange are also significant. The percentage share of fisheries in the country's GDP from Agriculture, Forestry & Fishing during 2011-12 is 4.47 percent. A brief profile of Indian Marine Fisheries is presented in Figure 1.2.

Figure 1.2 Marine Fisheries Profile of India

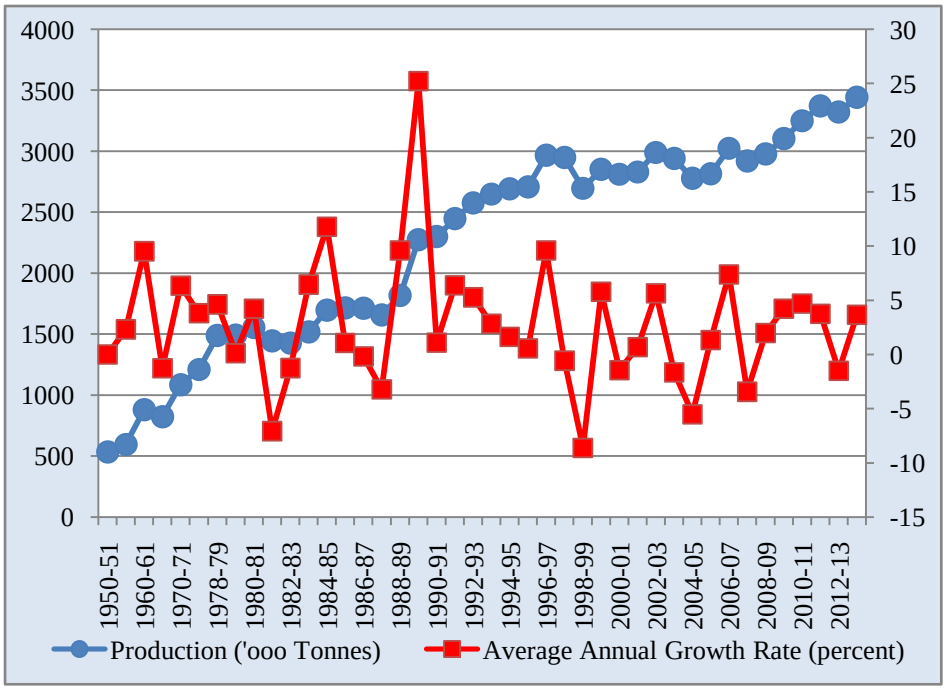


Source: DADF, 2013

Marine fish production in India during the period 1950-51 to 2013-14 is given in Figure 1.3. While the overall fish production has increased, there have been oscillations in the annual growth rate. There was an increase of

more than 25 percent during 1989-90 from the previous period. However, the annual decline has remained below 10 percent during the whole period of 1950-2014. Marine fish production increased from 5.34 lakh tonnes to 27.07 lakh tonnes during 1950-51 to 1995-96. However, after this period production has grown at a slow rate. The marine fish production during 2013-14 stood at 34.43 lakh tonnes.

Figure 1.3 Marine Fish Production in India

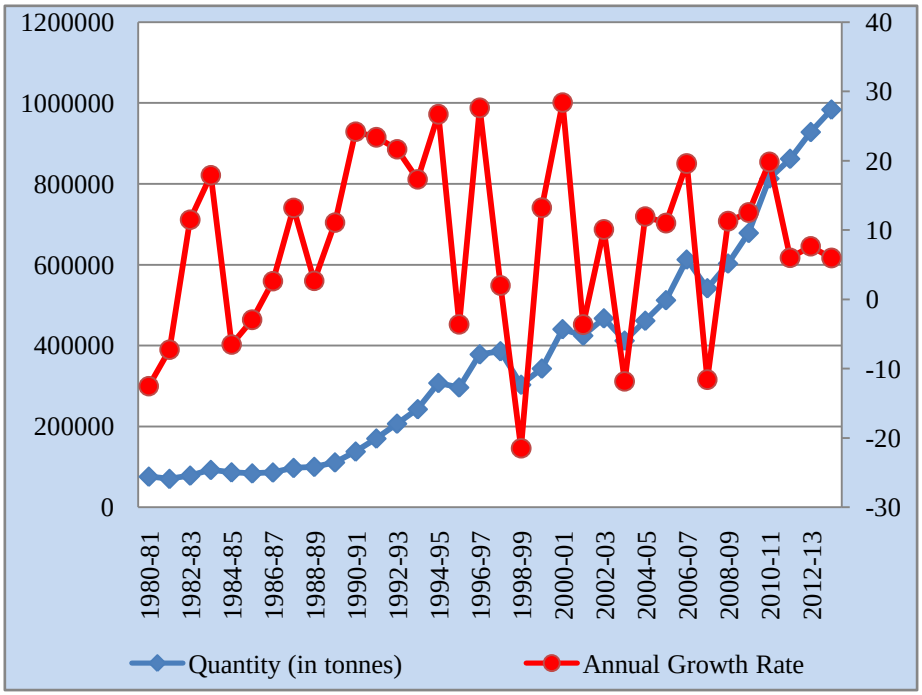


Source: Worked out from Appendix 1.3

As per the Handbook on Fisheries Statistics 2014, the major share in the fish output is contributed by the southern coast (33.63 percent of the total coastal area) comprising of Kerala, Karnataka, Andhra Pradesh and Tamil Nadu, which are among India's top 10 Fish producing states with a

contribution of 39 percent of the total production. Another pertinent fact is that the four states have 51.12 percent of the fishers in the country.

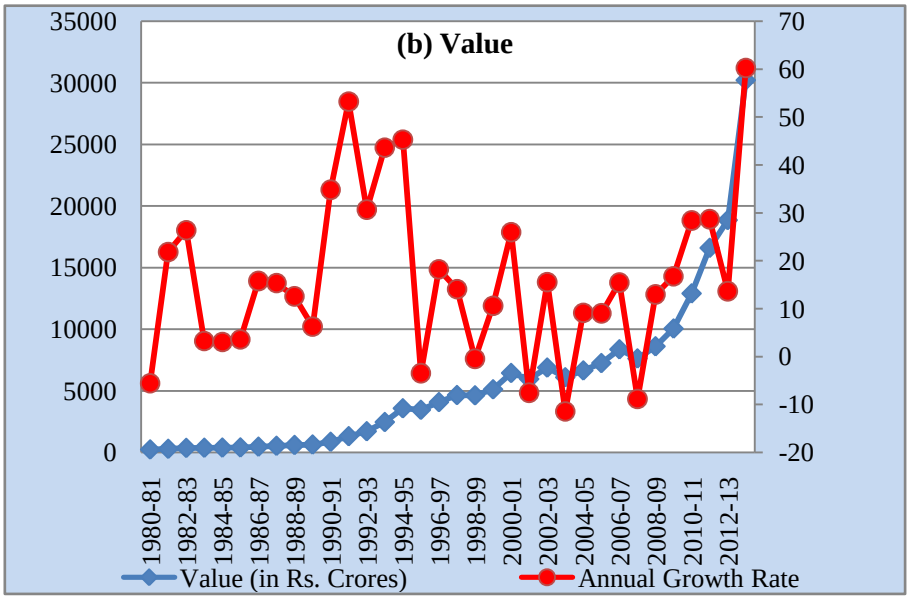
Figure 1.4 Export of Marine Products from India in terms of Quantity



Source: Worked out from Appendix 1.4

Export of fisheries product during 2013-14 is 983756 tonnes in terms of quantity and Rs. 30213.26 crores in terms of value. Both in terms of quantity and value there have been a steady increase in the export of marine products from India (Figure 1.4 and 1.5) during the period 1980-81 and 2013-14. In terms of value exports, the annual growth rate was more than 30 percent during 1990-1995. From Rs. 836 crores in 1990-91, the export value spurt up more than 50 percent at Rs. 1311.6 crores during 1991-92.

Figure 1.5 Export of Marine Products from India in terms of Value



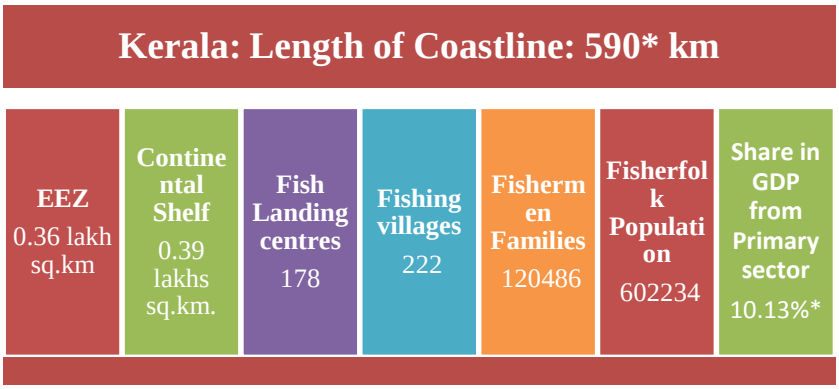
Source: Worked out from Appendix 1.4

1.2.3 Fish Economy of Kerala

Kerala is second to Gujarat in marine fish production during the period 2013-14. However, Kerala's share has declined over the period. A brief profile of Marine Fisheries sector of Kerala is portrayed in Figure 1.6. The coastal belt of Kerala is about 590 km which spreads across 9 districts viz. Thiruvananthapuram, Kollam, Alappuzha, Ernakulam, Thrissur, Malappuram, Kozhikode, Kannur and Kasargod with 178 fish landing centres and 222 fishing villages. In Kerala there are 602234 fisher folks in 120486 households. As per the 2013 Kerala Marine Fisheries Statistics, 30776 fishing vessels are registered in Kerala, out of which majority are motorized. A lion's share of marine fish landings are contributed mainly by the mechanized (56 percent) and motorized (42 percent) sectors. The marine

fisheries sector of the state has achieved higher growth compared to the inland sector mainly due to the vast coastline and marine resources embedded with Kerala and contribute 10.13 percent in the state share of GDP from the primary sector (Director of Fisheries, 2014).

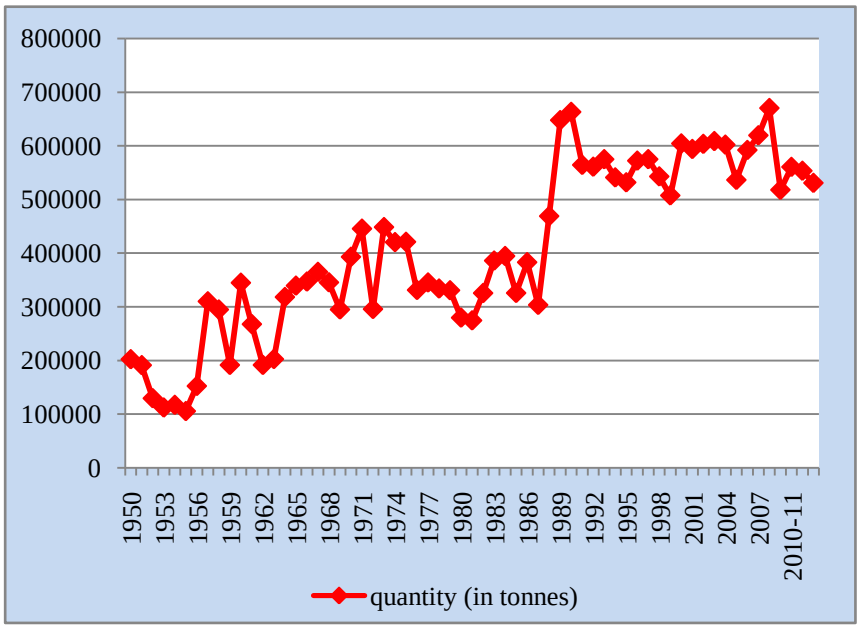
Figure 1.6 Marine Fisheries Profile of Kerala



Source: DADF, 2013; *Director of Fisheries, 2014

Barring some ecological and occupational issues, the marine fisheries sector has been growing at a decent pace in the state. The marine fish production has dilly-dallied during the period 1950-2013 owing to the impact of globalization measures. The whole process of egalitarian growth in the Kerala marine fisheries started with the Indo Norwegian Project (INP) during the 1950s. The 1960s marked the growth of this sector to a major export industry. Fish production in Kerala during 1950-2013 is shown in Figure 1.7. The marine fish catch fluctuated largely due to the entry of new players with advanced crafts and gears. The fish production during the year 2000 was 604113 tonnes (CMFRI, 2009), which declined to 530638 tonnes during 2012-13 (KSPB, 2014).

Figure 1.7 Fish Production in Kerala

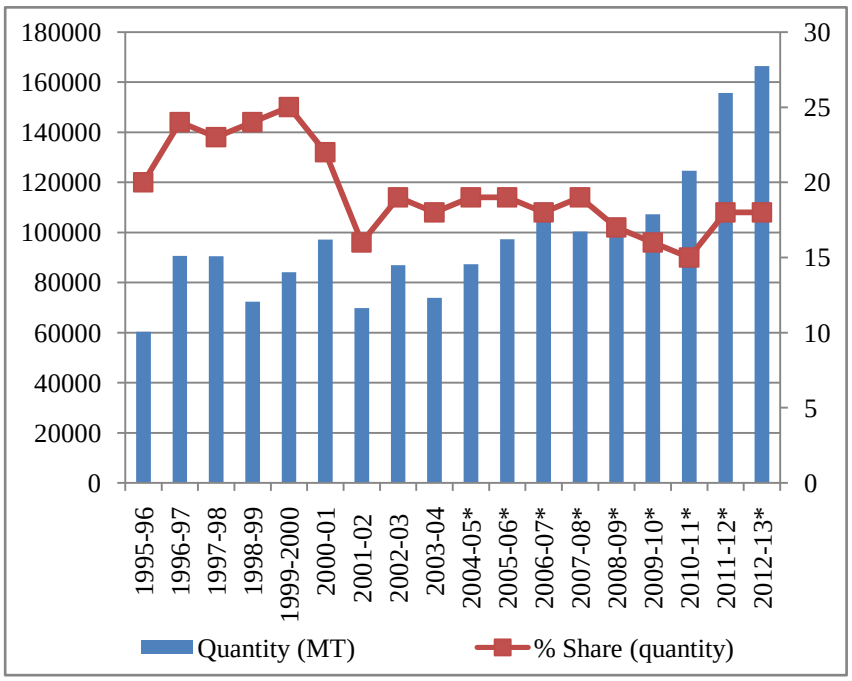


Source: Worked out from Appendix 2.6

Kerala has been considered as one of the major contributor to the country's seafood exports. The period of 1960 saw the emergence of export oriented approach in the marine fisheries of Kerala with penaeid prawn becoming main attraction (Kurien, 1985). The seafood export sector got a fillip due to the mechanization drive. There was an increase from Rs. 183.93 crores to Rs. 3435.85 crores (2012-13) in the seafood exports from Kerala. Even with a 10 percent share of total coastline of India, the marine fisheries sector of the state accounted for 24 percent of the fish production of the country and 40 percent of India's seafood export earnings during the 1980s (Meynen, 1989).

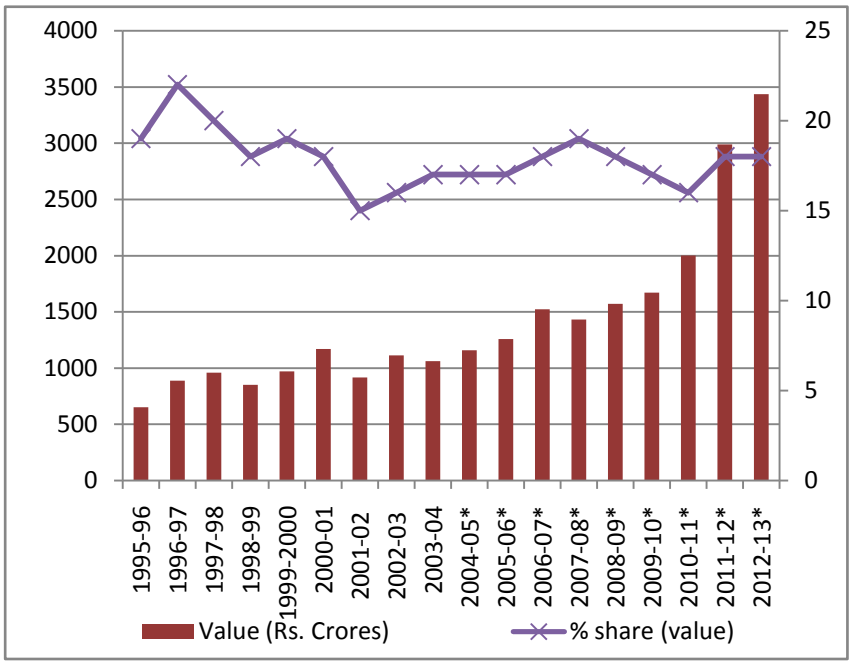
An evaluation of the 20 year data on fishery exports from Kerala shows that the share of fisheries exports in terms of quantity was above 20 percent until 2000-01. Since then, the quantity as well as the percentage share of export has been steadily declining until 2003-04 (Figure 1.8). As is evident from Figure 1.8 and Figure 1.9, the export of marine fisheries from Kerala has recovered both in terms of quantity (73890 metric tonnes to 166399 metric tonnes) and value (Rs. 1062 crores to Rs. 3435.85 crores) during 2003-2013 with a share of 18 percent in country's seafood exports (Director of Fisheries, 2014). Until 2005-06 fluctuations are visible in the state's export after which the quantity exported has steadily increased.

Figure 1.8 Export of Marine Products from Kerala (Quantity)



Source: Worked out from Appendix 1.5

Figure 1.9 Export of Marine Products from Kerala (Value)



Source: Worked out from Appendix 1.5

Despite the unhindered spurt in the international trade indicators and export orientation in this sector, the share of fisheries in terms of its contribution in the Net State Domestic Product has been declining. From 3.05 percent during 1990-91, the share of fisheries in NSDP has declined drastically to 1.17 percent during 2010 (Appendix 1.6).

Earlier, marine fisheries sector was considered as a subsistence sector and fish was the cheapest mode of animal protein among the households of to the coastal belts of Kerala. The perishability factor of the product limited the trade to nearby locations. From a subsistence sector during the pre-

independence era, the marine fisheries sector of the state transformed into one of the major export oriented sectors mainly due to the technological changes. However, the transformations were at the cost of the artisanal fishers and those working in the post harvest activities, especially the women fish vendors. The reverberations in the sector totally ignored the traditional sector. In fact, the development dynamics in the Kerala marine fisheries divided the sector into three sub sectors viz. traditional, motorized and mechanized sectors. The former two are more labour intensive, whereas the latter uses capital intensive techniques and caters to the needs of export oriented and processing market. The results were increased conflicts for resources between various actors both at land and sea, which ultimately resulted in governmental action like the ban on trawling during the monsoons. For a detailed analysis an in-depth scrutiny of the dynamics of fisheries development in Kerala during 1950-2013 is done on an inter-temporal basis in the 2nd Chapter.

1.2.3.1 Institutional Framework in Kerala Fisheries

Institutional framework in Kerala fisheries is based on the Results-Framework Document for fisheries developed during 2011-12 (RFD, 2011-12). This framework envisages "Sustainable development of fisheries, both marine and inland, for food and nutritional security, economic growth and for socio-economic development of fisher community". With this end in view the department tries "to promote, facilitate and secure the long-term development, conservation and utilisation of both inland and marine fisheries resources based on responsible fishing practices and environmentally sound management programmes". There are several agencies functioning for the

overall development of the fisheries sector and the fisher folk like Matsyafed, KFWB, ADAK, SAF, NIFAM, FIRMA, etc. An overview of major institutions in the Kerala fisheries is shown in Box 1.1.

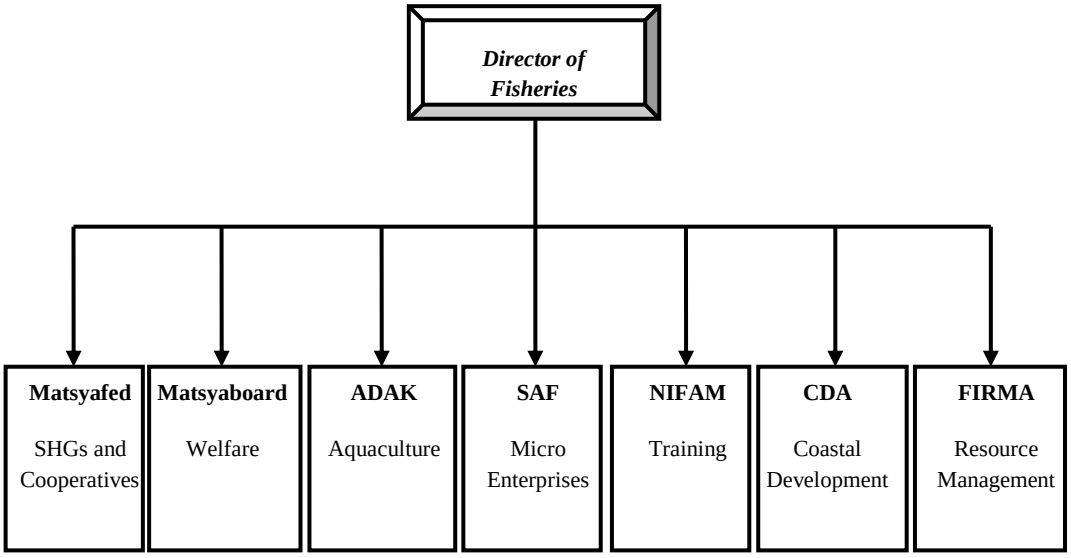
Box 1.1 An Overview Institutions in Kerala Fisheries

- ***Kerala State Co-operative Federation for Fisheries Development Ltd. [Matsyafed]*** - Apex Federation of the Fisheries Cooperatives in the state.
- ***Matsya Board [Kerala State Fishermen's Welfare Fund Board (KFWB)]*** - a statutory board constituted by the Government of Kerala under the provisions of the Kerala Fisherman's Welfare Fund Act 1985.
- ***Agency for Development of Aquaculture (ADAK)*** - Agency to implement various aquaculture development activities.
- ***Society for Assistance to Fisherwomen (SAF)*** – To empower the fisherwomen in the coastal villages of Kerala
- ***Fisheries Training Centre [National Institute of Fisheries Administration and Management (NIFAM)]*** - For organising short term training programmes to fisheries officers, fishermen, fish farmers & social workers.
- ***State Fisheries Resource Management Society (FIRMA)*** - **autonomous body for the development of fisheries sector in Kerala & to review & evaluate all fishery development management & conservation programmes under fisheries & build up appropriate contacts with other research & development agencies in the country.**

Source: Department of Fisheries (2014)

Though each agency has specific role to play, Matsyafed is the apex federation of fisheries cooperatives in the state. It is the agency in Kerala which has designed and developed plans for the welfare of fisher folk through SHGs and cooperative movement. SAF specializes in developing schemes for the economic and social empowerment of the fisherwomen. The agencies and their area of activity are depicted in Figure 1.10.

Figure 1.10 Institutions in Kerala Marine Fisheries



Source: Department of Fisheries (2014)

1.2.4 Cooperative Movement in Fisheries Sector

The cooperative movement in fisheries sector is pivotal in poverty alleviation and ensuring food security and plays an important role in improving socio-economic status of the fisher folks. Based on the evaluation of cooperative movement in fisheries sector globally, Unal et al. (2011), explain the success of the fishery cooperatives in various countries. Immense

potential of the cooperatives in dealing with day-to-day affairs and issues of fisher folks has also been identified. The history of country's cooperative movement can be traced with the formation of 'Karla Machhimar (Fishermen) Co-operative Society' in Maharashtra in the year 1913 (Mishra, 1997). The Apex Federation of Cooperative movement in India is National Federation of Fishermen's Cooperatives Ltd (FISHCOPHED) under the Ministry of Agriculture, Government of India established in the year 1982. The motto of the Federation is "to promote and develop the fishery cooperative movement in India, to educate, guide and assist fishers in their efforts to build up and expand the fishery cooperative sector and serve as an exponent of cooperative opinion in accordance with cooperative principles". The FISHCOPHED has 22 state level federations.

Fisher folk cooperatives in Kerala have a long history which dates back to 1917. Majority of them were caste based groups. Several community-based organizations were formed mainly aiming at the welfare of the fisher folks. The development of community organisations in the Kerala marine fisheries sector is divided into three distinct phases according to Reeves et al. (1997), which started from the formation of organizations based on religious category (1960-70); several agitations and struggles formed the characteristics of the second phase (1970-80) and the third phase marked the graduation of agitations to the national arena during the late 1980s. The state initiative in the formation of cooperatives started with the introduction of a three tier cooperative movement during the 1950s. This was a failure due to the entry of external players. The formation of a state level apex federation of primary society's viz. Kerala State Co-operative Federation for Fisheries

Development Ltd. (Matsyafed) in 1984 is a major institutional development in the fisheries cooperatives of the state. Matsyafed is termed as one of the three *"assisted successful cooperatives"* by the National Cooperative Development Corporation (NCDC). The dynamics associated with the cooperative movement in Kerala marine fisheries sector is delineated in detail in the Chapter 2.

1.3 Statement of the Problem

The Kerala model of development mostly bypassed the fishing community, as the fishers form the main miserable groups with respect to many of the socio-economic and quality of life indicators. Modernization drive in the fishing sector paradoxically turns to marginalization drives as far as the traditional fishers in Kerala are concerned. Subsequent management and resource recuperation drives too seemed to be detrimental to the local fishing community. Though SHGs and cooperatives had helped in overcoming many of the maladies in most of the sectors in Kerala in terms of livelihood and employment in the 1980s, the fishing sector by that time had been moving ahead with mechanization and export euphoria and hence it bypassed the fishing sector. Though it has not helped the fishing sector in the initial stages, but because of necessity, it soon has become a vibrant livelihood and employment force in the coastal economy of Kerala. Initial success made it to link this with the governmental cooperative set up and soon SHGs and Cooperatives become reinforcing forces for the inclusive development of the real fishers.

The fisheries sector in Kerala has undergone drastic changes with the advent of globalised economy. The traditional fisher folk are one of the most marginalized communities in the state and are left out of the overall development process mainly due to the marginalization of this community both in the sea and in the market due to modernization and mechanization of the sector. Mechanization opened up the sector a great deal as it began to attract people belonging to non-fishing community as moneylenders, boat owners, employers and middle men which often resulted in conflicts between traditional and mechanized fishermen. These factors, together with resource depletion resulted in the backwardness experienced by the traditional fishermen compared to other communities who were reaping the benefits of the overall development scenario.

The studies detailing the activities and achievements of fisher folks via Self Help Groups (SHGs) and the cooperative movement in coastal Kerala are scant. The SHGs through cooperatives have been effective in livelihood security, poverty alleviation and inclusive development of the fisher folk (Rajasenan and Rajeev, 2012). The SHGs have a greater role to play as estimated fall in demand for marine products in international markets, which may result in reduction of employment opportunities in fish processing, peeling, etc. Also, technological advancement has made them unskilled to work in this sector making them outliers in the overall development process resulting in poor quality of physical and social infrastructure. Hence, it is all the more important to derive a strategy and best practice methods for the effective functioning of these SHGs so that the

traditional fisherman can be saved from the waves of globalization and technological development *inter alia* inclusive development option.

1.4 Literature Review

There exists prolific literature on fish and fisheries. However, literature focusing on socio-economic aspects *inter alia* literature pertaining to exclusion inclusion aspects is very scant. For the sake of area specific focus, the literature review has been classified into several sub-groups, such as the general and socio economic profile of the fisher folks, modernization and the resultant issues of resource depletion, livelihood threat and exclusion of fisher folks and development of formal-informal institutional linkages in Kerala marine fisheries.

1.4.1 Socio-economics of Fisher folks

Literature capturing the socio economic structure of the fisher folks are manifold, most of which throws light into the dismal status of the artisanal fishers. The Kerala fisher folks are characterized by unattractive demographic traits as well as low and lopsided household income levels. Despite this, some recent studies have shown a drastic improvement in socio-economic status of the marine fisher folks in Kerala. Sathiadhas (2009) opines that the socio economic condition of the fisher folks has improved especially while considering the educational and housing status. However, problems of overcrowding and risk associated with the proximity of these houses to shore line are still a pertinent issue (DFID, 2003). This will have telling implications on the sanitation, cleanliness and the resultant health conditions and health ailments of the fisher folks.

A major livelihood threat to the fisher folks was in the form of mechanization. The structural changes in the sector coupled with trade liberalization impacted the socio economic foundation of the fisheries sector in a multi-facet manner (Charles, 2001). There are also problems of disguised unemployment, low per capita catch, etc. This, in turn, has paved way for resource depletion and multifold sustainability issues. Debt status from non-institutional sources like the private money lenders also shows a dismal picture of fisher folks. The prevalence of high incidence of poverty the fisher folks have remained outliers in the overall development process. KSPB (2014) identifies development and welfare measures adopted by the government for the fishers have helped to ensure social security and livelihood security of the fisher folks. Kerala Development Report (2008), while tracing the development programmes by the state for the fisher folks in Kerala evinces a change in income and living standards of the fishers and thereby indicating that the state initiative to revive the fisher folks have produced the desired results. However, a disheartening fact is the regional disparity in the socio-economic indicators which is well portrayed by Rajasenan and Rajeev (2012) with more urbanized centres exhibiting better socio-economic indicators than the other semi-urbanized/rural centres. This is the major challenge faced by the policy makers of the state. Overall, the individual income works as a reinforcing factor for their socio-economics, which in turn, is determined by the sub-sector in which they are employed. Rajasenan and Paul (2012) study the socio-economic sustainability and ecological sustainability of fisheries sector in Kerala and identifies that seasonal trawl ban is not enough to protect the sector so as to ensure livelihood security to the fishing community.

An evaluation of socio economics based on fisheries sub-sector in Tamil Nadu by Swathilekshmi (2011), explains a difference in average monthly income earnings of the mechanized crafts with that of the motorized craft operators. A difference of this nature in the earnings of motorized and non-motorized sector in the Kerala marine fisheries has been identified by Mahesh (2014), with the former earning more than the latter. Higher trips produce lesser increase in earnings for the non-motorized crafts but at a lower rate compared to the motorized sector.

1.4.2 Modernization in Marine Fisheries

Modernization in the marine fisheries sector was one of the thrusts given by the Kerala government during the post independence era. Mechanization has been the one and only development agenda to rejuvenate the fisheries sector. This prominence is at the cost of ignoring the traditional sector, which according to them is "primitive" run by the "ignorant, unorganised and ill-equipped fishermen" (Kurien and Paul, 2000). The technological changes and mechanization drive in the fisheries sector adversely affected the traditional fisher folks and are considered as the major reasons for changes in the occupational pattern in the fisheries sector of Kerala (Kurien and Paul, 2001; Kurien, 2005), i.e. emergence of sub sectors like the mechanized and motorized. Also, the role of fisher women also declined due to centralized landing process irrespective of mechanized or motorized. The impact of the technological changes on ecology and economy of Kerala marine fisheries sector is evaluated by Kurien, (1987). While those in the artisanal and other harvest and post harvest sectors suffered, the benefits of mechanization often went to the non-fishing communities.

Initially, the process of mechanization reached uncontrollable limits (Rajasenan, 2001), resulting in the over exploitation of fishery resources. This often caused conflicts between traditional and mechanized fishers both at sea and land. Change in technology and the concomitant labour process resulted in the espousal of an alternate technology in the traditional sector in the form of motorization for survival. Institutional arrangements for safeguarding the income and livelihood security of the fisher folks and the sustainability of resources also emerged. The outcome was in the form of seasonal trawl ban which has been proved successful.

1.4.3 Resource Issues-Fishery Management Plan

The Kerala marine fisheries is a resource based industry with the open access and limited resources and they are entrapped into an industry due to lack of technology and alternate employment. Resource depletion in marine fisheries sector is a globally acknowledged phenomenon. Exploitation of fisheries resources or overfishing is one of the prime reasons identified behind the depletion of natural resources. Open access nature of the fisheries is one of the major reasons for overfishing or exploitation of fishery resource. Mahesh (2006) while examining the effect of resource depletion on the livelihood security of the small scale fishing community identified a marked difference in income due to depletion.

A solution to resource depletion through community involvement in the management of fishery resources has become the recent agenda in fisheries management. Under the community based natural resource management, the local communities are given the prime role of managing the

natural resources. These include both formal and informal management systems (Pido et al., 1996). Fishers' growth is possible only with proper management of fisheries (Meany, 1987). This is due to the strong correlation between resource rent, common property and fisheries management. Clark (1985) has also identified a relation between fisheries management and fishery development and considered these two as complementary. This calls for a control in fishing effort and proper resource management. Rajasenan (1987) has stressed the need for management regulations for conserving the depleting fishery resources and also for increasing the catch.

1.4.4 Livelihood Threats among the Fisher folks

Livelihood threat among the fisher folks is a major reason for conflicts at sea (Firth, 1966). Usage of Non-Tariff Trade Barriers (NTB) by the importers is yet another livelihood threat to the fisher folks [Henson, Saquib and Rajasenan (2005)]. Sathiadhas (2006) has identified the rampant presence of disguised unemployment in the fisheries sector and stressed the need for promoting alternate livelihood options both within and outside the sector. However, the former (i.e. livelihood alternatives within the fisheries sector) seems to be a viable option as the lack of skill and capital makes the rehabilitation of the fisher folks outside the fisheries sector virtually impossible. The role of common property resources in livelihood of the poor is well explained by Beck and Nesmith (2001). Unsustainable production pattern pose a major livelihood threat to the fisher folks which ultimately leads to depletion of natural resources. A study by Rajasenan and Paul (2012), identify major livelihood threats to the fisher folks reveal that limited livelihood alternatives in the coastal villages, the subsistence level earnings

and high debt burden are some of the existing/potential threat to the sustainable fishing practices and fishery resource management. Lack of skill is the major impediment in seeking alternate employment within and outside the fishery sector. The excessive dependence on a single source of income marked by high volatility and increased competition leaves the households in coastal Kerala vulnerable to the changes in the external factors. Poverty and livelihood are often inter-linked as the issues with the poor are lack of capital, skills, etc. and hence they are employed in risky and low paying jobs (Narayan et al., 2000). Designing and developing strategies for poverty alleviation are the major thrust areas to be considered so as to mitigate livelihood threats (Mitlin, 2002; Kay, 2006).

1.4.5 The Concept of Inclusive Development and Poverty

The concept of social exclusion can be closely knit with the Capability Approach by Sen (2000) and can be defined as "a process leading to a state of functioning deprivations". The social exclusion also revolves around the disparities in income distribution, which, in turn, is an outcome of inequities in the distribution of assets such as land, credit and education. The fishermen are generally a socially alienated community in Kerala and hence they are very backward in all spheres of human, natural and social capital aspects. Because of this they are in the vicious nexus of poverty and social exclusion. As the adage about fisherman in Kerala goes like this 'a fisherman is born in debt, lives in debt and dies in debt'; which exemplifies the severity and nature of fishers. Quite often they are exploited and hence they live and work with expectation that one day the 'Goddess of the Sea' (*Kadalamma*) will give all bounty to them for the hard labour.

As per the UNDP, "Development can be inclusive - and reduce poverty - only if all groups of people contribute to creating opportunities, share the benefits of development and participate in decision-making. Inclusive development follows UNDP's human development approach and integrates the standards and principles of human rights: participation, non-discrimination and accountability" (UNDP, 2015).

It is indisputable that the inclusive growth plays a key role in poverty eradication (World Bank, 2009). Bourguignon (1999) and DFID (2005) identifies a close correlation between the concept of social exclusion and poverty. The scan of existing literature points out that the poverty is prevalent among the fisher folks (World Bank, 1992; Bene, 2003; Gupta and Pandit, 2007). Cunningham (1993) identifies that the income levels of fisher folks are low. The reasons for poverty among the fisher folks are endogenous and exogenous with endogenous causes related to low level resources and common property nature. This relationship between the resource depletion and poverty is termed as a major reason for the wretched condition of the fisher folks which would result in poverty among the fishers (Bene, 2003). The prevalence of poverty among the fisher folks and the reasons for the same are discussed by Mock and Steele (2006), identify resource depletion in the form of overfishing, the decline of natural fishery ecosystem through overexploitation and pollution are the major threatening factors to the earnings of the fishers. Inequality in assets, exploitation by the middle men and excessive spending during peak catch seasons are major reasons for poverty among the fisher folks (Kurien, 1981). Among the artisanal fishers, the resource dependency is severe and hence their concomitant poverty.

Exogenous causes are related to the lack of alternate income and livelihood (Copes, 1989; Gorden, 1991). Nayak (1993), identify indicators of poverty like expenditure exceeding income, indebtedness and calorie intake below the basic minimum standards etc among the fishing community. The linkages between fisheries management, livelihood and poverty alleviation are evident according to Walmsley et al., (2006). Income inequality and poverty among the small scale fishers of Kerala in the context of resource depletion is evaluated by Mahesh (2006), shows that identifying the risk factors and poverty will pave the way to formulate policies aimed at poverty alleviation.

1.4.6 Formal and Informal Institutional Development in Kerala Marine Fisheries

The formal-informal institutional linkages via the SHGs and Cooperative setups have been phenomenal in ensuring livelihood security to the vulnerable sections like the fisher folks. The community organizations in the Kerala marine artisanal fisheries sector helped for safeguarding the welfare of the fisher folks. They aid in their long term development by nullifying poverty and livelihood threats and help to assure sustainable development to the fisher folks (Vipinkumar et al., 2014). The community based fisheries management is considered as a key factor in improving the resource condition and for this aspect cooperatives have actively participated in the form of collective action at the state, district and village level (Thomson, 2006; 2013).

Reeves, et al. (1997) divide the development drive of community organizations among the fisher folks into three phases. Phase I is the period

from 1960 to 1970, where Church linked organizations emerged. The movement has close connection with the Roman Catholic Church. The second phase (Phase II) of 1970-80 saw the period of agitation and struggle from these organizations as severe pressure and tactics were imposed on both the state government to redress the issues related to modernization. The last phase was in the late 1980s and early 1990s when the agitations from these organizations reached the national arena and persuaded the central government on deriving strategies for protecting the rights of the traditional fisher folks *inter alia* fishery resources. The endeavor of cooperative movement in the marine fisheries sector of Kerala in the initial stages has been explained as a failure (Kurien, 1991). But the reverse story of success of formal-informal institutional linkages and SHG-cooperative movement has been highlighted in the works of (DFID, 2003 and Rajasenan and Rajeev 2012). This has been mainly because of identifying and subsequently mitigating the issues and weakness encountered during the initial stages of cooperative movement and community development in the Kerala fisheries.

While studies have shown an improvement in the socio-economic situation of the fisher folks, the role of cooperatives in improving the socio-economic status and living standards of the fisher folks is well acknowledged (Gupta and Pandit, 2007, Nair, et al., 2010). Chandrasekera (1990) has brought to light the major factors required for the success and well being of the fishery cooperatives like specific legislations, economically viable village level societies, more prominence to fish marketing, provision of insurance and other financial services to the fishers and their households and a good

leadership. Complete brew of these factors are detrimental to the success of cooperatives n the coastal belts.

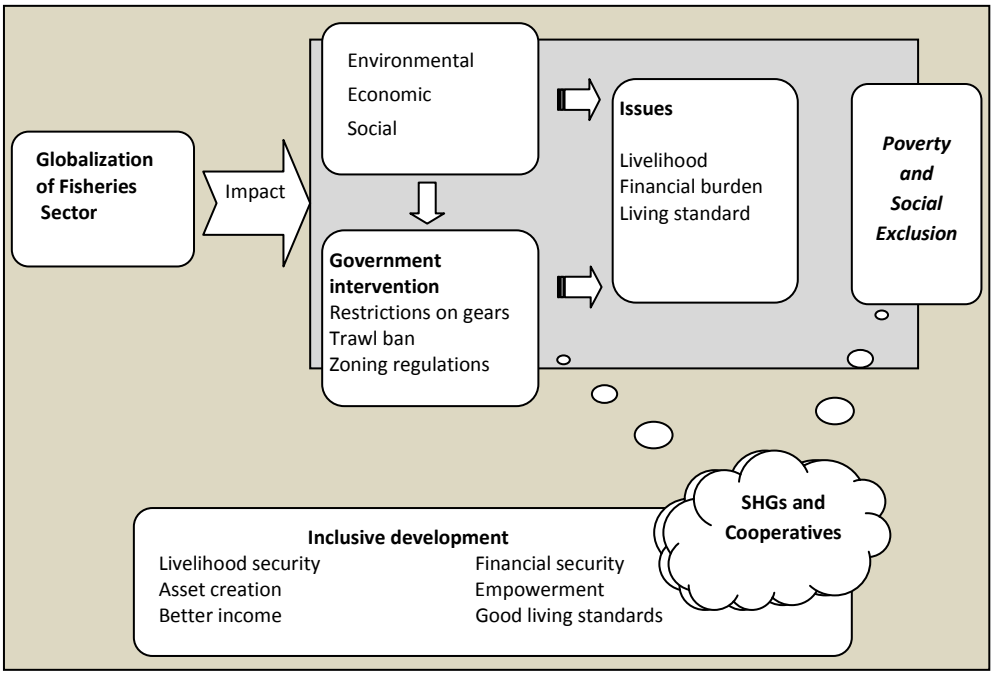
Archari (1994) identified that initiatives taken by the fishermen together with clarity of objectives and full participation by members in planning, implementation and evaluation are the major catalysts for the development of SHGs. The success stories in micro-credit programmes through the SHGs and cooperatives in fishing sector have also been advocated by Archari (1994) and FAO (2003). Schemes like micro-credit introduced through the SHGs have been instrumental in bettering the socio-economic and living standards of the rural people (Meenambigai, 2004). Apart from bringing in drastic changes in the life of poor, the SHGs and other institutional linkages are identified as a pivotal factors in financial security through the generation of thrift (Anand, 2002) and through access (Shylendra, 1998), utilization and prompt repayment of formal credit Jayaraman (2000). This formal informal institutional bank linkage has reduced the dependence on the private money lenders who ruled the coastal belts of Kerala. The debt repayment capacities for fisher folk having membership in the SHGs are higher than the non-members (Vipinkumar et al., 2014). The income generating activities of the groups have also a crucial role to play in the economic empowerment and thereby resulting in advancement of health, education and sustainable development of the households (Tripathy, 2004). The nexus between participation in poverty alleviation programmes and micro-credit through the SHGs in achieving socio-economic development is well captured and the integral role of

organizations like the SHGs in developing fisher folks is identified by Rajan (2002).

1.5 Theoretical Framework

The theoretical framework of the study is illustrated in Figure 1.11. Globalization and the allied developments in the fisheries sector created an array of sub sectors ultimately resulting in a situation of "too many vessels chasing too few fish". This created multifaceted issues like resource depletion, seasonality, variation in catch, shift in landing centres, etc. which directly impacted the income and livelihood security of the fisher folk and also resulted in problems like low asset creation, lack of skill, low living standards and debt burden. The result of this has been poverty and social exclusion. The process continued like a vicious nexus involving poverty, exclusion, livelihood issues, lack of skills and assets, etc. While the trawl ban assisted in curbing resource depletion to a certain extent, its impact on the livelihood of fisher folks was visible more so for women working in the allied sectors. Matsyafed, an apex federation of fisheries cooperatives in Kerala kick started the formal and informal institutional linkage in the fisheries sector. With the advent of SHGs and Cooperatives, a new wave of development and financial reliance emerged among the fisher folk of Kerala ensuring livelihood security, asset creation, empowerment and better living standards.

Figure 1.11 Theoretical Framework



1.6 Objectives of the Study

The main objective of the study is to evaluate the effectiveness and functioning of fisherman SHGs through cooperatives in socio-economic empowerment and inclusive development. Other objectives are:

- To evaluate the variation in catch structure in different stages of fisheries development.
- To identify the sectoral and sub-sectoral socio-economic indicators of the fisher folk.
- To evaluate the living standards of the fisher folk.
- To evaluate the poverty and income inequality among fisheries sub-sectors.

- To study the functioning and effectiveness of SHGs and Cooperatives as a development option for the fisher folk.

1.7 Hypotheses

- There exists similarity in average catch of societies irrespective of zones.
- Living standards of fisher folks are same across regions.
- Income levels are same irrespective of region, gender and activity.
- Indicators of poverty levels are alike across activities.

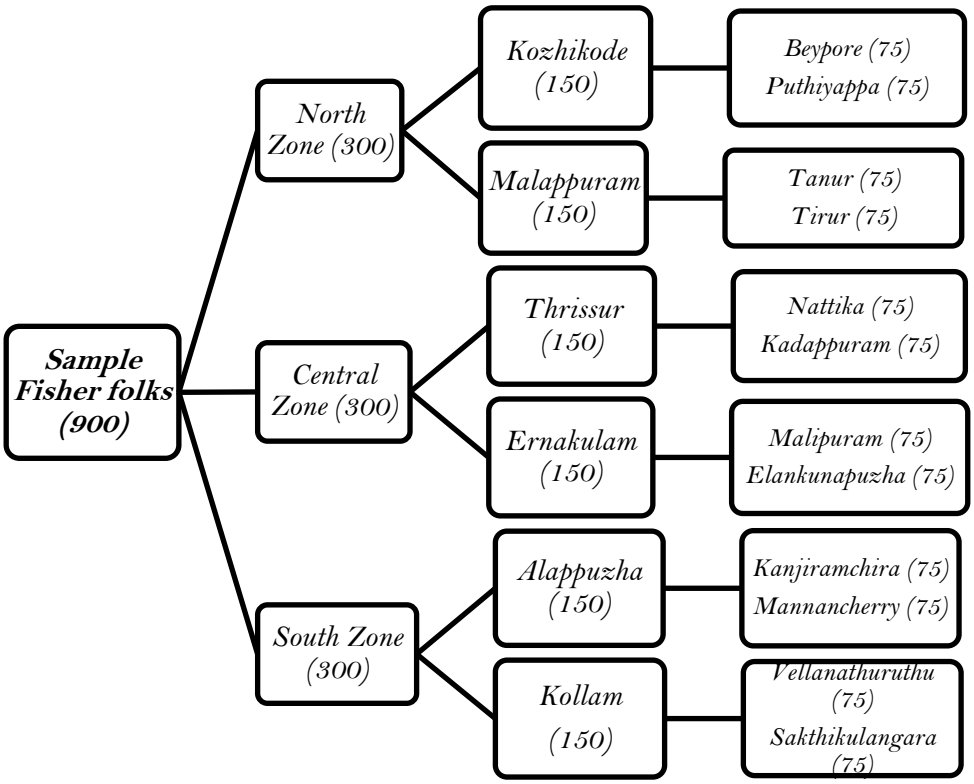
1.8 Methodology and Sampling Design

The study, which is largely explorative in nature, uses both Primary and Secondary data. Universe of the primary survey is the fishers' population in the 222 fishing villages of Kerala encompassing three fishing zones. Multi-stage stratified random sampling method is employed in the study. Primary data is collected through semi formal interviews using pre-tested questionnaires. The data collection also includes participatory approaches in the form of discussion with focus groups. The sampling frame of the study is the fisher folk and fishery related SHGs in twelve fishing villages. The selection is done after due consultations with the officials and agencies engaged in fisheries development like the Department of Fisheries, Matsyafed, etc. Members of SHGs functioning under the Matsyafed are selected as it is the apex Federation of the Fisheries Cooperatives in the state.

Fisherman population in the fishing villages of the state is divided into of three zones viz. North Zone, Central Zone and South Zone. Two

coastal districts each from North zone (Kozhikode and Malappuram), Central zone (Ernakulam and Thrissur) and South zone (Kollam and Alappuzha) are selected. Two coastal villages from each district are selected and from each village 75 respondents are surveyed, thus constituting a total of 900 respondents, which form the sample of the study. Detailed sample design is depicted in Figure 1.12. Simultaneously, along with the sample survey, standard of living of the fisher folk has also been worked out.

Figure 1.12 Sampling Design



Secondary data comprises of records and information collected from magazines, journals, published articles, newspapers, published thesis,

unpublished data from research institutions, internet sources etc. Records and reports collected from various international agencies and Government Departments like the Food and Agriculture Organization (FAO), Matsyafed, Department of Fisheries, Department of Animal Husbandry Dairying and Fisheries (DADF), Central Marine Fisheries Research Institute (CMFRI), etc. are also used.

1.8.1 Analytical Tools used

Data are tabulated on the basis of socio-economic characteristics and also for analyzing differences in income, employment, poverty and inequality. Apart from the basic Chi-Square tests and Correlation Analysis, the study takes the aid of the following statistical tools to develop an in-depth scrutiny of the data:

- ANOVA and Post Hoc Duncan's Test,
- Lorenz Curve and Gini,
- Mann-Whitney U test,
- Kruskal-Wallis Test,
- Correspondence Analysis,
- Factor Analysis,
- Foster-Greer-Thorbecke (FGT) Analysis,
- Logistic Regression, etc.

The difference in mean values between various groups is worked out using ANOVA and Post Hoc Duncan's Test is used to corroborate which mean value is different. Inequality in income is worked out with the aid of

Lorenz Curve and Gini. Correspondence Analysis is used as a method of data reduction to cull out the relationship between the categorical variables. Factor Analysis is used to identify the pertinent benefits and problems of SHGs. The relevance of statements regarding their perception on various aspects related to SHGs, their effectiveness, etc. is captured. Foster-Greer-Thorbecke (FGT) Analysis of poverty is used to work out the relative poverty between groups. The pertinent factors determining the living standards, poverty and level of development are identified with the aid of Logistic Regression.

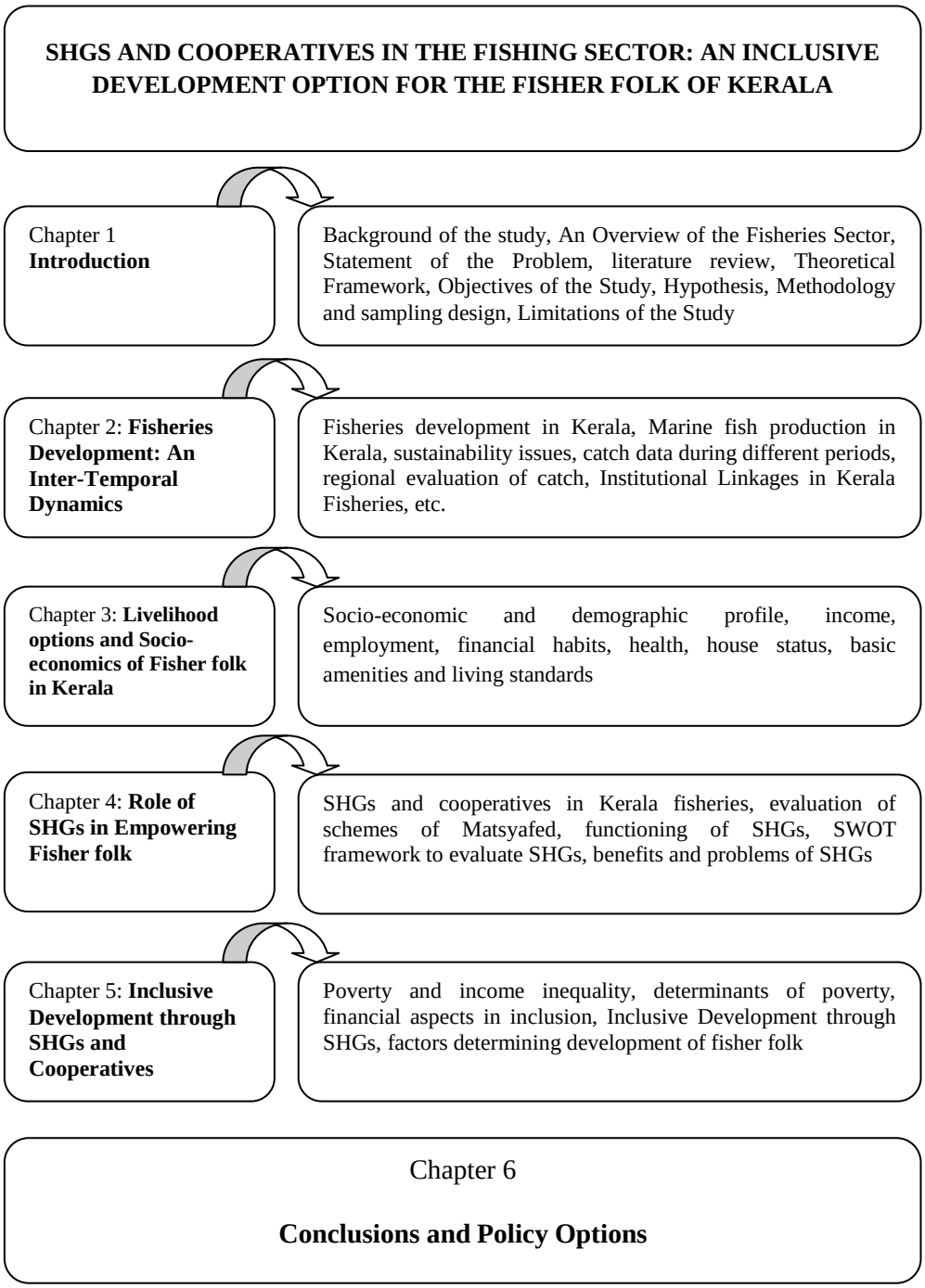
1.9 Limitations of the Study

Assessment of inclusive development encompassing their socio-economic aspects among fisher folks is a maiden venture. Though, questions relating to inclusive aspects have been incorporated in the questionnaire, failed to obtain the requisite data base for such an enquiry. Field inference during the survey also pointed towards their non-comprehension about the concept of exclusion as they generally believe that they are not an excluded community in the Kerala society. There is also the non availability of a precise and comprehensive database of the inter-temporal and inter-spatial income and socio economic indicators of marine fisher folks at sectoral and sub sectoral levels. Also, sample selection and locating the SHGs affiliated to Matsyafed and data collection from the members, especially income earning in the SHGs fishing activities, was a difficult task.

1.10 Chapterisation Scheme

The study comprises of six chapters. Chapter 1 gives general background about the study and throws light on the theoretical base and conceptual framework. An overview of the marine fisheries sector is also given in this chapter. The objectives, methodology, theoretical base, sampling framework and limitations together with an insight into the scheme of the study are also part of the first chapter. Chapter 2 envisages the dynamics of marine fisheries sector development and the resultant sustainability issues in the Kerala fisheries. The formal institutional arrangements like the Kerala State Co-operative Federation for Fisheries Development Ltd. (Matsyafed) and the development activities of the Federation as part of the fishery development dynamics in the state are also discussed in this Chapter. With the aid of primary data, Chapter 3 gives an insight about the socio-economic and demographic profiles of the fisher folk vis-à-vis their living standards on an inter-regional basis. Chapter 4 is an assessment on functioning of the SHGs in the fisheries sector of Kerala with the aid of primary and secondary data. Being the apex federation, the fisher folk SHGs under the Matsyafed and a district wise evaluation of various schemes and programmes implemented for the benefits of the fisher folks is put under scanning. Strengths, weaknesses, opportunities and threats are worked out as a case study on the basis of discussions with the stakeholders. Problems and benefits of the SHGs are evaluated by recording the perception of the members based on primary data.

Figure 1.13 Chapterisation Scheme



Chapter 5 evaluates the effectiveness of SHGs as a development option of the fisher folks using primary data. Poverty and income inequality among the fisher folks are worked out and the role of SHGs as development option are evaluated and compared with socio-economic indicators. Pertinent factors influencing the development of the fisher folks are also identified. Chapter 6 gives conclusions and policy options. A brief Chapterisation scheme is shown in Figure 1.13.

Chapter 2
Fisheries Development: An Inter-temporal Dynamics

The fisheries sector in the Kerala has witnessed manifold changes during the last six decades. Chapter 2 is an espousal of the dynamics of fisheries sector development in the state vis-à-vis the formation of the formal-informal institutional linkages and is explained in two sections. The first section highlights the fisheries sector development of the state and evaluates the catch structure based on decennial evaluation in different periods of modernization of fisheries derived from secondary information. Variations in catch during different periods of fisheries development and concomitant sustainability issues are also discussed. The second section evaluates the formal institutional arrangements like the Kerala State Co-operative Federation for Fisheries Development Ltd. (Matsyafed) and the development activities of the Federation as part of the fishery development dynamics in the state.

Section I

The fishery development trails of Kerala have been structured into six different phases in the matter of initiatives and interventions. They are:

- Initiating Planning Phase – 1951-1960
- The Export Oriented Phase – 1961-1970
- Stagnation and Growth Phase -1971-1980

- The Latter Phase of Transition (Motorization Effort) – 1981-1990
- Post-trawl Ban Period – 1991-2000
- Post-trawl Ban Period –2001 onwards

2.1 Fisheries Development in Kerala

Introduction of mechanized trawlers and outboard motors were the two major changes which had reverberations in the marine fisheries sector in Kerala. The mechanization of crafts started in the early 1950s under the aegis of the Indo-Norwegian Project (INP) in the Kollam area. 1960s saw the introduction of nylon webbings supplant cotton webbings. Purse-seining was introduced in the late 1970s. Large scale motorization of the country crafts was the feature during the 1980s. Trawl ban was introduced in the late 1980s. The 1990s was the period which saw the introduction of plywood boats. The 2000s witnessed the strengthening of formal and informal institutional linkages the fisheries sector. The modernization mainly focused artisanal fisher folks and their socio-economic well being by increasing the overall productivity.

2.1.1 Initiating Planning Phase

The development of the marine fisheries sector in Kerala was initialised by the First Five Year Plan. Hence the period from 1950-1960 can be termed as the initiating period of fisheries development in Kerala. The whole process started with the modernisation programme in the form of mechanization. The mechanization was done with the help of agencies under

the Indo Norwegian Project (INP) and experts and naval architects associated with Food and Agricultural Organisation (FAO) [Korakandy (1987)].

2.1.1.1 Indo-Norwegian Project (INP)

The Norwegian intervention into Kerala came in the form of an Indo Norwegian Project (INP) for Fisheries Community Development in the States of Travancore-Cochin and took effect in January 1953 following a tripartite agreement for economic cooperation between Government of India, the Government of Norway and the United Nations in October 1952 (Directorate of Fisheries, 1969). The INP, which was the world's first development project as a part of the UN Expanded Programme for Technical Assistance for post-war reconstruction and development assistance to the newly independent developing countries was aimed at extending technical assistance in the form of machinery, aid and expertise to what in those times were referred to as "underdeveloped economies" (Kurien, 1985). Under the Agreement, it was agreed that the government of Norway will provide assistance to the government of India to carry out "a programme of developmental projects to contribute to the furtherance of the economic and social welfare of the people of India" (Gerhardsen, 1958).

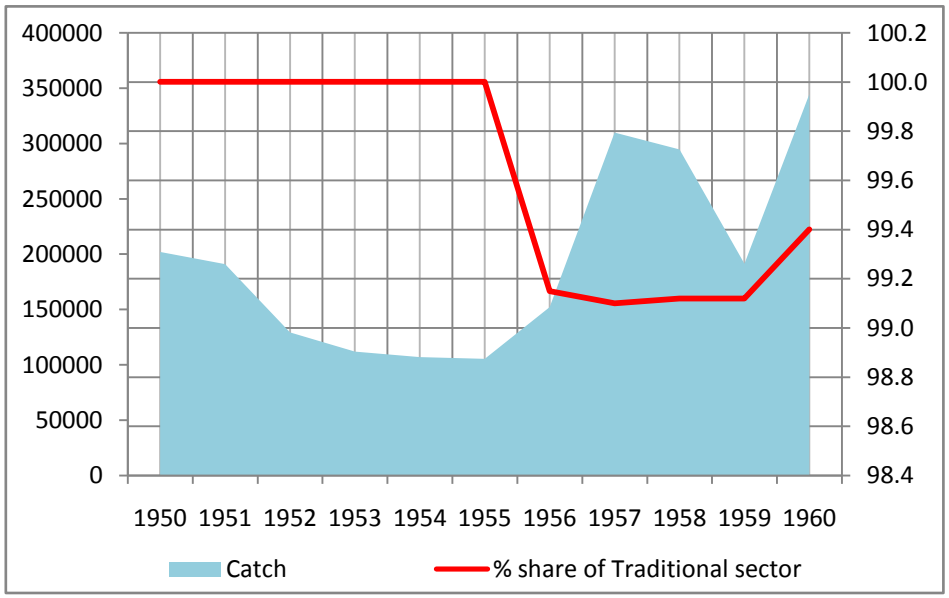
Box 2.1 Objectives of the INP

- *An increase in the return of fishermen's activity;*
- *An efficient distribution of fresh fish and improvement of fishing;*
- *An improvement of the health and sanitary conditions of the fishing population; and*
- *A higher standard of living for the community in the project area.*

Source: Kurien, 1985

The Indian Government accepted the offer in a framework of publicized Community Development Programme with the objectives as per Box 2.1, which were derived based on the consensus between the development agenda of Norwegian, Central Government and the then Government of Travancore-Cochin.

Figure 2.1 Share of Traditional Sector in Catch during 1950-60



Source: Worked out from Appendix 2.1

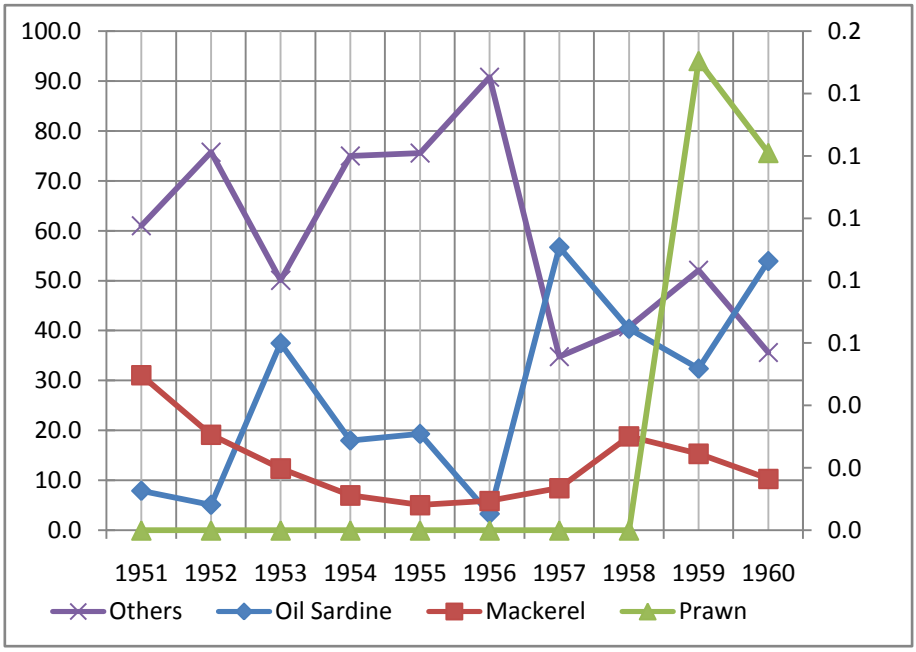
One of the major objectives of the project was the improvement in fishing methods, which was initiated by making changes in fishing crafts, whereas the same fishing gears viz. gillnets were used (Kocherry, 2000). Initially, the project mainly concentrated its operations in the fishing villages of Sakthikulangara and Neendakara in Kollam district. Rather than motorization and mechanization of existing crafts, the imported designs from Norway and a series of mechanized boats constructed at Neendakara were

used. The infrastructure such as boat yard and workshop designed to build and maintain mechanized boats, a fishery education and gear development centre, Health centre, Refrigeration plant and pipe factory and several marketing schemes were also introduced (Gerhardsen, 1958). The refrigeration plant was managed and operated by a small fishermen cooperative society. Mechanized boats of varying length from 22 to 36 ft were introduced and training was provided initially to 100 local fisher folks. Indentifying the vast export markets for shrimps was one of the major developments during the last stages of this phase (Saxena, 1970). This together with lure of mammoth profits triggered the entry of capitalists and private entrepreneurs into the seafood export sector. Considering this export potential, 36 ft mechanized stern trawler with 48 horse power engines were also introduced. By identifying the export potential of prawns in United States and Japan, bottom trawling first introduced in Neendakara in Kollam district (Kocherry, 2000). Majority of the total spending of Rs. 6 million on fisheries development during the Second Five Year Plan (1955-1960) was on processing and marketing schemes (56 percent) and production oriented schemes (36 percent). 86 percent of the spending on production oriented schemes was on providing credit through fishermen cooperatives and making improvements to the traditional craft and gear (Kurien, 1985).

Plan wise, the first five year plan marked planned development of the marine fisheries sector in Kerala. The first five year plan showed a declining trend of fish production of 91 percent whereas there was a consequent recovery of 69 percent in the second plan. The oil sardines and mackerels were the main economic species caught during the period majority of which

was caught by the artisanal fishermen using their non mechanized wooden craft and traditional cotton nets or hooks. The detailed catch data of traditional fisher folks is depicted in Figure 2.1 and species-wise catch is shown in Appendix 2.2 and Figure 2.2.

Figure 2.2 Species-wise Catch share during 1951-1960

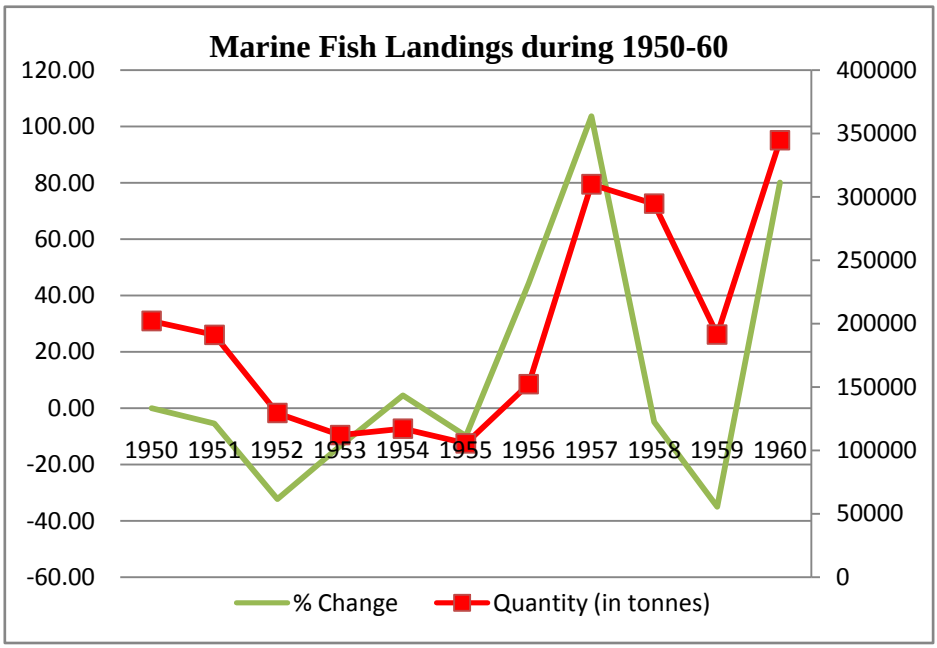


Source: Worked out from Appendix 2.2

The marine fish production of Kerala and percentage change of 1950 to 1960 is shown in Figure 2.3. The year 1955 marked the lowest fish production of 105457 tonnes and year 1960 marked the highest fish landing of 344605 tonnes. By the end of the decade Marine fish landings in the state, as a whole showed an overall increase of 70 percent, i.e. from 202047 tonnes to 344605 tonnes. The entire harvest was a result of the efforts of the artisanal fishermen of the state (Figure 2.1). In the 260 tonnes (12 percent)

out of the total landings of 2080 tonnes were from the mechanized boats (Kurien, 1985).

Figure 2.3 Marine Fish Landings during 1950-60



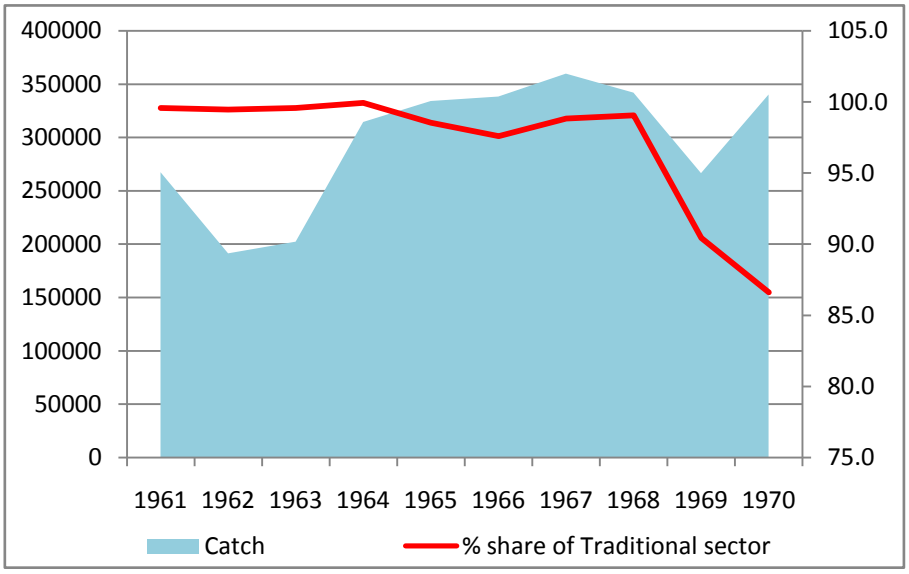
Source: Worked out from Appendix 2.6

2.1.2 The Export Oriented Phase

The 1961-70 is considered as the export oriented period in fisheries development. 1963 marked the end of INP. The period between 1961 and 1963 is the turning point of the INP as the objective of the project shifted from welfare of traditional fisher folks to increasing the catch of export oriented species like the shrimp. The beginning of the phase saw the introduction of small mechanized boats and trawl nets which were banned in Norway during 1936. During 1961-69, about 84 percent (i.e. Rs. 92 million) of the total spending of Rs. 110 million on the fisheries development was for

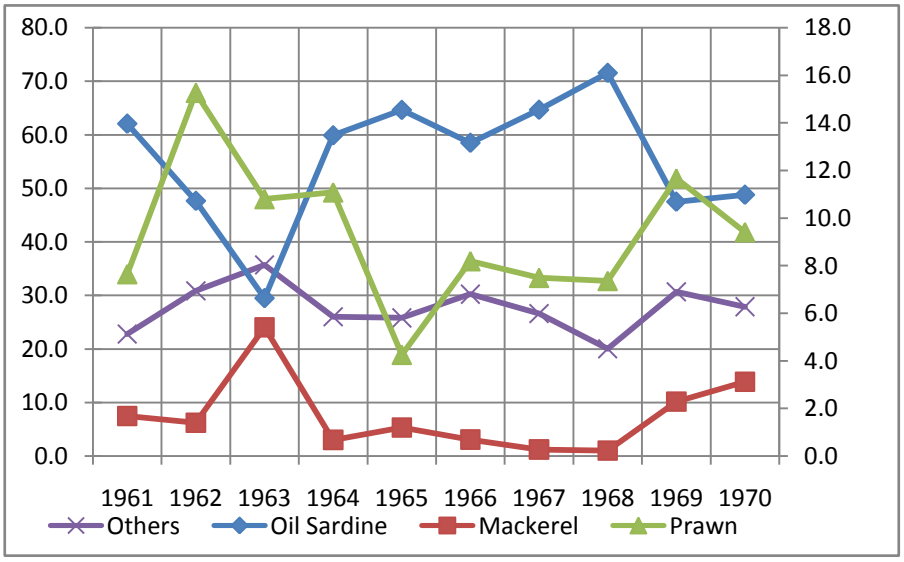
the promotion of exports (Suja, 1992). Technological change was a major development during this period. The whole development process in the fisheries sector started with an objective of bringing the artisanal fishers to the mainstream by keeping them in the central place of modernisation process. From subsistence sector and source of nutrition for locals, the fisheries grew into an export oriented sector with mammoth potential. The sector transformed from subsistence oriented one to a respectable investment avenue. The result was the emergence of capitalists who owned advanced crafts and gears and migrant labour. This modernisation of the sector with the capitalist approach resulted in the marginalisation of traditional fisher folks. There was a clear division between those in the traditional and mechanized as the latter were from outside the fishing community. The 1960s were marked with the process of technological polarisation (Kurien, 1985; Kocherry, 2000). The mechanized sector mainly concentrated on the export market, whereas the traditional sector was more labour intensive and concentrated on internal markets. There was an increasing export demand for prawns, which resulted in spurt in prices and affected the local fish economy of Kerala. The devaluation of rupee during the 1966 acted as an impetus for prawn exports (Kurien, 1985). There was a tenfold increase in the revenue as Rs. 909 million export values was realized with an investment of Rs. 92 million by the state. Rs. 8 million were also spent by the state to improve the artisanal fishery methods and augment facilities for internal marketing during the same period.

Figure 2.4 Share of Traditional Sector in Catch during 1961-70



Source: Worked out from Appendix 2.1

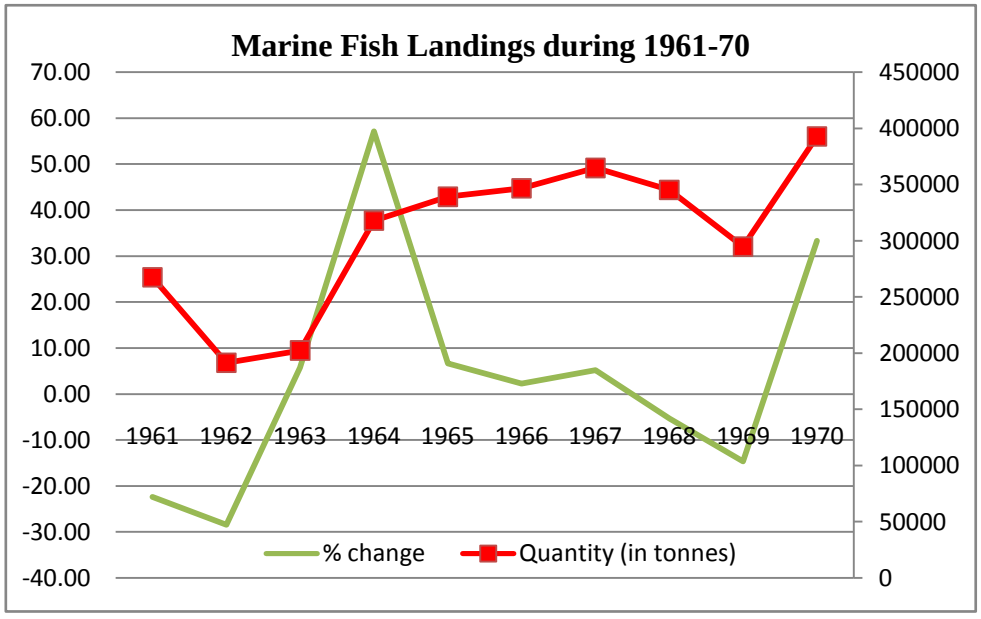
Figure 2.5 Species-wise Catch share during 1961-1970



Source: Worked out from Appendix 2.3

Major share of catch during this period went to the traditional sector (Figure 2.4). Also, 70 percent of the total prawns landed were also caught by the artisanal fishermen (Kurien, 1985). However, the share of traditional sector declined to 86.6 percent during the end of this period and rest of the catch (13.4 percent) went to the mechanized sector. The mechanized sector began to emerge slowly into the forefront with a double digit share in the fish production. Oil sardine had the highest share in the catch during the period (Figure 2.5). Share of prawns in the total catch began to increase owing to the spurting export demand and during the ten year period average share was at 9.3 percent.

Figure 2.6 Marine Fish Landings during 1961-70



Source: Worked out from Appendix 2.6

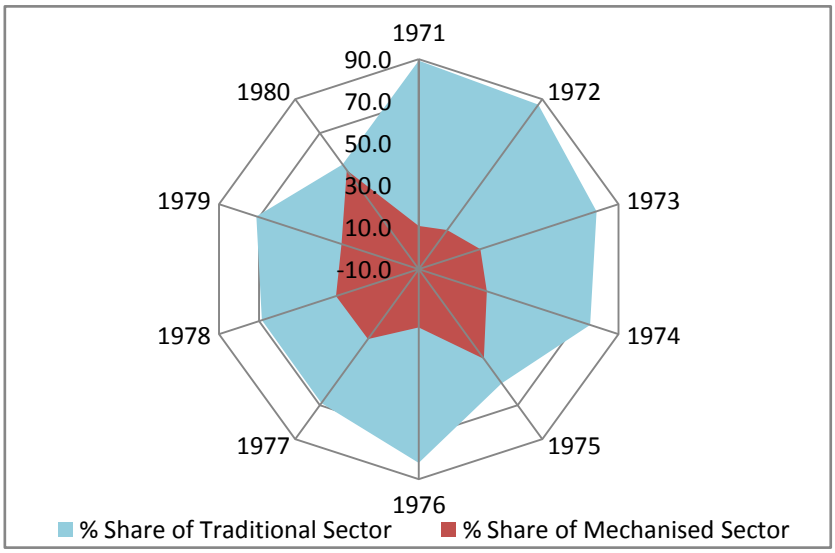
The total marine fish landings during the decade are depicted in Figure 2.6. The decade started with a significant fall in the fish production compared to the 1960 and the lowest fish production of 191421 tonnes was recorded in the year 1962. The sector recovered drastically in 1963 and 1964. The change in growth from the initial stage to the export oriented decade shows a decline in production during the first five years and an increase in the second half. A decline was seen during the 1969, which further recovered to the highest catch during the decade at 392880 tonnes.

2.1.3 Stagnation and Growth Phase

The period witnessed greatest rise and fall in fish production. This has to be evaluated in lieu of introduction of mechanized boats and gears for harvesting prawns and oil sardines. The period is pertinent as it also saw the private expenditure in the fish processing and marketing. There was a manifold increase in the number of mechanized boats, which also resulted in an increase in employment in this sector. However, there was no corresponding increase in the catch and per head catch share. In response to the fall in share of total output, the period witnessed higher investments in the fishing assets of the traditional fishers. Irrespective of this, those in the mechanized sector were better off than the traditional fishers (Kurien, 1985).

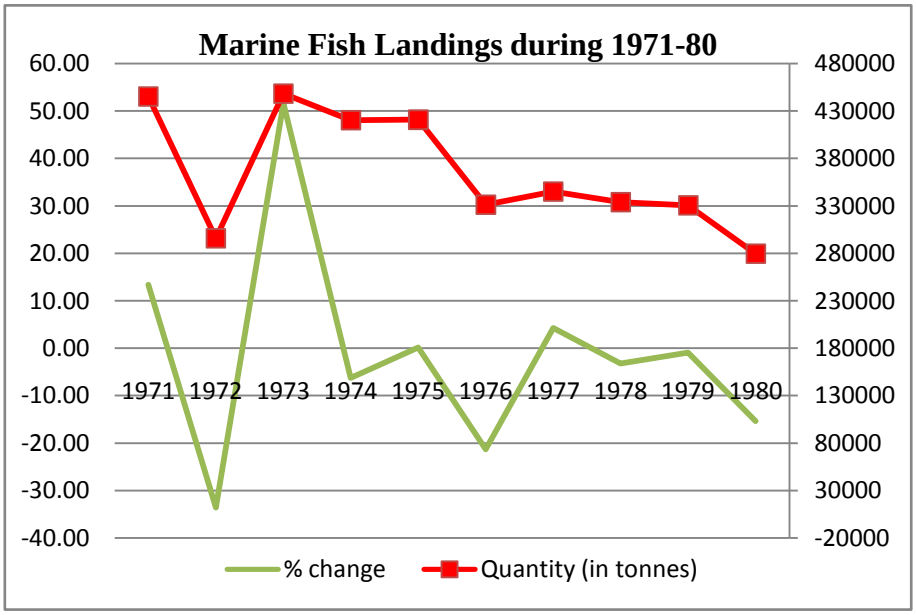
The period saw a drastic decline in the share of traditional sector in the total catch from nearly 90 percent in 1971 to 50 percent in 1980. The share of traditional sector in the total catch oscillated during the period and reached an all time low of 51.70 percent during 1980. The detailed results are depicted in Figure 2.7.

Figure 2.7 Share of Traditional and Mechanized sector in Catch during 1971-80



Source: Worked out from Appendix 2.4

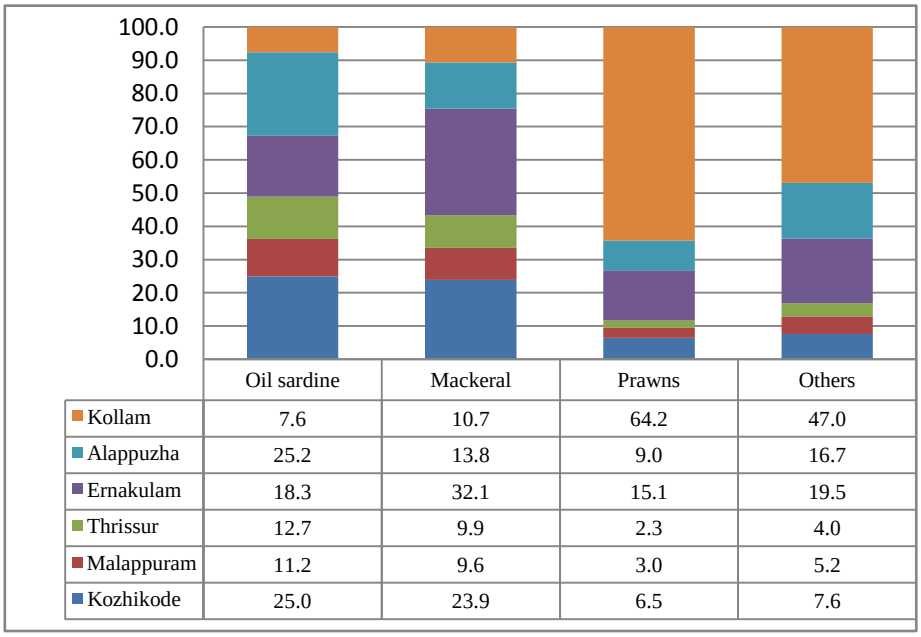
Figure 2.8 Marine Fish Landings during 1971-80



Source: Worked out from Appendix 2.6

Even with an increased share of mechanized sector, the overall fish production saw a decline of 28.85 percent. Technological advancements, labour abundance, etc. did not ensure overall increase in fish production. The traditional fishermen opined that the indiscriminate trawling has resulted in destruction of the marine ecosystem and consequent decline in fish production. The fish production trend of 1971-80 is shown in the Figure 2.8.

Figure 2.9 Percentage share in Total Catch 1974-84



	Oil sardine	Mackeral	Prawns	Others
Kollam	7.6	10.7	64.2	47.0
Alappuzha	25.2	13.8	9.0	16.7
Ernakulam	18.3	32.1	15.1	19.5
Thrissur	12.7	9.9	2.3	4.0
Malappuram	11.2	9.6	3.0	5.2
Kozhikode	25.0	23.9	6.5	7.6

Source: Worked out from Appendix 2.7

The situation of stagnation in the sector is evident from the reduction of catch of some important species from the yearly average during 1975-79, there was an overall decline of 22.5 percent during the 1980 (Kurien and Willmann, 1982). However, a district wise scrutiny of the species-wise percentage share of catch shows a marked difference in the catch structure (Figure 2.9) which is indicative of the difference in the mechanization

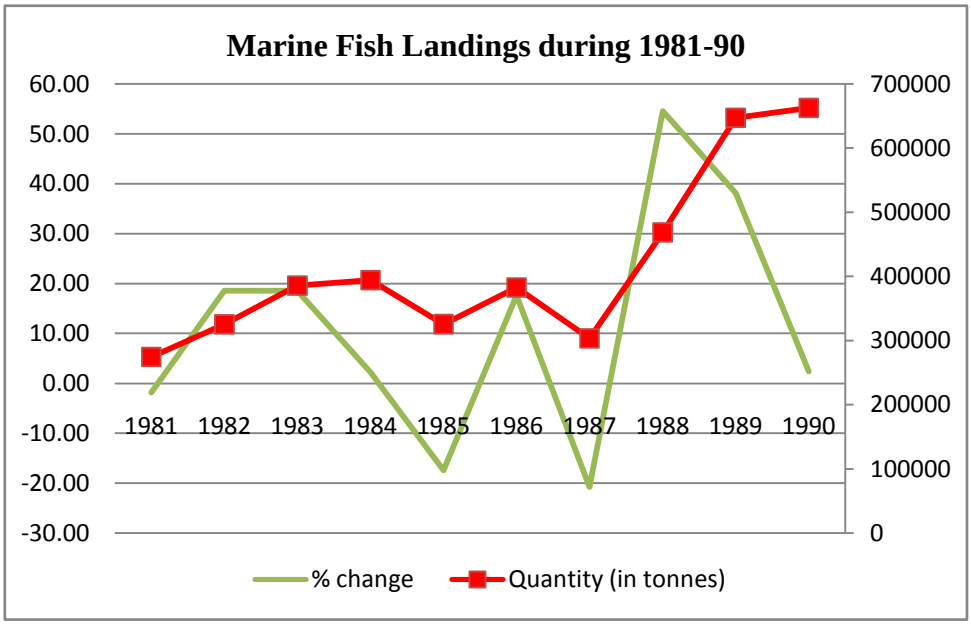
process across districts. The data during the period 1974-1984 evinces a decline in the relative share of northern districts in terms of high priced varieties (prawns and others) of fish caught by the mechanized boats. Kollam district outperforms the other five districts in terms of commercially important species, followed by Ernakulam. This can be attributed as a major outcome of the INP which was kick started in the fisheries villages of Kollam region. The northern districts like Kozhikode and Malappuram have very less share in catch.

2.1.4 Motorization Effort

Traditional sector responded to mechanization by rapid motorization of indigenous crafts by fixing outboard motors. This was because of the increasing share of mechanized sector in total catch as a result of the concentration of this sector in deep sea fishing. The inshore resources were on a decline. The initial efforts of motorization in Kerala were done by the Marianadu Malsya Ulpadaka Cooperative Society (MMUCS) in Thiruvananthapuram District in 1974 which aimed to motorize kattumarams. This, together with replacement of gears drastically increased the fish production (Balan, 1998). This was seen as a response by some of the traditional fishers to compete with the mechanized crafts. Hence, a new category of fishermen emerged during this period and because of this presently there are three sub sectors in the marine fishing sector of Kerala viz. Non-motorized - fishermen falling in the labour powered traditional sector; Motorized (Small units- fishermen in the motorized small-scale sector and Motorized Ring seine- fishermen in the ring-seine sector) and

Mechanized - fishermen in the mechanized sector. Due to motorization of the sector, the decade moved to a recovery stage from the stagnation. The advent of the motorization eclipsed the traditional non-motorized fishermen and the resources were shared between motorized and mechanized units. Also, the non-motorized fishermen began to shift to the motorized sector and occupied the same area of resources which resulted in an increase in catch. However, this increase was at the cost of large scale depletion of fisheries resources, the main culprits of this being motorized and mechanized sectors.

Figure 2.10 Marine Fish Landings during 1981-90



Source: Worked out from Appendix 2.6

During the 1981-90 periods, the marine fish landing of the state has increased from 274395 tonnes to 662890 tonnes (an increase of 141.58 percent). The early phase of the decade has shown a nominal rise of 18.64 percent in the fish production whereas the latter phase showed a drastic

growth of 103.63 percent. The fish landing trend during the decade is portrayed in Figure 2.10.

2.1.4.1 Conflicts and Evolution of Community Organisations

The emergence of the modern sector created a division between the sub sectors. The mechanized sector fishers became a privileged group and hence there were conflicts between the unprivileged traditional and other stakeholders for access to resources. The blame for decline of catch was on the mechanization and the resultant indiscriminate trawling (Kumar, 1999; Kurien and Mathew, 1982). The conflicts between different sub sectors started from the 1960s. There was a threat to the traditional fisher's gears as well as life of traditional fishers as mechanized and traditional fishers shared the same area as well as target the most demanded species, viz. prawns. The catch of this sector was also affected leading to livelihood insecurity. The second phase marked a period of agitation and struggle in the 80s and into the 90s. The pressure groups were formed within subsector to protect their livelihood option. This was more so due to increased competition from the new sub sector viz. motorized fishers. The period that came in the 1990s where the Kerala fishers had been fighting for increasingly become national issues.

Severe resource exploitation and falling fish production, the fisher folks started forming unions of their own. These institutional arrangements were mainly religious based. The Latin Catholic Fishermen Union was formed in 1971 and the unions in different districts amalgamated in 1977 and

formed Kerala Latin Catholic Fishermen Federation. In 1980 this federation changed its name to Kerala Independent Fishermen Federation (KIFF). The Hindu fishers joined the unionization drive and organized under the banner of All Kerala Dheevara Sabha. These unions were united under an umbrella body, Kerala Swathanthra Malsya Thozhilali Federation. The amalgamation was mainly due to political compulsions. The Federation is affiliated to the National Fish workers Forum, which is involved in addressing the issues faced by the fish workers at the national level. The Kerala Independent Fishermen Federation has been holding protests and agitations regarding the ill effects of unsustainable practices in fishing to pressurize the government. The main demands of the artisanal fishers in this regard include: proclaim an exclusive economic zone for small scale fishermen; ban of destructive fishing techniques; and a systematic regulation and management of the living marine resources of Kerala. The response from mechanized fishers was by forming political unions by the boat owners and workers. This resulted in frequent clashes litigations and counter litigations by these groups (KSMTF, 2007).

The fishing industry became increasingly polarised between a 'modern' ('mechanized') sector, able to make considerable profits from exports and a 'traditional' ('non-mechanized') sector, confined to a domestic market with declining catches and fish stock. In the 1980s the increasing industrialisation - and internationalisation - of the fisheries by mechanization and by trawling by still larger vessels, both by Indian companies and by trawlers of other nations, heightened this polarisation and posed dangers which threatened to do serious damage to both the fisheries and the artisanal fishers.

2.1.4.2 Government Intervention and Trawl Ban

The major demands of the traditional fishers included the enforcement of the 'Kerala Marine Fishing Regulation Act–1980 (KMFRA) and implementing a ban on monsoon trawling, so as to ensure livelihood security. In the wake of agitations by the traditional fisher folks due to resource depletion, regulative measures were introduced by the government in this sector. The major ones are depicted in Box 2.2. The main regulative measure was the ban of trawling which was imposed after scrutinizing the studies and recommendations of various committees appointed by the government, the details of which are depicted in Box. 2.3.

Box 2.2 Regulative Measures by the Government

- Restricting mechanized trawling beyond territorial waters
- Imposing ban on night trawling, purse seining, ring seining, pelagic trawling and mid water trawling
- Imposing temporarily a ban on monsoon trawling
- Enhancing the minimum mesh size of the cod end of trawls to 35 mm
- Motorization of artisanal crafts, etc.

The committee appointed under the chairmanship of D. Babu Paul in 1981 failed to decide on the issue of monsoon trawling. This, together with continued agitations and demands from the traditional sector resulted in the constitution of another expert committee in 1984 with A.G. Kalawar as the Chairman. The committee, while not agreeing to a ban on monsoon trawling, suggested a series of measures for the conservation and management of resources. An Expert Committee headed by Prof. N. Balakrishnan Nair was

constituted in 1987. The committee noted the over exploitation of marine resources and its impact on traditional sector due to indiscriminate trawling. The fisheries sector was in the clamor of severe resource depletion during the period 1973-1987 which was evident from the declining marine fish production in general and deteriorating prawn catch in particular. Based on this, a ban on trawling by mechanized vessels above 25 HP capacities during the monsoon seasons was introduced by the Government of Kerala from 1988. The problems of overfishing and impact of trawl fishing on marine ecosystem was highlighted by the Balakrishnan Committee, appointed by the Government of Kerala during various periods.

Box 2.3 List of Expert Committees

- Babu Paul Committee: 1981
- Kalawar Committee: 1984
- Balakrishnan Nair Committee I: 1987
- Balakrishnan Nair Committee II: 1989
- P.S.B.R James Committee: 1993
- Silas Committee: 1994
- Balakrishnan Nair Committee III: 2000
- D.K Singh Committee: 2006
- Expert Committee on Fish Wealth of Kerala: 2014

The other expert committees constituted in between the Balakrishnan Nair committee II and III were P.S.R James Committee in 1993 and Dr. E.G. Silas committee in 1994. The Silas committee recommended the demarcation of a separate zone as an artisanal exclusive fishing zone exclusively for non-

motorized and motorized crafts of less than 15 HP and standardization of overpowered artisanal fishing gears like mini trawls and ring seines.

The expert committee headed by D.K Singh during 2006 pointed out the extent of habitat destruction and evaluated the suitability of uniform fishing ban along Kerala coast. The report recommended the continuation of 47 days ban. Details of trawl ban imposed by the Government from 1988 are depicted in Appendix Table 2.5.

A seven member Expert Committee to evaluate Fish wealth/ impact of Trawl Ban along Kerala Coast was constituted by the state government during 2012 under the Chairmanship of the Additional Director of Fisheries, Kerala. The terms of reference of the Committee are depicted in Box 2.4.

Box 2.4 Major Terms of Reference of the Expert Committee to evaluate Fish wealth/ impact of Trawl Ban along Kerala Coast

1. Evaluate how far the monsoon trawl ban imposed along the Kerala Coast for the last 18 years was beneficial in sustaining fish wealth of the state.
2. Review the changes in fishing methods and practices and its influence in sustainability of resources.
3. Evaluate the length-power combinations of fishing vessels, suggested by the previous committees and offer practical recommendations.
4. Suggest administrative and regulatory measures for the sustainable development of fisheries in the state.

The suggested vision statement by the Committee for Kerala marine fisheries is:

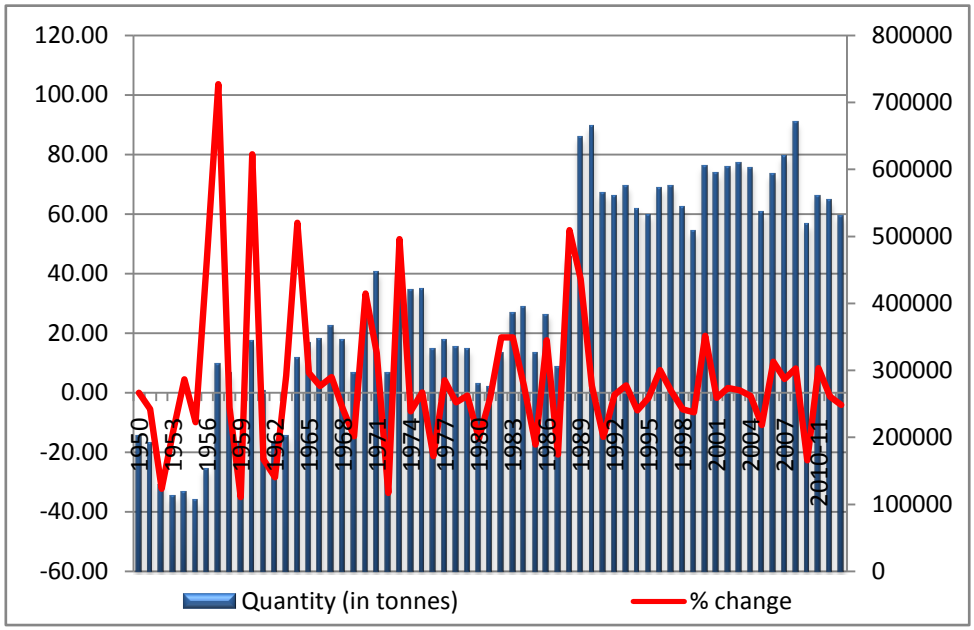
> *"To maintain in a sustainable manner the marine fishery yields from the presently exploited continental shelf of the state and to increase production through exploitation of deep sea resources"*

The Committee while hailing the success of trawl ban imposed in 1988 identified the need to extend the trawl ban period from 45 days to 60 days in two periods each for 30 days i.e. June-July and October-November (Expert Committee on Fish Wealth of Kerala, 2014).

2.1.5 Pre and Post Ban Period Catch and Sustainability Issues

Despite the trawl ban, the catch structure has seen oscillations, but however has remained constantly over the 500000 tonnes. The catch share of traditional sector declined. Development measures like centralized landings adversely affected the allied sector workers like fish vendors especially women. The marine fish production during the two post trawl ban periods as well as the total fish catch upto 2012 (Figure 2.11) itself provides the impression that unsustainable fishery practices and the resultant over fishing have stepped into the coastal fishery sector of the state by the latter half of seventies.

Figure 2.11 Marine Fish Landings during 1950-2012

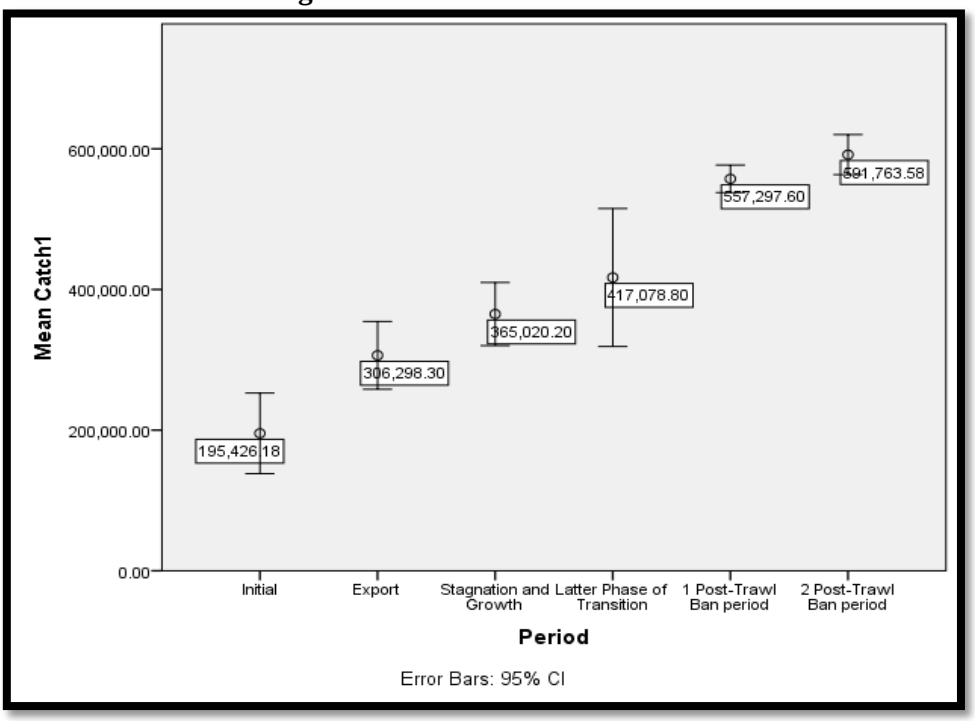


Source: Worked out from Appendix 2.6

In spite of increased fishing effort, the landing declined from a peak of 448269 tonnes in 1973 to 303286 tonnes in 1987. Increasing fishing effort can be inferred as the major unsustainable practice contributed to stock collapse in this period. With the ever increasing number of active fishermen and mechanized boats the period also saw introduction of purse seiners, introduction and massive growth of motorized fishing and more efficient gears. The declining catches in the event of increasing effort provide basic evidence of over fishing and unsustainable fishery practices in the coastal waters. Resource depletion and existence of biological overfishing is evident from the fact that there was an overall decline in demersal species, which can be largely attributed to the existence of bottom trawling in the coastal waters (Rajasenan and Paul, 2012). Even though the catch has exceeded 600000

tonnes in 1989 and 1990, it could not be sustained beyond 1990 as landings are maintained more or less near the MSY, but only with a far more increase in fishing effort. Trawl ban has positively impacted the fishery yield. However, this impact was visible only upto 1997 indicating that the benefits from yield were not sustained and the growth of mechanized sector was also affected by this (Expert Committee on Fish Wealth of Kerala, 2014). The period wise difference in average catch is evident from Figure 2.12, with average catch increasing over the different period of fisheries sector development. However, in lieu of the increasing fishing efforts, the results point towards resource depletion.

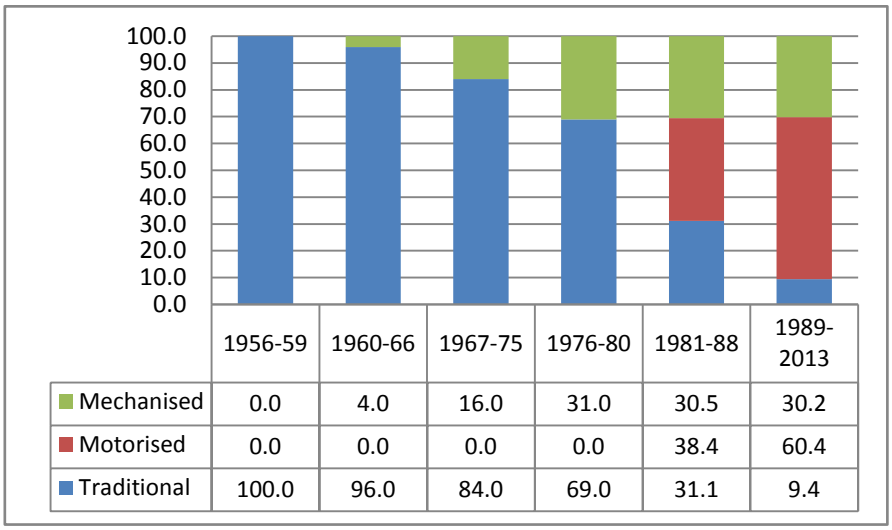
Figure 2.12 Mean Catch 1950-2012



Source: Worked out from Appendix 2.6

Also, the share of different sub sectors in catch during various periods is depicted in Figure 2.13. A huge sector-wise variation in catch share can be identified during the three phase's viz. slow modernization, rapid modernization and modernization with the share of traditional artisanal sector declining and that of mechanized and motorized sectors increasing. Even though there is a marked increase in the fish production especially after the trawl ban, an in depth scrutiny of the data evinces decline in the contribution of traditional sector. Rapid modernizations of this sector lead to the introduction of outboard motors by the traditional fishers. The share of motorized sector has increased from 38.4 percent in 1981-88 to 60.4 percent post trawl ban. There has been an overall increase in the fishing post trawl ban, the major contributors being motorized sector (60.4 percent) and mechanized (30.2 percent), where as the non-motorized sector almost eclipsed with only about 10 percent share in catch.

Figure 2.13 Sector-wise Percentage Catch Share



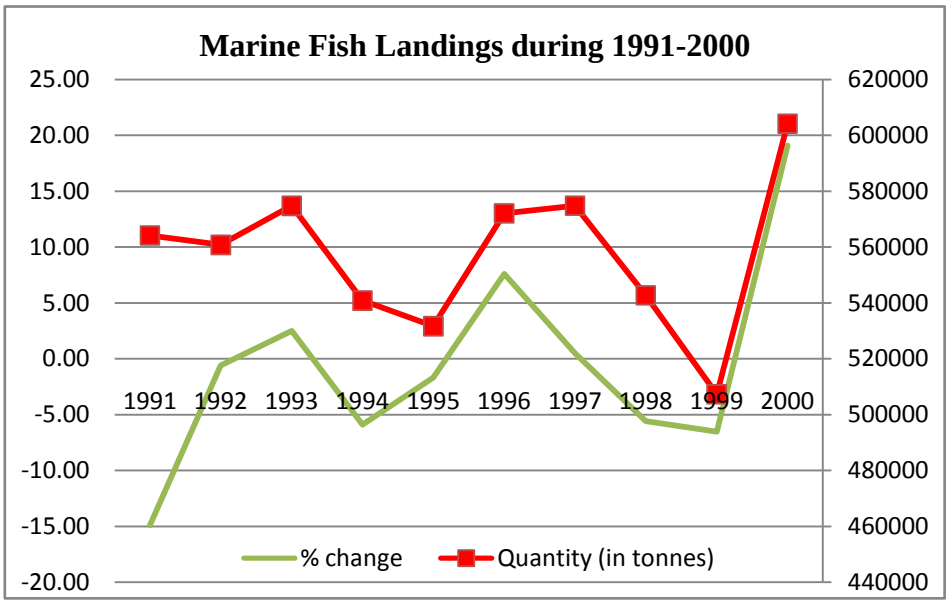
	1956-59	1960-66	1967-75	1976-80	1981-88	1989-2013
Mechanised	0.0	4.0	16.0	31.0	30.5	30.2
Motorised	0.0	0.0	0.0	0.0	38.4	60.4
Traditional	100.0	96.0	84.0	69.0	31.1	9.4

Source: Worked out from Appendix 2.8

2.1.5.1 First Post Ban Period

The evaluation of the catch data for the first trawl ban period (1991-2000) is depicted in Figure 2.14. On an average, the catch during the period has been at 5572976 tonnes and this ended in the highest point of above 600000 tonnes during 2000 (604113 tonnes) from the lowest point of 507287 tonnes in 1999. There was an overall decline of 15 percent during the start of the period from the 1990 data.

Figure 2.14 Marine Fish Landings during 1991-2000



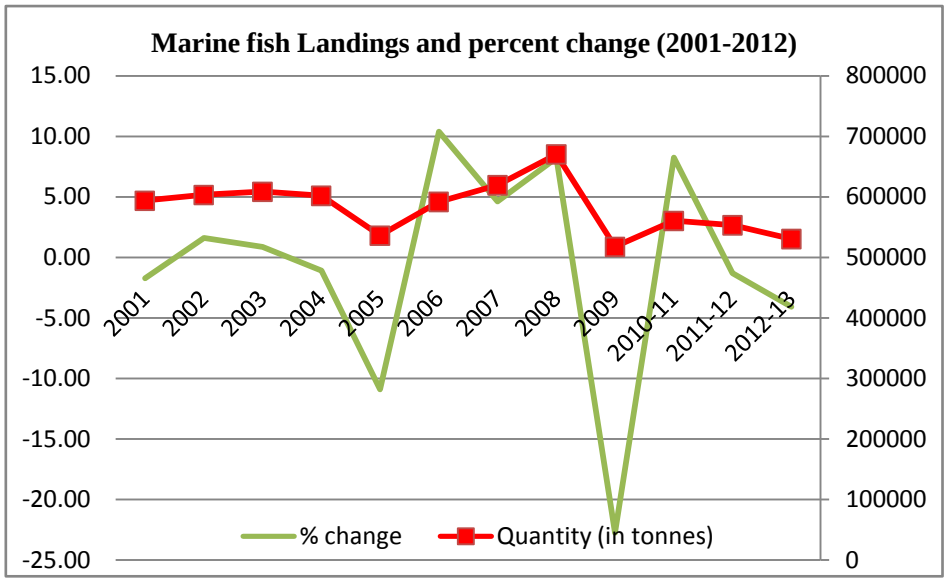
Source: Worked out from Appendix 2.6

2.1.5.2 Second Post Ban Period

While the average catch during the period remained at 600000 tonnes, the year 2012 saw catch of 530638 tonnes. There were oscillations in the

range of + or - 10 in catch between years during the period. The results are depicted in Figure 2.15.

Figure 2.15 Marine Fish Landings during 2001-2012

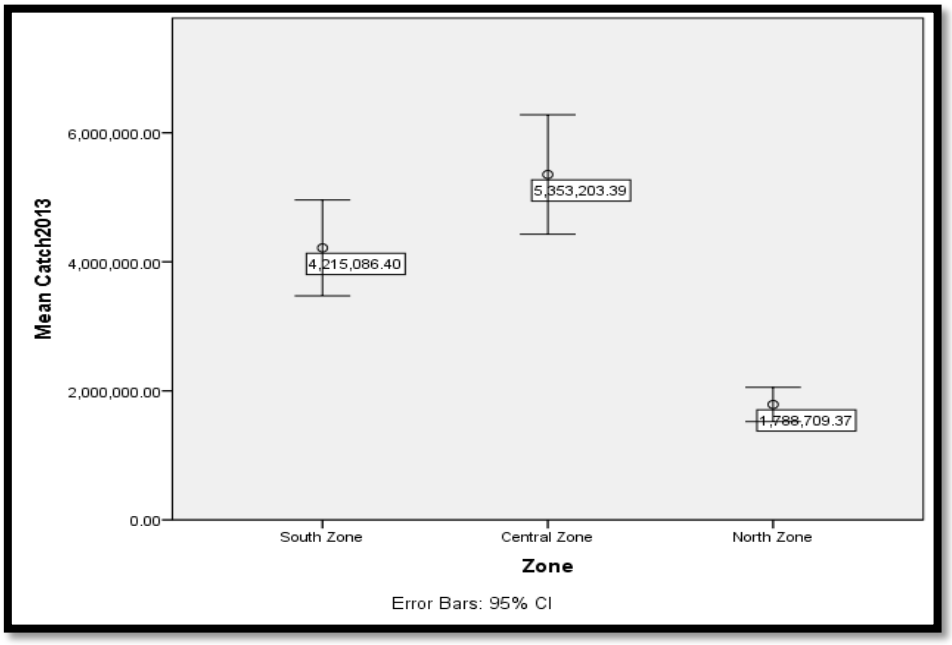


Source: Worked out from Appendix 2.6

2.1.6 Evaluation of SHG based Cooperatives

By analyzing the resource pattern and form of mechanization, it is clear that there are differences. To understand further with respect to the 2013 catch data, compiled from the SHG based cooperative societies of three zones viz. the north (Kozhikode), south (Kollam) and Central (Ernakulam), it is analysed empirically to identify the inter-zone differences if any in the resource availability, catch and earnings of the fisher folks. The catch data were collected on a group basis. The error bars in Figure 2.16 shows the zone-wise mean catch. Mean catch during 2013 is high for the central zone and lower for the north zone.

Figure 2.16 Average Catch during 2013



Source: Worked out from CMFRI data

The difference in mean values of the three zones is further evaluated with the aid of ANOVA and Duncan's Test to identify the inter-regional differences in catch structure between the societies. The ANOVA results are statistically significant (Table 2.1), indicating a clear difference between zones in the mean catch structure. However, mean values of which zones are different is not captured with the aid of ANOVA and for this Duncan's Test is performed.

Table 2.1 ANOVA: Zone and Catch

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	238658801355804.700	2	119329400677902.340	27.690	.000
Within Groups	452500480717643.440	105	4309528387787.081		
Total	691159282073448.100	107			

The results in Table 2.2 clearly evinces that the three zones are not homogeneous sub-sets. This indicates heterogeneity of each zone. Hence the null hypotheses that "there exists similarity in average catch of societies irrespective of zones" is rejected and proved that there is variation in the catch structure of societies across zones. The geographical difference in the catch structure is evident from the fact that the mean of three zones are different. North zone is in subset 1, south in subset 2 and the central zone in subset 3. The difference in catch is an indication towards a difference in socio-economics, income, expenditure and living standards of fisher folks between regions, which has been analysed in detail with the aid of primary survey data in Chapter 3.

Table 2.2 Duncan Test: Zone and Catch

Zone	N	Subset for alpha = 0.05		
		1	2	3
North Zone	36	1788709.3667		
South Zone	36		4215086.3991	
Central Zone	36			5353203.3917
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 36.000.

Section II

2.2 Institutional Linkages in Kerala Fisheries

Section II tries to delineate the institutional linkages as part of the dynamics of the fisheries development in the state. This is focused to uplift the fishing community with various welfare and development schemes to

overcome the traditional fishers from the burden of the dynamics that has been favorable to the mechanized groups.

The fisher folks are one of the most marginalized communities in the state in lieu of their low socio-economic development, lack of assets, financial habits, etc. To remedy this malady of low standard of living and poverty, various schemes have been implemented by the state and central governments for the empowerment of these communities; one among them is the SHG movement through cooperatives. The poverty alleviation programmes have failed miserably mainly due to the seasonality issues and concomitant debt burden. This, together with the ecological issues prompted the government to adopt this methodology of participatory approach through the SHGs and Cooperatives. The main objective of this approach was to ensure economic and social development (skill and capacity development) of the fisher folks by eliminating the middle men.

The concept of the cooperative movement in the fisheries sector was adopted in Kerala during the pre-independence era. Kerala was the first state to initiate the formation of fisherman cooperatives in India, that too way back in 1917. The formation and functioning of these groups was on the basis of religion and caste. This would imply that the very purpose of poverty alleviation, socio-economic development and empowerment were not achieved by these groups. The financial issues viz. increasing credit needs of the fisher folks were not also addressed, the main culprits of this being the middle men. All these factors resulted in the collapse of this system by the early 1950s. Subsequently, Matsya Utpadaka Cooperative Societies (MUCSs) were set up with producer cooperatives at the primary level and

marketing and marketing societies at the regional level and there were a total of 849 registered societies in 1956 (Fisheries Network Information System, 2012). The main objective of these societies was to increase fish production by supplying fishermen modern methods of fishing. The formation of these societies was pivotal in kick starting the process of mechanization in this sector. Again the major reason for the downfall of these societies was the paucity of working capital due to the exploitation of middle men. The monopoly power of the middlemen is the major reason for the fishermen's reduced share in the Consumer Rupee (Rajasenan and Rajeev, 2012). Cooperative setup was the one and the only way identified by the fisher folks to disentangle themselves from the webs of exploitative forces. The first step in this regard was formation of a cooperative to have the right of first sale of catch at the sea shore itself. The first such fish marketing society viz. Marianad Matsya Utpadaka Co-operative Society (MUCS), Trivandrum was set up. The management and membership was bestowed upon the active fishers. The main activities of the societies included credit facilities for fisher folks to purchase gears, sale of nylon nets, etc. In return a small amount was deducted from their daily catch earnings.

The state initiative in the fisheries cooperative movement started during the second half of 1950s. The government identified that the formation of cooperatives was the best possible way to uplift the fisher folk. The Department of Fisheries, Government of Kerala constituted a three tier cooperative structure with the main objective of modernization of this sector through cooperative movement.

The cooperative structure included:

- Village level cooperative societies with an objective of encouraging the fisher folk to increase their production,
- District level cooperative societies which provided assistance to the primary level to develop basic infrastructure to enter into the fish markets so as to ensure better price for the catch, and
- A State Apex organization to coordinate the district level offices.

However, the initiative was a failure mainly due to the external influence as most of the boats issued were taken by the rich and the affluent non fishing community members under false name, who also had complete control over the activities of the cooperatives. The rejuvenation measures from the part of the government which got a launch pad with the passing of Kerala Fishermen Welfare Societies Act, 1980. The Act aimed at the constitution of Fishermen Welfare Societies (FWS). The welfare and development programmes custom made for the fisher folks were also designed. However, the paucity of funds meant that the 222 FWS constituted in the Kerala coast were defunct upto 1983. The major touchstone of the development of cooperative movement in the Kerala fisheries sector was through the formation of the Kerala State Co-operative Federation for Fisheries Development Ltd. (Matsyafed) in 1984 with it headquarters in Thiruvananthapuram. The main objective was to strengthen the cooperative movement among the fisher folk in the state. The federation took up the difficult task of reorganizing these cooperative into Fishermen Welfare and Development Co-operatives Societies (FWDCS).

Matsyafed, Kerala State Cooperative Federation for Fisheries Development was constituted in 1984 as a state-level Apex Federation of primary level welfare societies in the coastal fishery sector with the objective of ensuring the economic and social development of the fishermen community by implementing various schemes aimed at promoting the production, procurement, processing and marketing of fish and fish products (Fisheries Network Information System, 2012). Registered in 19.03.1984 with an authorized capital of Rs. 100 lakhs, the federation started its full fledged function in 21.06.1984. The Matsyafed was formed by amalgamating Fisheries Corporation, Fisheries Welfare Corporation and the Inland Fisheries Development Corporation. The sole objective of the Matsyafed until 1988 was to implement schemes and programmes for the development of traditional fisher folk community in Kerala. The formation of District Fisheries Development Co-operative Societies at middle level and Fishermen Development and Welfare Co-operative Societies at the Primary level in 1987-88 made the system a three tier one. Later the middle level societies vanished making it a two tier system with the Primaries and Apex. In 1992, the direct affiliation of 292 primary cooperative societies to Matsyafed made it a cooperative federation. Matsyafed comprises of 666 primary level Fishermen Development Welfare Cooperative Societies (FDWCS); 637 are in the 9 marine districts of Kerala. Out of this, 343 are in the marine sector, 198 in the inland sector and 125 women co-operatives. The membership strength of the cooperatives is more than 3.8 lakhs (KSPB, 2013). The District wise details of societies affiliated to the Matsyafed are depicted in Table 2.3.

Table 2.3 Cooperatives in Marine Districts of Kerala

District	Affiliated to Matsyafed
Trivandrum	87
Kollam	82
Alappuzha	132
Ernakulam	102
Thrissur	41
Malappuram	66
Kozhikode	72
Kannur	25
Kasaragode	30
Total	637

Source: Matsyafed, 2013

It is evident that the maximum number of cooperatives under Matsyafed function in Alappuzha District (132 societies), followed by Ernakulam (102) and Kollam (82). However, the cooperatives are lesser in north zone districts like Kozhikode and Malappuram (67 and 65 respectively). The financial assistance is provided by the Matsyafed to the members through the societies. The groups are graded and based on the grading they are provided with loans. Various welfare measures have been derived by the Matsyafed to ensure the socio-economic development of the fisherman community in the State. Apart from thrift, micro finance loan is provided at 6 percent interest rate to the SHGs through respective cooperative societies in which these groups are members. Some of the major programmes of Matsyafed and its financial achievement during 2012-13 are depicted in Table 2.4.

Table 2.4 Programmes of Matsyafed during 2012-13

No	Name	Physical Achievement	Financial Achievement (in Rs. Lakhs)
1	Fish Auction	44856	32905
2	Integrated Fisheries Development Project	7500	2931.12
3	Motorization of country crafts	400	40
4	Bankable Scheme	262	50
5	Subsidy for suitable complements of fishing gear	833	50
6	Matsyafed Input Security Scheme	37	6.69
7	Scheme with financial Assistance of NBCFDC and NMDFC	879	998.6
8	SHG's	47550	5997.88
9	Interest Free Loan for Fisher Women	24740	2609.3

Source: KSPB, 2014

The administration and management of Matsyafed is vested with the Board of Directors having 25 members of whom 15 are elected from the primary co-operatives, 7 official members and 3 non-official members nominated by the State Government. The Chief Executive Officer is the Managing Director. There are district offices in the maritime districts of the state headed by the District Manager. The management of the societies is done by the filed officer and cluster officer. The field officer provides guidance and support to the fisher folks with regard to various plans and development programmes and also plays an active role in implementation of projects. The main objective of Matsyafed is to carry out activities for the overall development of fishermen community. Various welfare activities of Matsyafed for the socio-economic development of fisher folk are discussed in this section.

2.2.1 Beach level Auctions/Control over First Sale

This system is developed to enable the traditional fishermen to have control over first sale of fish and to ensure that the fisher folk get a reasonable price for their catch and to curb the fall in price during bulk landing. This system was developed through primary cooperative societies and it has made sure that the fishermen are getting cash-down payment at the beach itself through the primary co-operatives. The procurement of high value and bulk quantity fish through primary societies is done by the seafood exporters. Timely assistance for replacement of fishing inputs as well as for working capital requirements is also assured by the Matsyafed.

2.2.2 Integrated Fisheries Development Project (IFDP)

IFDP is a 90 percent Centrally Sponsored Scheme implemented in 1984 with the assistance of the National Cooperative Development Corporation (NCDC). Since the amendment of the NCDC Act in 1974, the Corporation has been pivotal in promotion and development of the fisheries cooperatives.

Box 2.5 Objectives of the IFDP

- To provide a mix of service to member fishermen through the Primary societies for the sustainable maintenance of fishing units.
- Intervention in the secondary marketing chain and better realization for the produce of the member fishermen.
- To provide necessary infrastructure facilities to the primary co-operatives to support and tackle the more organized market forces.
- To develop the Primary Co operatives as self-reliant profit centers through service marketing.
- To generate more employment opportunities for women in fishing communities.
- To create awareness among members in social participation and Institutionalization

Source: Director of Fisheries, 2014

The loan which is distributed through the societies affiliated to the Matsyafed is provided for procuring fishing implements such as Craft, Out Board Engines and Webbings in kind, infrastructure facilities for fish marketing and processing to the primaries for the benefit of member fishermen and Working Capital for fish vending and Marketing. Eliminating the role of the middle men in supplying fishing inputs is the main role of this programme. The objectives of the IFDP are depicted in Box 2.5.

Table 2.5 Fund Allocation for IFDP through Matsyafed

No	Scheme	Period	Outlay (in Rs. Lakhs)
1	IFDP-Phase I	1985-86 to 1990-91	555.84
2	IFDP-Phase II	1987-88 to 1993-94	1034.28
3	IFDP-Phase III	1991-92 to 1996-97	4228.68
4	IFDP-Inland	1998-99 to 1999-2000	636.37
5	Fish Marketing Centre	1998-99 to 2000-01	339
6	IFDP 1998-99	1998-99 to 1999-2000	1989.75
7	IFDP 1999-2000	1999-2000 to 2000-01	1690
8	IFDP 2000-01	2000-01 to 2001-02	1634.85
9	IFDP 2001-02	2001-02	2702.5
10	IFDP Project Matsya	2003-05	2458
11	IFDP 2006-07	2006-08	1504.5
12	IFDP 2007-08	2009-11	3402
13	IFDP 2010-11	2010-11	3550.2
14	IFDP 2011-12	2012-13	3153.82
15	IFDP 2012-13	2013-14	3134
Total			32013.79

Source: Director of Fisheries, 2014

Inputs are provided at a subsidized rate and a nominal interest is charged from the fisher folks. The total dues amounting to Rs. 115 crores (interest and penal interest) have been set off by the state government in the debt relief scheme. An amount of Rs. 54 crores was converted to 100 percent share capital in Matsyafed by the state government. 25 percent of subsidy for fishing inputs is available from Department of Marketing and Infrastructure

from IFDP 2012-13. The details of expenditure under Integrated Fisheries Development Projects implemented in Kerala are given in Table 2.5. Total outlay of the project is Rs. 32013.79 lakhs during 1985-2013. Rs. 339 lakhs was allotted for fish marketing centres during 1998-2001, whereas the IFDP Project Matsya got a fund allocation of 2458 lakhs during 2003-05.

2.2.3 Fishermen Personal Accident Insurance Scheme

The insurance scheme for the fisher folk is implemented by the Matsyafed through the approved insurance companies by the IRDA. A nominal amount is collected from the fisher folks who are members of cooperative societies as insurance premium. The compensation is paid to the dependents of the fishermen.

2.2.4 Matsyafed Input Security Scheme (MISS)

The scheme provides compensation to the losses of fishing implements due to accidents and natural calamities. The corpus of this scheme is constituted as a revolving fund by raising funds from different sources including assistance from Government and beneficiary contribution the coverage of the scheme if for 3 years for equipments purchased as part of the loan scheme of the Matsyafed. The fisher folk remit 4 percent of the cost of implements to Matsyafed while availing assistance for fishing implements under the loan scheme of the Matsyafed. The losses/damages sustained will be assessed by the Matsyafed Officials and the compensation will be released to the beneficiaries.

2.2.5 Suitable Components of Fishing Gear

Assistance is provided to the traditional fisher folks for the procurement of fishing gear by passing of subsidy of Rs. 6000 or the cost, whichever is less. The fisher folk is eligible for assistance under this scheme only once and the fishermen having craft with the out board motor of less than 10 HP are eligible for this subsidy. As per Table 2.6, total spending during 1996-2013 was Rs. 279.25 lakhs with 4640 beneficiaries.

Table 2.6 Fund Allocation: Suitable Components of Fishing Gear

Year	Groups	Subsidy (in Rs. Lakhs)
1996-97	83	5
1997-98	165	10
1998-99	0	0
1999-00	334	20
2000-01	255	15
2001-02	250	15
2002-03	116	7
2003-04	0	0
2004-05	70	4.25
2005-06	50	3
2006-07	0	0
2007-08	167	10
2008-09	333	20
2009-10	650	40
2010-11	667	40
2011-12	667	40
2012-13	833	50
Total	4640	279.25

Source: Director of Fisheries, 2014

2.2.6 Bankable Scheme

The Scheme has been implemented by the Matsyafed since 1988-89. The artisanal fisher folks availing bank loans for the fishing inputs can get a subsidy of 25 percent of the loan amount which is released to the banks by

the Matsyafed. The detailed fund allocation under the scheme since its inception is depicted in Table 2.7. Rs. 333.3 lakhs have been allocated to 1633 groups under the scheme during the period of 1988 to 2013.

Table 2.7 Fund Allocation under "Bankable Subsidy Scheme"

Year	Groups	Subsidy (in Rs. Lakhs)
1988-89	3	10
1989-90	-	-
1990-91	2	-
1991-92	3	10
1992-93	3	-
1993-94	5	5
1994-95	1	5
1995-96	15	10
1996-97	78	20
1997-98	140	20
1998-99	132	20
1999-00	107	14
2000-01	78	10
2001-02	32	7.5
2002-03	8	2.8
2003-04	12	4
2004-05	49	-
2005-06	-	-
2006-07	40	5
2007-08	50	5
2008-09	28	25
2009-10	55	30
2010-11	268	30
2011-12	262	50
2012-13	262	50
Total	1633	333.3

Source: Director of Fisheries, 2014

2.2.7 Modernization of Country Crafts

Modernization/Motorization of Country Crafts is a 50 percent centrally sponsored scheme which provides a subsidy of Rs. 30000 per unit to replace the outboard motors below 10 HP of already motorized crafts.

Table 2.8 Fund Allocation under "Modernization/ Motorization of Country Crafts"

Year	Groups	Subsidy (in Rs. Lakhs)
1988-89	581	16.875
1989-90	-	57.623
1990-91	765	45
1991-92	451	30
1992-93	649	25
1993-94	626	60
1994-95	93	50
1995-96	947	50
1996-97	640	50
1997-98	161	60
1998-99	600	20
1999-00	191	20
2000-01	200	20
2001-02	200	30
2002-03	300	14
2003-04	154	-
2004-05	42	4.25
2005-06	50	5
2006-07	-	-
2007-08	50	5
2008-09	300	30
2009-10	150	15
2010-11	70	7
2011-12	400	40
2012-13	400	40
Total	8020	694.748

Source: Director of Fisheries, 2014

The detailed fund allocation under this scheme during 1988-2013 is depicted in Table 2.8. Since 1988-89, 8020 groups have been given assistance under this scheme and an amount of Rs. 694.748 lakhs was distributed.

2.2.8 Self Employment Schemes

These include term loans and micro finance. Term loans are secured loans advanced to the fisher folks with the financial assistance of National Backward Classes Finance Development Corporation (NBCFDC) and National Minorities Development and Finance Corporation (NMDFC). 85 percent of the loan amount is funded by the NBCFDC/NMDFC at an interest rate of 3.5 percent, 10 percent by the Matsyafed at 6 percent interest and balance 5 percent by the beneficiary. Loan amount per beneficiary is capped at a maximum of Rs. 2 lakhs for a maximum term of 5 years. The term loans are given under: Agriculture and allied including fishing inputs, Technical Trade, Small Business, Artisan and traditional occupation and Transport and Service Sector. The Micro Finance (MF) is given to the fisher folks in the SHGs under the Primary fishermen Co-operatives coming in the purview of Matsyafed. The maximum loan amount is Rs. 10000 for two years at 6 percent interest. Details of fund allocation under the two schemes since the inception have been highlighted in Table 2.9 and Table 2.10. NBCFDC term loan has been given to 13588 beneficiaries since 1995-96. The total contribution by the corporation is Rs. 4197.94 lakhs and that of the Matsyafed is Rs. 490.78 lakhs upto 2013. 597 beneficiaries have availed funding under the NMDFC schemes during 1998 to 2013 with a total spending of Rs. 2849.06 lakhs by the corporation and Rs. 335.2 lakhs by the Matsyafed. As per the 2013 data, 161461 members in 13672 groups in 362 societies have benefitted from the Micro Finance scheme and the total fund utilised is Rs. 24913.35 lakhs.

Table 2.9 Fund Allocation: Term Loan

Year	NBCFDC/NMDFC	Matsyafed	Beneficiary	Total	Beneficiaries
(a) NBCFDC (Contribution Amount in Rs. Lakhs)					
1995-96	40.69	4.79	2.39	47.9	300
1996-97	34.68	4.08	2.04	40.8	290
1997-98	90.01	10.59	5.74	106	836
1998-99	190	19	9.5	219	1365
2000-01	398	46.81	23.85	469	2035
2001-02	283.07	33.3	16.65	333	1192
2002-03	58.07	6.83	3.42	68.3	321
2003-04	31.38	3.69	1.85	36.9	75
2005-06	13.11	1.54	0.77	15.4	36
2006-07	158.93	18.7	9.35	187	296
2007-08	200	23.58	11.79	235	347
2008-09	200	23.58	11.79	235	376
2009-10	600	70.74	35.37	706	3605
2010-11	600	70.6	35.3	706	1539
2011-12	300	35.3	17.65	353	343
2012-13	1000	117.65	58.82	1176	632
Total	4197.94	490.78	246.28	4935	13588
(b) NMDFC (Contribution Amount in Rs. Lakhs)					
1998-99	152.31	17.92	8.96	179	690
1999-00	78.5	9.24	4.62	92.4	471
2000-01	119.34	14.04	7.02	140	595
2001-02	200	23.53	11.76	235	705
2002-03	100	11.76	5.88	118	394
2003-04	150	17.65	8.82	176	365
2004-05	55	6.47	3.24	64.7	131
2006-07	180	21.18	10.59	212	323
2007-08	300	35.29	17.65	353	537
2008-09	150	17.65	8.82	176	299
2009-10	250	29.41	14.71	294	369
2010-11	413.91	48.7	24.35	487	597
2011-12	350	41.18	20.58	412	426
2012-13	350	41.18	20.6	412	300
Total	2849.06	335.2	167.6	3352	6202

Source: Director of Fisheries, 2014

Table 2.10 Micro Finance Scheme

Societies availed MF	Groups			Members			Amount (Rs. Lakhs)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
362	1643	12029	13672	21349	140112	161461	1986.61	22926.74	24913.35

Source: Director of Fisheries, 2014

2.2.9 Tsunami Emergency Assistance Project (TEAP) and Tsunami Rehabilitation Programme (TRP)

The scheme has been implemented by the Matsyafed since January 2005 by meeting the input costs of Rs. 13 crores. Other projects include Fish Kiosk, Vehicle for fresh fish marketing, working capital for revolving fund, seafood kitchen, repair and replacement of marine fishing inputs, introduction of LPG Kit, OBM repair unit, etc.

2.2.10 Educational Loans

Educational loans are funded by the NBCFDC/NMDFC. Loan is provided for the children from fisher folk households for pursuing professional courses. Maximum loan amount is Rs. 2.5 lakhs at an interest rate of 3 percent for a period of 5 years after course completion.

2.2.11 Women Empowerment Programme

Major women empowerment programmes of Matsyafed include Ornamental Fishery Development Scheme, Production and marketing of value added fishery products from trash fish and Production and Marketing of Value Added Fish and Fishery Products, training programmes, etc.

2.2.12 Special Bus for Fisher women Vendors (Vanitha bus)

Women fish vendors face manifold issues in travelling with fish in public buses. Initially the landing centres were village based near the sea shore itself. Sale was also limited to the places near to the fishing village. Present centralized landing system has made the problem of fisher women more intense. They need to traverse long distance to reach the landing centres to procure fish. They are usually not allowed to travel in public transport with fish baskets. This has been a major problem in their livelihood activities.

Matsyafed is operating buses at nominal rates for transporting fisherwomen vendors in various routes as a resolution to this problem. They are picked up from selected landing centers and transported to the various market places and back.

The dynamics of fisheries development in Kerala in the aforementioned two sections shows differing effects in various phases in various vicissitudes in output with actions, reactions and counter reactions. One can very well visualize the initial reaction comes from the part of the traditional fishermen in the form of motorization of the traditional sector with outboard motors for survival. By and large, with this reaction they have regained the lost control of the labour power in as much as the action taken by the mechanized powerful group for profit making in the sector. The action of the mechanized lobby has been unabated consummating to a much wider counter reaction by introducing much more harmful fishing gears than used by the mechanized sector culminating to a paradoxical situation 'traditional sector becomes a threat to the mechanized sector'. The nuances of this form of reactions have wider ramification in Kerala fishery paving the way for uneconomic fishing operations ecological damage and the concomitant sustainability implications. This has also culminated in the development of institutional linkage to the fishing sector through Matsyafed and associated dynamics. Soon this institutional set up has derived and developed several welfare schemes for the fisher folks. Fund allocation under this scheme is impressive. The schemes are mainly for the overall welfare and livelihood security of the fisher folks.

Chapter 3
Livelihood Options and Socio-economics of Fisher folk in Kerala

Severe resource depletion and clamour for management options have prompted the policy makers to develop policies appropriate for conservation like the trawl ban becomes the content of Chapter 2. Chapter 3 gives an insight about the socio-economic and demographic profile of the fisher folk vis-à-vis their living standards on an inter-regional basis.

3.1 Religion and Social Category

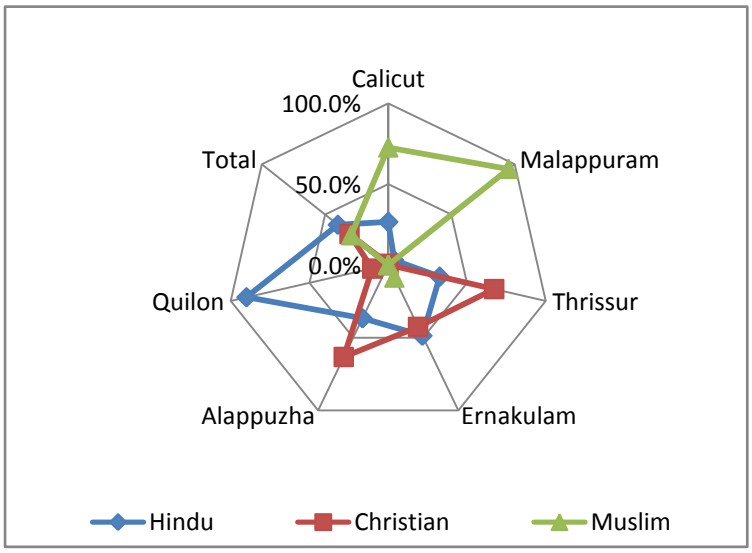
Religious affiliation of the fisher folks in the six regions is given in Table 3.1 and Figure 3.1. Overall, Hindus constitute about 40 percent of the respondents, Muslims 30 percent and Christians about 30 percent. Muslims constitute majority in the north zone districts of Malappuram (95.3 percent) and Kozhikode (72.6 percent) whereas in Kollam, Hindus are the majority. In Alappuzha (63.3 percent) and Thrissur (67.3 percent) the Christian community form the majority.

Table 3.1 District wise Religious Affiliation

	Religion (in percent)			
District	Hindu	Christian	Muslim	Total
Kozhikode	26.7	0.7	72.6	100.0
Malappuram	4.7	0.0	95.3	100.0
Thrissur	32.7	67.3	0.0	100.0
Ernakulam	48.6	42.7	8.7	100.0
Alappuzha	36.7	63.3	0.0	100.0
Kollam	90.0	10.0	0.0	100.0
Total	39.9	30.7	29.4	100.0

Source: Survey data

Figure 3.1 District wise Religious Affiliation



Source: Worked out from Table 3.1

It is clear from the results that there is a significant regional difference in religious category of the fisher folk which is also reiterated with the aid of Chi-Square results in Table 3.2.

Table 3.2 Chi-Square Tests: District and Religious Category

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	859.645[a]	10	.000
Likelihood Ratio	956.458	10	.000
Linear-by-Linear Association	358.659	1	.000
N of Valid Cases	900		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 44.17.

Table 3.3 and Figure 3.2 give a description of social category of the fisher folks. Latin Catholic (29.9 percent), Mapilla (29.4 percent) and

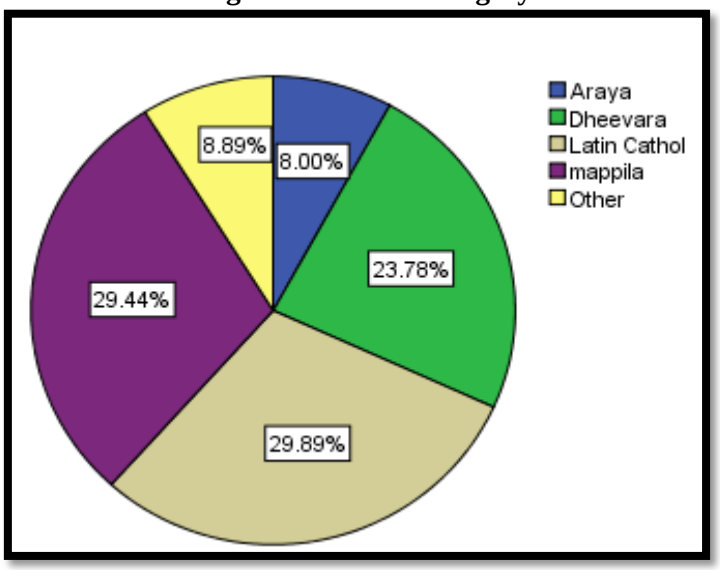
Dheevara (23.8 percent), respectively are the major social or caste groups of the fisher folks surveyed. Other social groups include Araya, Ezhava, Mukkuva, etc.

Table 3.3 Social Category

Caste	Percent
Araya	8.0
Dheevara	23.8
Latin Catholic	29.9
Ezhava	3.0
Syrian Catholic	0.8
Pulaya	0.9
Mappila	29.4
Mukkuva	4.2
Total	100.0

Source: Survey data

Figure 3.2 Social Category



Source: Worked out from the Survey data

3.2 Gender and Age

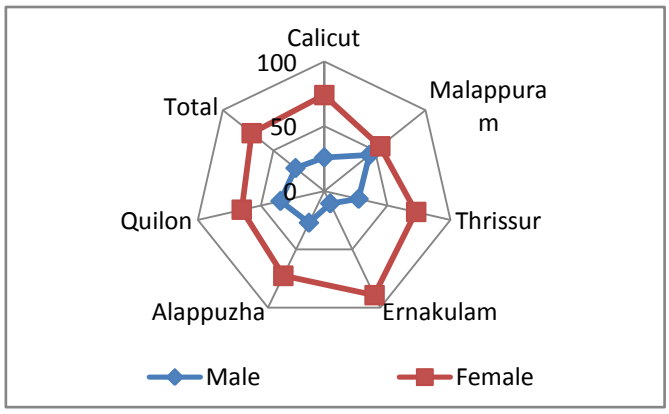
Except for Malappuram district, gender ratio among the fisher folks favours females. The percentage of females is less in Malappuram i.e. 44.7 percent compared to the overall percentage of 71.6 percent. Ernakulam district is more skewed towards females (nearly 90 percent). This indicates that while the females are the majority in most of the districts, their participation in fishery related SHG activities is comparatively less in Malappuram District.

Table 3.4 Gender of the Respondents

District	Gender (in percent)		Total
	Male	Female	
Kozhikode	26.0	74.0	100.0
Malappuram	44.7	55.3	100.0
Thrissur	27.3	72.7	100.0
Ernakulam	10.7	89.3	100.0
Alappuzha	27.3	72.7	100.0
Kollam	34.7	65.3	100.0
Total	28.4	71.6	100.0

Source: Survey data

Figure 3.3 Gender of the Respondents



Source: Worked out from Appendix 3.2

Hence it can be concluded the Malappuram district is the most gender biased compared to other districts. The detailed results are illustrated in Table 3.4 and Figure 3.3.

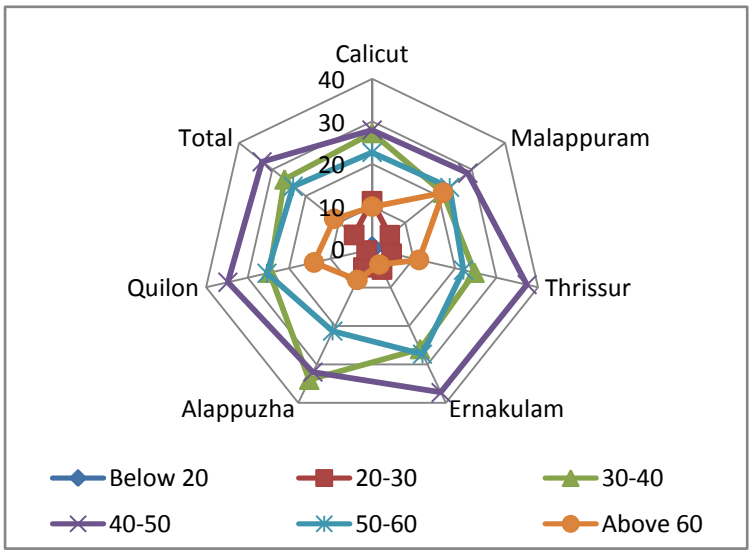
The average age of the respondents is 46.46 years [Table 3.5 (a)]. For males the average age is 51 and for females the average age is 44.

Table 3.5 Area and Age

District	(a) Mean Age			(b) Age Category (in percent)						
	M	F	T	Below 20	21-30	31-40	41-50	51-60	Above 60	Total
Kozhikode	49.62	43.20	44.86	0.7	11.3	27.3	28.0	22.7	10.0	100.0
Malappuram	51.90	46.00	48.61	0.0	5.3	21.3	28.7	23.3	21.3	100.0
Thrissur	54.37	44.00	46.81	0.0	4.7	24.7	37.3	22.0	11.3	100.0
Ernakulam	54.00	44.07	45.13	0.0	5.3	26.0	37.3	27.3	4.0	100.0
Alappuzha	47.02	44.60	45.23	0.0	4.7	34.0	32.0	21.3	8.0	100.0
Kollam	51.17	46.56	48.16	0.0	1.3	24.7	34.7	25.3	14.0	100.0
Total	51.13	44.61	46.46	0.1	5.4	26.3	33.0	23.7	11.4	100.0

Source: Survey data

Figure 3.4 Age of the Respondents



Source: Worked out from Appendix 3.3

Evaluating the age-wise classification [Table 3.5 (b) and Figure 3.4] of the respondents evinces that majority are in the age group of 41 and 50 years i.e. 33.0 percent, followed by 30-40 years (26.3 percent) and 51-60 (23.7 percent). A district wise evaluation also shows similar inferences. However, those above 60 years are comparatively higher in the Malappuram district. It is also pertinent to mention that the percentages of respondents below the age of 20 years are very less in the entire sample. This may be because majority of these age group people are either employed in a sector other than fishing/allied occupation or are students.

Field inferences and discussions with the respondents indicate that most of the youngsters in their household or area are undergoing studies like graduation, plus two, diploma, etc. or are working in the non-fisheries activities. Getting educated is a positive sign for the fishermen community as this is the first and foremost step towards attaining a sustainable livelihood option other than the fisheries sector and the youth will seek for better and attractive avenues of employment after their studies. Also, those between 21 and 30 years are only 5.4 percent, as majority of in this category are employed in other better income earning activities. However, due to the lack of education of the people in this age group, they mainly work as loading and unloading workers, construction workers, etc. which provide them with higher per day wage, but with inconsistent earnings. The overall evaluation of the age category points out towards the disinterest shown by the youngsters in taking up the fishing and allied activities; the main reason for this being the unstable nature of earnings from the fishing sector.

3.3 Educational Qualification

Education is the prelude for social and economic development of an individual. Lack of educational attainment is a major impediment in the socio-economic development of marginalised community like the fishers. This paves the way towards low levels of material attainment. Results reveal the dismal picture of the community in terms of educational attainment. Majority of the fisher folks surveyed have an educational qualification of primary level, upper primary level (43.3 percent and 39.4 percent, respectively) and 10 percent have an education of secondary. Only 4.2 percent of the respondents are higher secondary and above. In Malappuram, 60 percent of the respondents have an educational qualification of primary level and 27.3 percent have a qualification of up to upper primary and 6.7 percent are illiterate.

Table 3.6 Education

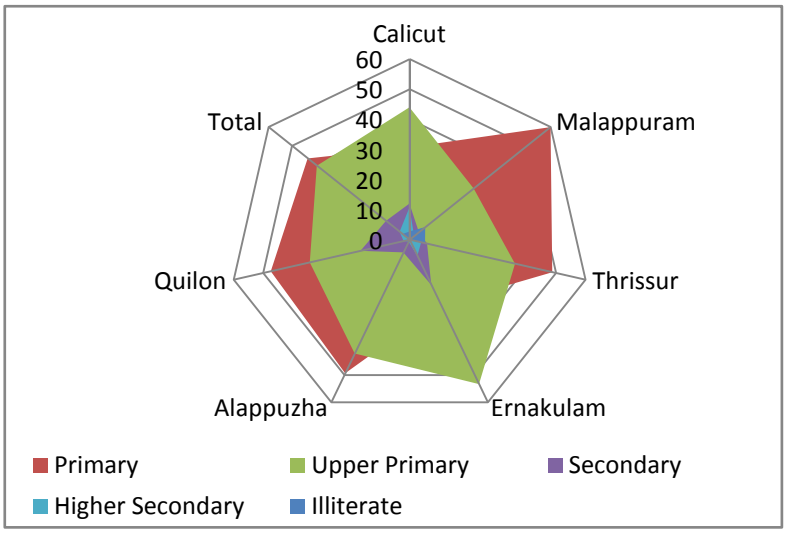
District	Education (in percent)					Total
	Illiterate	Primary	Upper Primary	Secondary	Higher Secondary and Above	
Kozhikode	2.7	30.7	44.0	12.0	10.7	100.0
Malappuram	6.7	60.0	27.3	4.0	2.0	100.0
Thrissur	5.3	48.7	36.0	6.0	4.0	100.0
Ernakulam	0.0	24.0	53.3	16.7	6.0	100.0
Alappuzha	3.3	49.3	42.0	4.7	0.7	100.0
Kollam	0.0	47.3	34.0	16.7	2.0	100.0
Total	3.0	43.3	39.4	10.0	4.2	100.0

Source: Survey data

A total of 66.7 percent respondents in Malappuram have educational qualification of primary and less, which is high compared to other districts; whereas the percentage of respondents above the secondary level is only 6

percent in Malappuram which is lower compared to other districts. Ernakulam has the lowest percentage of respondents with an educational level of less than primary i.e. 24 percent. Illiteracy level among the fisher folks in Ernakulam and Kollam are zero.

Figure 3.5 Educational Profile



Source: Worked out from Appendix 3.4

Comparatively better educational traits in the urban centres may be due to the better access to the educational institutions. District-wise data evinces a clear variation in formal education level between six districts the results of which are shown in Table 3.6 and Figure 3.5.

3.4 Livelihood and Income

The employment, livelihood and income play a pivotal role in determining the socio-economic contour of an individual as well as overall welfare of the household. Main issue among the fishers is the fluctuating income levels depending on the season, availability and catch. Apart from the

demand and supply of fish resources, the income also depends on value or market price of the catch. Major activities of the fisher folk community can be broadly classified into pre-harvest, harvesting and post-harvest. Detailed representation of various actors along with their activities is portrayed in Table 3.7.

Table 3.7 Major Activities in the Kerala Marine Fisheries

Activity	Nature of activity
Traditional*	Include fishing labours, owners using artisanal crafts and gears.
Motorized*	Include fishing labours, owners using motorized crafts and gears. This sector emerged in the early 80's.
Mechanized*	They include craft/boat owners, labourors working in mechanized units, etc.
Allied activities@	This sector includes those working in pre-harvest and post-harvest activities such as net making/repairing, fish vending, peeling, drying, etc.

Note: Sample constitutes those SHG members working in the above sub sectors
* sector employs only male fisher folk; @ Includes both men and women; all the fisherwomen are employed in this sector

Table 3.8 depicts the major activities of the sample fisher folks. Out of the SHG members, 80.1 percent are engaged in allied activities. They mostly work as fish vendors, marketing of dried and fishery products, etc. There is a difference in the gender and activity status of the fishers. Gender-wise classification of activity shows that men work in fish harvesting activities in mechanized, motorized and non-motorized sectors (69.9 percent) and the remaining 30.1 percent work on allied sectors. Female fishers in toto are working in allied sectors such as fish vending, sale of fishery products, SHG activity, etc.

Table 3.8 Gender-wise Activity of Fisher folks

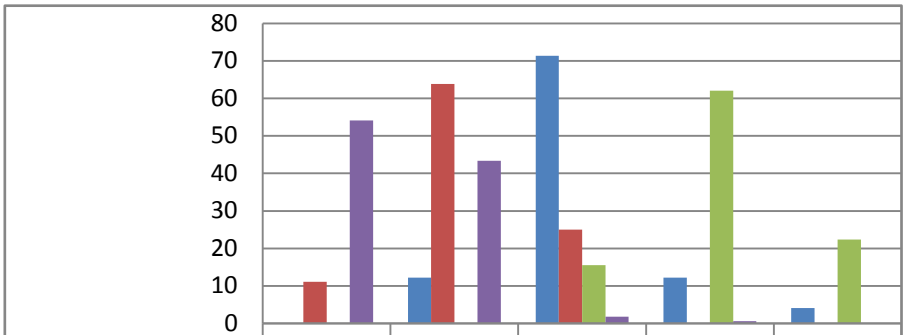
Gender	Activity (in percent)				Total
	Motorized	Non-motorized	Mechanized	Other activities	
Male	19.1	28.1	22.7	30.1	100.0
Female	0.0	0.0	0.0	100.0	100.0
Total	5.4	8.0	6.4	80.1	100.0

Source: Survey data

3.4.1 Individual Income

Apart from the occupational attachment and lack of skill set and finance, low income is yet another issue among the fisher folk. Here an attempt is made to evaluate the individual income and household income as well as the expenditure of the respondents. The section also tries to situate how individual income determines household income and household expenditure. Majority of the fisher folks have an income of below Rs. 3000 and those with an income of over Rs. 4500 form a small part of the sample. The income categories of the fishers vary based on activity as more than 85 percent of the fisher folks in mechanized sector have an income of Rs. 4500 and above and none have an income below Rs.3000. Majority (about 71 percent) of motorized sector fishers have an income between Rs. 3001-4500. A major portion of the non-motorized fisher folks have an income between Rs. 1501-3000. The situation of fishers working in the other allied sectors is dismal in that more than 90 percent of the fisher folks have an individual income of less than Rs. 3000, out of which the percentage of respondents with an income of below 1500 are 54 percent. Majority having an individual income of more than Rs. 6000 are from the motorized and mechanized sectors.

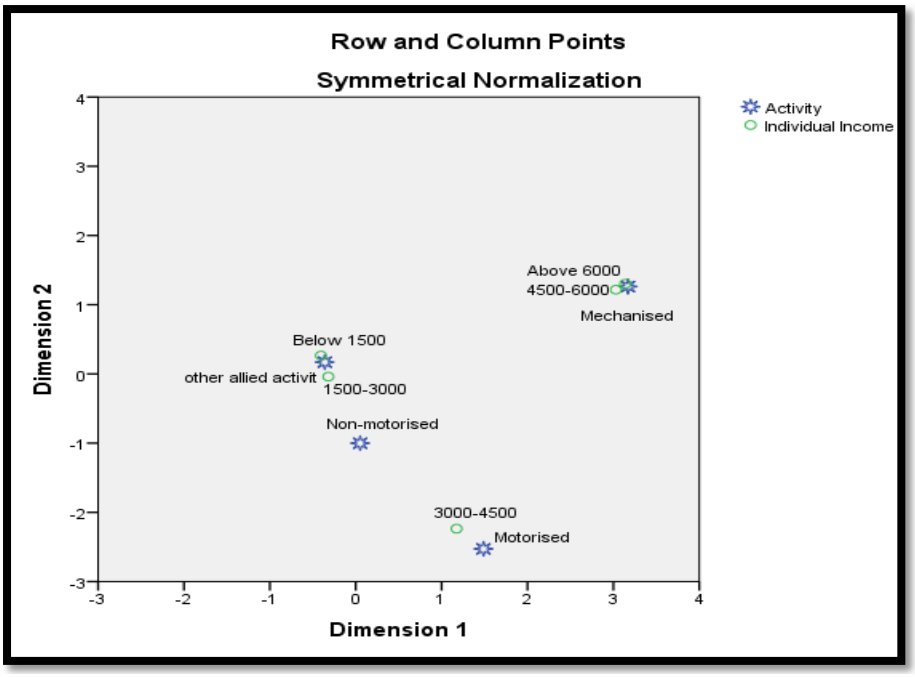
Figure 3.6 Activity and Individual Income Category



	Below 1500	1501-3000	3001-4500	4501-6000	Above 6000
Motorized	0	12.2	71.4	12.2	4.1
Non-motorized	11.1	63.9	25	0	0
Mechanized	0	0	15.5	62.1	22.4
Other allied activities	54.1	43.4	1.8	0.6	0.1

Source: Worked out from Appendix 3.5

Figure 3.7 Correspondence Chart: Activity and Individual Income Category



Source: Worked out from the Survey data

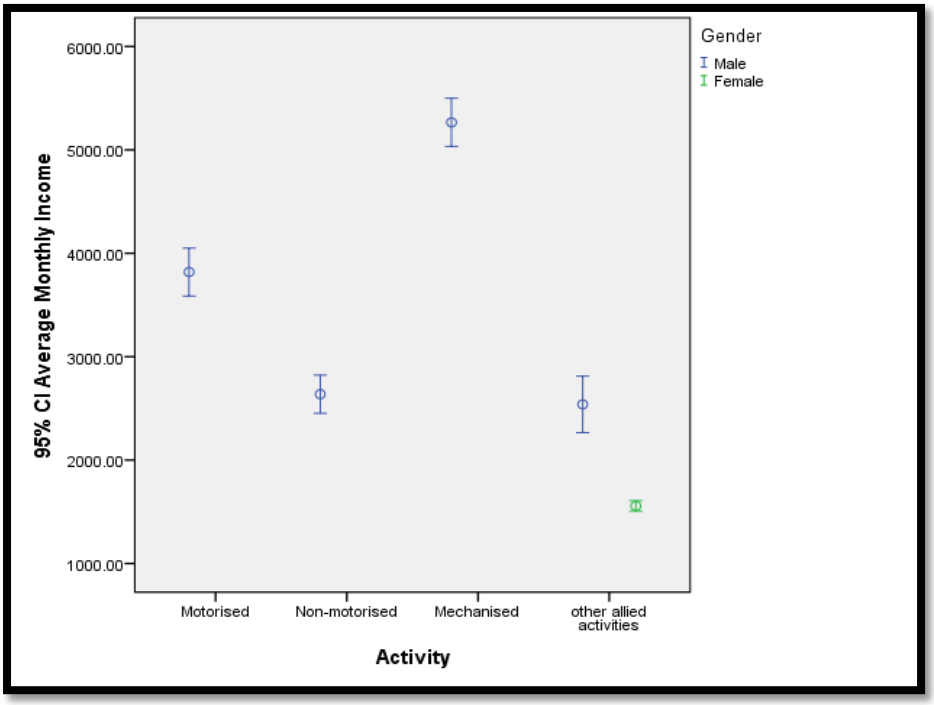
The activity-wise difference in the income category is evident from Figure 3.6, Figure 3.7 and significant Chi-Square results in Table 3.9.

Table 3.9 Chi-Square Tests: Activity and Individual Income Category

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	982.503[a]	12	.000
Likelihood Ratio	603.015	12	.000
Linear-by-Linear Association	247.217	1	.000
N of Valid Cases	900		

a. 8 cells (40.0%) have expected count less than 5. The minimum expected count is .87.

Figure 3.8 Gender-wise Activity and Individual Income



Source: Worked out from the Survey data

Average monthly income of the respondents based on activity and gender is depicted in Figure 3.8. It can be inferred from Figure 3.8 and

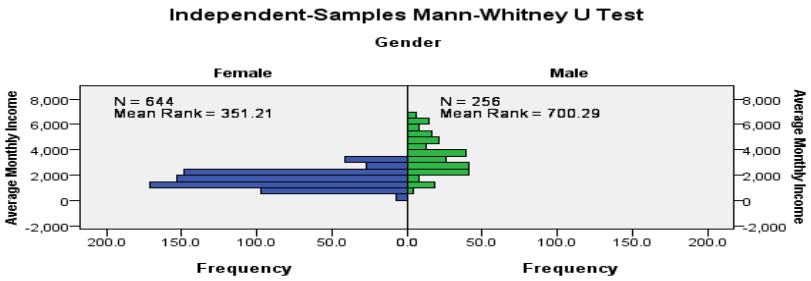
Appendix 3.6 that Motorized fisher folks draw an average income of Rs.3818.84, Non-motorized groups draw an average income of Rs. 2637.50 and Mechanized groups draw about Rs. 5266.17. The average monthly income of fisher folks engaged in pre-harvest and post-harvest allied activities such as net making, peeling, fish vending, sales, etc. as well as those with other activities is about Rs. 1661.30.

Figure 3.9 Mann-Whitney U test: Individual Income and Gender

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Average Monthly Income is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



Total N	900
Mann-Whitney U	18,486.500
Wilcoxon W	226,176.500
Test Statistic	18,486.500
Standard Error	3,509.649
Standardized Test Statistic	-18.220
Asymptotic Sig. (2-sided test)	.000

Source: Worked out from the Survey data

Females in this sector earn an average of Rs. 1556.35 per month and Males earn an average income of Rs. 2539.12. Overall, there is significant

gender wise variation in the average monthly income as income of females is Rs.1556.35 whereas that of males is Rs. 3429.58. To further identify whether there is any difference in the distribution of monthly income across gender; Mann-Whitney U test is used. The null hypothesis "the income levels are same irrespective of gender" is rejected at 5 percent significance. The test results are depicted in Figure 3.9.

Table 3.10 ANOVA: Activity and Individual Income

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	885648933.250	3	295216311.083	459.304	.000
Within Groups	575901446.229	896	642747.150		
Total	1461550379.479	899			

ANOVA is run to identify whether there exists any occupation-wise difference in the individual earnings of the fishers. The results are statistically significant (Table 3.10) and hence it can be hypothesized that there is difference in mean income values based on activity of the fisher folks.

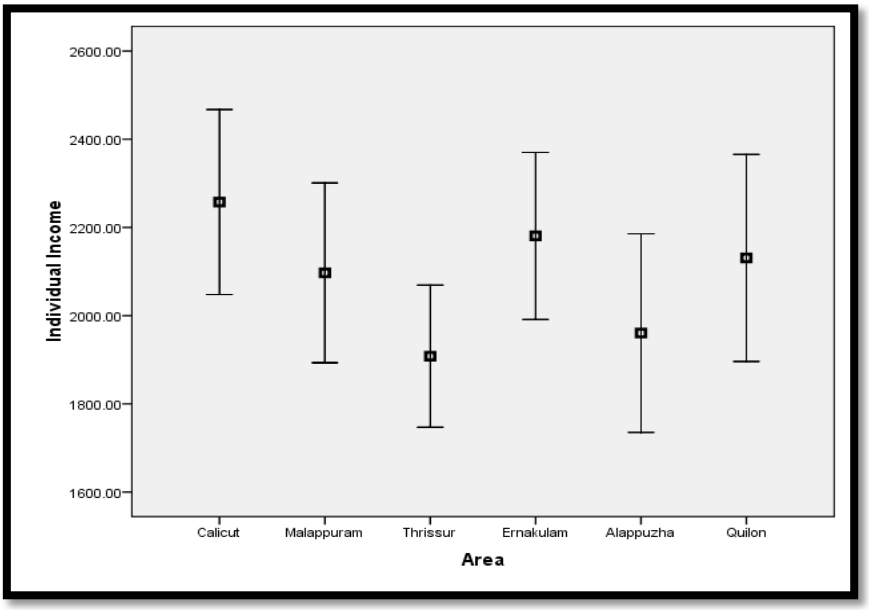
However, the ANOVA results do not throw light into which mean value is different, to identify this, Duncan's test is used (Table 3.11). It is evident from the results that the means of the group are not homogenous subsets. All the four activity groups are heterogeneous as resembled by the means. Hence the null hypothesis that "the income levels are same irrespective of activity" is rejected.

Table 3.11 Duncan Test: Activity and Individual Income

Activity	N	Subset for alpha = 0.05			
		1	2	3	4
Other allied activities	721	1661.3065			
Non-motorized	72		2637.5000		
Motorized	49			3818.8367	
Mechanized	58				5266.1724
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 75.578.
b. The group sizes are unequal. The harmonic mean of the group sizes is used.

Figure 3.10 District and Individual Income



Source: Worked out from the Survey data

Region-wise evaluation of the monthly income shows that the urban centres like Ernakulam, Kollam and Kozhikode have higher income than the rural belts. One reason may be that modernisation and mechanization has been concentrated in these areas compared to centers like Malappuram,

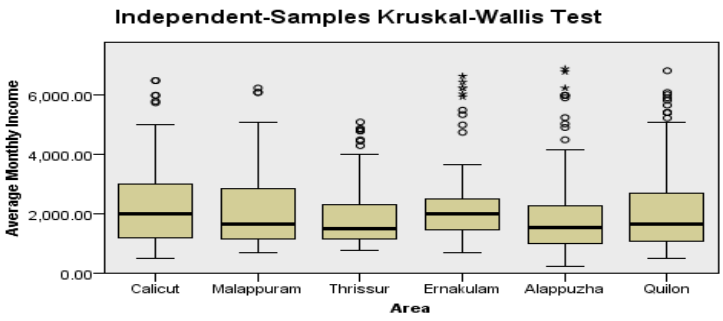
Thrissur and Alappuzha. While the total average income is Rs. 2089.18, average income is the highest for Kozhikode (Rs. 2257.58) and the lowest for Thrissur (Rs.1908.11). Malappuram has the highest average monthly income compared to other rural centers, mainly due to the higher proportion of males and as percentage of males is high, it is obvious that the average income will also be higher and hence this discrepancy in income. Error plot in Figure 3.10 shows that in all the districts, there is some variation in individual incomes.

Figure 3.11 Kruskal-Wallis Test: District and Individual Income

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Average Monthly Income is the same across categories of Area.	Independent-Samples Kruskal-Wallis Test	.018	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.



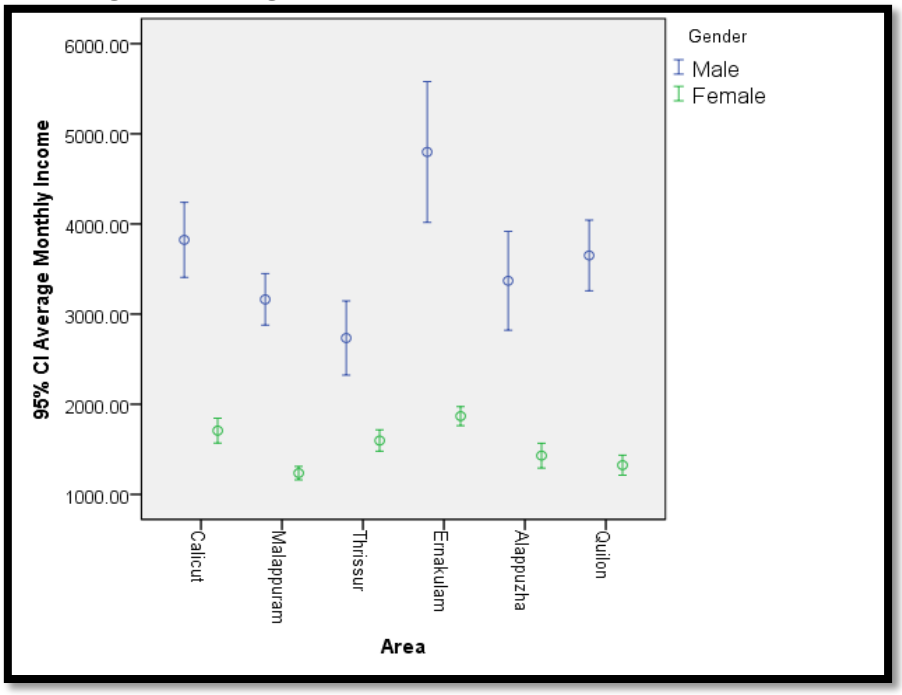
Total N	900
Test Statistic	13.686
Degrees of Freedom	5
Asymptotic Sig. (2-sided test)	.018

Source: Worked out from the Survey data

To further test the hypothesis that the income levels are same irrespective of regions, Kruskal-Wallis Test is used, based on the results of which (Figure 3.11) the null hypothesis is rejected.

Figure 3.12 depicts the district-wise average individual income based on gender. It is clear from the error bars in Figure 3.12 that male income is more spread across a larger area than females. This is because women get more or less same income from most of the activities, whereas income for men varies in proportionate to the nature of activity (e.g. a male working in mechanized may earn more than one working in non-motorized/motorized or allied sectors). Ernakulam has the highest variation in income of males.

Figure 3.12 Region and Individual Income based on Gender

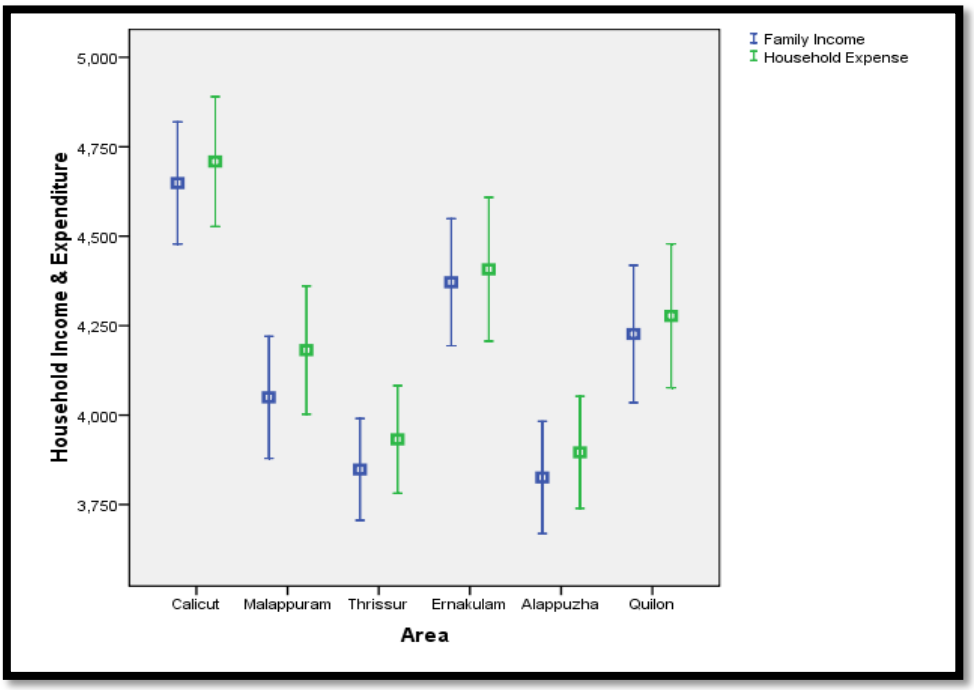


Source: Worked out from the Survey data

3.4.2 Household Income and Expenditure

Average monthly household income and expenditure based on districts is depicted in Table 3.12, and Figure 3.13. Kozhikode has the highest average monthly family income (Rs. 4649), followed by Ernakulam (Rs. 4371) and Kollam (Rs. 4227). The three districts have income higher than the overall average of Rs. 4162. Average monthly family income of Alappuzha, Malappuram and Thrissur are less than the total income.

Figure 3.13 Region-wise Household Income and Expenditure



Source: Worked out from the Survey data

Expenditure also shows a similar pattern with Ernakulam, Kollam and Kozhikode having more than average of Rs. 4234 and the rest of the three districts (Alappuzha, Malappuram and Thrissur) have expenditure less than

the total average expense. However, all the districts have their average family income more than the family expenditure irrespective of the rural urban difference. Another important inference is that northern districts Malappuram and Kozhikode have the highest average family income in the rural and urban categories, respectively, one of the reasons for this is that these regions are highly gender-biased compared to other areas and the individual income level for females are low compared to the male counterparts. It can be further inferred from Figure 3.13 that Kozhikode has the highest average household income and expenditure among all districts. From the overall analysis of the total income and expenditure of the fishermen household, it can be identified that they have an expenditure pattern higher than their income and hence there might be a situation of borrowings.

Table 3.12 Region-wise Family Income and Expenditure

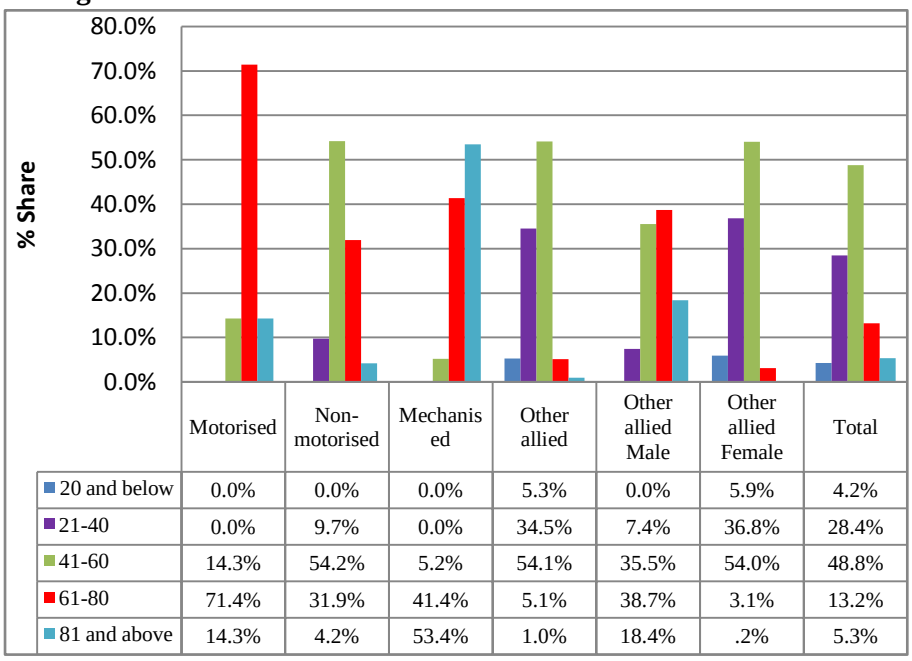
Area	Household Income	Household Expense
Kozhikode	4649	4709
Malappuram	4050	4182
Thrissur	3848	3932
Ernakulam	4371	4407
Alappuzha	3826	3896
Kollam	4227	4277
Total	4162	4234

Source: Survey data

An evaluation of percentage share of individual income on the household income is done in Figure 3.14. Sector-wise comparison evinces that contribution to the household income is more than 65 percent for 85 percent fisher folks in the motorized sector. Majority of fishers employed in

the non-motorized sector has an income share of 41-60 percent. Those working in the mechanized sector contribute above 81 percent (53.4 percent) and between 61-80 percent (41.4 percent), respectively to their household income. Majority (about 54 percent) in the other allied activities contribute 41-60 percent of the household income.

Figure 3.14 Share of Individual Income in the Household Income



	Motorised	Non-motorised	Mechanised	Other allied	Other allied Male	Other allied Female	Total
20 and below	0.0%	0.0%	0.0%	5.3%	0.0%	5.9%	4.2%
21-40	0.0%	9.7%	0.0%	34.5%	7.4%	36.8%	28.4%
41-60	14.3%	54.2%	5.2%	54.1%	35.5%	54.0%	48.8%
61-80	71.4%	31.9%	41.4%	5.1%	38.7%	3.1%	13.2%
81 and above	14.3%	4.2%	53.4%	1.0%	18.4%	.2%	5.3%

Source: Worked out from Appendix 3.7

However, a gender-wise segregation shows that the contribution of females in the household income is less compared to males. Females in the allied sector mainly come in the less than 60 percent category whereas the males are more in the 40-80 percent category. Here it is pertinent to mention based on the sector-wise evaluation of the data that the earnings in the mechanized and motorized sector were more than that of the traditional and

other allied activities. Hence, it can be concluded that higher the earning, the higher is the contribution to the household income and vice versa. Also, another point in this regard is that those contributing less than 20 percent to the household income are very less. This indicates that fishing and related activities are still the major source of earnings for the households. Any setback in individual earnings will adversely affect the household income.

Table 3.13 Correlations: Individual Income and Household Income

		Average Monthly Income	Family Income
Average Monthly Income	Pearson Correlation	1	.913**
	Sig. (2-tailed)		.000
	N	900	900
Family Income	Pearson Correlation	.913**	1
	Sig. (2-tailed)	.000	
	N	900	900

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3.14 Correlations: Individual Income and Household Expenditure

		Average Monthly Income	Household Expense
Average Monthly Income	Pearson Correlation	1	.890**
	Sig. (2-tailed)		.000
	N	900	900
Household Expense	Pearson Correlation	.890**	1
	Sig. (2-tailed)	.000	
	N	900	900

**. Correlation is significant at the 0.01 level (2-tailed).

There exists a strong positive correlation between individual income and monthly household income, which is evident from Table 3.13. Correlation is positive and significant at 0.01 levels. Further, a comparison between individual income and monthly household expenditure show a positive correlation significant at 0.01 levels (Table 3.14). This means that any increase in average monthly income of the individual will bring in an increase in their household income as well as expenditure. Hence it may be noted that the individual income of the respondents is an important portion of the total family income, which, in turn, plays a pivotal role in determining the household expenditure.

3.5 Financial Habits

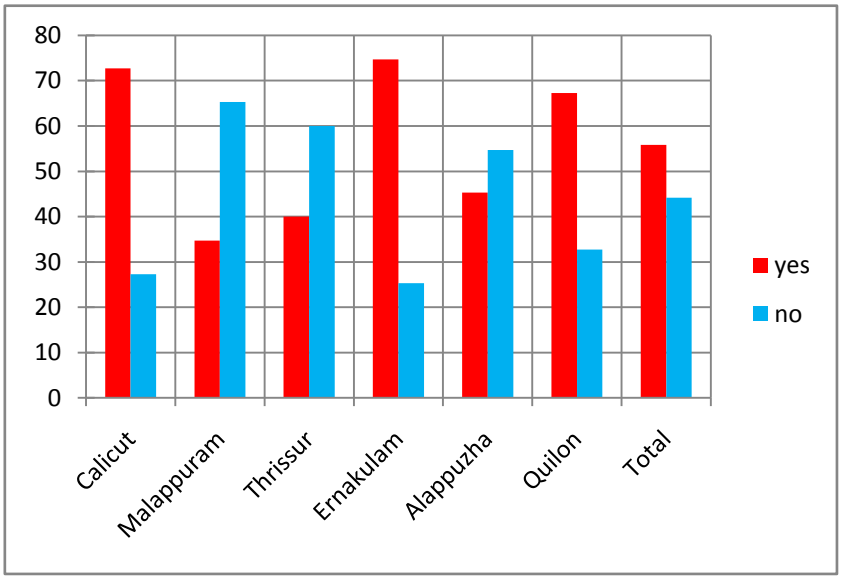
An evaluation of the financial habits of the respondents like bank account, savings, indebtedness, its purpose, etc. are discussed in this section. Such an evaluation will help to situate the financial health of the respondents which is pivotal in determining the financial inclusion.

3.5.1 Holding Bank Account

Possessing a bank account is considered as the first step towards financial inclusion as it would enable and empower an individual in that he/she can access other banking services like savings, loans, etc. While 55.8 percent of the fisher folks have an active saving bank account (Figure 3.15), the percentage holding bank account is lower in rural belts like Malappuram, Alappuzha and Thrissur. Districts like Ernakulam, Kozhikode and Kollam

have a better percentage (74.7 percent, 72.7 percent and 67.3 percent, respectively) of respondents, who hold bank account.

Figure 3.15 Holding Active Bank Account



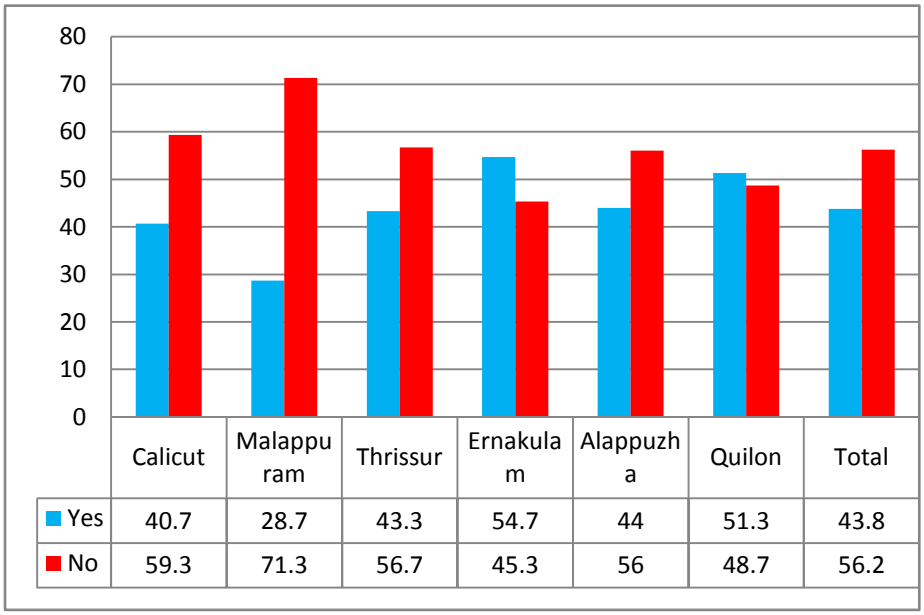
Source: Worked out from Appendix 3.8

3.5.2 Saving Pattern

Savings are pivotal in shaping the financial health of an individual. For communities like the fisher folk, who have risks and uncertainty associated with their occupation, even small amount of savings can be a boon as they can use it during off seasons or in the event of contingency like illness, for purchase or maintenance of equipments, house maintenance, etc. The section does not take into account the thrift account of the respondents with their respective groups as thrift is maintained by 100 percent of the respondents.

Figure 3.16 shows the district wise responses. Overall, 43.8 percent of the respondents exhibit saving habits. As was the case with bank account holdings, there is a rural-urban difference as respondents from Kozhikode (40.7 percent), Ernakulam (54.7 percent) and Kollam (51.3 percent) have a higher percentage of saving habits compared to the rest of the three districts (Malappuram 28.7 percent; Thrissur 43.3 percent; and Alappuzha 44.0 percent). Chi-Square analysis results in Table 3.15 also indicate towards significant difference across the districts in saving pattern of the fisher folks.

Figure 3.16 Regular Savings



	Calicut	Malappuram	Thrissur	Ernakulam	Alappuzha	Quilon	Total
Yes	40.7	28.7	43.3	54.7	44	51.3	43.8
No	59.3	71.3	56.7	45.3	56	48.7	56.2

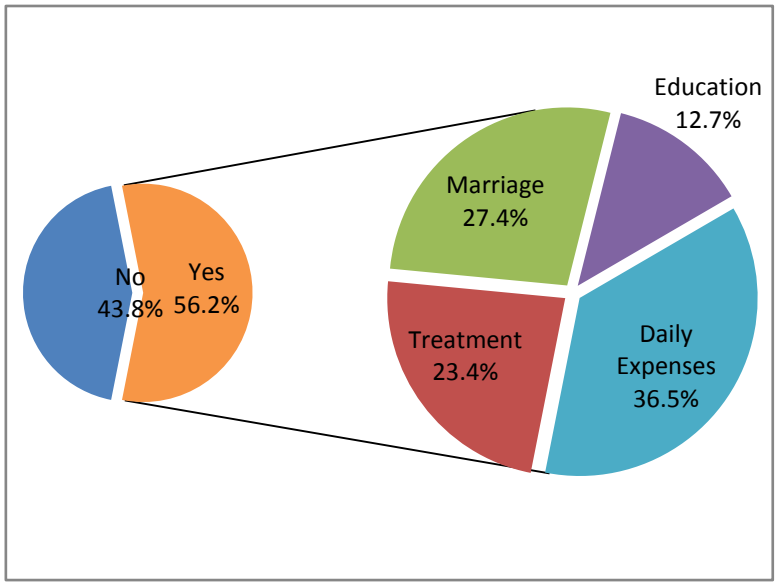
Source: Source: Worked out from Appendix 3.9

Table 3.15 Chi-Square Tests: Savings and District

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.226[a]	5	0
Likelihood Ratio	25.741	5	0
Linear-by-Linear Association	10.651	1	0.001
N of Valid Cases	900		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 65.67.

Figure 3.17 Purpose of Savings

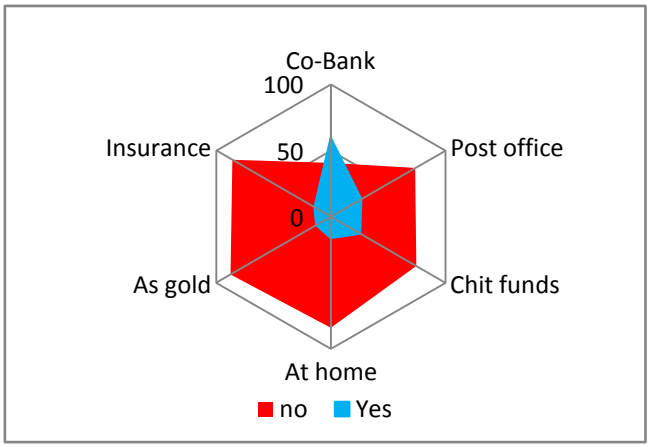


Source: Worked out from Appendix 3.9

The fishers mainly set apart their earnings for daily affairs, marriage or other functions and for health purposes. About 36.5 percent save for the purpose of daily consumption, followed by marriage (27.4 percent), treatment (23.4 percent), and education (12.7 percent). The results are depicted in Figure 3.17.

The respondents were asked to record their opinion on various instruments used by them for saving (Figure 3.18). Majority (59.1 percent) have savings with cooperative banks. 26.4 percent of the respondents have post office savings. 25.4 percent joined chit funds, 16 percent save at home, 14.1 percent buy insurance and 12.5 percent save as gold. There is an irregular pattern in savings mainly due to the fluctuating earnings. Whenever there is an excess from earnings, they try to save some amount. However, as was found in the previous section the savings are mainly utilized for meeting contingencies rather than for investing in their activity. One heartening factor is that the thrift generation is 100 percent for all the respondents. This is also a type of savings where they set apart a small portion of their earnings for future.

Figure 3.18 Type of Savings

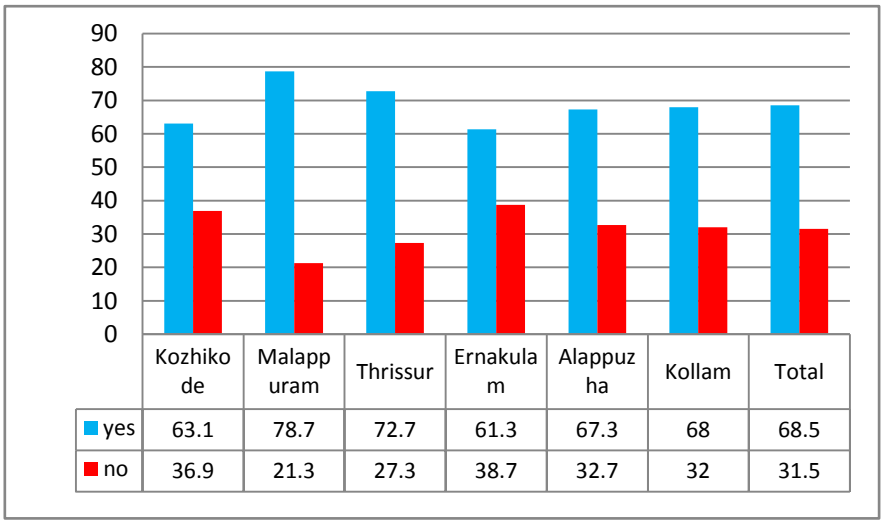


Source: Worked out from Appendix 3.9

3.5.3 Indebtedness

An expenditure pattern surpassing the income would imply that the fishers will have to resort to borrowings. Apart from this is the problem of irregular earnings coupled with erratic savings. This warrants that the fisher will have to resort to borrowings for meeting their expenses and for managing day-to-day household and occupational affairs. Overall, about 69 percent of the fisher folks have indebtedness. Malappuram tops the list of highest percentage of respondents (78.7 percent) with indebtedness, followed by Thrissur (72.7 percent), Kollam (68.0 percent) and Alappuzha (67.3 percent). 61.3 percent of the respondents in Ernakulam recorded to have indebtedness and 63.1 percent in Kozhikode. The region-wise details about indebtedness are depicted in Figure 3.19.

Figure 3.19 Indebtedness



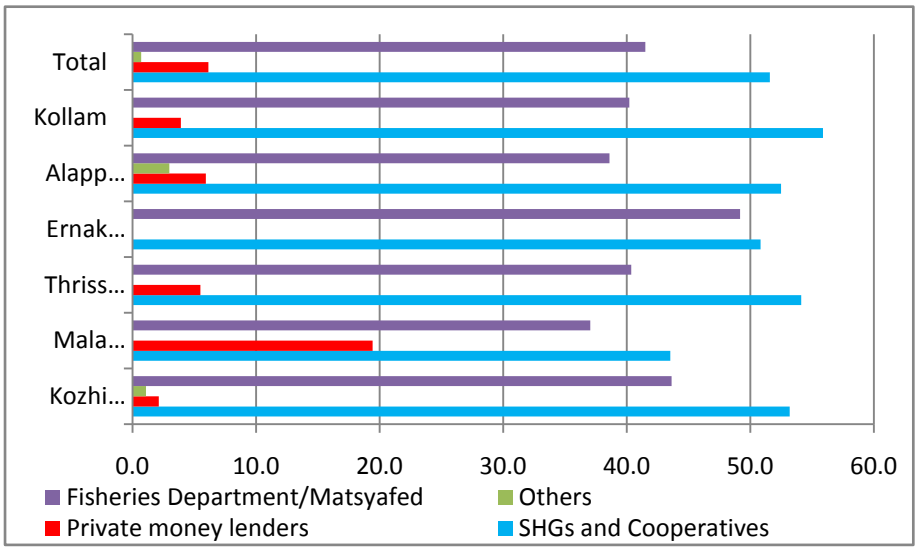
	Kozhikode	Malappuram	Thrissur	Ernakulam	Alappuzha	Kollam	Total
yes	63.1	78.7	72.7	61.3	67.3	68	68.5
no	36.9	21.3	27.3	38.7	32.7	32	31.5

Source: Worked out from the Survey data

Majority of the respondents (51.6 percent) recorded their prime source of debt as SHGs and Cooperatives, followed by Cooperative Banks (41.5 percent). Here, it is pertinent to mention that the groups and societies which they have membership mainly come under the Apex Federation of the Cooperatives in Kerala viz. Matsyafed. Over dependence on private and unorganized money lender for daily needs, purchase of equipment, healthcare, etc. has been termed as a major issue among the fisher folks leading them to financial instability. It is heartening to note that dependence on private money lenders is only 6.2 percent. However, the percentage of respondents depending on money lenders are the highest (19.4 percent) in Malappuram; whereas the percentage of respondents depending on Cooperative Banks are the highest in Ernakulam i.e. 49.2 percent and the lowest in Malappuram (37 percent). It is evident that all districts other than Malappuram show almost same pattern. From the overall analysis of source of indebtedness of the respondents, it is clear that Matsyafed, through the SHGs and Cooperatives has emerged as one of the major sources of debt for the fisher folk, saving them from the clinches of private money lenders. Debt is provided through the SHGs and Cooperative societies for purchase of inputs for fishing, fish vending, etc., under various schemes. The thrift or funds generated from the activities is also advanced to its members at a nominal or in some cases no interest, which is a major boon for the fishers. Main issue experienced while taking loan (for house maintenance/construction or marriage, etc.) for the fisher folk is the lack of collateral and hence rather than approaching scheduled commercial banks who offer attractive interest rate, they often approach cooperative banks

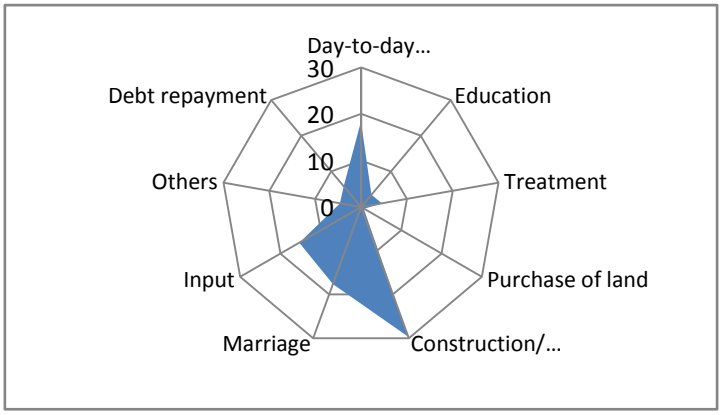
posing heavy interest burden. The detailed results of source of debt are shown in Figure 3.20.

Figure 3.20 Source of Indebtedness



Source: Worked out from Appendix 3.10

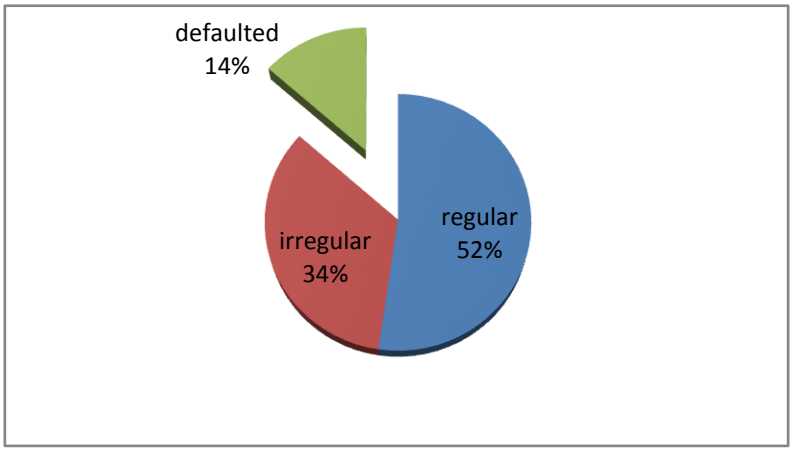
Figure 3.21 Purpose of Indebtedness



Source: Worked out from Appendix 3.11

The results on the purpose of borrowing are depicted in Figure 3.21. The respondents were asked to record the main reason for which they borrowed. The results point out that the fisher folks mainly borrow for construction and maintenance of house (29.6 percent), daily activities (18.4 percent) and marriage (17.3). 15.3 percent borrow to buy inputs/raw materials, 4.6 percent for treatment, 3.5 percent for education and 5.8 percent for repayment of debt. The vulnerability of the fisher folk community may be the reason for taking debt for the purpose of maintenance of house. As most of them reside in close proximity to the sea shore, they are vulnerable of sea attacks during monsoons as well as during a sporadic change in weather conditions. There is very high probability of partial or complete damage of their house, land and even life during stormy and rough seasons. Another reason citied is the inadequacy of government assistance in meeting the expenses of constructing/maintaining their house.

Figure 3.22 Mode of Debt Repayment



Source: Worked out from the Survey data

Field inference shows that the amount borrowed varies based on purpose. For construction and marriage, the fisher folks borrow between 75000-200000 whereas for daily household expenses or for healthcare needs, they borrow between 1000-5000. Hence borrowing amount is generally in a range between 10000 and 200000 rupees. 52.3 percent of the fisher folks who have indebtedness are regular in repaying their installments, whereas 34.2 are irregular. 13.5 percent have defaulted in repaying their debt (Figure 3.22).

3.6 Living Conditions

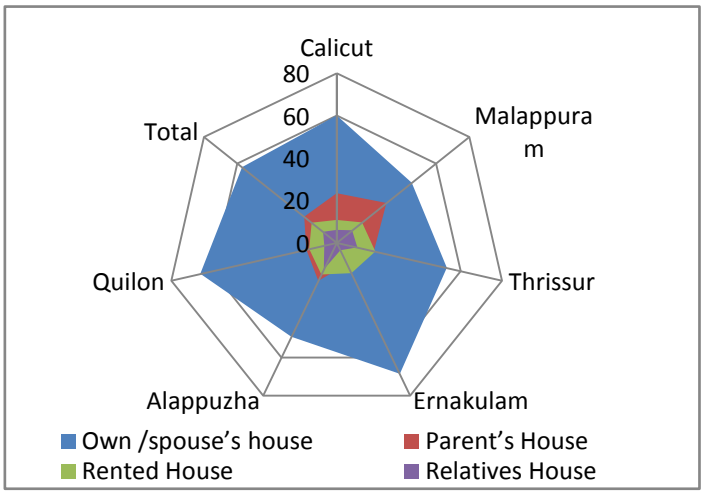
The living conditions of the fisher folks viz. house ownership, condition, area, latrine, drinking water facilities, electrification, etc. are discussed in the section. Evaluating the living conditions provide a clear picture about their standard of the living.

3.6.1 House Conditions

House ownership is a major determinant of the physical assets owned by an individual. Majority of the respondents (57.1 percent) stay in their own/house owned by the spouse, whereas 19.6 percent stay with their parents. 15.1 percent of the fisher folks live in rented house.

District-wise evaluation shows that there is a rural urban disparity in the house ownership as those having their own house are lesser compared to the urban centres like Kozhikode, Ernakulam and Kollam, (Figure 3.23). The significant Chi-Square results in Table 3.16 also confirm the existence of district-wise difference in the house ownership status.

Figure 3.23 House Ownership



Source: Worked out from Appendix 3.12

Table 3.16 Chi-Square Tests: District and House Ownership

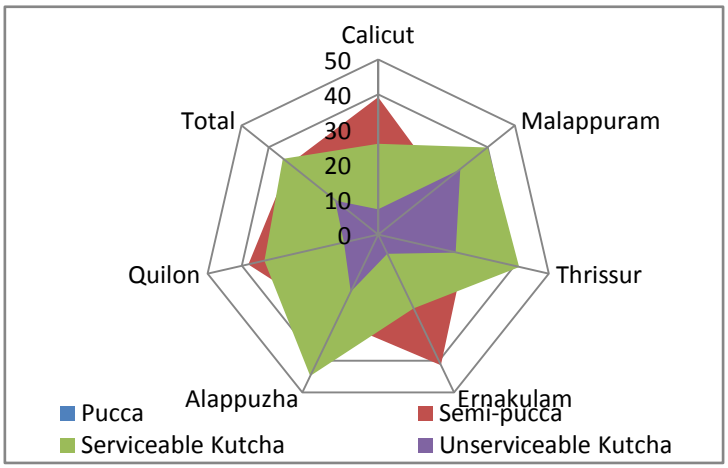
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	43.889[a]	15	.000
Likelihood Ratio	43.781	15	.000
Linear-by-Linear Association	.154	1	.694
N of Valid Cases	900		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.33.

It is a fact that the quality of housing has undergone a drastic change after the mid 80s, particularly after the formation of Matsyafed and other fishery cooperatives *inter alia* various government schemes and programmes as part of the welfare programmes. However, the evaluation of data on house type shows a dismal picture of the fishers as majority live in Kutcha houses (34.8 percent of the sample have serviceable kutcha house and 15.7 percent

live in unserviceable house). 17.1 percent of the total households stay in pucca houses whereas 32.7 percent stays in semi pucca houses. In the house condition as well, there exists a rural-urban disparity which is evident from Figure 3.24 and Chi-Square results in Table 3.17, which is significant. Malappuram has the least percentage of pucca (6.7 percent) and the highest percentage of unserviceable kutcha (30 percent) houses, whereas it is almost reverse in Ernakulam (29.3 percent pucca and 6.0 percent semi pucca).

Figure 3.24 Type of House



Source: Worked out from Appendix 3.13

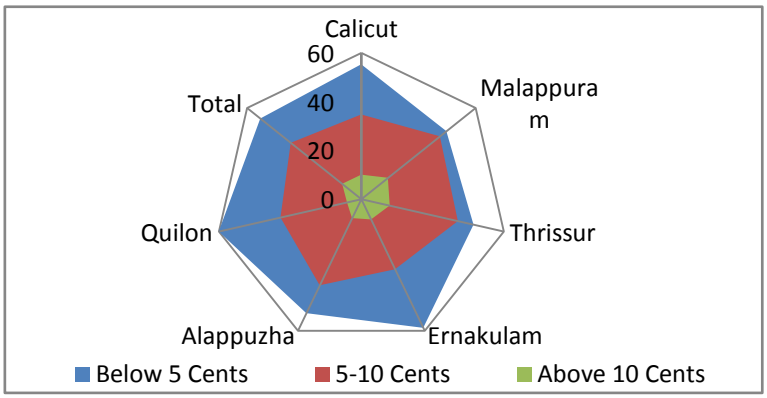
Table 3.17 Chi-Square Tests: District and Type of House

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	114.625[a]	15	.000
Likelihood Ratio	115.957	15	.000
Linear-by-Linear Association	.232	1	.630
N of Valid Cases	900		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 23.50.

The problem of overcrowding in the coastal areas is evident from Figure 3.25 as majority have plot in less than 5 cents of lands. District-wise distribution of the sample also shows similar results. Chi-Square results depicted in Table 3.18 also showed no significant difference between district and area of land holding. However, there is slight variation in the district wise percentages. Here the situation is reverse as the rural centres are showing better land holding pattern than the urban counterparts. This is mainly due to the fact that land is scarce and costly in urban centres. Even though the fisher folks in the rural centres reside in comparatively more land area, land as an asset will have higher value in the urban centres.

Figure 3.25 Area of House



Source: Worked out from Appendix 3.14

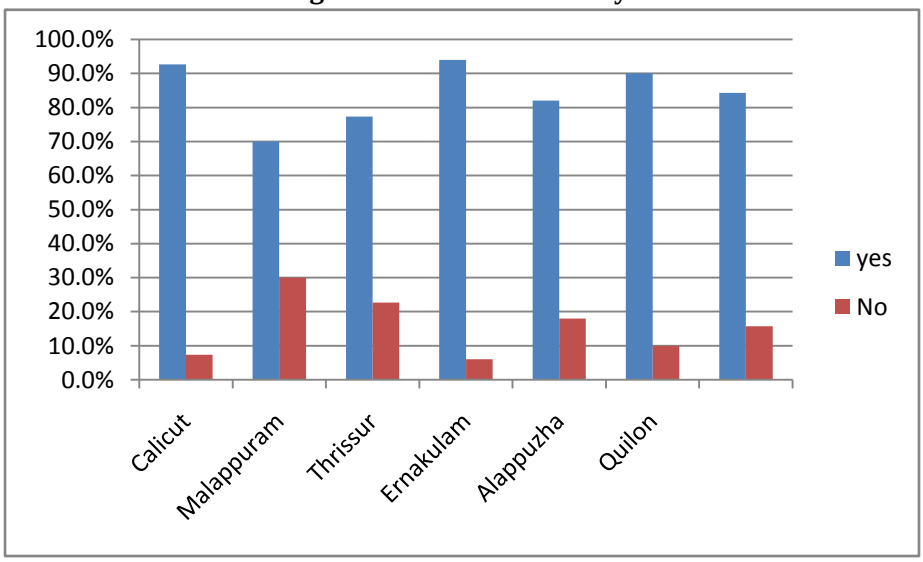
Table 3.18 Chi-Square Tests: District and Area of House

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.212[a]	10	.164
Likelihood Ratio	14.397	10	.156
Linear-by-Linear Association	4.371	1	.037
N of Valid Cases	900		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.00.

.

Figure 3.26 Latrine Facility



Source: Worked out from Appendix 3.15

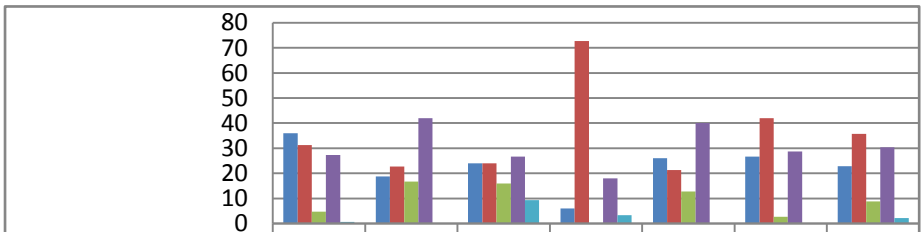
84.3 percent have latrine facility. Households having latrine facility are more than 90 percent in the urban centres. The percentages of households without latrine are the highest in Malappuram district, followed by Thrissur and Alappuzha districts. The results are illustrated in Figure 3.26. The results give an impression that there is a marked improvement compared to the earlier periods. However, the harsh reality is that the latrines are unusable during rainy seasons. Also the latrines are in poor shape with lack of proper roof, water supply, etc. This will have some implications on their health status.

3.6.2 Other Household Amenities

Non-availability of safe and pure drinking water is the most prominent as well as unresolved issue of the fishers in the coastal belts of

Kerala. However, there has been drastic improvement during the recent period. Figure 3.27 shows that 58.6 percent of the total respondents have their own source of water, whereas the remaining (41.4 percent) depend on public sources such as public well, public tap and other sources. It can be further inferred that 78.7 percent of the respondents in Ernakulam have their own source of water whereas the rest (21.3 percent) depend on public sources. The percentage of respondents who depend on own source is 67.3 percent in Kozhikode, 41.4 percent in Malappuram, 48 percent in Thrissur, 47.3 percent in Alappuzha and 68.7 percent in Kollam. Urban centers show larger percentage depending on own sources for drinking water whereas the proportion of respondents depending on public sources is high in rural centers. Irrespective of this, some of the fishing villages only get erratic supply of water through their pipe connections.

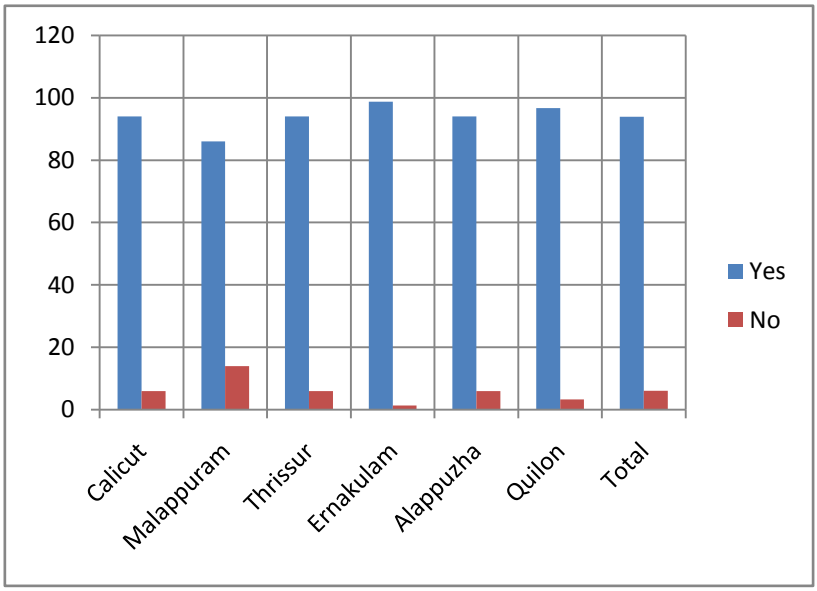
Figure 3.27 Source of Drinking Water



	Calicut	Malappuram	Thrissur	Ernakulam	Alappuzha	Quilon	Total
own well	36	18.7	24	6	26	26.7	22.9
House Connection	31.3	22.7	24	72.7	21.3	42	35.7
Public Well	4.7	16.7	16	0	12.7	2.7	8.8
Public Tap	27.3	42	26.7	18	40	28.7	30.4
Others	0.7	0	9.3	3.3	0	0	2.2

Source: Worked out from Appendix 3.16

Figure 3.28 Electrified House

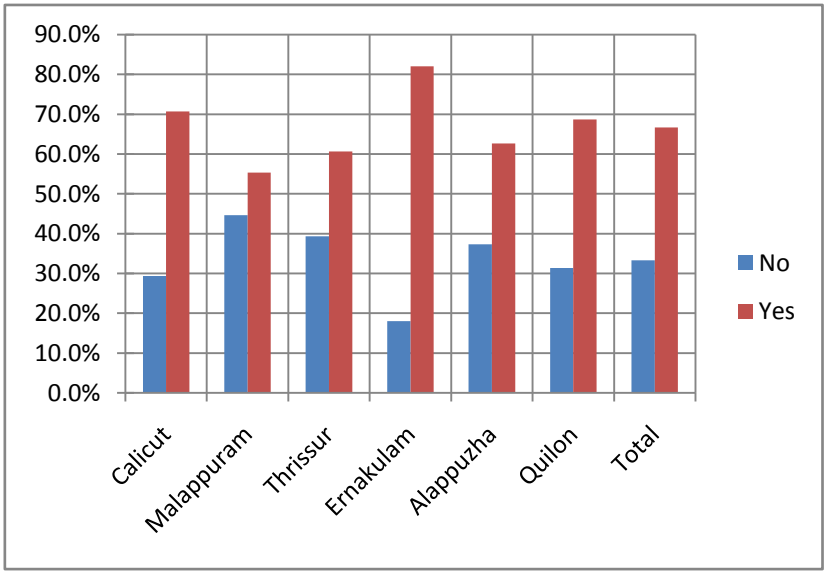


Source: Worked out from the Survey data

More than 90 percent of the household are electrified. However, the electrification rate for Malappuram district is 86 percent. The detailed results are depicted in Figure 3.28 and Appendix 3.19.

It is evident from Figure 3.29 that majority of the households have LPG connections (66.7 percent). LPG is the main fuel used for cooking in majority of the households, followed by wood (Appendix 3.18). Ernakulam has the highest percentage of households who mainly use LPG for cooking (82.7 percent) and lowest percent who use kerosene (1.3 percent) and wood (16.7 percent). Malappuram has the lowest percent of households who use LPG i.e. 55.3 percent and highest who use kerosene and wood 14 percent and 30.7 percent, respectively. Even those with LPG use wood also.

Figure 3.29 LPG Connection

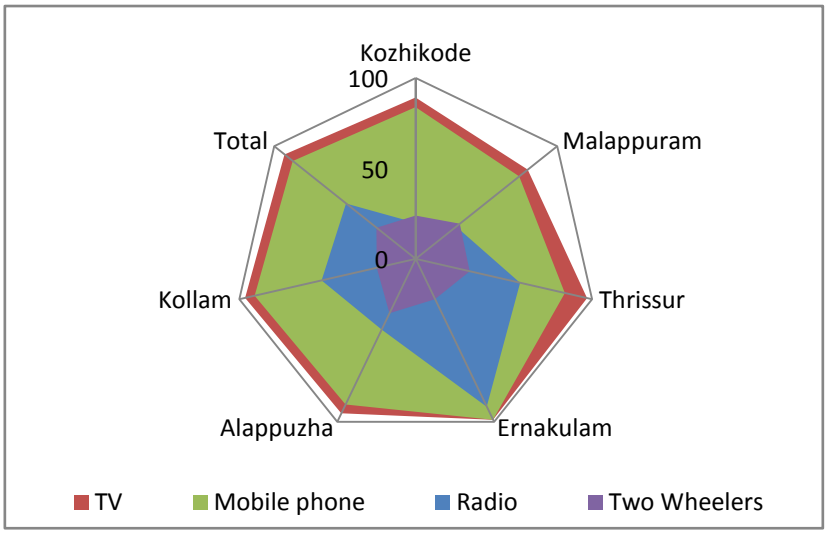


Source: Worked out from Appendix 3.17

3.6.3 Household Assets

Possession of household assets indicates the well being of a household. Income and employment are the major determinants of these household assets. The details of some major articles or assets available with the fishermen households are depicted in Figure 3.30. 49.20 percent have radio, 92.7 percent are having TV, 86.90 percent use mobile phone and 27.70 percent have two wheelers. Except for the rural belts like Malappuram, the percentage is impressive. Overall, those holding costly assets like motor bike or two wheelers are less. Other assets like refrigerator, four wheelers, etc. are also not owned by the fishers.

Figure 3.30 Household Assets



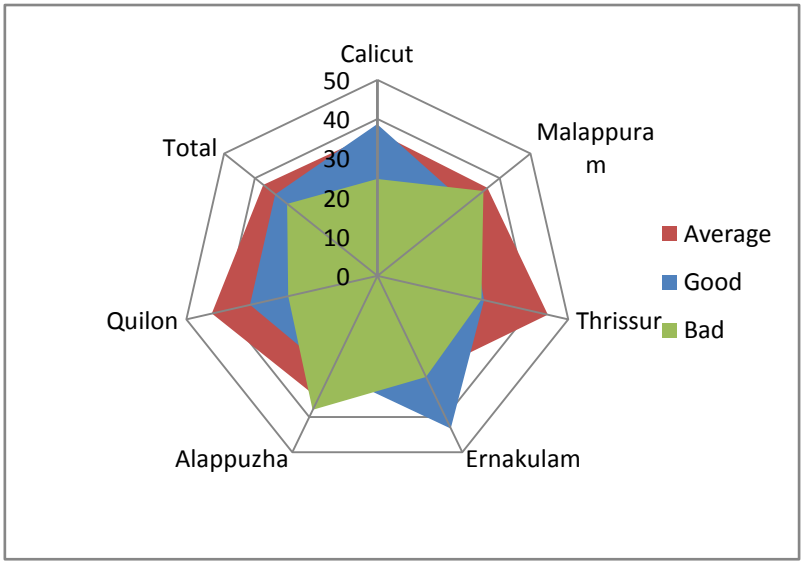
Source: Worked out from Appendix 3.20

3.7 Health Status

Evaluating the health status of the fishers is pertinent in that they are susceptible to several ailments mainly due to the unhygienic living conditions, lack of proper latrines and waste disposal, etc. The results (Figure 3.31) show only a slight regional variation in the health status of the fisher folks. Out of the total respondents, 33.3 percent have recorded their health status as good, whereas 37.2 percent said that their health status is average. 29.4 percent perceived their health status as bad. Region wise evaluation shows that Ernakulam has the highest percentage of respondents with good health (43.3 percent), whereas Malappuram and Alappuzha have the lowest percent (29.3 percent and 33.3 percent, respectively). All the districts have more than 20 percent of the respondents recording their health status as bad; for Malappuram and Alappuzha, the percentage of respondents recording bad

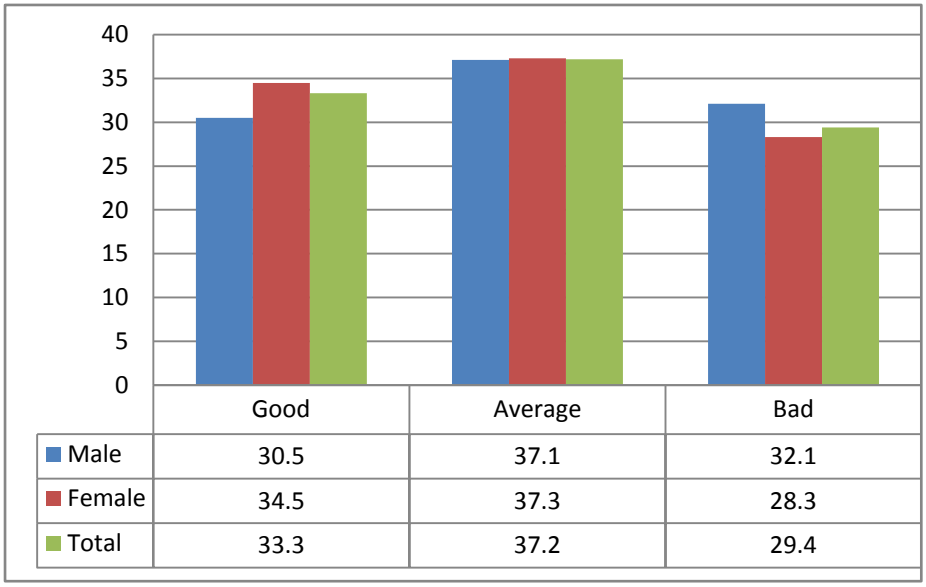
health status are more than 30 percent (34.7 percent and 38 percent, respectively). Even though urban centers have better health care facilities, due to their proximity to seashore and living conditions, the fisher population is prone to several diseases and hence a district like Ernakulam has more than 25 percent of respondents with bad health conditions. Gender-wise, variation in health status is only miniscule as those possessing average health are similar among the males and females. However, 34.5 percent females recorded good health as against 30.5 males. Similarly females having bad health situation are 28.3 percent against 32.1 percent among the males. The results are highlighted in Figure 3.32. One of the reasons may be the lifestyle and occupational structure of men and habits like drinking, smoking, etc.

Figure 3.31 Health Status



Source: Worked out from Appendix 3.21

Figure 3.32 Gender and Health Status



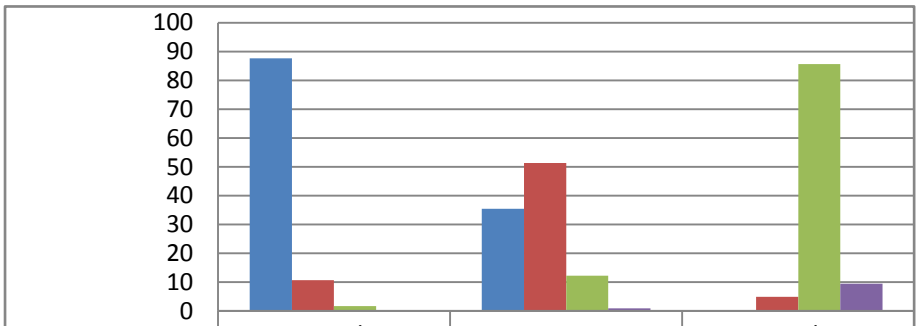
	Good	Average	Bad
Male	30.5	37.1	32.1
Female	34.5	37.3	28.3
Total	33.3	37.2	29.4

Source: Worked out from Appendix 3.22

Health condition of an individual is an important determinant of one's employment and livelihood. Better health will enable an individual to be employable without any break in employment due to ill-health. This would imply better earnings prospects especially considering the nature of activities engaged by the fisher folks. Majority (87.7 percent) possessing good health have no lost work days due to ill health; only 10.7 percent have lost 1 to 3 days and 1.7 percent have lost 4 to 6 days. 51.3 percent of the respondents with average health have lost 1 to 3 days of their work per month due to sickness, whereas 35.5 percent have lost no days. 12.2 percent of the respondents with average health have lost about 4 to 6 days of employment and only 0.90 percent of those with average health have lost more than 7 days due to ill-health. The respondents with bad health lose at least more than

1 day per month due to illness. 85.7 percent of these respondents lose about 4 to 6 days, whereas 9.4 percent lose more than 7 days due to ill-health. In this category, the respondents who lose about 1 to 3 work days per month due to ill-health are 4.9 percent. Here it is pertinent to mention that no respondent with a good health has lost more than 7 days of work days due to ill-health. Similarly respondent possessing bad health has lost at least one or more work days per month due to ill-health. The results are shown in Figure 3.33. Figure 3.34 further envisages the difference in lost work days based on health status of the fisher folks using Correspondence Chart. Here "good health" is closer to "no days" average health is near 1-3 days and bad health is closer to 4-6 days and 7 days and above. Hence the perception of the fisher folk about their health condition is proper as they can very well assess their health situation.

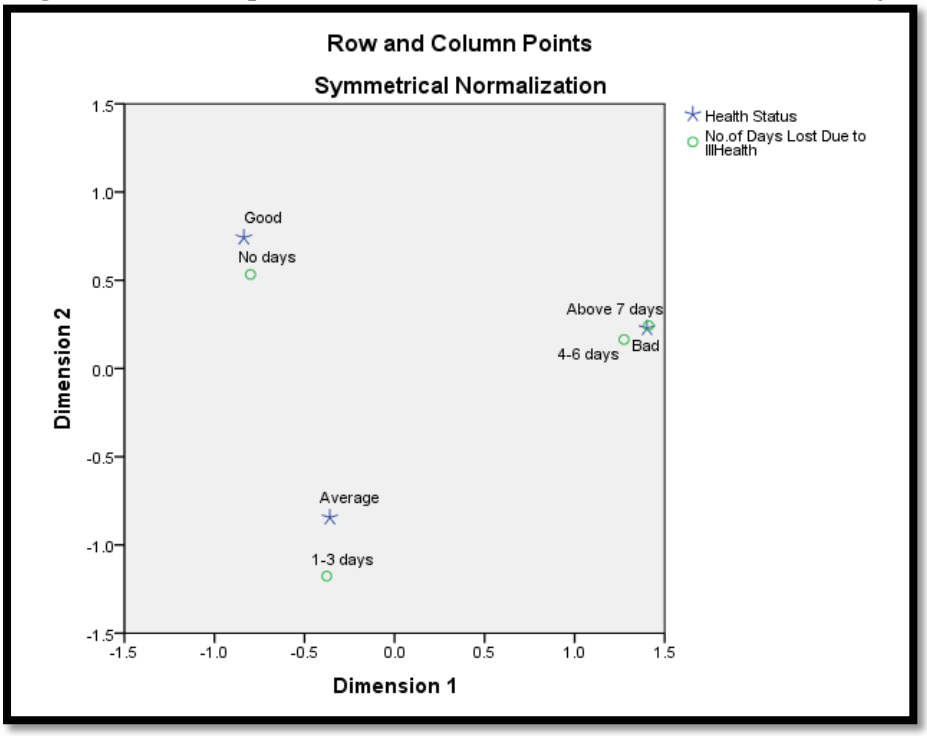
Figure 3.33 Health Status and Lost Work Days



	Good	Average	Bad
No days	87.7	35.5	0
1-3 days	10.7	51.3	4.9
4-6 days	1.7	12.2	85.7
Above 7 days	0	0.9	9.4

Source: Worked out from Appendix 3.23

Figure 3.34 Correspondence Chart: Health Status and Lost Work Days



Source: Worked out from the Survey data

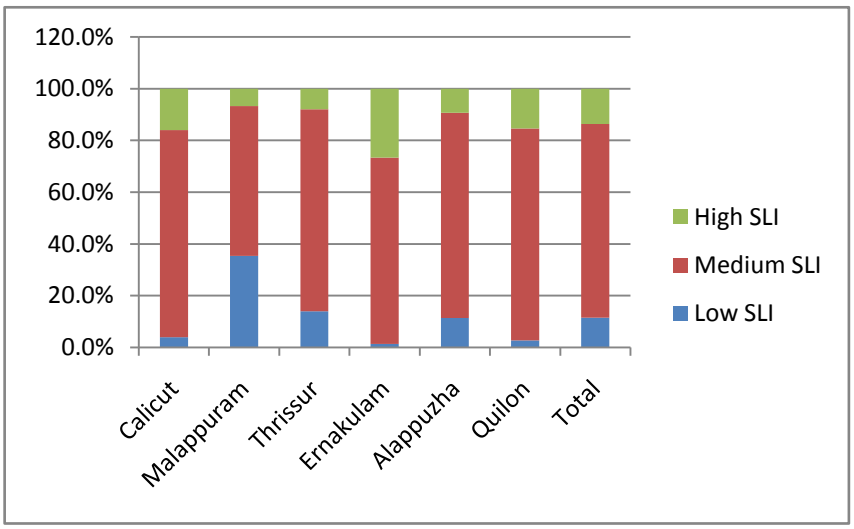
3.8 Standard of Living Index (SLI)

Data and field survey experience show a considerable difference in the living standards of fisher folk based on region. To evaluate this, a Standard of Living Index (SLI) is constructed from the survey data for respondents. Standard of living of the community normally explains the well being of the people either collectively or across groups based on the perception of the people as well as by evaluating their basic household living conditions. SLI is an index constructed to understand the general living conditions of people taking into account different indicators of lifestyle and living standards [Rajasenan and Rajeev (2012); Rajasenan, Bijith and Rajeev

(2013); CSSEIP (2014)]. Indicators like ownership of house, type of house, drinking water, energy used for lighting, fuel used for cooking, type of latrine, etc. are individually valued. The variables are then scrutinized on a three point scale according to their combined score.

While the majority is in the "Medium SLI" category, there is a district wise difference in the proportion of households in exhibiting low and high living standards. Malappuram has the highest number of households in the Low SLI category, whereas Ernakulam has the least number of households. This is evident from Figure 3.35.

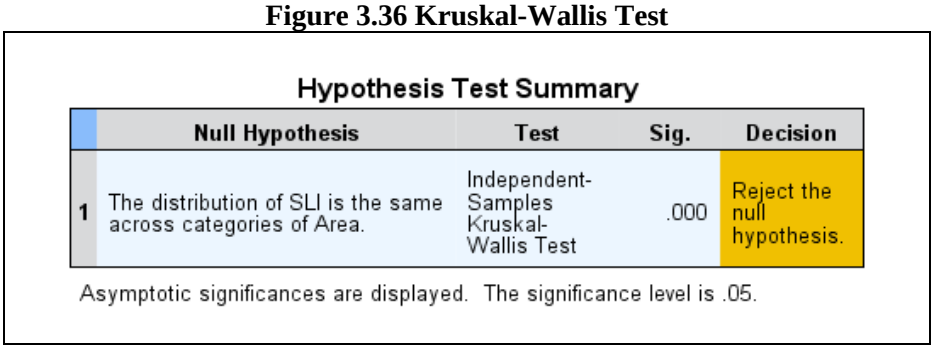
Figure 3.35 Living Standard



Source: Worked out from Appendix 3.24

Kruskal-Wallis Test is done to identify the inter-district variation in living standards. The results are significant (Figure 3.36) and hence the null hypothesis that "the living standards of fisher folks are same across regions" is rejected.

Figure 3.36 Kruskal-Wallis Test



Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of SLI is the same across categories of Area.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Source: Worked out from the Survey data

A district-wise Correspondence Analysis is performed to further capture the difference in living standards across the six districts. Summary table (Table 3.19) shows that the results are significant.

Table 3.19 Summary: District and SLI

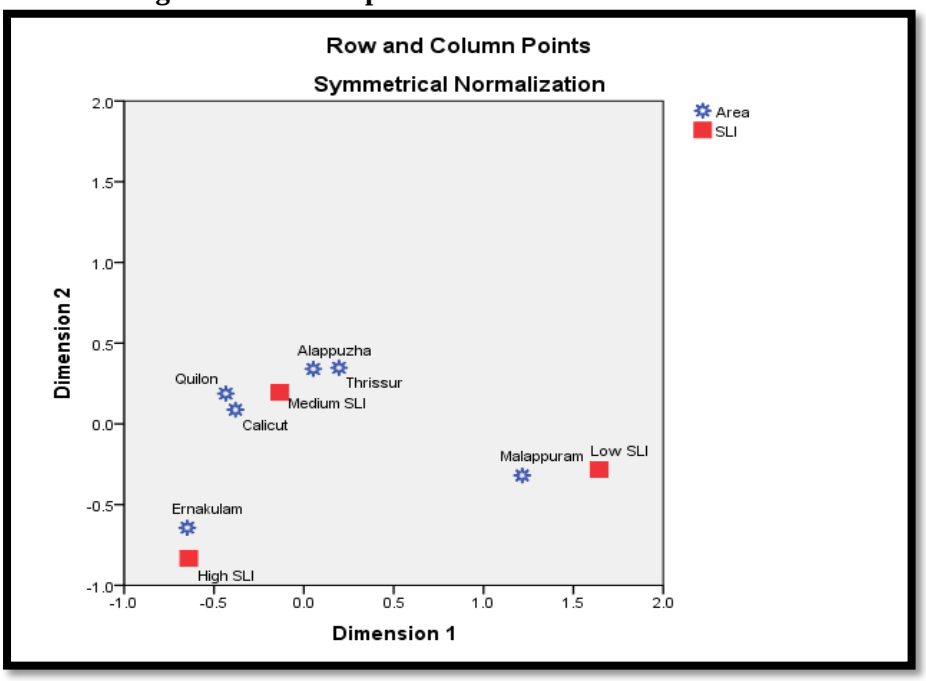
Dimension	Singular Value	Inertia	Chi Square	Sig.	Proportion of Inertia		Confidence Singular Value	
					Accounted for	Cumulative	Standard Deviation	Correlation 2
1	0.379	0.143			0.891	0.891	0.034	0.229
2	0.133	0.018			0.109	1	0.036	
Total		0.161	144.838	.000[a]	1	1		

a. 10 degrees of freedom

Correspondence Chart (Figure 3.37) indicates a clear inter-district variation in the living standards of the fisher folks. The prominent urban centre, Ernakulam is close to the "High SLI", whereas Kozhikode, Kollam, Alappuzha and Thrissur are closer to the "Medium SLI" category. Malappuram is closer to the "Low SLI". Another pertinent factor is that Ernakulam is better off compared to other urban centers of Kozhikode and Kollam as it is closer to high SLI, whereas Malappuram is worse off

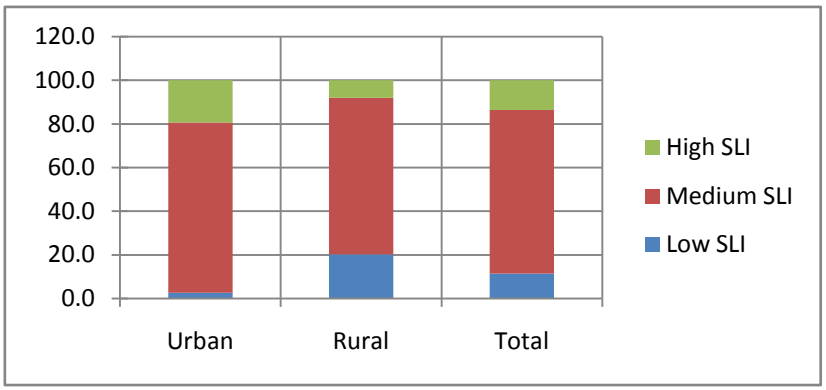
compared to other rural centers, viz. Thrissur and Alappuzha who are closer to the medium SLI.

Figure 3.37 Correspondence Chart: District and SLI



Source: Worked out from the Survey data

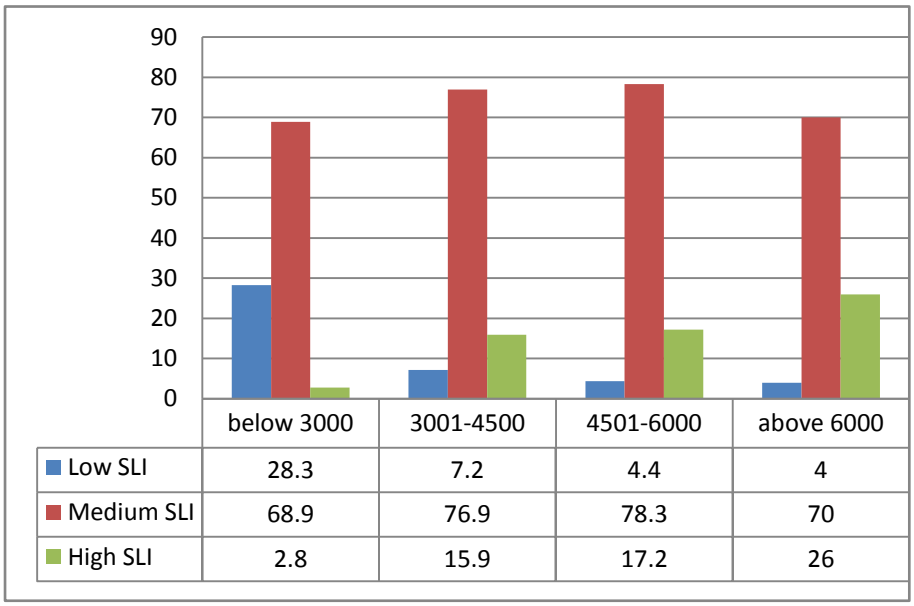
Figure 3.38 Rural-Urban divide in SLI



Source: Worked out from Appendix 3.25

A rural-urban variation can also be observed (Figure 3.38) in SLI category, with majority of high and medium SLI households in urban centers (Ernakulam, Kozhikode and Kollam) whereas majority of low SLI households are in rural centers (Malappuram, Thrissur and Alappuzha).

Figure 3.39 Household Income and SLI

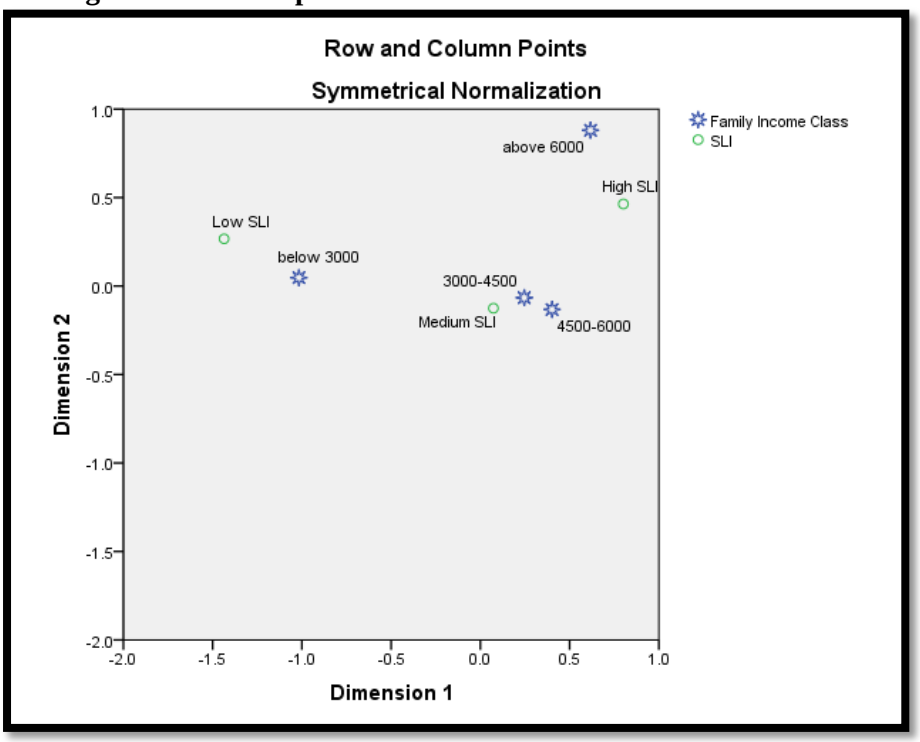


	below 3000	3001-4500	4501-6000	above 6000
Low SLI	28.3	7.2	4.4	4
Medium SLI	68.9	76.9	78.3	70
High SLI	2.8	15.9	17.2	26

Source: Worked out from Appendix 3.26

A comparison of income category and the standard of living is depicted in Figure 3.39. While most of the fisher folks households across the income categories are in the medium SLI, there is more concentration of households in the high SLI category in three income groups of Rs. 3001-4500, Rs. 4501-6000 and above Rs. 6001. Similarly, the proportion of households in low SLI are comparatively higher in income category below Rs. 3000.

Figure 3.40 Correspondence Chart: Household Income and SLI



Source: Worked out from the Survey data

The results in the Correspondence Chart (Figure 3.40) show some kind of an association between the household income category and living standard of the fisher folks. Fisher folks having a household income of Rs. 3000 and below are concentrated in the low SLI group. The two groups between Rs. 3001 and Rs. 6000 are closer to the medium SLI category and households with an income of above Rs. 6000 are in the high SLI category. This points out towards a clear and visible difference in the living standards based on household income.

3.8.1 Factors Determining SLI

Influential Factors in determining the living standards of the fisher folks are identified with the aid of Binary Logistic Regression with variables like region, family income, household members, number of earners, gender, activity and percentage share in income. The omnibus test (Table 3.21) is used to measures how well the model performs. The Chi-Square statistic is 121.318 and the p-value is 0.000. Since the p-value is 0.000, the overall model is statistically significant. The pseudo r-square statistics, i.e. Cox and Snell and Nagelkerke is shown in the Table 3.22. High pseudo r-square statistics indicates that more variation is explained by the model, to a maximum of 1.

The Hosmer and Lemeshow is a test for the overall fit of the model. The model adequately fits the data if the test indicates non significance. Because the p-value (0.107) is higher than the significance level (5 percent), it can be concluded than the model fits adequately the observed dataset (Table 3.23). Table 3.24 shows that the full model correctly predicts 88.8 percent of the cases. The model is statistically significant based on Table 3.20 and Table 3.21.

The logistic regression equation for predicting the dependent variable from the independent variable is in log-odds units and the prediction equation is:

$$\log(p/1-p) = b0 + b1*x1 + b2*x2 + b3*x3 + b4*x4+b5*x5+ b6*x6+ b7*x7$$

Table 3.20Variables in the Equation: factors determining SLI

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	2.045	.105	381.349	1	.000	7.728

Table 3.21 Omnibus Tests of Model Coefficients: factors determining SLI

		Chi-square	df	Sig.
Step 1	Step	121.318	7	.000
	Block	121.318	7	.000
	Model	121.318	7	.000

Table 3.22 Model Summary: factors determining SLI

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	518.712[a]	.126	.248

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 3.23 Hosmer and Lemeshow Test: factors determining SLI

Step	Chi-square	df	Sig.
1	13.135	8	.107

Table 3.24 Classification Table[a]: factors determining SLI

Observed			Predicted		
			SLI		Percentage Correct
			Low	Medium-High	
Step 1	SLI	Low	4	99	3.9
		Medium-High	2	794	99.7
	Overall Percentage				88.8

a. The cut value is .500

Table 3.25 Variables in the Equation: factors determining SLI

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Region	2.076	.337	38.050	1	.000	7.971
	Family Income	.001	.000	7.596	1	.006	1.001
	Household Members	-.252	.096	6.885	1	.009	.777
	Earning Members	.472	.198	5.661	1	.017	1.603
	Gender	-.642	.365	3.082	1	.079	.526
	Activity	.343	.479	.511	1	.475	1.409
	Percent share	.015	.011	1.929	1	.165	1.015
	Constant	-1.389	.777	3.197	1	.074	.249

The regression results in Table 3.25 indicate that variables like region, family income and household members are significant. The estimated model is:

log(p/1-p) = -1.389 + 2.076 * Region + .001 * family income - .252 * Household members + .472 * Earning members - .642 * gender + .343 * Activity + .015 * Percent share.

Region has the highest Wald score and hence is the most influencing factor in determining the living standards. Region and family income positively influence the model, whereas the number of household members

has shown negative influence. Persons living in the urban belts will have high chance of attaining better living standards. With regard to the number of household members, one additional member in the household will reduce the chance of household to be in the high SLI category. Increase in the number of earners will have a positive influence on the living standards. Hence, it can be concluded that region, household income and members in the household are the major determinants of living standards. Gender, activity and contribution to the household income are insignificant and hence do not have a role in determining the household standard of living.

Socio-economic profiles of fisher folk in six districts viz. Kozhikode, Malappuram, Thrissur, Ernakulam, Allappuzha and Kollam have brought about interesting results. Urbanized zones (Kozhikode, Ernakulam and Kollam) showing better socio-economic indicators than the other semi-urbanized/rural zones (Thrissur, Malappuram and Alappuzha). Individual income seems to be the major determining factor for the household income and expenditure of the fisher folk. As this study is corned to members who have been supported by the fishermen SHGs and cooperatives for carrying out their activities, it can be interpreted that SHGs income acts as pivot in determining their total individual income. This chapter gives a kaleidoscopic view of socio-economic matrix and living standards of SHG members of the fishing community. A further analysis with respect to concept, activity, functioning, role, and effectiveness *inter alia* their perception is attempted in Chapter 4.

Chapter 4

Role of SHGs in Empowering Fisher Folks

Chapter 3 has given an elucidation of the socio-economic situation of the fisher folks. This shows that the socio-economic picture is very miserable and hence needs to be uplifted with institutional and other types of integration. The role of SHGs in this direction is to be scanned properly so as to understand the nature and the width of empowering the fishers. Chapter 4 is an assessment in this direction by pooling together the primary and secondary data sets. In addition to this, participatory rural appraisal method is also used to make an analysis of the effectiveness of the action plans aiming fishery level SHGs. SWOT framework based on stakeholders perception in an activity-wise level is also attempted in Chapter 4.

4.1 SHG and Cooperatives in Kerala Fisheries

Mechanization and technological changes in the Kerala fisheries sector brought in manifold problems in the fishing sector. The negatives of this were felt more by the fisher women especially in the post harvest activities like fish vending. Women played an important role in the socio-economic well being of the fishers' families as they worked as the main bread earners in the family. The male counterparts lavishly spent their income earned from fishing for liquor and other unproductive activities leaving nothing to the family. Whatever earned by the fisher women was used for the daily affairs of the household. Modernization has put an end to

the livelihood option of these women leading to deterioration in the living pattern of the fisher folk households. The main objective of the SHG and cooperative movement was to provide the fisher folks in general and fisher women in particular with a secure income and livelihood source for enabling their family to lead a reasonable living. Matsyafed started organizing Self Help Groups (SHGs) associated with Primary Fisherman Cooperatives with the active involvement of fisher folks, allied workers (especially women) and other family members.

4.2 District-wise details of SHGs and Fund Allocation

Detail of SHGs and fund allocation for six districts viz. Ernakulam, Kollam, Alappuzha, Thrissur, Kozhikode and Malappuram are done in this section. Data are obtained from the Matsyafed BDP Report and KRA Report 2011-12 which is used for evaluation of fund allocation and assistance received to the groups. Details of cooperative societies and SHGs are given in Table 4.1. There are a total of 361 cooperative societies with SHGs in Kerala with 13,372 working groups (majority of them female working groups i.e. 10,706) and 162,693 active members out of which 129,797 are females. Rs. 4922.94 lakhs was generated as thrift (Rs. 3316.63 lakhs by female members). Generation of thrift is the most important factor in determining the credit worthiness of the group as usually an amount one to four times more than the thrift generated can be given as loan to a particular group. The thrift generated is also used by the groups for the internal lending to the needy members at a nominal interest rate. This has helped the fisherman families to get out of the clinches of private money lenders who charged a

very high rate of interest from them. Out of the thrift generated, Rs. 4753.63 lakhs was disbursed as loans to members through internal lending.

Table 4.1 SHGs and Cooperatives under Matsyafed

No. of Societies with SHGs	Male	314
	Female	182
	Total	361
No. of working Groups	Male	2,666
	Female	10,706
	Total	13,372
No. of active members	Male	32,896
	Female	129,797
	Total	162,693
Amount generated as Thrift (A)	Male	1,606.30
	Female	3,316.63
	Total	4,922.94
Amount of Thrift disbursed as loan to members through Internal Lending (B)	Male	1,027.81
	Female	3,725.82
	Total	4,753.63
Velocity of Internal Lending (VIL = B/A)	Male	0.64
	Female	1.12
	Total	0.97
Fund mobilised from Matsyafed	Male	1,089.59
	Female	9,082.82
	Total	10,172.41
Fund mobilised from other source	Male	138.41
	Female	285.9
	Total	424.31
No of groups with rating >100	Male	1,901
	Female	9,536
	Total	11,437
No of members in groups graded >100	Male	22,989
	Female	111,991
	Total	134,980

Source: Matsyafed, 2011

The groups were able to mobilize Rs. 10,172.41 lakhs worth of funds from Matsyafed (Rs. 9082.82 lakhs by female groups). Regarding the rating obtained to them, out of a total of 10,706 female groups 9536 groups got a

rating of more than 100 whereas out of 2666 male groups 1901 groups got a rating of more than 100. Groups which have got a rating of more than 100 are eligible for obtaining micro finance. Acquisition of momentum by these SHG movements resulted in increased level of participation of fisher folks and their family members and this has had a positive impact on their organizational culture.

4.2.1 District-wise SHGs

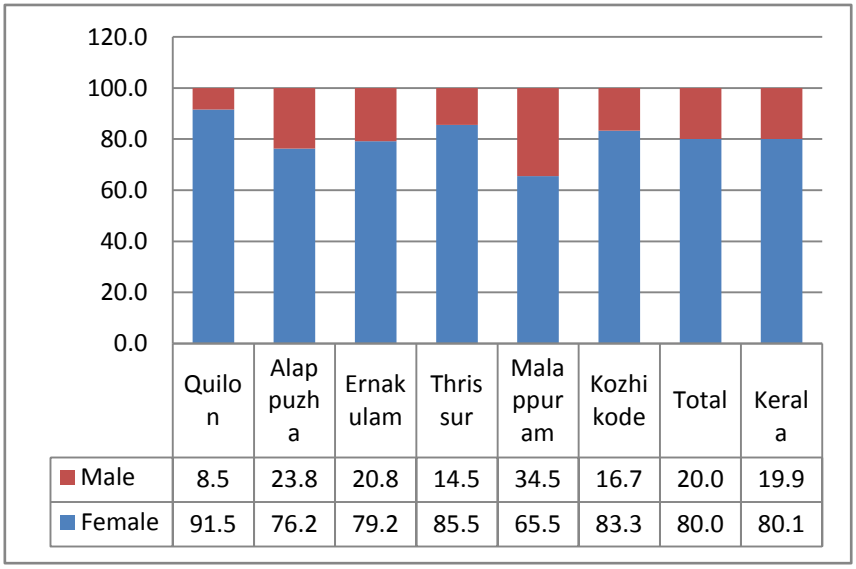
There are 13372 working groups in the state with 162693 members, majority of which are female working groups. Alappuzha and Ernakulam districts have got highest number of working groups (i.e. 2871 and 2416, respectively), followed by Kozhikode, Kollam and Malappuram (Table 4.2).

Table 4.2 District-wise SHGs

No	District	No. of Groups			Members		
		Male	***Female***	***Total***	***Male***	***Female***	***Total***
1	Kollam	102	1104	1206	1060	10191	11251
2	Alappuzha	682	2189	2871	8349	28194	36543
3	Ernakulam	502	1914	2,416	5660	20600	26260
4	Thrissur	139	822	961	1747	9285	11032
5	Malappuram	248	470	718	2922	4823	7745
6	Kozhikode	219	1091	1,310	2650	12140	14790
Total		1892	7590	9482	22388	85233	107621
Kerala		**2666**	**10706**	**13372**	**32896**	**129797**	**162693**

Source: Matsyafed, 2011

Figure 4.1 Gender-wise Groups



	Quilon	Alappuzha	Ernakulam	Thrissur	Malappuram	Kozhikode	Total	Kerala
Male	8.5	23.8	20.8	14.5	34.5	16.7	20.0	19.9
Female	91.5	76.2	79.2	85.5	65.5	83.3	80.0	80.1

Source: Worked out from the Matsyafed data, 2011

While majority are female groups the proportion of male groups is higher in Malappuram district (Figure 4.1). This is pertinent as gender backwardness is a common phenomenon in Malappuram which is also one of the most backward districts in terms of socio-economic indicators. The work participation rate for women in this district is 7.6 percent compared to the state average of 18.2 percent (Census, 2011). Also out of the total female fisherwomen population of 30,261, only 650 work in other fishing and allied activities (Matsyafed, 2011).

Rating enables a group to get financial assistance from the Matsyafed. Rating is provided by the Matsyafed on the basis of thrift and other financial habits. Table 4.3 and Figure 4.2 show the district-wise details of groups obtained 100 percent rating from Matsyafed. Out of the total 13372 groups, 11437 groups (85.5 percent) have full rating from the Matsyafed. Out of the

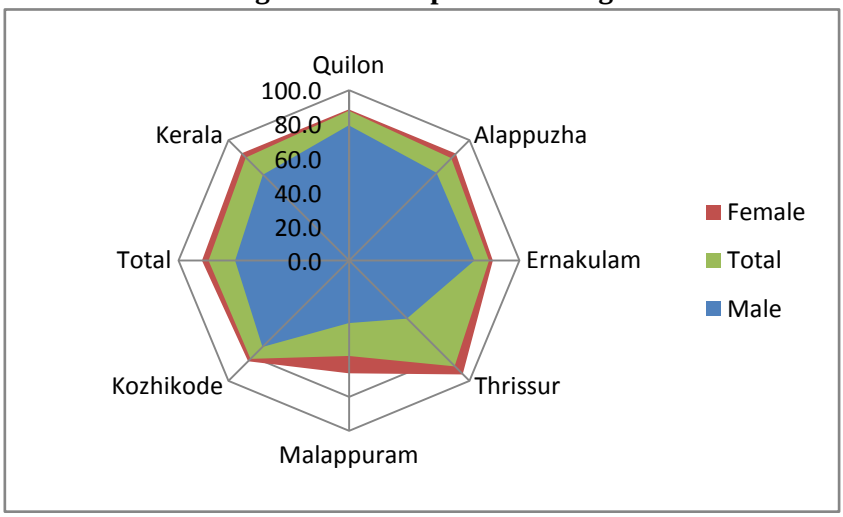
total 718 groups in Malappuram district, only 402 groups (56 percent) have obtained full rating from the Matsyafed.

Table 4.3 Groups with Rating

District	Groups with > 100 points			% of Groups		
	Male	Female	Total	Male	Female	Total
Kollam	81	980	1061	79.4	88.8	88.0
Alappuzha	497	1945	2442	72.9	88.9	85.1
Ernakulam	370	1619	1989	73.7	84.6	82.3
Thrissur	67	777	844	48.2	94.5	87.8
Malappuram	91	311	402	36.7	66.2	56.0
Kozhikode	157	912	1069	71.7	83.6	81.6
Total	1263	6544	7807	66.8	86.2	82.3
Kerala	1901	9536	11437	71.3	89.1	85.5

Source: Matsyafed, 2011

Figure 4.2 Groups with Rating



Source: Worked out from the Matsyafed data, 2011

The overall results points out that Malappuram lags behind other five districts in terms of number of groups. For other five districts, more than 80 percent of the groups are rated with 100 percent score. Groups with 100

percent ratings are also less compared to other districts in Malappuram. Also, ratio of female groups per male groups is also less in Malappuram district.

Table 4.4 Assistance from Matsyafed

District	Assistance received from Matsyafed (Rs lakhs) to groups		
	Female	**Male**	**Total**
Kollam	593.12	43.24	636.36
Alappuzha	1365.00	300	1665.00
Ernakulam	971.12	236.68	1207.80
Thrissur	602.24	39.72	641.96
Malappuram	226.33	62.56	288.89
Kozhikode	960.58	126.36	1,086.94
Total	4718.39	808.56	5526.95
Kerala	**7470**	**1220**	**8690.06**

Source: Matsyafed, 2011

Table 4.4 shows the amount received as assistance from the Matsyafed. Rs. 8690.06 lakhs were distributed as assistance to the fisher folks under various schemes. Majority of this allocation is for the six coastal districts with more than 60 percent share of total allocation. Alappuzha tops the list among the six districts in terms of assistance received from Matsyafed (Rs.1665 lakhs), followed by Ernakulam (1207.80 lakhs) and Kozhikode (1086.94 lakhs). Again Malappuram has received the least amount of assistance (288.89 lakhs).

4.2.2 Integrated Fisheries Development Project (IFDP)

The programme is implemented with the financial assistance from the National Cooperative Development Corporation (NCDC). The assistance under this scheme is provided mainly for procuring fishing inputs, working

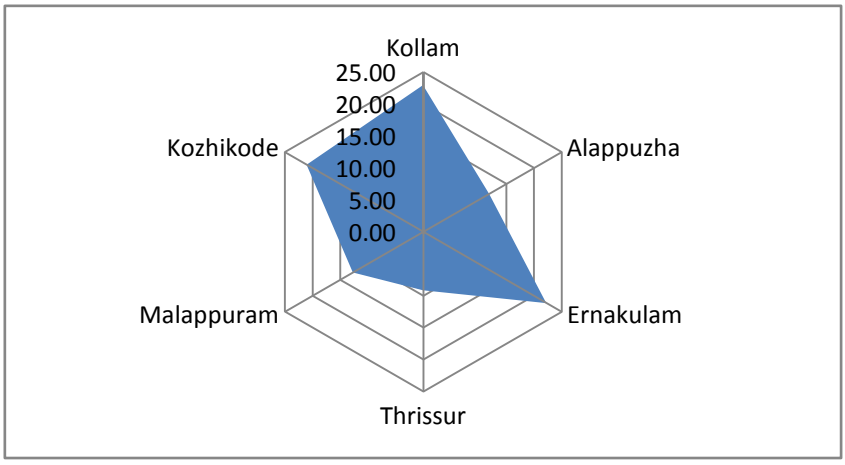
capital and other infrastructure facilities. Rs. 5104.08 lakhs was allocated under this scheme during the period 2006-11. 14934 members in 3289 groups and 363 societies made use of these funds. Details of fund allocation for the six districts during the period under review are depicted in Table 4.5. An amount of Rs. 3636.24 lakhs was allocated in the three coastal districts of Ernakulam, Kollam and Kozhikode during the period 2006-11. Kollam district received the highest allocation (Rs. 904.05 lakhs), followed by Ernakulam and Kozhikode. The least allocation was for the Thrissur, Alappuzha and Malappuram districts. The percentage share in fund allocation is depicted in Figure 4.3. Out of the fund allocation of Rs. 3936.24 lakhs, it is evident that the urban regions have received more fund allocation than their rural counterparts. However, even with a district wise variation in the amount of fund and beneficiaries, the data on the fund utilized shows that the overall utilization rate for the state is more than 80 percent.

Table 4.5 IFDP Scheme (amount in Rs. lakhs)

No	District	Amount
1	Kollam	904.05
2	Alappuzha	470.00
3	Ernakulam	876.50
4	Thrissur	359.22
5	Malappuram	498.86
6	Kozhikode	827.61
Total		3936.24
Kerala		**5104.08**

Source: Worked out from Appendix 4.1

Figure 4.3 IFDP Fund Allocation (in percent)



Source: Worked out from Appendix 4.1

4.2.3 Micro Finance

The micro finance beneficiary is provided with a loan at an interest rate of 6 percent. The amount of loan per person varies based on the repayment history. As it is a finance provided at a low interest rate, the scheme is pivotal in reducing the exploitation of the private money lenders to a great extent. Micro finance is given through two schemes viz. National Backward Classes Development and Finance Corporation (NBCFDC) and National Minorities Development and Finance Corporation (NMDFC). The status of Micro Finance as on March 2011 for the six coastal districts is depicted in Table 4.6. Across the districts, the number of female beneficiaries is higher than males. Repayment percentage is also impressive at nearly 100 percent for all the six districts (Matsyafed, 2011). Rs. 9458.69 lakhs was utilized by the Matsyafed 124737 fisher folks, out of which Rs. 5902.50

(62.40 percent) was allocated in the six coastal districts. Malappuram has the lowest and Alappuzha has the higher fund allocation under this scheme.

Table 4.6 Status of Micro Finance (in Rs lakhs)

No	District	Beneficiaries			Fund Utilised (Rs lakhs)			% share
		Male	Female	Total	Male	Female	Total	
1	Kollam	597	8467	9064	41.87	664.37	706.24	11.97
2	Alappuzha	4835	21458	26293	286.04	1368.29	1654.33	28.03
3	Ernakulam	596	20584	21180	234.32	1038.86	1273.18	21.57
4	Thrissur	511	8222	8733	36.89	810.63	847.52	14.36
5	Malappuram	576	2864	3440	37.3	221.45	258.75	4.38
6	Kozhikode	1367	8729	10096	102.3	1060.18	1162.48	19.69
Total		8482	70324	78806	738.72	5163.78	5902.50	62.40
Kerala		**16427**	**108312**	**124739**	**1140.06**	**8318.63**	**9458.69**	--

Source: Matsyafed, 2011

4.2.4 Thrift Generation

The thrift generated by a group is important in its financial strength. Thrift generated and term of the same is a major factor in determining the eligibility of the groups to avail various financial schemes. The thrift is used for the purpose of internal lending within the group. Out of the total thrift of Rs. 4922.94 lakhs, the contribution of six districts is Rs. 3118.25 (63.34 percent). Among the six districts, Ernakulam has collected the majority share (Rs. 1201 lakhs), followed by Alappuzha (Rs. 1087.05 lakhs). It can be also inferred that as there are comparatively more female groups the amount raised as thrift among them is higher than the male SHGs. The details of thrift for the six districts are given in Table 4.7.

Table 4.7 Thrift Generated

No	District	No. of Groups			Thrift (Rs. In Lakhs)		
		Male	Female	Total	Male	Female	Total
1	Kollam	102	1,104	1,206	16.61	106.37	122.98
2	Alappuzha	682	2,189	2,871	283.48	803.57	1087.05
3	Ernakulam	502	1,914	2,416	731.39	469.61	1201.00
4	Thrissur	139	822	961	31.05	196.61	227.66
5	Malappuram	248	470	718	76.24	94.60	170.84
6	Kozhikode	219	1,091	1,310	55.85	252.88	308.72
Total		1892	7590	9482	1194.61	1923.63	3118.25
Kerala		**2,666**	**10,706**	**13,372**	**1606.30**	**3316.63**	**4922.94**

Source: Matsyafed, 2011

4.2.5 Interest free Loan to Women Fish Vendors

Centralized landing procedure followed in the post modernization in the fisheries sector would mean that the travel expenses for fisher women are more than the earlier landing process which was largely based on fishing village. Adding fuel to fire was the scarce resources and competition which further fastened the operational cost of the women fish vendors. The private and unorganized money lenders were the only resort for them who charged high penal interest even ranging upto 10-15 percent per day. A boon to the fisher women is in the form of this interest free loan to the fisherwomen involved in fish vending. The scheme was developed by the Matsyafed with the support of the Government of Kerala so as to financially equip them to get adequate credit without the huge interest burden. The amount is made available to the members of the SHGs by Matsyafed through NBCFDC and NMDFC. The expected outcome of this scheme is to reduce the grinding down income of the women fish vendors. The 100 percent repayment rate and the field inference based on perception and discussion with the officials

point out that the scheme was a great success. The first phase advanced Rs. 5000 per beneficiary and an amount of Rs. 10000 per beneficiary was advanced during the second phase to those who made prompt and complete repayment. The third phase Rs. 5000 per person was given to the fresh applicants and Rs. 10000 for persons for those who availed loans and repaid promptly since the first phase. Rs. 15000 per woman vendor was advanced as part of the fourth phase of this programme. Fund allocation under this scheme in Malappuram is zero and as fish vending is highly a gender based affair in Malappuram district. The fund allocation and beneficiaries under this scheme is the highest in the Ernakulam district, followed by Kollam and Alappuzha. Details of number of beneficiary groups and their members are given in Table 4.8.

Table 4.8 Interest Free Loan to Women Fish Vendors

No	District	Societies	Groups	Beneficiaries	Fund Utilized (Rs. Lakhs)	% Share
1	Kollam	32	677	4799	332.1	20.61
2	Alappuzha	45	683	3495	309.35	19.19
3	Ernakulam	59	1468	7006	922.9	57.26
4	Thrissur	15	56	284	39.6	2.46
5	Malappuram	0	0	0	0	0.00
6	Kozhikode	14	0	60	7.7	0.48
Total		165	2884	15644	1611.65	100

Source: Matsyafed, 2011

4.3 Profile of SHGs

The section evaluates the profile of SHGs with the aid of primary data. The SHGs mainly function in the fishing and related activities like fish vending, etc. Other major income generating activities of the groups include: food processing (pickle making, dry fish, etc.); detergent or soap making;

small/petty business and trade (grocery sales, dress marketing, firewood sale, stationery shops, etc.); service activities (preparing meals, restaurant business, catering, bakery items, etc.); and dress making (tailoring). Apart for the fishery related groups, their functioning varies according to activity. While analyzing the functioning of the groups, specific evaluation of the functioning of traditional activity groups such as those dealing in fishing, net making, fish vending have not been included.

Table 4.9 Activity of the Groups

Activity	Percent
Fishing	9.4
Fish Vending	34.1
Dried fish/fish pickle	8.2
Catering/hotel/snacks	25.9
Soap/Detergent Making	5.9
General Trade	8.2
Tailoring	8.2
Total	100.0

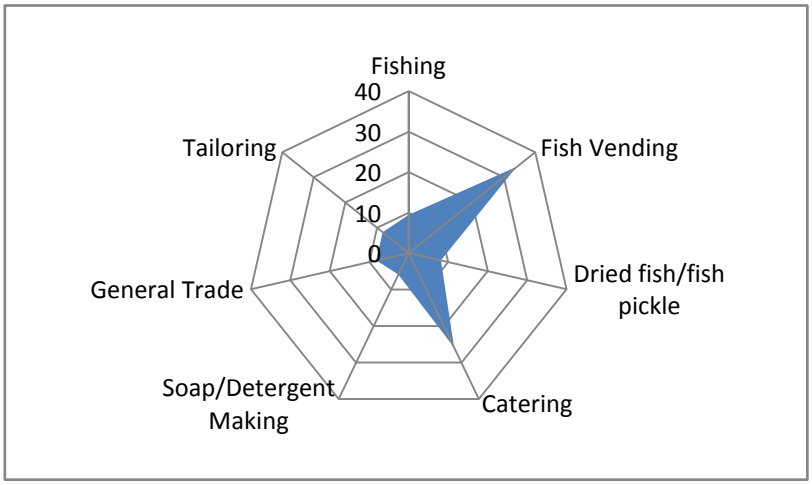
Source: Survey data

Profile of SHGs from six districts, viz. Ernakulam, Kozhikode, Kollam, Thrissur, Alappuzha and Malappuram are collected. Majority of the SHGs surveyed are female groups. Activities of the group include: general trade, catering/hotel and other services, soap and detergent production/sale, tailoring, fishing, fish vending and sale of dried seafood items.

The detailed activity status of the fisher folks is depicted in Table 4.9 and Figure 4.4. Fish vending is the major activity of the groups (34.1 percent), followed by catering/making bakery items (25.3 percent). Other activities include fishing (9.4 percent); dried fish/pickle sale, general trade,

catering (8.2 percent each) and detergent making (5.9 percent). It is evident from the results that majority of activity groups are related to the fishing, fish vending or use fishery product as an input (like sale of dried fish and fish pickle, etc). Hence they are still dependent on the fishery sector. Any variations in the catch or fluctuations in the price will affect their profitability and livelihood.

Figure 4.4 Activity of the Groups



Source: Worked out from the Survey data

However, being in an SHG, major benefit is with regard to financial aspects like thrift, loans, etc. Those in the hotel, bakery items and catering activities also mainly specialize on the making fishery related items. Tailoring and detergent making are the activities requiring specific skills and training as well as inputs or equipments. General trade mainly include sale of groceries, dress materials and other products, which require funds to purchase the products.

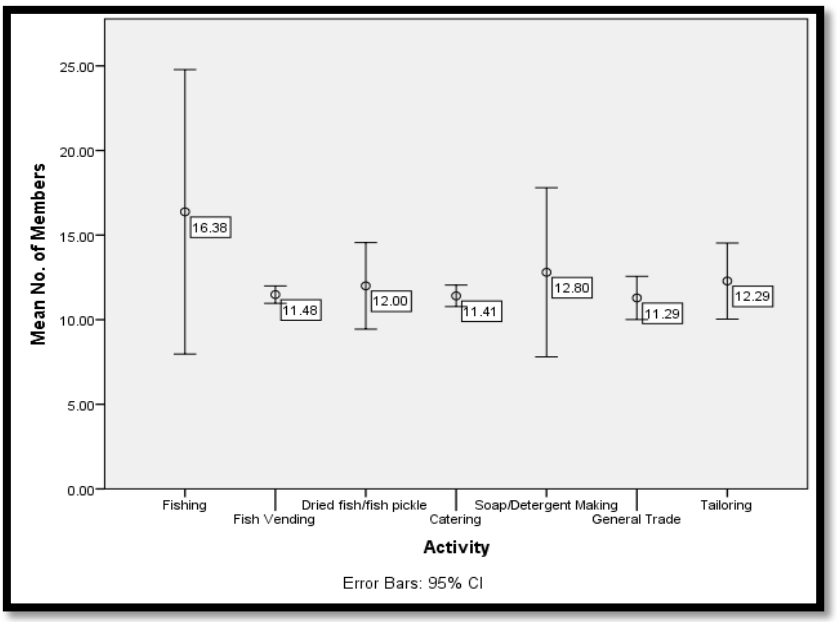
Table 4.10 Average Number of Members

Activity	Mean
Fishing	16.38
Fish Vending	11.48
Dried fish/fish pickle	12.00
Catering	11.41
Soap/Detergent Making	12.80
General Trade	11.29
Tailoring	12.29
Total	12.10

Source: Worked out from the Survey data

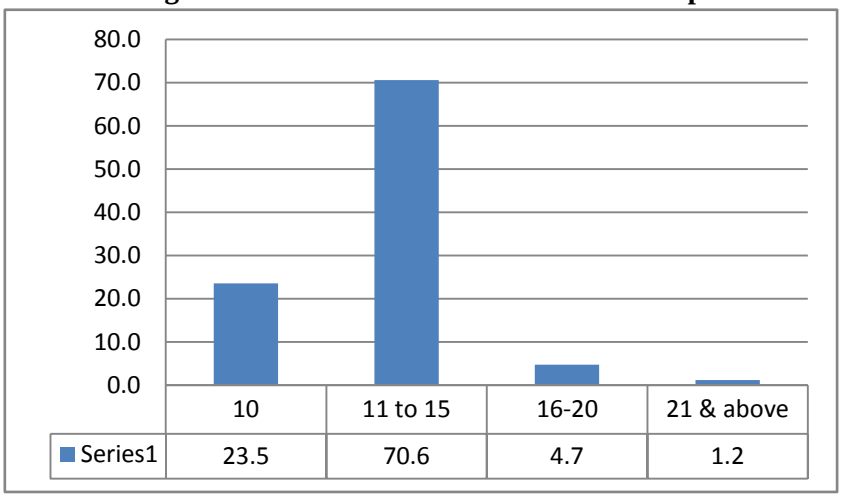
On an average the SHG group has member strength of 12. For fishing activities, the member average is 16. For other fishery and non-fishery related activities, the average membership ranges from 11-12 members (Table 4.10 and Figure 4.5). 70.6 percent of the groups have membership strength of 10-15 and 4.7 percent have membership of 16-20 (Figure 4.6).

Figure 4.5 Average number of Members



Source: Worked out from the Survey data

Figure 4.6 Number of Members in the Group



Source: Worked out from the Survey data

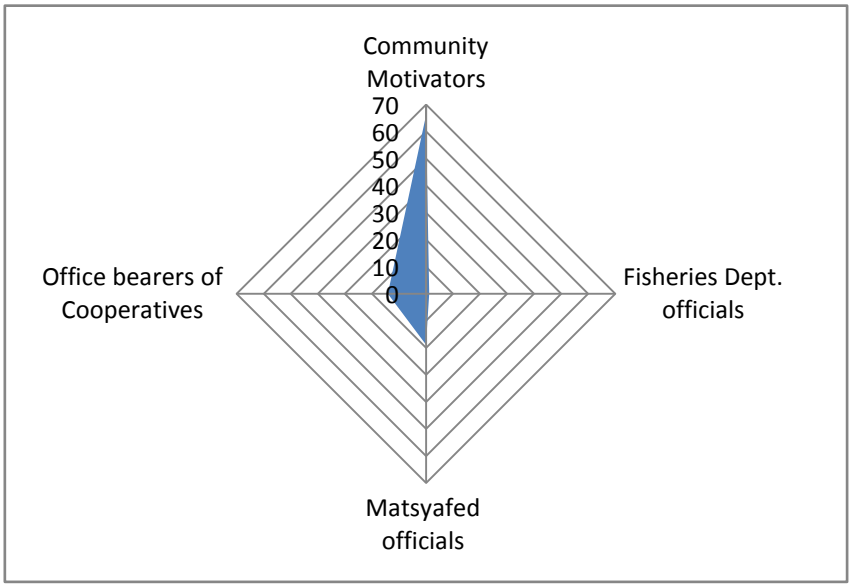
Community motivator supported to form the group in majority of the cases (65.9 percent), followed by officials of the Matsyafed (18.8 percent). It is pertinent to mention that the community motivators are from the fisher folk households from their own locality who procures training from agencies like the Matsyafed. The main duty of the motivators is to provide awareness about various schemes/programmes, training activities, financial aspects, etc. The office bearers of the cooperative societies motivated in the formation of groups in 14.1 percent of the cases. Here it has to be noted that the very objective of the community motivators as an intermediary between the fisher folks and the Matsyafed is fully performed which is evident from the fact that the idea of forming the groups was propagated to the members by the community motivators. The results are depicted in Table 4.11 and Figure 4.7. All the groups maintain cordial relationship with the motivators.

Table 4.11 Motivator of SHG

Motivator	Percent
Community Motivators	65.9
Fisheries Dept. officials	1.2
Matsyafed officials	18.8
Office bearers of Cooperatives	14.1
Total	100.0

Source: Survey data

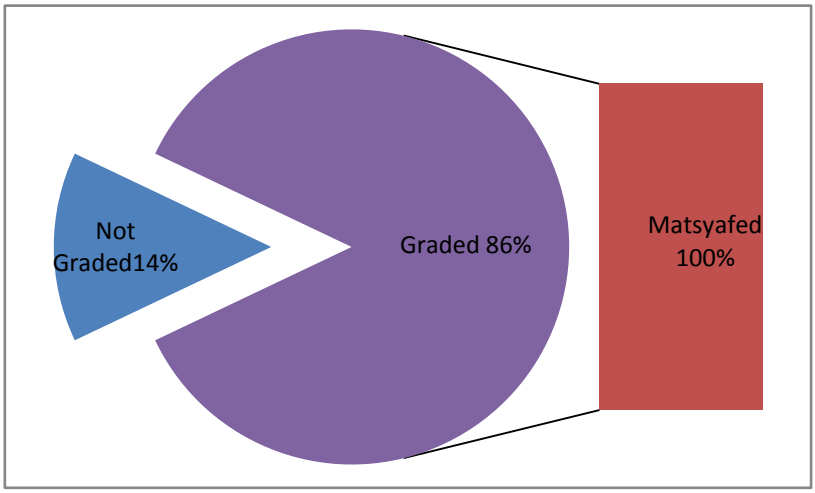
Figure 4.7 Motivator of SHG



Source: Worked out from Table 4.11

Grading is obtained by about 86 percent of the groups. As the groups come under the purview of the Matsyafed, grading is provided by the apex federation for majority of the groups (Table 4.12 and Figure 4.8). Bank account is maintained by all the groups.

Figure 4.8 Grading the SHGs



Source: Worked out from Table 4.12

Table 4.12 Grading Obtained

Graded	Percent	Agency	Percent
Yes	86.0	***Matsyafed***	100.0
No	14.0		
Total	100.0		

Source: Survey data

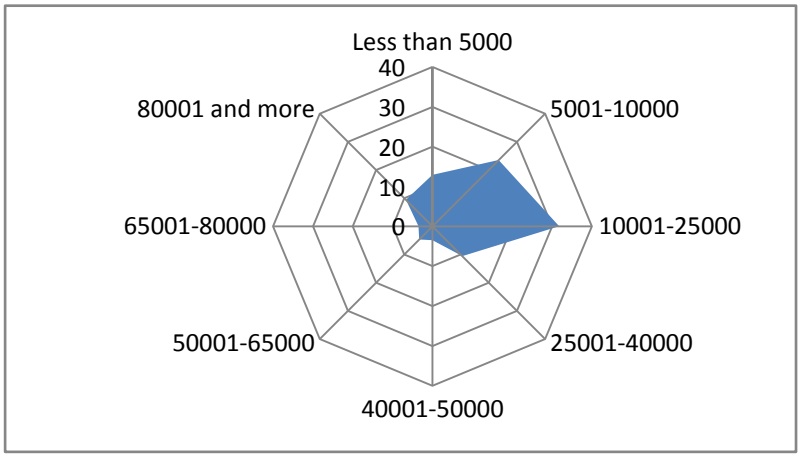
The details regarding the amount in the account (in the form of thrift, interest income, etc.) are depicted in Table 4.13 and Figure 4.9. Majority (31.8 percent) of the groups have an account balance of between Rs. 10001 and 25000. 23.5 percent have an account balance of Rs. 5001-10000 and 12.9 percent have an account balance of less than Rs. 5000. 9.4 percent of the groups have a balance of Rs. 80001 and above.

Table 4.13 Amount in the SHG Account

Amount (in Rs.)	Percent
Less than 5000	12.9
5001-10000	23.5
10001-25000	31.8
25001-40000	10.6
40001-50000	3.5
50001-65000	4.7
65001-80000	3.5
80001 and more	9.4
Total	100.0

Source: Survey data

Figure 4.9 Amount in the SHG Account



Source: Worked out from Table 4.13

Matsyafed is the major financier for all the 53 percent of the groups who have received revolving funds (Table 4.14). Purchase of inputs (55.6 percent) was the major purpose for which the funds are used, followed by lending (31.1 percent) and marketing (13.3 percent). Figure 4.10 shows detailed results.

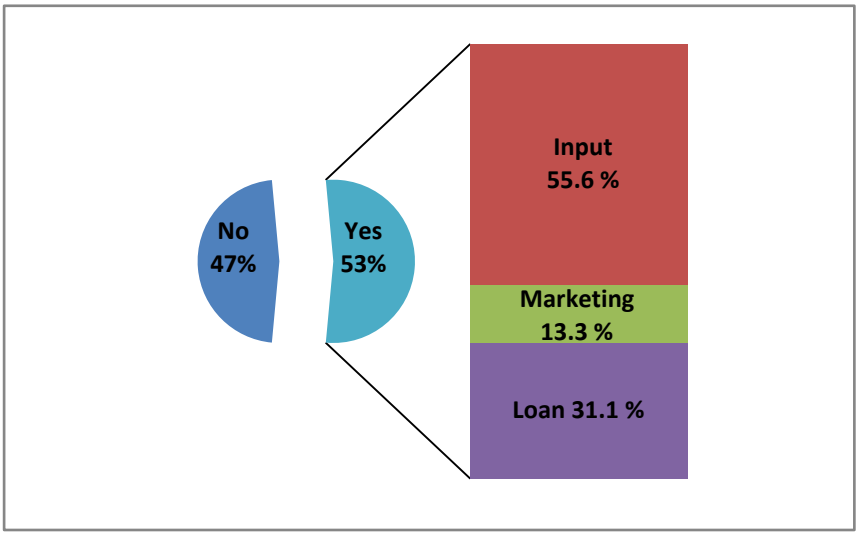
Table 4.14 Revolving Fund

Revolving Fund	Percent	**Agency**	Percent	**Purpose**	Percent
Yes	53.0	**Matsyafed**	100.0	Inputs	55.6
No	47.0			Marketing	13.3
				Loan	31.1
Total	**100.0**			**Total**	**100.0**

Source: Survey data

Based on the discussions held with the office bearers of the SHGs using Participatory Rural Appraisal Method, it was identified that Matsyafed is the major funding agency of the groups. They have received assistance from the Matsyafed through the societies or directly under various schemes and programmes.

Figure 4.10 Revolving Fund



Source: Worked out from Table 4.14

It is heartening that 93.4 percent of the groups have not made any default. This corroborates the results of the Matsyafed Report (2011)

showing a debt repayment rate of more than 90 percent by all the groups. Barring some catering and bakery item producer's groups, the majority of the groups (both related to fishing and others) function between 6-8 months a year. Branding of the product has not been obtained by the groups dealing with specified activities like catering, making bakery items, soap making, etc. The activity groups sell their products near to their localities i.e. within 5 kms from their activity area.

4.4 Functioning of SHGs

An evaluation of the functioning of the SHGs is done by recording the perception of the fisher folks using interview schedules as well as with the aid of Participatory Rural Appraisals (PRAs). Activities of the groups dealing the fishing and non-fishing related work is also discussed. Strengths, Weaknesses, Opportunities and Threats of the group are also evaluated.

4.4.1 Activities of the Groups

The main activity groups include those involved in various sub-sectors of fisheries viz. mechanized, motorized, traditional and fish vending, selling dried and processed fishery products, detergent/soap making units, general trade, catering/other service and sewing.

4.4.1.1 Fishing

The members of this activity groups are working mainly in mechanized, motorized and non-motorized fishing crafts. These are 100 percent male groups and the members of each group are from the same sub sector. There

are even groups with around 40 members in the mechanized SHGs. Group formation is pivotal for the fishers as they can avail loans without any collateral for meeting the household needs during the lean seasons and for other emergencies. Revolving credit, thrift and other assistance are also of high utility for the fisher folks mainly due to the lack of collateral to take loan from banks and other formal credit institutions.

4.4.1.2 Fish Vending

This activity groups include both male and female groups engaged in retail fish vending. The sub groups include head load fish vendors (both men and women), cycle/motor cycle fish vendors (only males), etc. The marketing or sale of fish is a major activity more so among the women fisher folks. The fish vendors mainly procure the fish through auctions and sell it mostly in nearby locations. The group is a gathering of individuals engaged in the above activity. Typically the fish vendors used to borrow from private money lenders. But now due to the SHG-cooperative linkage, they are able to explore the credit facilities like the interest free loans. The motor cycle fish vendors have an edge over the women fish vendors as well as other head load fish vendors mainly due to better access.

4.4.1.3 Sale of Dried fish/fish products

The groups mainly deal with the production and sale of food items like pickles, dried fish/fishery products, etc. and hence they are female SHGs. Some groups have undergone training in pickle making. The membership of the groups ranges from 10 to 15. The fish and other products are procured

from the nearby market. The main market for the products is nearby shops, households, etc. The activity groups are highly dependent on the price and availability of fish and hence apart from the value addition by processing the item, the dependence on the catch is still there. The main advantage of working as an SHG is the work sharing and bulk purchase.

4.4.1.4 Detergent/soap making

This is one of the non-traditional activities engaged by the group member which requires proper training. The markets for their products are mainly local grocery shops located near to their region or in the nearby town. However, again as the groups are women SHGs, sale of products in the town is very difficult. One issue is problem with transportation as they have to traverse long distance if they want to increase their sales. Lack of brand name, proper marketing and attractive packing also makes it difficult to sale the products in the nearby towns. As there is good rapport between the group members and local communities, they are able to generate satisfactory sales. Major issue faced is the procurement of raw materials as the proceeds of sales to the shops takes a while to reach them.

4.4.1.5 Small Trade

Sale of grocery items, readymade garments, small household items, etc. are main activities of these groups. The members procure the products at the wholesale rate and sell them to nearby households. The groups purchase readymade garments during festive seasons and distribute it at a reasonable profit. Whatever profits earned are shared among the members.

4.4.1.6 Catering/making bakery items

The activity is mainly taken up by the women groups. Catering, restaurant, bakery items, etc. are the major sub-activities. Catering groups also supply food in their locality for receptions, wedding, etc. at low rates.

4.4.1.7 Sewing/Embroidery

Sewing and embroidery is yet another activity woman groups are engaged in. In most of the cases the member who is well versed in sewing takes the initiative to start the group. Due to various constraints like lack of publicity and accessibility, these groups are limited to the local areas and are not able to expand their activities to the town.

4.4.2 SWOT Analysis for Successful and Effective Functioning of SHGs

The SWOT framework observes the positive and negative factors that have implications in the functioning, and development of fisheries SHGs in the state. Positive factors comprise of strengths and opportunities whereas weaknesses and threats indicates negative or harmful effects. It is all the more important that each unit identifies the strengths, weaknesses, opportunities and threats to the activities and develop an effective framework in which they can maximize the strength and opportunities and reduce or eliminate threats and weaknesses.

Specific areas of strength, weaknesses, opportunities and threats of the SHGs identified based on the interview and PRAs conducted with the members of the SHG are discussed here. The SHG-cooperative framework has emerged as a stable and secure livelihood option for the fisher folks. The

group members are united and can manage regular thrift. Debt repayment is also regular in most of the cased. Increased political awareness and social interaction are also major strengths identified. Absence of marketing, instability in price of products, linkage issues, input problems, lack of training, lack of funds and low education among the group members are the identified weaknesses. Most of the SHGs lack proper marketing strategies. Also, there is no stable pricing mechanism for their products as the fisheries sector is highly supply driven. This is true in the case of fishing and allied SHGs. Some of the activities of the groups require rigorous training which is also not provided. Insufficiency of thrift amount is also a major weakness as it will adversely affect the functioning of the group. The last weakness identified is the low educational traits of the group members. More access to government schemes, improved living standards, access to formal credit, skill development, socio-economic development, more savings and better pricing are some opportunities present with the groups which they can effectively tap if they function properly.

Seasonality of catch is a major threat as earnings and functioning of most of the groups are directly related to the catch structure and price. It is projected that paucity of fishery resources will worsen mainly due to overfishing related to ecological issues and climate change etc. (Rajasenan, 2015). Uncertainty in sales is also a major threat. The price or the quantity sold in the market cannot be determined by the fisher folks. Another threat is the changing policies of the government. Any addition or deletion from the part of central and state governments with regard to the policy aspects in the

marine fisheries sector have serious reverberations in the livelihood situation of fisher folks. This has been perceived as one of the major threats which will affect their livelihood.

Competition from other groups in the locality is also an issue. More groups or individuals engaged in same activity (fish vending, other SHG activities) within an area would imply more competition which will result in reduced market share. Another threat is with regard to default in loan repayment. This situation is an outcome of the earlier threats and the resultant low income. Fear of conflicts between the group members and mismanagement is also a threat perceived by majority of members. The major strengths, weaknesses, opportunities and threats identified are depicted in Table 4.15.

Table 4.15 SWOT Analysis of SHGs

STRENGTHS	***WEAKNESS***
Stable livelihood option	*Absence of marketing*
Unity within members	*No stable pricing*
Thrift generation	*Lack of linkages*
Regular repayment of debt	*Input issues*
Political awareness	*No proper training*
Social interaction	*Insufficient funds*
	Low education
OPPORTUNITIES	***THREATS***
Access to government scheme	*Seasonality issues*
Improved standard of living	*Changing Government Policies*
Access to formal credit	*Competition*
Skill development	*Uncertain sales*
Socio-economic development	*Loan repayment*
More savings	*Conflicts between the members*
Smart pricing	*Mismanagement of groups*
Basic amenities	

SWOT may differ for different activity groups. The section tries to identify the SWOT of income generating activities carried out by the group. Major strength identified for food processing SHGs is the increasing demand for processed food items due to the difference in consumption pattern, lifestyle, etc. weaknesses faced by the business are in the field of packaging, marketing, etc. Major threats include lack of raw materials (fish) during off season. If the groups are able to develop their opportunity of branding and are creating tie ups with dealers/food processing units, they can develop an optimum marketing plan for the success of the business. The major strength of trade of items of general consumption is the never ending local demand. However, lack of credit is a hurdle. Also, lack of training and skills regarding sales and marketing activities is also a hindrance. Availability of credit and skill development can effectively solve this issue. Detergent making is an activity with a lot of potential as there will be demand due to the fact that it is a commonly used item by the entire household. However, in the era of brand consciousness and influence of media in purchase decision, it is very difficult to create demand for the product among the middle class outside their locality/community. In addition to this, lack of marketing and low sales will aggravate the issue. Production expansion and development of a brand image (in the local market) can be considered as an opportunity. Low demand and entry of competitors is perceived as a threat. A good marketing plan can resolve the issue. Catering service is one of the major activities taken up by fisher folk SHGs as majority are women members who are well versed in cooking. However, their access to markets is limited and they have difficulties in managing and marketing the business. Solution is to develop a regular customer pool. There is demand for skilled tailors locally. So, proper

training and skill development is a must for SHGs for venturing into this activity. Low skill and less capital for development can be a hurdle. However, if the opportunity of developing the unit into a readymade stitching unit or setting up institutional linkage with schools, organizations and offices are well tapped, the business can flourish and develop in the right direction. SWOT analysis, if conducted by a group can benefit them to go a long way. Once they identify their SWOT, they can develop their own action plan for the success of the group. They should consolidate their strengths, overcome weaknesses, avail of opportunities and guard against threats to sustain in the long run and thereby ensuring a better livelihood option than their traditional avenues. Any flaw or operational difficult experienced by the group members needs to be sorted out so as to ensure the smooth functioning of the group. Box 4.1 depicts case study of SHGs functioning in similar area of activity and having identical operational issues. The case study throws light on the manner in which some groups deal with the issue and how they have overcome the problem.

Box 4.1 Case Study

Sreedhanya SHG is a women group with 10 Members under Malipuram Cooperative Society, Ernakulam. The group is prompt in remittance of thrift and has received assistance from authorities for starting micro-enterprise. Activities of this group include processing, sales of dried fish, sale of readymade garments, catering, etc. The members of the group have disadvantage as their products are not directly sold in the market. They depend on middlemen to sell their product as they cannot travel to the town due to several constraints. Their activities, viz. stitching and sale of readymade garments are also limited to their locality. There is also an

issue with the availability of inputs in the case of dry fish sales, making fish pickle, etc. during off seasons. They involved in dry fish sales even when they were functioning alone and their primary occupation is still the same. Another problem is the lack of proper work place. Currently they are functioning in a house of one of the members of the group. They have diversified their activities but have not been able to effectively manage them. These hurdles, which are small but very crucial in the functioning and even, are hampering their activities.

If the case of Kadal Group in Malappuram District is taken, similar issues can be inferred with regard to marketing of the product. Majority of the members in the group belong to the households within the locality and their activity is done in their house. They do not market the product. Rather than door-to-door sale, they sell the products in and around their household that too, to those who come and demand the products. As they are women group, they are unable to explore markets in town areas and their activity is limited to the locality or even in the house or place in which the group are functioning.

The two cases discussed can be compared with another case named HUMD in Kozhikode which is also a woman SHG. They have similar difficulties as cited above. However, they have managed to convert these issues to their advantage. They do not prioritize the sale of dry fish/fish pickle as their main activity. In the case of lack of fish during off seasons, they concentrate on other activities and hence the lack of raw materials has no influence on their income and livelihood. They have also got an issue with marketing of their products in the town, especially for businesses like catering and supply of bakery items. But, they are willing to resolve the issue by themselves. They are trying to eradicate middle

men from their business. They are participating in food festivals and fairs in the town and are giving publicity in the form of banners and in other forms about their catering business. Regarding the issue with transportation facilities, they have to depend on auto or other vehicles to supply their products (bakery items and snacks) to shops in the town. The Secretary of the group opined that they have found a solution to this transportation problem. They have applied for assistance to purchase a vehicle (an auto rickshaw) to transport the materials and finished products to the town and some of them are also willing to learn driving so that they need not have to depend on any one and can take these articles to the market place by themselves.

In this case it could be analysed whether a group is developed or not is also depending on the mindset and the involvement of these groups as well as support they receive from their family and society. A member of HUMD said that initially they were not given support by their family to form a group. But once they started and functioning well with good earning, the family members started supporting them in their activities.

4.5 Perception of Fisher folks

SHGs and cooperatives in the fisheries sector have got its own pros and cons. Evaluating the pros and cons of this set up will help the policy makers to develop plans and programmes so as to improve the functioning. Discussions with the experts as well PRAs has identified major benefits and problems of fisher folk SHGs. The statements are framed and their responses are recorded in a five point scale, viz. “strongly agree”, “agree”, “neutral”, “disagree” and “strongly disagree”.

Table 4.16 KMO and Bartlett's Test: Benefits of SHGs

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.623
Bartlett's Test of Sphericity	Approx. Chi-Square	4514.645
	Df	105
	Sig.	.000

Table 4.17 Communalities: Benefits of SHGs

	Initial	Extraction
Improved living standard	1.000	.662
Sustainable livelihood option to the household	1.000	.770
Unity among the members	1.000	.831
Better interaction with outside community	1.000	.611
Increased political awareness	1.000	.693
Increased mutual trust and bonding	1.000	.789
Better contribution to the household income	1.000	.781
Awareness about government schemes	1.000	.701
Feeling of empowerment	1.000	.931
Skill Development	1.000	.934
Less dependence on money lenders	1.000	.557
Adequate funds to meet borrowing needs	1.000	.685
Better savings	1.000	.595
More participation in social activities	1.000	.516
Easy credit at low interest	1.000	.652

Extraction Method: Principal Component Analysis.

Perception of fisher folks on 15 statements with regard to the benefits of SHGs is recorded in a five point scale and based on this a Factor Analysis is performed to identify pertinent benefits. Table 4.16 depicts the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy, which has generated a value of 0.623, which is above the suggested acceptable cutoff of 0.50 for

performing the factor analysis (Burns and Burns, 2008). The overall results are significant indicate that the factor analysis may be carried out. Table 4.17 shows communalities which give the variability in a particular variable accounted for by all factors extracted by the factor analysis.

Table 4.18 Total Variance Explained: Benefits of SHGs

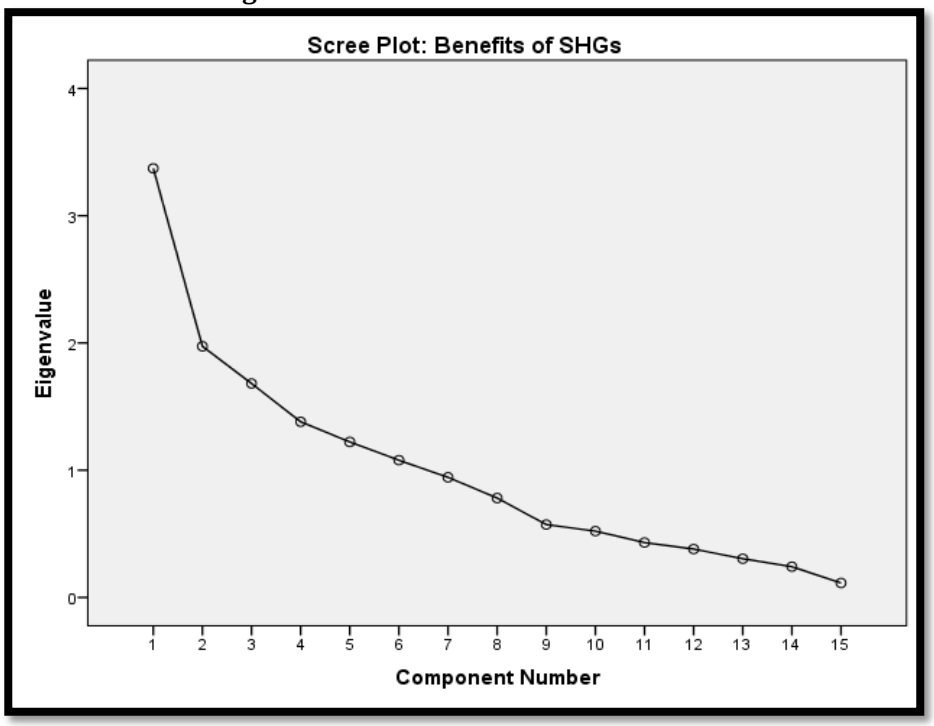
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cumulative %	Total	% of Var	Cumulative %	Total	% of Var	Cumulative %
1	3.372	22.481	22.481	3.372	22.481	22.481	2.079	13.859	13.859
2	1.974	13.160	35.641	1.974	13.160	35.641	1.916	12.774	26.633
3	1.682	11.210	46.852	1.682	11.210	46.852	1.898	12.650	39.283
4	1.380	9.203	56.055	1.380	9.203	56.055	1.850	12.331	51.614
5	1.222	8.148	64.202	1.222	8.148	64.202	1.760	11.735	63.350
6	1.079	7.191	71.393	1.079	7.191	71.393	1.207	8.044	71.393
7	.944	6.293	77.686						
8	.781	5.209	82.896						
9	.573	3.819	86.714						
10	.521	3.473	90.187						
11	.431	2.876	93.063						
12	.381	2.537	95.600						
13	.304	2.030	97.630						
14	.242	1.611	99.241						
15	.114	.759	100.000						

Extraction Method: Principal Component Analysis.

Among the extracted variables, six factors have an Eigen value of more than 1. The first factor, which accounts for 3.372, explains around 22.50 percent of the total variances. The six factors together explain about 71.40 percent of the variance. In the rotated solution, the first factor accounts for 2.079 and explains 13.859 percent of the total variance, with 12.774

percent of variance the Eigen value for the second factor is 1.916. The third, fourth, fifth and sixth factors explain about 12.65, 12.331, 11.735 and 8.044 percentages of the total variance. The tabulated results are depicted in Table 4.18 while Figure 4.11 shows the Scree plot.

Figure 4.11 Scree Plot: Benefits of SHGs



Source: Worked out from the Survey data

Table 4.19, Table 4.20 and Table 4.21 show the component matrix, rotated component matrix and component transformation matrix. As the first component in Component Matrix (Table 4.19) explains 10 factors, a rotated solution (Table 4.20) is derived to get a clear picture.

Table 4.19 Component Matrix[a]: Benefits of SHGs

	Component					
	1	2	3	4	5	6
Improved living standard	-.079	-.495	-.120	.534	.183	.279
Sustainable livelihood option to the household	-.513	.432	.462	-.174	.118	-.249
Unity among the members	.588	.132	.376	-.020	.315	.476
Better interaction with outside community	.010	.057	.048	.285	.580	-.433
Increased political awareness	.612	-.073	-.095	-.428	.348	.032
Increased mutual trust and bonding	.535	.329	.503	-.064	.232	.290
Better contribution to the household income	.540	-.422	-.541	.026	.028	.135
Awareness about government schemes	.579	-.079	-.237	-.510	.088	-.190
Feeling of empowerment	.254	.769	-.433	.274	.088	.071
Skill Development	.191	.764	-.517	.194	-.091	.025
Less dependence on money lenders	.530	.022	.106	-.202	-.457	-.121
Adequate funds to meet borrowing needs	.549	-.143	.287	.514	-.085	-.100
Better savings	.624	-.013	.101	.095	-.361	-.236
More participation in social activities	-.280	.161	.141	-.046	-.389	.488
Easy credit at low interest	.565	.043	.347	.327	-.207	-.245

Extraction Method: Principal Component Analysis; a. 6 components extracted.

Table 4.20 Rotated Component Matrix[a]: Benefits of SHGs

	Component					
	1	2	3	4	5	6
Improved living standard	-.088	***.583***	-.203	-.494	.030	.165
Sustainable livelihood option to the household	-.196	***-.835***	-.046	-.152	-.001	.096
Unity among the members	.144	.119	.022	.105	***.885***	-.025
Better interaction with outside community	-.014	-.098	.055	-.085	.048	***.767***
Increased political awareness	.006	.232	-.016	***.674***	.398	.163
Increased mutual trust and bonding	.245	-.168	.085	.127	***.823***	-.010
Better contribution to the household income	.101	***.806***	.053	.341	-.018	.036
Awareness about government schemes	.122	.185	.023	***.800***	.074	.079
Feeling of empowerment	.022	.017	***.951***	-.001	.135	.087
Skill Development	.035	-.006	***.963***	.053	-.038	-.046
Less dependence on money lenders	***.564***	.004	.010	.396	.030	-.286
Adequate funds to meet borrowing needs	***.695***	.239	-.043	-.191	.254	.206
Better savings	***.718***	.113	.067	.243	.034	-.043
More participation in social activities	-.125	-.135	.030	-.286	.078	-.628
Easy credit at low interest	***.771***	-.006	.027	-.019	.197	.132

Extraction Method: Principal Component Analysis.; Rotation Method: Varimax with Kaiser Normalization.; a. Rotation converged in 10 iterations.

The first factor (termed as *'financial'*) comprises of statements like less dependence on money lenders, funds to meet borrowing needs, better savings and easy credit at low interest, which can be categorized into financial benefits. These are generally statements related to financial reliance and development of the fisher folks due to their membership in the SHGs. Second factor is related to income, livelihood and living standards; the third factor is relating to skill development and empowerment. The fourth is

related to political and scheme/government assistance awareness. The fifth factor comprises of statements related to unity and trust between the members in the groups. The sixth factor indicates the improved interaction of fisher folks with the outside community.

Overall, membership in the SHGs has brought in financial reliance and development among the fisher folks. There has been an improvement in their savings rate. Matsyafed through the SHG and cooperative setup are providing adequate funds for meeting the borrowing needs. This would mean that they can now get easy credit without collateral, that too at a low rate of interest. The contribution to their household income has increased drastically. This is more so in the case of fisher women. This has resulted in an improved household standard of living among the fisher folks. Training activities and participation in the meetings has resulted in development of skills. The awareness level of fisher folks with regard to the government schemes and political aspects have also improved due to their SHG affiliation. Field inference shows that the fisher folks are more politically aware and active.

Here, it is pertinent to note that community motivator appointed by the Matsyafed has been effective in propagating governmental assistance in the form of various schemes and programmes for the benefit of the fisher folks. Trust level within the group members has increased. The fisher folks are now more united mainly due to the democratic method followed during the group meetings while taking major decisions. Interactions with the non-fisher folks have also increased mainly due to improved communication skills.

Table 4.21 Component Transformation Matrix: Benefits of SHGs

Component	1	2	3	4	5	6
1	.612	.382	.174	.487	.453	.085
2	-.017	-.565	.796	.000	.207	-.069
3	.336	-.563	-.521	-.245	.488	-.023
4	.351	.294	.249	-.794	-.022	.311
5	-.506	.051	-.027	.062	.445	.734
6	-.365	.360	.050	-.260	.562	-.593

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The perception of the fisher folks with 15 positive and negatives of SHGs at the individual, household and group level is evaluated with the aid of Factor Analysis. The Kaiser-Meyer-Olkin (KMO) measure of sample adequacy is depicted in Table 4.22, which has generated a value of 0.870 which is above the generally accepted minimum of 0.50 (Burns and Burns, 2008). This is above the suggested acceptable cutoff of 0.50 for performing the factor analysis.

Table 4.22 KMO and Bartlett's Test: Perception of Fisher folks

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.870
Bartlett's Test of Sphericity	Approx. Chi-Square	4401.027
	Df	105
	Sig.	.000

Table 4.23 Communalities: Perception of Fisher folks

	Initial	Extraction
Trust and bonding among group members	1.000	.764
Ability to withstand obstacles	1.000	.793
Greater role in decision making	1.000	.608
Lack of Technical Know-how	1.000	.585
Better Living Standards	1.000	.587
Better Contribution to Household Income	1.000	.701
Marketing Problem	1.000	.638
Input Problems	1.000	.578
Sustainable Livelihood Option	1.000	.591
Linkage Issues	1.000	.493
SHG as a Development Option	1.000	.593
Need of more government schemes/programmes	1.000	.790
Less dependence on Money Lenders	1.000	.563
Regular Debt Repayment	1.000	.520
Regular Savings	1.000	.379

Extraction Method: Principal Component Analysis.

The overall results are significant indicating that the factor analysis may be carried out. Table 4.23 shows communalities which give the variability in a particular variable accounted for by all factors extracted by the factor analysis. Among the extracted variables, four factors (Table 4.24) have an Eigen value of more than 1. The first factor accounts for 5.505, which explains around 36.70 percent of the total variances. The four factors together explain 61.23 percent of the variance. In the rotated solution, 24.922 percent of the variance is explained by the first factor, 16.026 percent is

explained by the second factor, 12.882 is explained by factor 3 and 7.403 is explained by the fourth factor.

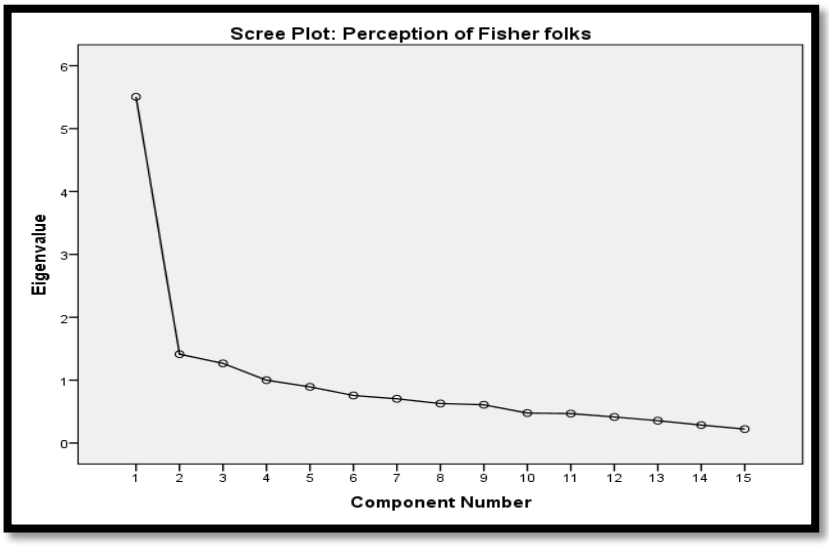
Table 4.24 Total Variance Explained: Perception of Fisher folks

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cumulative %	Total	% of Var	Cumulative %	Total	% of Var	Cumulative %
1	5.505	36.703	36.703	5.505	36.703	36.703	3.738	24.922	24.922
2	1.413	9.418	46.121	1.413	9.418	46.121	2.404	16.026	40.949
3	1.267	8.445	54.567	1.267	8.445	54.567	1.932	12.882	53.831
4	1.000	6.667	61.234	1.000	6.667	61.234	1.110	7.403	61.234
5	.893	5.956	67.191						
6	.757	5.044	72.235						
7	.704	4.693	76.927						
8	.628	4.187	81.115						
9	.609	4.057	85.171						
10	.477	3.180	88.352						
11	.468	3.123	91.474						
12	.415	2.766	94.240						
13	.356	2.370	96.610						
14	.286	1.906	98.517						
15	.223	1.483	100.000						

Extraction Method: Principal Component Analysis.

The Scree plot in Figure 4.12 is parallel to ‘x’ axis after Component 1 and 2 and Eigen values are less than 1 after Component 4. Table 4.25 and Table 4.26 show the Component Matrix and Rotated Component Matrix, respectively for 15 statements. The Component Transformation Matrix is depicted in Table 4.27. Rotated solution is sought for as the first component in the component matrix explains 12 statements.

Figure 4.12 Scree Plot: Perception of Fisher folks



Source: Worked out from the Survey data

Table 4.25 Component Matrix[a]: Perception of Fisher folks

	Component			
	1	2	3	4
Trust and bonding among group members	.687	-.142	-.403	.332
Ability to withstand obstacles	.686	-.131	-.444	.330
Greater role in decision making	.644	-.003	-.395	.192
Lack of Technical Know-how	.556	-.010	-.173	-.496
Better Living Standards	.350	.662	-.006	.163
Better Contribution to Household Income	.451	.705	-.021	.017
Marketing Problem	.754	-.069	.243	-.078
Input Problems	.730	-.021	.206	-.056
Sustainable Livelihood Option	.525	.478	-.024	-.293
Linkage Issues	.671	-.198	.036	.046
SHG as a Development Option	.685	-.248	.243	-.052
Need of more government schemes/programmes	.250	.135	.677	.501
Less dependence on Money Lenders	.735	-.102	.048	-.101
Regular Debt Repayment	.599	-.269	.298	.014
Regular Savings	.506	-.065	.097	-.331

Extraction Method: Principal Component Analysis.; a. 4 components extracted.

The first factor clearly explains the benefits and the operational issues of the SHGs. The factors like less dependence on money lenders, regular debt repayment, regular savings and development options fit in as individual benefits of SHGs. However, the first factor also highlights the problem like the lack of technical skill of group members, marketing and input as well as linkage issues of the group. These can be categorized as operational or functional problems. So the first factor is a mix of individual or household benefits of the SHGs as well as the hurdles experienced with regard to the inputs, in the sale of products.

Table 4.26 Rotated Component Matrix[a]: Perception of Fisher folks

	Component			
	1	2	3	4
Trust and bonding among group members	.276	***.823***	.098	-.005
Ability to withstand obstacles	.255	***.846***	.108	-.032
Greater role in decision making	.253	***.696***	.221	-.100
Lack of Technical Know-how	***.526***	.144	.224	-.487
Better Living Standards	.003	.159	***.731***	.165
Better Contribution to Household Income	.112	.137	***.817***	.045
Marketing Problem	***.733***	.220	.206	.098
Input Problems	***.676***	.233	.241	.093
Sustainable Livelihood Option	.346	.054	***.652***	-.207
Linkage Issues	***.576***	.396	.051	.052
SHG as a Development Option	***.728***	.229	.013	.106
Need of more government schemes/programmes	.272	-.051	.173	***.827***
Less dependence on Money Lenders	***.652***	.326	.173	-.047
Regular Debt Repayment	***.669***	.187	-.043	.189
Regular Savings	***.567***	.044	.140	-.192

Extraction Method: Principal Component Analysis.; Rotation Method: Varimax with Kaiser Normalization.; a. Rotation converged in 7 iterations.

While the input issue is the concern raised by the fish vending and processed food making groups, marketing problem has been a major issue of most of the women activity groups. The second factor can be generally termed as "empowerment" as statements related to trust, role in decision making and ability to withstand obstacle are highlighted. Factor three (benefits related to income, livelihood and standard of living) is related to each other as one leads to the other. The role of the SHGs as a sustainable livelihood option in increasing their share in the household income and improving their household living standards is well acknowledged with this factor. The final factor calls for more government schemes and programmes aimed at the socio-economic development of the fisher folks.

Table 4.27 Component Transformation Matrix: Perception of Fisher folks

Component	1	2	3	4
1	.766	.534	.357	.008
2	-.310	-.179	.932	.060
3	.440	-.632	-.016	.638
4	-.350	.533	-.064	.768

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

While evaluating the benefits and problems of the SHGs, it is evident that development through financial reliance forms a major part of benefits. However, concerns relating to marketing, input, linkages, and lack of government schemes have also emerged as major issues. The eradication of these operational problems of the SHGs can help the groups to excel more, which, in turn, will help a great deal in brining the fisher folks more into to

the mainstream. Overall, improved savings, high living standard; better contribution to the household income, etc. indicate that the SHG and cooperative movement in the fisheries sector is a step towards the right direction in achieving livelihood security and inclusive development to the fisher folks.

4.6 Reason for Success and Effectiveness of SHGs

Several reasons identified through case studies, primary survey, discussions with the authorities and PRAs with the SHG members have brought in the interesting inferences about the success stories of fisher folk SHG and cooperative movement with the Apex Body "Matsyafed" in its spearhead. Close interaction and cordial relation among the members have ensured unity and collectiveness of efforts in achieving financial and social goals. There has been an enormous development in the leadership skills and self confidence of the members. They can motivate themselves and are also able to motivate their fellow group members. Information about various schemes as well as socio-economic factors is effectively shared among members. The members have greater share in the household income. They feel more financially, socially, politically as well as psychologically empowered being members of the SHG. Improved family income and better livelihood option by attaining financial independence has helped in providing support to the household. Fisherwomen have become more articulate by their active participation in economic, political and social activities. Compared to male SHGs, women are more prompt and organized in remittance of thrift and loan repayment. The above reasons contributed to the success of SHGs and cooperatives in the coastal villages.

Chapter 4 shows the effectiveness of SHGs and cooperatives in the fisheries sector in Kerala based on changing employment pattern and roles of the fishers owing to globalization and technological advancement in the fishing sector. Analysis based on case studies of individuals, groups and regions and empirical inferences based on primary survey also are categorical in depicting the success of SHG activities in the fishing sector particularly in the areas of employment and livelihood and income earning levels in the fishing sector. While analyzing the SHG dynamics in the fishing sector in Kerala, it is visible that the dynamics is more in the women related SHGs as women fishers have got an avenue for empowering their financial, social, cultural and political levels.

Chapter 5

Inclusive Development through SHGs and Cooperatives

Chapter 4 has given an evaluation on the functioning of the SHGs and its benefits and problems based on primary and secondary data. Chapter 5 situates the effectiveness of SHGs as an inclusive development option of the fisher folks using primary data.

5.1 The Concept of Inclusive Development

Though social exclusion is all pervasive, it is strong among the fishers. There are several reasons for the high exclusionary tendencies. The most pertinent is their poverty and sticky labour with no alternative livelihood options. The fisher folks socially and culturally are different from other social groups in the state. They are geographically segregated with poor infrastructure and quite often cut off from the main stream of life and thinking. The fish economy is rudimentary in nature with manifold levels of exploitations and deceit. Though presently fish output fetches good price, a considerable amount of this is pick-pocketed by the middlemen and hence the fishermen share in their produce is pathetically low. This is true with respect to low valued pelagic species like sardine and mackerel as the traditional fishers output still predominates the catches of these two species.

Kerala is one of the states in India that has undergone radical transformation in social and physical quality of life index. This has helped

for the formation of micro-level development initiatives targeting the marginalized, a form ignited in the development literature as 'inclusive development'. Initially it originated in the form of Self Help Groups (SHGs) and subsequently metamorphosed into Kudumbashree, Microfinance, and Neighborhoods etc. with no institutional proliferation or networking. Nonetheless these inclusive forces have not penetrated into the fishing sector, though poverty and livelihood issues are much worse in comparison to any other sectors in the Kerala economy. The SHGs success stories have become a new social dialogue in the state and even in India and hence it reached the coastal areas of the state as well. Soon they embraced this new inclusive development force as a revolutionary livelihood security force (not only by the fishermen groups but fisherwomen as well). In a gender angle this has benefitted more to the fisherwomen as they have already been thrown out of the alien from the head-load fish vending activities owing to the modernization impact with motor-bike based local fish marketing.

Soon the state has also indentified the need and its importance as an inclusive development vibrant force in the coastal areas. The Matsyafed, the state level apex cooperative society with its network in the 222 fishing villages becomes the part of this social process of inclusion. Along with this, community participation in this new activity is also leveraged by the church and other activists groups in the coastal areas and hence it becomes a new spirited force helpful in developing new success stories in the rigidly formed fishermen society.

The inclusive aspects can be analysed in many facets, this Chapter focuses mostly on financial inclusion inter alia livelihood and income inequality in a sub-sectoral and Standard of Living Index (SLI) basis with empirical flavor.

5.2 Financial Inclusion

Financial inclusion is the "process that ensures the ease of access, availability, and usage of formal financial system for all members of an economy" (Sarma, 2008). Financial inclusion is closely linked to the level of poverty and income inequality in the group (Park and Mercado Jr., 2015) and its role in curbing income inequality in poverty alleviation is evident [Burgess and Pande (2005); Sarma (2008); Brune et al. (2011); Allen et al. (2013)]. Higher access to financial services reduces the income inequality which was proved by the Gini Coefficient value (Honohan, 2007). Studies also reveal that the higher individual income is a means of financial inclusion and hence there is a negative relationship between poverty and financial inclusion. The present section is an attempt to gauge the level of financial inclusion attained by the respondents. For this, Lorenz Curve and Gini Ratio are used to measure the income inequality. Absolute poverty is evaluated with the aid of basic head count and to work out the relative poverty Foster-Greer-Thorbecke (FGT) decomposition method is used. Factors that bring the respondents out of poverty are also identified. Average individual income and expenditure is also worked out. Level of financial inclusion is computed based on perception and their financial habits and then compared with poverty and living standards.

5.2.1 Income and Expenditure

The household income expenditure pattern shows that expenditure is more than income irrespective of occupational levels. Mechanized households have high average income and expenditure, followed by motorized, non-motorized and other allied sectors. Average number of earners per household is 2.34 with an average household size of 4.46 members. It has been already identified in Chapter 3 that there is significant differences in the individual earnings based on activities. Chapter 3 also throws light on the relationship between the individual income, household income and household expenditure. The evaluation of per-capita income and expenditure further strengthens this notion as the two are also highly determined by the sub-sectors in which the fisher folk work in. The details are depicted in Table 5.1.

Table 5.1 Average Income and Expenditure Pattern

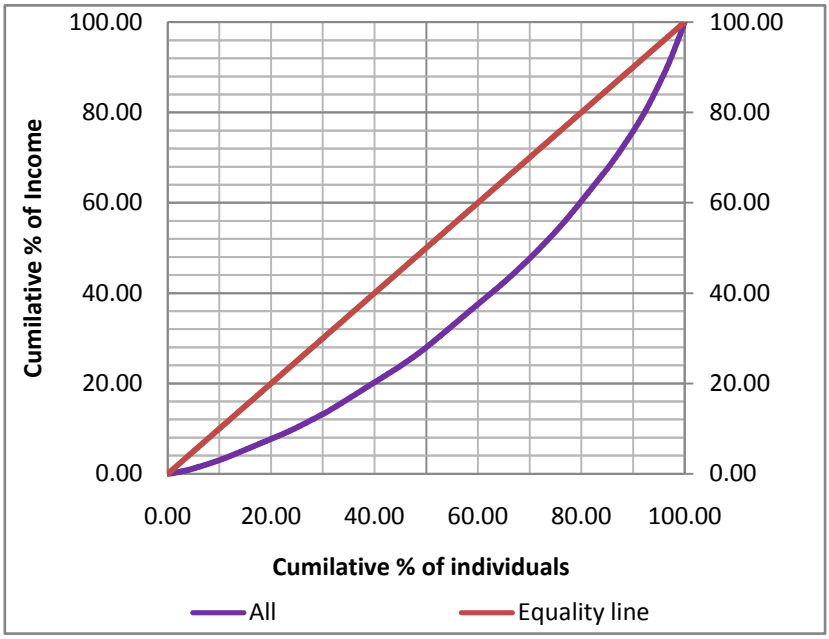
Activity	PCI	PCE	Family Income	Family Expense
Motorized	1451.16	1505.6	5530.61	5703.43
Non-motorized	1104.61	1141.88	4592.36	4733.81
Mechanized	1590.89	1640.97	6605.17	6836.71
Others	925.35	933.86	3829.06	3874.67
Total	1011.21	1027.2	4161.67	4233.86
Household Members		4.46	***Earners***	2.34

Source: Worked out from the Survey data

5.2.2 Income Inequality

Social exclusion has been termed as a major reason for disparities in income distribution. So a less disparity in income distribution can be termed a sign of inclusive development. An evaluation of the income differences within the sub groups of the fisheries will help to identify the regional, gender and employment aspects. Lorenz Curves (LC) and Gini Coefficients (GC) are used to cognize the normative perspectives of social welfare in gender, regional and employment dimensions. The Lorenz Curve is a tool used to represent the income distribution, which can be well captured by looking into the shape of the curve. Gini Index indicates the income inequality within the group with the aid of Lorenz Curve.

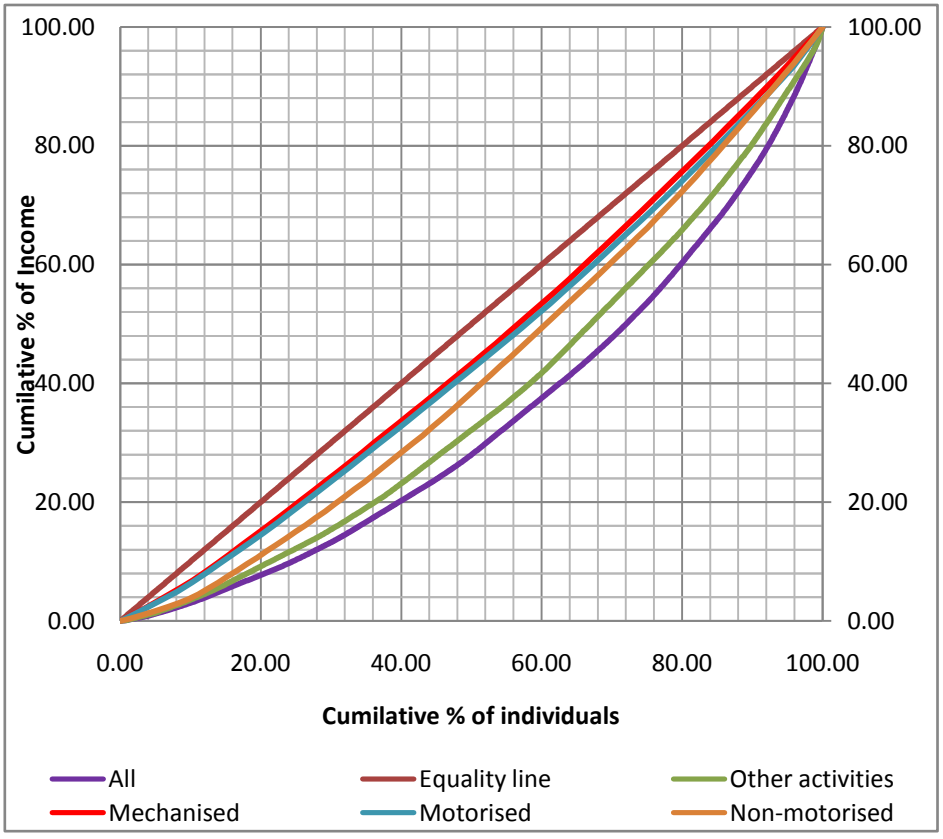
Figure 5.1 Lorenz Curve



Source: Worked out from the Survey data

The LC based on individual income is depicted in Figure 5.1. The straight line represents the line of perfect equality where the income is distributed equally i.e. every person in the population has the same income. It is evident from the figure that the distribution of income is further from the equality line indicating towards some inequality between individuals in the income levels. The Gini Value is 0.318.

Figure 5.2 Lorenz Curve based on Activity

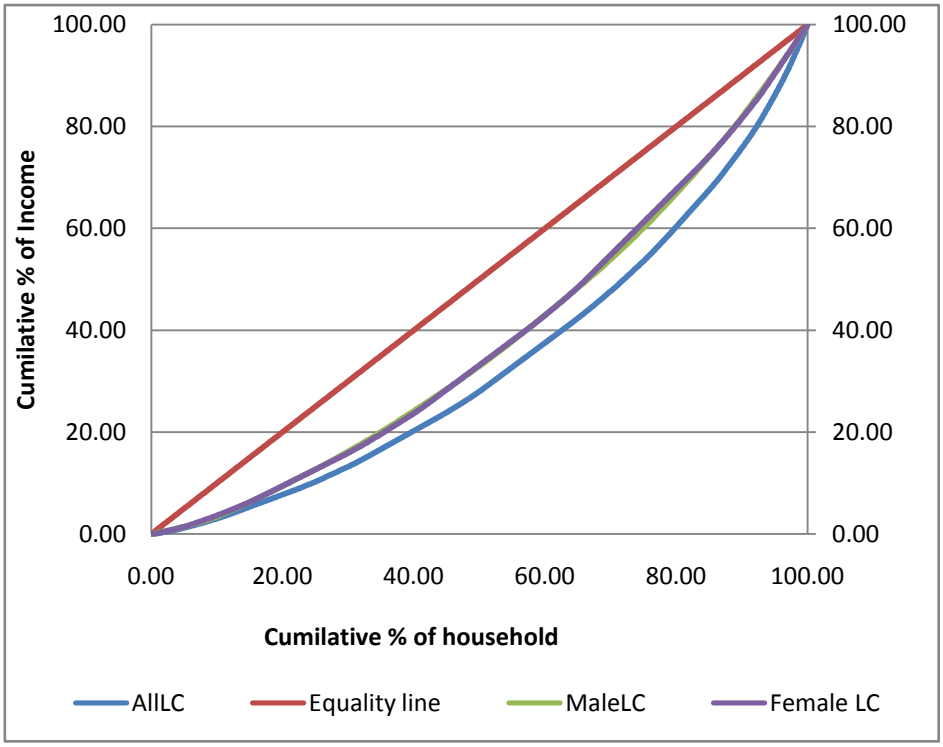


Source: Worked out from the Survey data

Figure 5.2 shows the occupation-wise Lorenz Curve for the four sub sectors. The LC for the mechanized sector is closer to the equality line

followed by the motorized, non-motorized and other allied activities. High inequality is seen in the "All" category. The LCs of the mechanized and motorized sectors overlap initially and the difference is feeble in the high incomes as well. However, the curves for non-motorized and motorized cross each other at higher income levels. This indicates that at higher incomes, income inequality is low for motorized compared to the non-motorized sector and vice versa in the low income groups. The LC of those working in the other activities stands apart from the LCs of the other sub sectors.

Figure 5.3 Lorenz Curve based on Gender



Source: Worked out from the Survey data

Gender-wise (Figure 5.3), there is no visible difference and the two LCs look as if they are closely knit to each other. The results in the LC are further corroborated with the Gini ratios of 0.239 and 0.238 for males and females. This would imply that within the group, the males and females have more or less same amount of earnings.

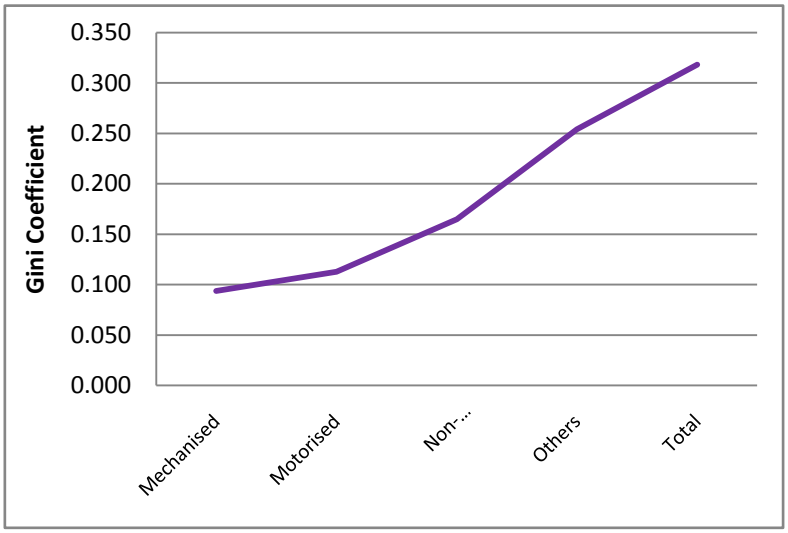
Table 5.2 Gini Coefficient

Sector	***Gini***	***District***	***Gini***
Mechanized	0.094	Alappuzha	0.362
Motorized	0.113	Kozhikode	0.307
Non-Motorized	0.165	Ernakulam	0.259
Others	0.254	Malappuram	0.319
Male	0.239	Kollam	0.358
Female	0.238	Thrissur	0.272
Region			
Region	*Gini*	*Region*	*Gini*
Rural	0.321	Urban	0.312
Total		***Gini***	
All		0.318	

Source: Worked out from the Survey data

For further comparison, Gini Index is worked out based on activity, gender and region (Table 5.2 and Figure 5.4). Overall, GC is 0.318. The Gini Values corroborate the LC results as the value for mechanized sector is (0.094) and motorized sector (0.113) are closer to zero indicating minimal income inequality within the groups. For the traditional sector, the GC value is 0.165. GC is the highest for other allied sectors (i.e. 0.254). However, the Gini values for all the sub sectors are less than 0.50. The higher Gini values for the allied sector are mainly due to the comparatively lower income level of females working in this sub-sector.

Figure 5.4 Gini Coefficient: Activity



Source: Worked out from the Survey data

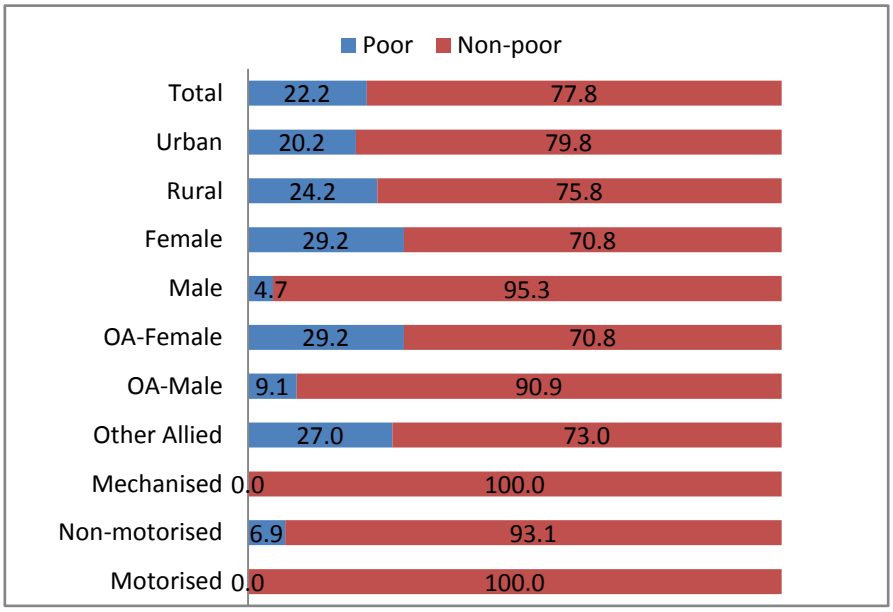
It was already identified in Chapter 3 that the there is marked difference in earnings of females and males engaged in the same activities. Difference in income levels within region evinces a GC of 0.321 for rural and 0.312 for urban regions.

5.2.3 Poverty among the Fisher folks

5.2.3.1 Absolute Poverty

Income inequality within a group is only a measure to corroborate the inter-group variations in income levels. The extent of poverty is measured by means of the conventional method of Head Count Ratio using the official poverty line as specified by the Planning Commission of India for Kerala. The results points out that 77.8 percent of the fisher folks have an income above the poverty line.

Figure 5.5 Poverty among the Fisher folks



Source: Worked out from the Survey data

Figure 5.5 shows detailed results. Gender-wise, more than 95 percent of males are above the poverty level, whereas for females the percentage above poverty line is 70.8 percent. All the fisher folks involved in motorized and mechanized activities and 93.1 percent working in the non-motorized sector are non-poor. Rural-urban difference is minimal as 75.8 percent in rural belts are above the poverty line compared to 79.8 percent in the urban region. The poverty level differs on the basis of living standards (Table 5.3). The percentages of those above the poverty line are 94.3 percent in the high SLI category. In the medium SLI section the percentage of non-poor comes down to 78.8. Compared to the 5.7 percent in the high SLI section, those who are poor are 21.2 percent and 48.5 percent in the medium and low SLI categories.

Table 5.3 SLI and Non-poor

SLI	Non-Poor1018		Total
	No	Yes	
Low SLI	48.5	51.5	100.0
Medium SLI	21.2	78.8	100.0
High SLI	5.7	94.3	100.0

Source: Survey data

5.2.3.2 Relative Poverty

To work out the relative poverty, Foster-Greer-Thorbecke [FGT] (1984) analysis is used. Incidence of Poverty Index or Head Count Index (HCI) and Relative Incidence of Poverty have also been computed. Appraising the depth Poverty Gap Index (PGI) and severity of poverty (SPGI) is important in designing plans aimed at reducing the number of people living below the poverty line. The FGT is based on the property of being additively sub-group decomposable. This means that the index is decomposable by subgroups (according to region, income class, gender, etc.) among the poor. This method helps to identify the relative position of each group in terms of poverty. The general form of FGT index is:

$$P(\alpha) = \frac{1}{N}\sum_{i=1}^{q}\left[1 - \frac{X_i}{\pi}\right]^{\alpha}$$

When α = 0 ---------- P (α = 0) – Head Count Index (HCI)
α = 1 ---------- P (α = 1) – Poverty Gap Index (PGI)
α = 2 ---------- P (α = 2) – Poverty Severity Index (SPGI)

The higher the value of α, the greater is the sensitivity of the measure to the well-being of the worst off.

Table 5.4 FGT based on Activity and Gender

	Poor	Non-poor	Total	% Poor	Non-Poor %	Poor %	HCI	Rel. inci.	PGI	SPGI
Activity										
Motorized	0	49	49	0	100.0	0.0	0.0000	0.0000	0.0000	0.0000
Non-motorized	5	67	72	2.5	93.1	6.9	0.0694	0.3125	0.0069	0.0013
Mechanized	0	58	58	0	100.0	0.0	0.0000	0.0000	0.0000	0.0000
Other Allied	195	526	721	97.5	73.0	27.0	0.2705	1.2171	0.0516	0.0216
a. Male	7	70	77	3.6	90.9	9.1	0.0909	0.3361	0.0037	0.0045
b. Female	188	456	644	96.4	70.8	29.2	0.2919	1.0794	0.0573	0.0241
Gender										
Male	12	244	256	6.0	95.3	4.7	0.0469	0.2109	0.0031	0.0005
Female	188	456	644	94.0	70.8	29.2	0.2919	1.3137	0.0573	0.0241
Region										
Rural	109	341	450	54.5	75.8	24.2	0.2422	1.0900	0.0456	0.0192
Urban	91	359	450	45.5	79.8	20.2	0.2022	0.9100	0.0382	0.0156
Total	200	700	900	100	77.8	22.2	0.2222	1.0000	0.0419	0.0174

Source: Worked out from the Survey data

The results depicted in Table 5.4 show the region, activity and gender-wise FGT analysis. There is a slight rural-urban centers' difference in the poverty level of the fisher folks as incidence, depth, relative incidence and severity of poverty are higher in the rural belts. Percentages of poor are also comparatively slightly higher. Activity-wise, none of the fisher folk from the motorized and mechanized sector is below the poverty line. Among the non-motorized and others, the highest poverty indicators are for the other allied category. 97.5 percent of poor are from this category. They have the highest incidence, relative incidence, depth and severity. The overall results points towards an activity-wise difference in the poverty and its indicators. Hence the null hypothesis "indicators of poverty levels are alike across activities" can be rejected. FGT analysis by disaggregating the samples into

males and females clearly evinces that the poverty indicators are highest for females. To further evaluate this, a gender-wise comparison of fisher folk in other allied sector is undertaken. Out of the total poor in this sector, majority (96.4 percent) are females. While at absolute level, more than 75 percent of the fishers are above poverty line, there is a sector and gender-wise difference in the level of poverty as the fisher folks from the allied sector, especially the fisher women are still in the clinches of poverty. Hence, they remain in the lower end of the income ladder. However, in overall terms the results are impressive. It can be drawn from the results that the involvement in SHG activities has had a positive impact on the individual income levels of the fisher folks. The estimates of poverty can be used by the policy makers to design and develop plans for the group, i.e. those working in allied sector in general and fisher women in particular in this case, so as to excel them from the poverty line. Even though there is prominence of women in the SHG activities, there is urgent needs to design and develop new tailor made programmes and income generation activities for the fisher women. This is all the more important as majority of the fisher women SHGs are still employed in activities like fish vending, sale of dried fish, marketing other value added fishery products, etc.

It has been identified that more than 75 percent of fisher folks have an income above the poverty level. However, there is still a risk factor that those closer to poverty line may go above the level and those slightly above the poverty level to slip into the poverty. The shift of the fisher folk from the poverty trap is a positive signal in itself as it implies that the cooperative movement in the fisheries sector was impressive in poverty alleviation

among the fisher folks. However, the pertinent question is that whether this move is permanent or temporary. An evaluation of the risks and vulnerabilities associated with the fisher folks to move below the poverty level needs to be done and corrective policy actions should be developed to keep intact the benefits being achieved by the SHG-Cooperative setup in the fisheries sector from this concept of inclusive development.

5.2.4 Factors Determining Non-poor

Binary Logistic Regression is used to work out the main factors determining whether an individual is out of poverty or not. The logistic regression model estimates regression coefficients that can effect of the independent variable on the "odds ratio", which is the probability of the event divided by the probability of the non-event. Here socio-economic variables like gender, earners, household members, work days lost and living standards are taken as covariates and poverty level (non-poor) is taken as dependent variable. The performance of the model is evaluated with the aid of omnibus test of model coefficients (Table 5.5).

Table 5.5 Omnibus Tests of Model Coefficients: Factors determining non-poor

		Chi-square	df	Sig.
Step 1	Step	180.863	6	.000
	Block	180.863	6	.000
	Model	180.863	6	.000

With a Chi-Square statistics of 180.863 and p-value of 0.000, it can be inferred that overall model is statistically significant. The pseudo r-square statistics, i.e. Cox and Snell and Nagelkerke is shown in the Table 5.6 High

pseudo r-square statistics indicates that more variation is explained by the model, to a maximum of 1.

**Table 5.6 Model Summary:
Factors determining non-poor**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	772.106[a]	.182	.279

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

The Hosmer and Lemeshow is a test for the overall fit of the model. The model adequately fits the data if the test indicates non significance. Because the p-value of 0.434 (Table 5.7) is higher than the significance level, it can be concluded than the model fits adequately the observed dataset. Table 5.9 shows that the full model correctly predicts 79.4 percent of the cases. The model is statistically significant based on Table 5.8.

**Table 5.7 Hosmer and Lemeshow Test:
Factors determining non-poor**

Step	Chi-square	df	Sig.
1	7.997	8	.434

Table 5.8 Variables in the Equation: Factors determining non-poor

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	1.251	.080	243.497	1	.000	3.495

Table 5.9 Classification Table[a] : Factors determining non-poor

	Observed		Predicted		
			Non-Poor		Percentage Correct
			No	Yes	
Step 0 [b]	Non-Poor	No	0	200	.0
		Yes	0	699	100.0
	Overall Percentage				77.8
	Observed		Predicted		
			Non-Poor		Percentage Correct
			No	Yes	
Step 1	Non-Poor	No	44	156	22.0
		Yes	29	670	95.9
	Overall Percentage				79.4

a. The cut value is .500

b. Constant is included in the model.

The logistic regression equation for predicting the dependent variable from the independent variable is in log-odds units and the prediction equation is:

$$\log(p/1-p) = b0 + b1*x1 + b2*x2 + b3*x3 + b4*x4+b5*x5+ b6*x6$$

The regression results are depicted in Table 5.10 the variable gender, earning members, total members, days lost due to ill health and standard of living are significant. The estimated model is:

$$\log(p/1-p) = 1.211 - .183*\text{Work days lost} + .460*\text{Earning Members} - 183*\text{Household members} + 2.311*\text{Gender} – 1.272*\text{SLILow} + 1.335*\text{SLIHigh}$$

Table 5.10 Variables in the Equation: Factors determining non-poor

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Work days lost	-.183	.035	27.330	1	.000	.832
	Earning Members	.460	.152	9.198	1	.002	1.585
	Household members	-.183	.074	6.030	1	.014	.833
	Gender	2.311	.318	52.807	1	.000	10.082
	SLILow	-1.272	.246	26.762	1	.000	.280
	SLIHigh	1.335	.413	10.423	1	.001	3.798
	Constant	1.211	.446	7.385	1	.007	3.357

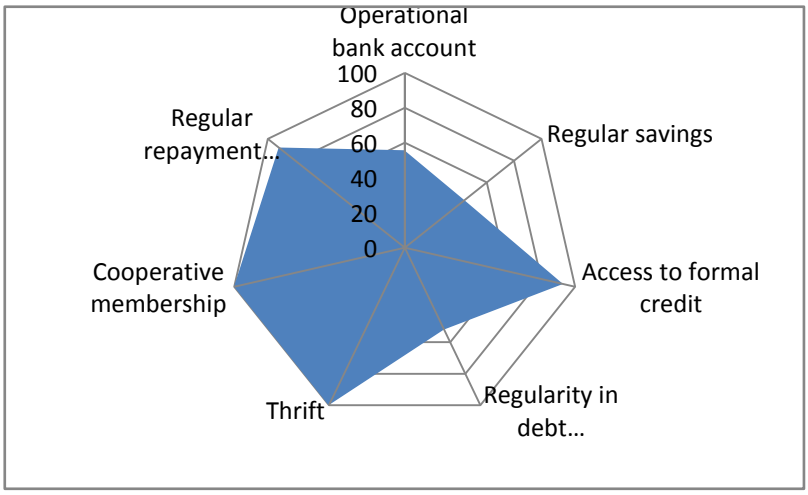
a. Variable(s) entered on step 1: Work days lost, Earners, Household members, Gender, SLILow, SLIHigh

Here it can be concluded that gender, number of earners in the household, total members in the household, lost work days due to ill health and SLI are major determinants of whether an individual is out of poverty or not. Low SLI is negative indicating that a person in low SLI have less chances of being non-poor. For the high SLI (with a positive B value), chances of being in the non poor category are more. For each additional work days lost, the odds of getting out of poverty are less. Also, increase in number of earners will help the household to get out of poverty. An additional member in the household will reduce the odds of coming out of poverty. Hence, an additional member is a burden to the household if that person is not an income earner. Gender of the respondents also influence whether they are out of poverty. Males have higher chance of being in non-poor category.

5.2.5 SHGs and Financial Inclusion

The financial habits of the SHGs help to exemplify the level of financial inclusion to a greater extent. An overview of the financial habits of the fisher folks is depicted in Figure 5.6. As the sample constitute fisher folk SHG members with cooperative tie up, 100 percent of the respondents have an active cooperative membership and regular thrift. It is heartening to note that the cooperatives are coming under the purview of the Matsyafed in all the cases.

Figure 5.6 Financial Aspects



Source: Worked out from the Survey data

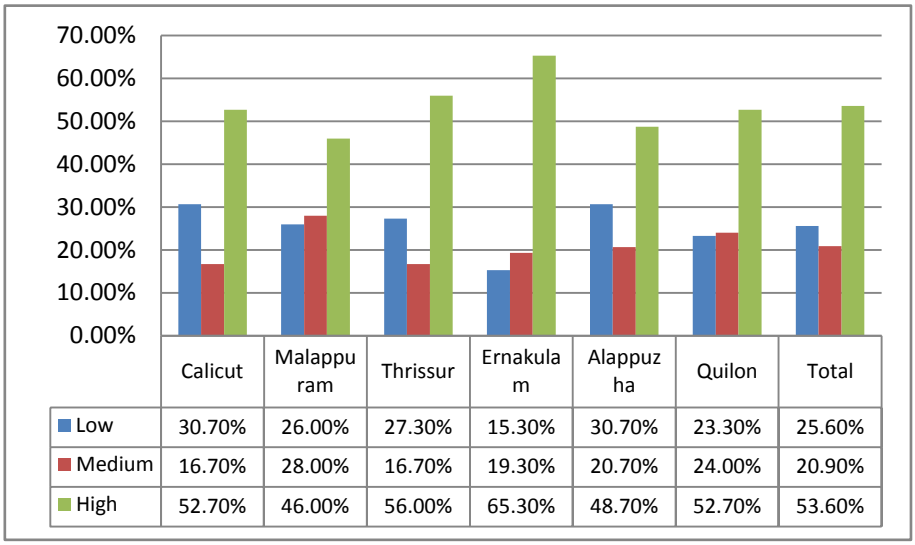
Another positive aspect of the SHGs coming under the Matsyafed is that regular thrift generation and regularity in repayment (repayment of borrowings from the societies and the Matsyafed is more than 90 percent). For other debts, the repayment rate is 52 percent. A considerable number, 93 percent of the respondents have access to formal credit through various schemes of Matsyafed and Department of Fisheries. Bank account and

regular savings levels of the fishers in percentage level come to 55.8 and 43.8 respectively. The financial aspects like active bank account, savings, indebtedness, etc. are already discussed in detail in Chapter 3.

Rampant Poverty and income inequality are the two pertinent issues faced by the fisher folks in the state mainly due to the variation in earnings. However, the participation in SHG activities has enabled them to ark out of these issues to a certain extent. This is clearly understood from the poverty analysis and income inequality levels discussed in the earlier sections. To further corroborate this, the indicators of financial reliance viz. holding an operational bank account, regular savings, access to formal credit, and regularity in repayment, thrift generation, etc. are worked out and categorized into three levels viz. high, medium and low.

The financial inclusion among the fisher folk is impressive with 53.6 percent of the respondents having high level of financial inclusion. This is mainly due to the fact that the cooperative setup brought in a culture of financial discipline in the coastal belts of Kerala. They have been introduced to pioneering ideas like thrift formation, account opening/operating, formal credit, regular savings, etc. The private money lenders and middle men who literally used to control the whole financial fate of the fisher folk are now in the verge of annihilation mainly due to the timely intervention of the agencies like the Department of Fisheries and Matyafed through various plans and credit programmes.

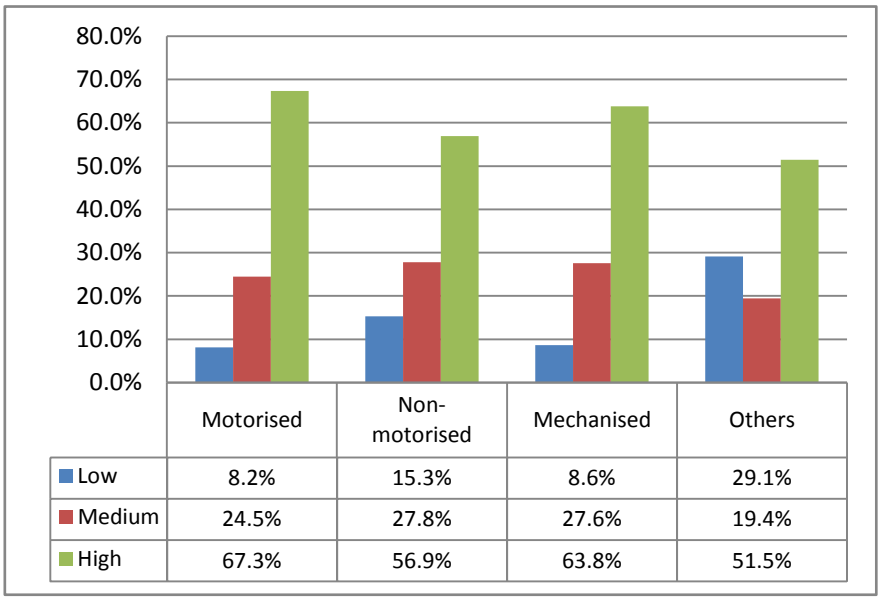
Figure 5.7 District and Level of Financial Inclusion



	Calicut	Malappuram	Thrissur	Ernakulam	Alappuzha	Quilon	Total
Low	30.70%	26.00%	27.30%	15.30%	30.70%	23.30%	25.60%
Medium	16.70%	28.00%	16.70%	19.30%	20.70%	24.00%	20.90%
High	52.70%	46.00%	56.00%	65.30%	48.70%	52.70%	53.60%

Source: Worked out from Appendix 5.1

Figure 5.8 Activity and Level of Financial Inclusion



	Motorised	Non-motorised	Mechanised	Others
Low	8.2%	15.3%	8.6%	29.1%
Medium	24.5%	27.8%	27.6%	19.4%
High	67.3%	56.9%	63.8%	51.5%

Source: Worked out from Appendix 5.2

District-wise, (Figure 5.7) 65.3 percent of the fisher folks have attained high level of financial inclusion in Ernakulam. For the rural districts of Malappuram and Alappuzha, those in the high level of financial inclusion are less than 50 percent. However, for Thrissur district, those in the high level of inclusion are higher than even the two urbanized regions like Kozhikode and Kollam.

Sector-wise, as well there is significant difference in the financial inclusion as percentage in the high financial inclusion are more in the modernized sectors viz. mechanized (63.8 percent) and motorized (67.3 percent). On the contrary, those in the low level of financial inclusion are lesser in these sectors and the concentration in the lower category is more in the traditional and other sectors. Figure 5.8 shows the detailed results. The activity wise variation in the financial inclusion is also evident from the Chi-Square results of Table 5.11 which are significant.

Table 5.11 Chi-Square Tests: Activity and Level of Financial Inclusion

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.438[a]	6	.000
Likelihood Ratio	30.708	6	.000
Linear-by-Linear Association	14.208	1	.000
N of Valid Cases	900		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.24.

A difference based on gender (Table 5.12) can also be identified as the males have higher proportion of respondents (61.7 percent) in the high financial inclusion category as against females (50.3 percent).

Table 5.12 Gender and Financial Inclusion

Gender	Financial Inclusion (in percent)			Total
	Low	Medium	High	
Male	16.4	21.9	61.7	100.0
Female	29.2	20.5	50.3	100.0
Total	25.6	20.9	53.6	100.0

Source: Survey data

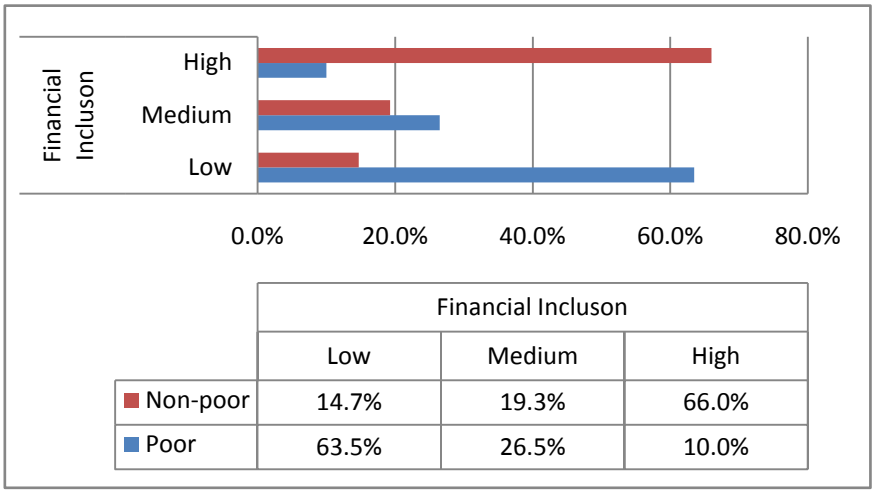
An evaluation of poverty levels of the fisher folks with level of financial inclusion brings in interesting inferences. Majority of the non poor are in the high and poor are in the low financial inclusion category (Table 5.13 and Figure 5.9). It is clear from Table 5.13 that more than 95 percent in the high financial inclusion category are non-poor. The percentage of non-poor is at 71 percent and 44 percent in the medium to low financial inclusion category.

Table 5.13 Financial Inclusion based on Poverty

Financial Inclusion	Not Poor (in percent)		Total
	No	Yes	
Low	55.2	44.8	100.0
Medium	28.2	71.8	100.0
High	4.1	95.9	100.0

Source: Survey data

Figure 5.9 Poverty and Financial Inclusion



	Financial Incluson		
	Low	Medium	High
Non-poor	14.7%	19.3%	66.0%
Poor	63.5%	26.5%	10.0%

Source: Worked out from Appendix 5.3

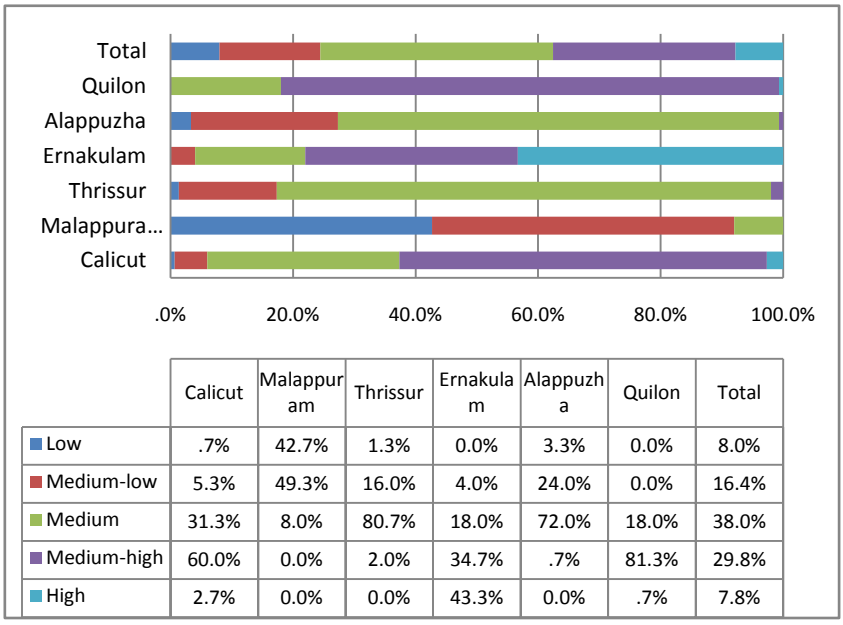
5.3 SHGs as Development Options

The perception of the fisher folk regarding the role of the SHGs and Cooperatives as a development option is recorded to identify the effectiveness of SHGs in ensuring inclusive development of the fisher folks. The perception of fisher folks on the level of development is recorded on a scale from 0 to 100 with 100 indicating highest level of development. The responses are then re-categorized in the five point scale and region-wise, gender-wise comparison and also comparison with indicators of inclusive development viz. poverty, living standards, etc. is done. As per majority of the respondents, the cooperative movements through the SHGs have enabled them to achieve medium (38 percent) to medium-high (29.8 percent) level of development.

5.3.1 District and Level of Development

The region-wise evaluation on the perception of the SHG members is depicted in Figure 5.10. Region-wise comparison shows a significant difference. 92 percent of the fisher folk in Malappuram have achieved only less than medium-low level of development due to SHGs. In Kozhikode, nearly same percentages are in the medium and medium-high category. More than 70 percent in Thrissur (80.7 percent) and Alappuzha (72 percent) districts have achieved medium level of development through the SHGs. Ernakulam. Kollam district is a bit more developed compared to Kozhikode having 99 percent in the medium-high (81.3 percent) and medium (18 percent) category.

Figure 5.10 Region and Development



	Calicut	Malappuram	Thrissur	Ernakulam	Alappuzha	Quilon	Total
Low	.7%	42.7%	1.3%	0.0%	3.3%	0.0%	8.0%
Medium-low	5.3%	49.3%	16.0%	4.0%	24.0%	0.0%	16.4%
Medium	31.3%	8.0%	80.7%	18.0%	72.0%	18.0%	38.0%
Medium-high	60.0%	0.0%	2.0%	34.7%	.7%	81.3%	29.8%
High	2.7%	0.0%	0.0%	43.3%	0.0%	.7%	7.8%

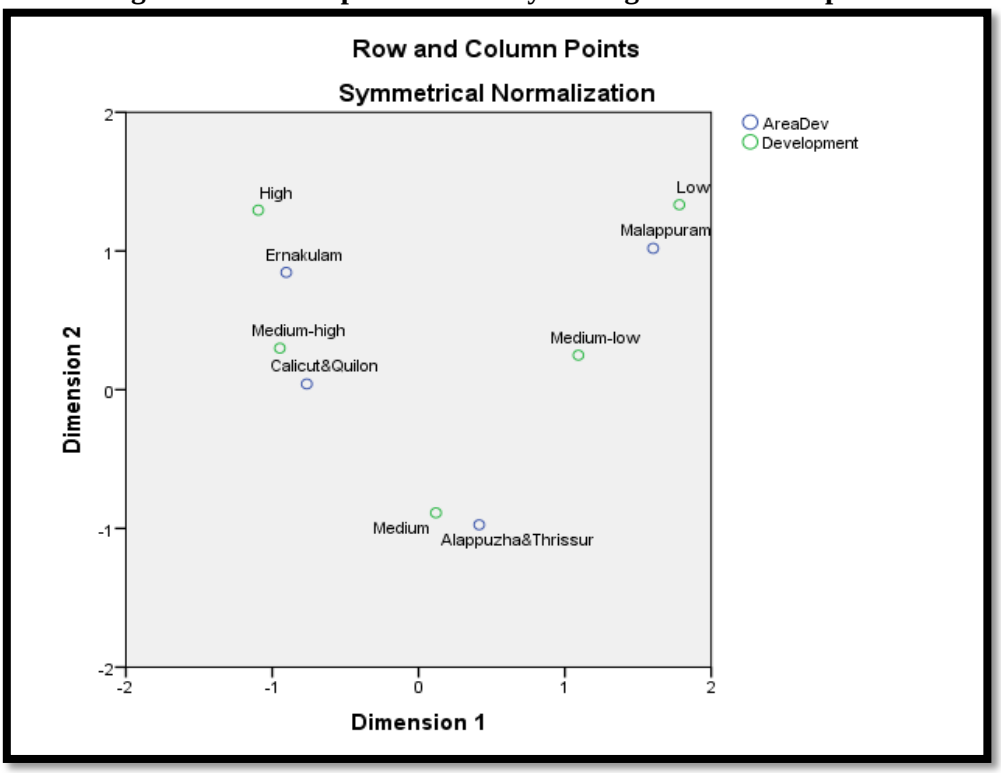
Source: Worked out from Appendix 5.4

Table 5.14 Summary: Region and Development

Dimension	Singular Value	Inertia	Chi Square	Sig.	Proportion of Inertia		Confidence Singular Value	
					Accounted for	Cumulative	Standard Deviation	Correlation 2
1	.816	.666			.503	.503	.014	.521
2	.609	.371			.280	.783	.024	
3	.536	.287			.217	1.000		
Total		1.324	1191.541	.000[a]	1.000	1.000		

a. 12 degrees of freedom

Figure 5.11 Correspondence Analysis: Region and Development



Source: Worked out from the Survey data

Overall, Ernakulam outperforms even the urban districts like Kozhikode and Kollam. The Ernakulam district has the highest number of respondents in the high development category. The district-wise difference in the level of development is further corroborated with the aid of Correspondence Analysis (Table 5.14 and Figure 5.11). Summary table in Table 5.14 shows that the overall results are significant. Ernakulam region is closer to the high development; Kozhikode and Kollam to the medium-high; Alappuzha and Kollam are closer to the medium; and Malappuram is close to low.

5.3.2 Gender and Level of Development

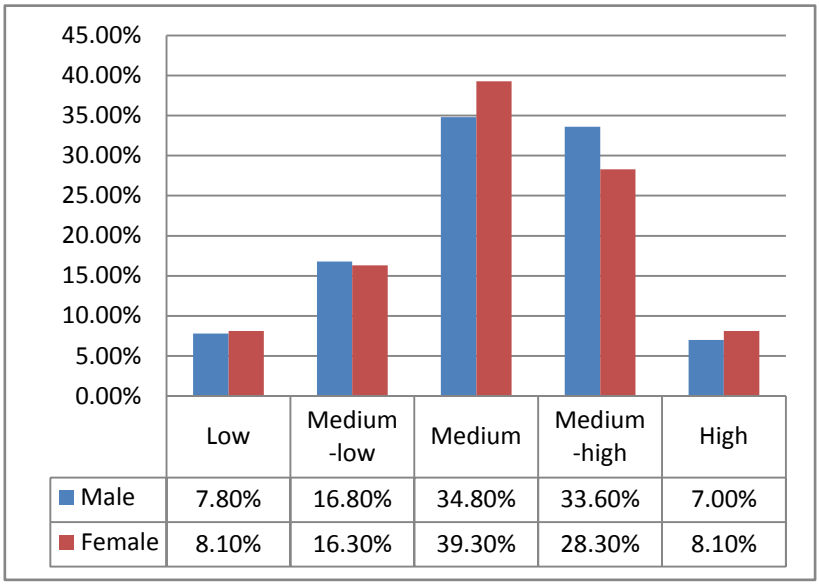
Comparison of the level of development with the gender of the fisher folk evinces that there is no considerable difference in their perception based on gender. The Chi-Square results are also not significant. The detailed results are shown in Figure 5.12 and Table 5.15.

Table 5.15 Chi-Square Tests: Gender and Development

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.034[a]	4	.552
Likelihood Ratio	3.015	4	.555
Linear-by-Linear Association	.183	1	.669
N of Valid Cases	900		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.91.

Figure 5.12 Gender and Development



	Low	Medium -low	Medium	Medium -high	High
Male	7.80%	16.80%	34.80%	33.60%	7.00%
Female	8.10%	16.30%	39.30%	28.30%	8.10%

Source: Worked out from Appendix 5.5

5.3.3 Level of Development based on Poverty

Based on poverty as well, there is difference in the perception of the fisher folks on the level of development achieved due to the SHG movement (Table 5.16). Chi-Square results in Table 5.17 are significant indicating a difference in the level of development achieved by the fisher folks. Despite this being the case, those who are still in the poverty (46 percent) have experienced medium level of development from the SHG movement. 30 percent have perceived the development achieved is medium-low. Among the non-poor, 36.7 percent have medium-high level of development and 35.7 percent of the fisher folks have medium level of development.

Table 5.16 Poverty and Level of Development

	Development (in percent)					Total
	Low	Medium-low	Medium	Medium-high	High	
Poor	16.5	30.0	46.0	5.5	2.0	100.0
Non-poor	5.6	12.6	35.7	36.7	9.4	100.0
Total	8.0	16.4	38.0	29.8	7.8	100.0

Source: Survey data

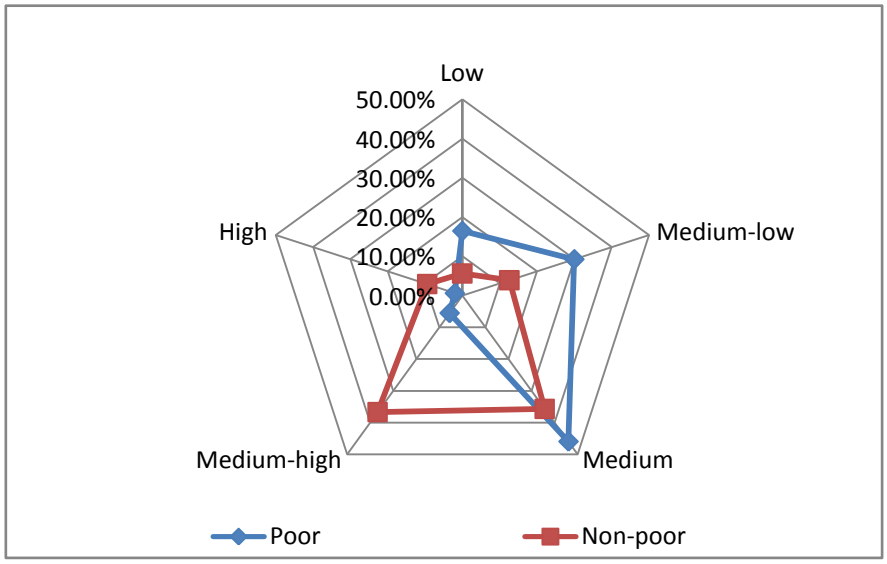
Table 5.17 Chi-Square Tests: Poverty and Level of Development

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	118.222[a]	4	.000
Likelihood Ratio	133.591	4	.000
Linear-by-Linear Association	105.143	1	.000
N of Valid Cases	900		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.56.

It is evident from Figure 5.13 that levels of development achieved by those below the critical poverty mark are medium or less, whereas the fisher folks above the poverty line are more concentrated in medium and medium-high category. While those in the high category are less, compared to poor non-poor fishers are in this category. Similarly, the concentration of poor fishers in the low and medium-low category is more than that of those above the line of poverty.

Figure 5.13 Non-poor and Development



Source: Worked out from the Survey data

5.3.4 Living Standards and Development

A marked difference in the level of development based on the living standards of the fisher folk can be identified from Table 5.18. This is further corroborated with the aid of significant values of Chi-Square (Table 5.19). The level of development in fact can be connected with the living standards of their households. More than 95 percent in the low SLI category have opined that they have been able to achieve low level (58.3 percent) and medium-low (27.9 percent) of development via the SHG movement. Fisher folks in the medium SLI category have mainly achieved medium (45.1 percent) and medium-high level of development (33.2 percent). Here, it is pertinent to mention that there are no fisher folk in the high SLI in medium-low and low category of development. 36.6 percent have achieved high level

of development and 35.8 medium-high level of development among those with high SLI.

Table 5.18 SLI and Level of Development

SLI	Development (in percent)					Total
	Low	Medium-low	Medium	Medium-high	High	
Low	58.3	37.9	3.9	0.0	0.0	100.0
Medium	1.8	16.2	45.1	33.2	3.7	100.0
High	0.0	0.0	27.6	35.8	36.6	100.0
Total	8.0	16.4	38.0	29.8	7.8	100.0

Source: Survey data

Table 5.19 Chi-Square Tests: SLI and Level of Development

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	648.985[a]	8	.000
Likelihood Ratio	495.577	8	.000
Linear-by-Linear Association	346.913	1	.000
N of Valid Cases	900		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.01.

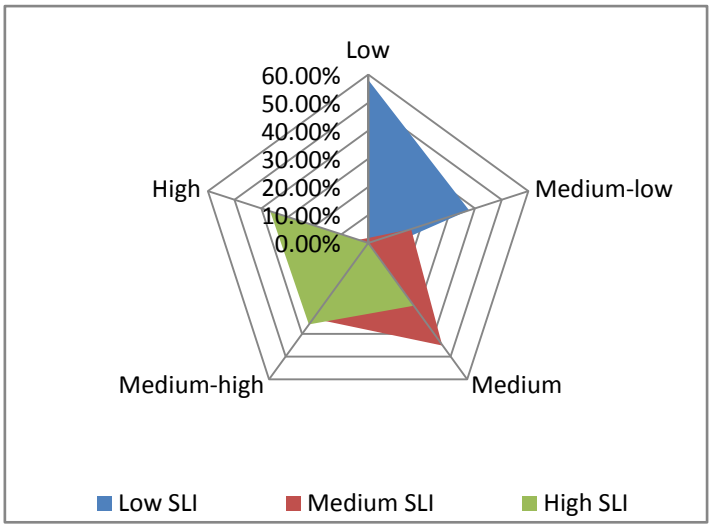
Figure 5.14 shows clear pictorial evidences of the disparity in development achieved by the fisher folks based on their household living standards. The pentagon plot in Figure 5.14 is an espousal of this difference which is further visualized with the aid of Correspondence Analysis.

Table 5.20 Summary: SLI and Level of Development

Dimension	Singular Value	Inertia	Chi Square	Sig.	Proportion of Inertia		Confidence Singular Value	
					Accounted for	Cumulative	Standard Deviation	Correlation 2
1	.737	.544			.754	.754	.028	.106
2	.421	.178			.246	1.000	.043	
Total		.721	648.985	.000[a]	1.000	1.000		

a. 8 degrees of freedom

Figure 5.14 SLI and Development

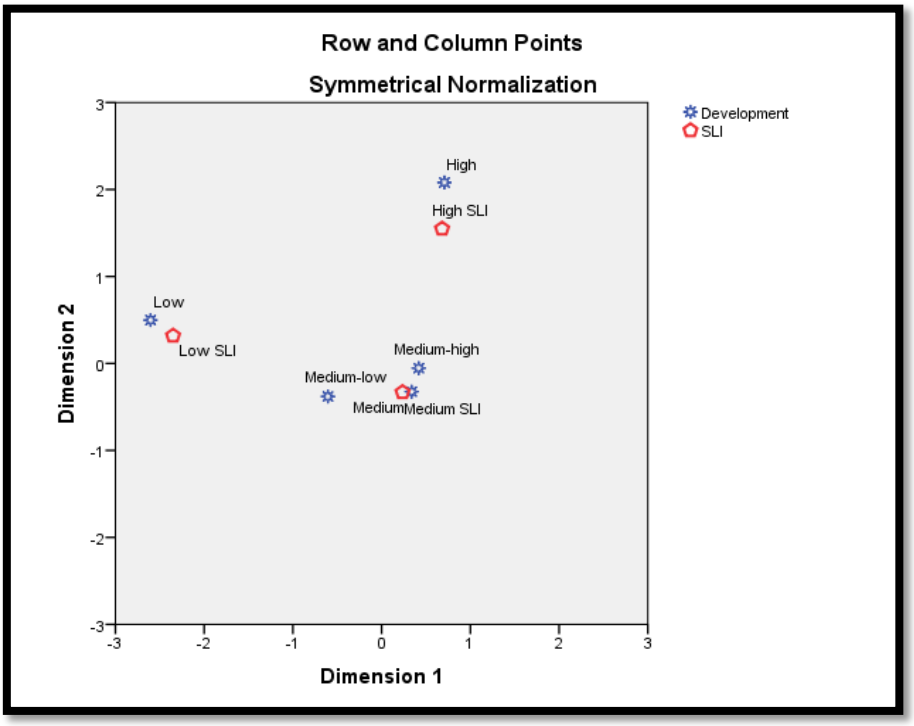


Source: Worked out from Table 5.18

The summary Table (Table 5.20) shows a significant Chi-Square value. A significant Chi-Square and Eigen value of 0.721 indicates that the correlation between SLI and level of development is significant. The model hence explains 72.1 percent of the total variance. The Eigen Values are representation of the relative importance of each dimension. The first

dimension explains 75.4 percent (0.754) of the 72.1 percent of the total variance explained by the model. Correspondence Chart (Figure 5.15) shows that low SLI is close to low development, medium low, medium and medium-high development points in the figure are concentrated around the medium SLI category and the high level of development is closer to the high SLI.

Figure 5.15 Correspondence Chart: SLI and level of Development



Source: Worked out from the Survey data

5.3.5 Factors Determining Development

During the field survey the role of the SHG movement in their development was applauded by the fisher folks. Pertinent factors influencing the development of the fisher folks are identified using Binary Logistic

Regression. The logistic regression model estimates regression coefficients that can effect of the independent variable on the "odds ratio", which is the probability of the event divided by the probability of the non-event. Financial inclusion, poverty estimate, living standards, gender and region are taken as dependent variables. The omnibus tests are used to measures how well the model performs (Table 5.21). With a Chi-Square statistics of 505.117 and p-value of 0.000, it can be inferred that overall model is statistically significant. The pseudo r-square statistics, i.e. Cox and Snell and Nagelkerke is shown in the Table 5.22 High pseudo r-square statistics indicates that more variation is explained by the model, to a maximum of 1.

Table 5.21 Omnibus Tests of Model Coefficients: Factors determining Development

		Chi-square	df	Sig.
Step 1	Step	505.117	5	.000
	Block	505.117	5	.000
	Model	505.117	5	.000

Table 5.22 Model Summary: Factors determining Development

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	495.951[a]	.429	.640

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

The Hosmer and Lemeshow is a test for the overall fit of the model. The model adequately fits the data if the test indicates non significance. Because the p-value of 0.224 (Table 5.23) is higher than the significance level, it can be concluded than the model fits adequately the observed dataset.

Table 5.24 shows that the full model correctly predicts 87.8 percent of the cases. The model is statistically significant based on Table 5.25.

Table 5.23 Hosmer and Lemeshow Test: Factors determining Development

Step	Chi-square	df	Sig.
1	9.416	7	.224

Table 5.24 Classification Table[a]: Factors determining Development

	Observed		Predicted		
			DevRe		Percentage Correct
			No	Yes	
Step 0[b]	DevRe	No	0	220	.0
		Yes	0	680	100.0
	Overall Percentage				75.6
	Observed		Predicted		
			DevRe		Percentage Correct
			No	Yes	
Step 1	DevRe	No	136	84	61.8
		Yes	26	654	96.2
	Overall Percentage				87.8

a. The cut value is .500
b. Constant is included in the model.

Table 5.25 Variables in the Equation: Factors determining Development

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	1.128	.078	211.673	1	.000	3.091

The logistic regression equation for predicting the dependent variable from the independent variable is in log-odds units and the prediction equation is:

$$\log (p/1-p) = b0 + b1*x1 + b2*x2 + b3*x3 + b4*x4+b5*x5$$

Table 5.26 Variables in the Equation: Factors determining Development

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	FinancialInclusion	.592	.249	5.672	1	.017	1.808
	SLILow	-5.059	.631	64.202	1	.000	.006
	NonPoor	1.329	.297	20.049	1	.000	3.777
	Gender	-.233	.252	.855	1	.355	.792
	Urban	3.719	.417	79.647	1	.000	41.235
	Constant	-.504	.241	4.382	1	.036	.604

a. Variable(s) entered on step 1: FinancialInclusion, SLILow, NonPoor, Gender, Urban

Except for gender, all other variables are significant (Table 5.26). This indicates that the level of development is not determined by the gender of the respondents. The low SLI is negatively related to being in the high level of inclusive development. Other variables, financial inclusion, non-poor and region are positively related with regard to development. The variables regarding poverty, financial inclusion and household living standards are the indicators of inclusive development/growth. The positive significance of these variables points towards inclusive development.

The estimated model is:

$$\log(p/1-p) = -.504 + .592*\text{FinancialInclusion} - 5.059*\text{SLILow} + 1.329*\text{NonPoor} - .233*\text{Gender} + 3.719*\text{Urban}$$

The SHGs through the Mastyafed have been functioning as an inclusive development option among the fisher folks of Kerala. This level of development achieved by them is irrespective of their gender. The living standards also have an integral role to play in inclusiveness as those in the low living standards are less likely to perceive the benefits of the SHG and

Cooperative movement of the Matsyafed as inclusive. However, a grave area of concern is the rural-urban differences in the inclusive development of the fisher folks with those in the urban areas having more probability of achieving inclusive development than their rural counterparts. The policies should also focus on the rural belts to bring in a balanced development touching both rural and urban belts.

Evaluating the income inequality within males and females shows that the inequality is lowest for the females; for activity, the inequality is highest for other allied sector and also highest when all categories are taken together. Analyzing the poverty based on FGT among the members highlights gender-wise and activity-wise differences in poverty levels both severity and depth. Gender, number of earners in the household, total members in the household, lost work days due to ill health and SLI are major determinants of whether an individual is out of poverty or not. Despite females having a higher probability of being poor, one heartening factor is that the contribution to the household income by females is impressive. This has to be linked with the fact that the income of females is fully utilized for the welfare of the household. The level of financial inclusion varied based on region, sector and gender. Regional disparity in the level of inclusiveness of the SHGs can be identified as the urbanized regions like Ernakulam, Kozhikode and Kollam have achieved High levels of development. There is disparity within the rural regions as Thrissur and Alappuzha have medium level of development whereas Malappuram is in the low levels of development. Apart from regional disparities, the inclusive development varies based on SLI, poverty and financial inclusion.

Chapter 6
Conclusions and Policy Options

6.1 Conclusions

The study "SHGs and Cooperatives in the Fishing Sector: An Inclusive Development Option for the Fisher folk of Kerala" gives valuable conclusions either from the area connected to secondary data or from primary data. For the sake of effortless understanding and assimilation the conclusion is presented based on area specific.

The evaluation of marine fisheries catch data based on temporal dynamics viz. initiating planning phase, export oriented phase, stagnation and growth phase, transition and post trawl ban phase shows dynamic and dampening oscillations in catch structure. The pre and post ban dynamics of fisheries developments are marked with actions, reactions and counter reactions. The nuances of these have wider ramification in Kerala fishery paving the way towards uneconomic fishing operations, ecological damage and the concomitant sustainability and livelihood implications. To resolve these issues and to keep the ecological sustainability intact, conservation measures such as restriction of specific gears and vessels, zoning regulations along with the trawl ban were introduced. However, these measures have sometimes failed due to conflicting aspirations and interests of various

stakeholders as the primary stakeholders, the fishers, have not been taken into confidence with appropriate steps on the part of the policy makers to ensure their livelihood security.

6.1.1 Dynamics of Fisheries Development

Catch during the 1950s and 60s was mainly from the traditional fishers. About 12 percent of the total fish landings in the INP area were the contribution of the mechanized sector. During the period 1961-70, majority of the prawn catch came from the traditional sector. Even though there was a decline in fish production during the first five years, the catch showed a recovery during the second half. The period 1971-80 saw an overall decline in marine fish production mainly due to the destruction of the marine ecosystem as a result of indiscriminate trawling. Due to motorization, the decade of 1981-90 moved to a recuperation stage from the stagnation. Though there was an overall increase in catch, it was at the cost of large scale depletion of fisheries resources, the main cause of this being motorized and mechanized sectors. However, the trend of fish catch in Kerala from the mid of 1990s to the present shows a stagnating nature with small oscillations in certain periods. The post trawl ban periods witnessed a decline in share of traditional sector. A huge sector-wise variation in catch share can be identified during the three phase's viz. slow modernization, rapid modernization and motorization with the share of traditional artisanal sector declining and that of mechanized and motorized sectors increasing. Even though there is a marked increase in the fish production especially after the

trawl ban, an in depth scrutiny of the data evinces decline in the catch share of the traditional sector. Evaluation of the society catch data for the groups shows variations in performance indicators (catch value) between zones. This indicates heterogeneity of each zone.

6.1.2 Socio-economics and Livelihood Options

Socio-economic matrix points to the fact that the present situation of the fisher folks is better in comparison to the present cooperative setup. While majority of the members surveyed are females, the proportion of the females are less in Malappuram. Though those having an education of higher secondary and above are less, there is an inter-regional difference in educational profile of the fisher folks. Gender-wise classification of activity shows the male fishers work in fish harvesting activities like mechanized, motorized and non-motorized sectors. Female fishers, by and large, are working in allied sectors and mostly in fish vending, other SHG activities, etc.

Nonetheless, majority of the fisher folks have an income of below Rs. 3000 and those with an income of over Rs. 4500 form a small part of the sample. An activity-wise difference in income can be also identified, which demonstrates a dismal picture with more than 50 percent working in other sectors with an average individual income of less than Rs. 1500. Similarly, those in the mechanized and motorized sectors constitute the majority with income of more than Rs. 6000. Gender disparity in the earnings of fisher folks is evident with males earning more than the females. Earning of male

and female fish vendors is also different. A difference in the individual income is identified with those working in mechanized sector, earning more than their counterparts in other sub-sectors. There is a rural-urban disparity in the average income as fisher folks in urban belts earn more than their rural counterparts. However, Malappuram district shows the largest average monthly income compared to other rural centers, mainly due to the higher proportion of males. Irrespective of the rural-urban bias, all the districts show average family expenditure more than the family income. However, variation between income and expenditure is less in urban areas compared to rural regions. Any increase in average monthly income of the individual will bring in an increase in their household income as well as expenditure. Hence it may be noted that the individual income of the respondents is an important portion of the total family income and it also plays a pivotal role in determining the total family expenditure. There is region-wise, activity-wise and gender-wise differences in average income.

Rural-urban difference in the financial habits is evident as urban centres show better financial habits than the rural. However, an expenditure value of more than the income means that fisher folk generally depend on borrowings to meet the excess expenditure. Here, it is pertinent to mention based on the perception of fisher folks that they have escaped from the clinches of the private unorganized money lenders to certain extent as formal institutions like the Matsyafed has emerged as one of the major financers for the fisher folks. This would imply that the formal-informal institutional linkages have been able to save fishers from the grave clinches of money

lenders who charge colossal interest rate which is often transferred to the generations. Despite this being the case, the dependence on private money lenders is still there in Malappuram District.

Quality of housing has undergone a drastic change particularly after the formation of Matsyafed and other fishery co-operatives by fishermen themselves *inter alia* other government schemes and programmes for the vulnerable sections. However, there is still room for improvement. Also there is a problem of overcrowding as majority live in an area of 5 cents and below. Non-availability of safe and pure drinking water is the most prominent as well as unresolved issue of the fisher folks in the coastal belts of Kerala. This happens despite numerous drinking water schemes in and around the coastal belts. Even an in-house water supply or a public tap in the urban bets is of no use as the water supply is often erratic and even then the water is not potable in some cases. Malappuram has the highest number of households in the low standard of living category, whereas Ernakulam has the least. A rural-urban variation can also be observed in SLI category, with majority of high and medium SLI households in urban centers (Ernakulam, Kozhikode and Kollam), whereas majority of low SLI households are in rural centers (Malappuram, Thrissur and Alappuzha). Evaluating the influential factors in determining the living standards of the fisher folks show that region, household income and members in the household are the major determinants of living standards. While the former two have positive influences on the SLI, an additional member to the household negatively influence the living standards. However, if the additional member is an

earner there is high chance that the household exhibits better living standards. Gender, activity and contribution to the household income are of no significance and hence do not have a role in determining the standard of living.

The health status of the fisher folks presents a dismal picture. No drastic rural-urban disparity in health status is seen as majority live in unhygienic environment. There are only slight variations in health status based on region. Even though urban centers like Ernakulam have better health care facilities, due to their proximity to seashore and living conditions, the fisher population is prone to several epidemics and diseases.

6.1.3 SHGs and the Fisher folks

Irrespective of the districts, women SHGs dominate in the list of those who received assistance from Matsyafed, with Malappuram having the least number of female SHGs per male SHG. This is pertinent as gender backwardness is a common phenomenon in Malappuram (which is one of the most backward districts in terms of socio-economic indicators). However, more women SHGs participation show interesting implication in the welfare point of view, as women fishers' income is fully utilized for the development of the family itself. This is very important as most of the fishermen are alcohol addicts.

Community promoters and officials and of the Matsyafed are the major motivators who supported and motivated the members to form a group, followed by members of societies, fisheries department and other members in the group. Majority have received the revolving fund from the Matsyafed. They used the funds for internal lending, purchase of raw materials, purchase of equipments, marketing, etc. However, they urged the need to give more financial, fishing and marketing support for their activities.

Profile of sample activity groups shows that groups are mostly involved in an array of activities such as catering, soap making, food processing, fishing/allied, trade, etc. While analyzing the details about functioning, financial strength and activities of the group, the role and effectiveness of Matsyafed in sculpting them towards achieving the desired objectives of livelihood, empowerment and inclusive development was identified. Matsyafed has played a phenomenal role in motivating, training, financing and empowering the fisher folk, especially women. Most of the groups function actively throughout the year, which means that they are able to derive a constant flow of income. However, there is need to provide them with more financial, marketing, managerial and fishing related support and also to support them to diversify their activities by providing them with adequate training and technical support. The processes of thrift generation through SHGs have reduced their dependence on private money lenders to a certain extent. Functioning SHGs have been successful, which is evident from the fact that the groups have an excellent micro finance repayment rate, interest free loan repayment, etc. The effectiveness of these schemes has

paved the way for financial reliance. Functioning of the SHGs varies according to the activities they are engaged in. Each activity has its own strengths, weaknesses, opportunities and threats and hence separate action plan is necessary for effective functioning.

The evaluation of Strengths, Weaknesses, Opportunities and Threats of the members show a mixed picture. Some problems are adversely affecting this and will have serious implications in the functioning of the groups. However the weaknesses and threats are remediable by taking corrective actions on the part of the group members. It has been proved from the case study of activity groups that the best practice method for a group is to consolidate their strengths, overcome weaknesses, avail opportunities and guard against threats to sustain in the long run and thereby ensuring a better livelihood option compared to their traditional avenues. Any flaw or operational difficult experienced by the group members needs to be sorted out so as to ensure the smooth functioning of the group.

The membership in the SHGs has brought in financial reliance and development among the fisher folks. There has been an improvement in their savings rate. Matsyafed through the SHGs and cooperative setups are providing adequate funds for meeting the borrowing needs. This would mean that they can now get easy credit without collateral security, that too at a low rate of interest. The contribution to their household income has increased drastically. This is more so in the case of fisherwomen. This has resulted in an improved standard of living among the fisher folks. Training activities and

participation in the meetings has resulted in development of skills. The awareness level of fisher folks with regard to the government schemes and political aspects have also improved due to their SHGs affiliation Trust level within the group members has increased. The fisher folks are now more united mainly through democratic method during the group meetings in order to take major decisions. Interactions with the non-fisher folks have also increased mainly due to improved communication skills.

While evaluating the benefits and problems of the SHGs, it is evident that the strength outnumbers the weakness. Inclusive development through financial reliance forms a major part of benefits. However, concerns relating to marketing, input, linkages, and lack of government schemes have also emerged as major issues. The eradication of these operational problems of the SHGs can help the groups to excel more, which in turn will help a great deal in brining the fisher folks more into to the mainstream society. Overall, financial inclusion and the resultant improved savings, high living standard; better contribution to the household income, etc. indicate that the SHGs and cooperative movement in the fisheries sector is a step towards the right direction in achieving livelihood security and inclusive development to the fisher folks. An analysis of the fishermen SHGs members brings out the inference that they have benefitted immensely from the new cooperative setup. This not only helps resource conservation and recuperation of fishery resources but also enhances the livelihood span of the fisher folk.

6.1.4 Inclusive Development

Evaluating the income inequality within males and females indicates only slight differences; with low inequality for females, for activity, sector-wise it is more for other allied sectors and very high when all categories are taken together. The values of Gini index shows that income inequality is minimal between mechanized (0.094) and motorized (0.113). For the traditional sector, the Gini value is slightly higher at 0.165. Gini coefficient is the highest for other allied sectors (i.e. 0.254) mainly due to the gender-wise income disparity in this sector.

Poverty based on head count shows that more than 95 percent of males are above the poverty level, whereas for females poverty line is above 70.8 percent. All the fisher folks involved in motorized and mechanized activities and 93.1 percent of the non-motorized fishers are non-poor. Rural-urban difference is minimal as 75.8 percent in rural belts are above the poverty line compared to 79.8 percent in the urban region. Poverty level differs based on living standards, with proportion of non-poor lesser in the high SLI category and vice-versa for the low SLI category. 48.5 percent in the low SLI category are poor whereas the proportion of poor in the medium and high SLI is comparatively lower. Analyzing the poverty based on FGT among the members of the SHGs showed a deceleration in comparison to the official level of poverty level explained in the official statistics of the Department of Fisheries. But the FGT analysis also highlights gender-wise and activity-wise differences in poverty levels both in the case of severity

and depth, with females and those in the other activities exhibit poor indicators of relative poverty. Despite this, one inspiring factor is that the contribution to the household income by females is impressive. This has to be linked with the fact that the income of females is fully utilized for the welfare of the household.

A scrutiny of the factors determining the non-poor shows that gender, number of earners in the household, total members in the household, lost work days due to ill-health and SLI are major determinants of whether an individual is out of poverty or not. Low SLI is negative, indicating that a person in low SLI has less chances of being non-poor. For the high SLI, chances of being in the non-poor category are more. For each additional work days lost, the odds of getting out of poverty are less. Also, increase in number of earners will help the household to get out of poverty. An additional member in the household will reduce the odds of coming out of poverty. Hence, an additional member is a burden to the household if that person is not an income earner. Gender of the respondents also influences whether they are out of poverty with males having higher chance of being in non-poor category.

The cooperative setup brought in a culture of financial discipline in the coastal belts of Kerala. All the members have regular thrift. The financial inclusion among the fisher folk is impressive with 53.6 percent of the respondents having high level of financial inclusion. This is mainly due to the cooperative setup in the fishing sector. They now have good knowledge

in areas like thrift formation, account opening/operating, formal credit, regular savings, etc. The private money lenders and middle men who controlled the whole financial fate of the fisher folk have shown positive changes owing to the timely intervention of the agencies like the Department of Fisheries and Matsyafed through various plans and credit programmes. There is an activity-wise difference in the level of financial inclusion with mechanized sector fishers showing attractive traits than others. Males have higher proportion of respondents in the high financial inclusion category. Poverty also determines the level of financial inclusion. Most of the poor are in the low financial inclusion category and non-poor are in the high financial inclusion category.

The SHGs through the Matsyafed have been functioning as an inclusive development option among the fisher folks of Kerala. However, an area of concern is the rural-urban differences in the inclusive development of the fisher folks with those in the urban areas having high probability of achieving inclusive development in comparison to their rural counterparts. Regional disparity in the level of inclusive development is also visibly identifiable as urbanized regions like Ernakulam, Kozhikode and Kollam have achieved High levels of development. Ernakulam outperforms even the urban districts like Kozhikode and Kollam. However, disparity is noticed within the rural regions in Thrissur and Alappuzha with medium level of development, whereas Malappuram rural areas show low levels of development.

6.2 Policy Options

Inferences obtained from the field as well as the data scan along with the case study of respondents point out that the SHGs have been phenomenal in reducing poverty and unemployment as well as in improving the living standards and ensuring inclusive development of fishers. It is pertinent to mention that only the cooperative setup with informal institutions having an institutional linkage to formal organizations, like the one derived and developed by Matsyafed can thrive in achieving the desired objectives, whereas those organizations without an institutional linkage have failed to function efficiently. Some of the policy suggestions include:

- The cooperative movement is effective only if it is backed by financial assistance from the government in the form of schemes and programmes. Based on the perception of fisher folks, need to design and develop more such schemes was identified.

- Despite the present formal and informal institutional linkages, the fisher folk (especially women) working in some of the sub sectors are in the clinches of poverty and income inequality. This warrants for more gender specific institutional policy arrangements for converting the outliers into the main stream.

- It is evident that the fishers in most of the sub sectors have been able to withstand the livelihood threats and escape from poverty. However, it should be ensured that they remain above the poverty

line. Such a step is all the more important considering the seasonality and inconsistency in earnings of this sector.

- ❖ Regional disparities in the socio-economic conditions and inclusive development of the SHG members in a rural urban divide, with a skewness favouring the development rhythm towards urban centers. Special attention by Matsyafed to bring the less developed regions to the forefront is also required.

- ❖ Still some of the activities done by the group (like fish vending, sale of fish food items, etc) are seasonal as they are related to the catch structure. Training, finance and marketing support from Matsyafed to SHGs to venture into more non-fisheries related activities is required so as to make them more financially independent.

- ❖ Periodic evaluations and reviews need to be done to identify hurdles faced by the groups. This would help to identify the specific requirement of the groups and also to rectify the issues with regard to its functioning.

- ❖ Most of the activity-connected groups are run by the females whereas the activity of males is still confined to fishing and fish vending. Steps to attract male fisher folks also to activities like catering, small trade, etc. should also be made so that they can earn uninterrupted income during lean seasons.

6.3 Scope for Future Research

The present study is a mere micro concept trying to illumine SHGs and Cooperatives in a standard of living and inclusive development framework for explaining the nuances of the socio-economics of the fishers in Kerala. Several aspects which have not been incorporated in this study need further probe so as to understand the real implications of the fishing community of Kerala, particularly in the livelihood and inclusive development framework. The present problems in the fishing sector are changes in the species composition in the catch, integration of the fish economy with the general economy, climate induced fishery problems and sustainability, opening up of the sea for joint venture for industrial fishing etc. These issues will emulate high levels of impacts to the traditional poor fishers, giving rise to livelihood, employment and manifold problems for contemplating inclusive development in fishery development thinking.

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APPENDICES

Appendix 1.1 Global Marine Fish Production

Year	Production (million tonnes)
2002	84.5
2003	81.5
2004	85.7
2005	84.5
2006*	80.2
2007*	80.4
2008*	79.5
2009*	79.2
2010*	77.4
2011*	78.9
2012#	79.7

Source: FAO, 2008; *FAO, 2012; # FAO, 2014

Appendix 1.2 Profile of Marine Fisheries in India

Length of coast line (km)	8118
Exclusive Economic Zone (million sq.km)	2.02
Continental Shelf (‘000 sq.km)	530
No of Fish Landing centres	1537
No. Of fishing villages	3322
No of Fishermen Families	8,74,749
Fisher folk Population	40,56,213

Source: Fisheries Profile, 2013

Appendix 1.3 Marine Fish Production in India

Year	Production ('ooo Tonnes)	Avg. Annual Growth Rate (percent)
1950-51	534	0
1955-56	596	2.32
1960-61	880	9.53
1965-66	824	-1.27
1970-71	1086	6.36
1973-74	1210	3.81
1978-79	1490	4.63
1979-80	1492	0.13
1980-81	1555	4.22
1981-82	1445	-7.07
1982-83	1427	-1.25
1983-84	1519	6.45
1984-85	1698	11.78
1985-86	1716	1.06
1986-87	1713	-0.17
1987-88	1658	-3.21
1988-89	1817	9.59
1989-90	2275	25.21
1990-91	2300	1.1
1991-92	2447	6.39
1992-93	2576	5.27
1993-94	2649	2.83
1994-95	2692	1.62
1995-96	2707	0.56
1996-97	2967	9.6
1997-98	2950	-0.57
1998-99	2696	-8.61
1999-2000	2852	5.79
2000-01	2811	-1.44
2001-02	2830	0.68
2002-03	2990	5.65
2003-04	2941	-1.64
2004-05	2779	-5.51
2005-06	2816	1.33
2006-07	3024	7.39
2007-08	2920	-3.44
2008-09	2978	1.99
2009-10	3104	4.23
2010-11	3250	4.7
2011-12	3372	3.75
2012-13	3321	-1.51
2013-14	3443	3.67

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Appendix 1.4 Export of Marine Products from India

Year	Quantity (in tonnes)	Value (in Rs. Crores)	Unit Value (Rs. Tonnes)	Unit Value Index	Annual GR	
					Quantity	Value
1980-81	75591	234.84	31067.19	1246.81	-12.51	-5.62
1981-82	70105	286.01	40797.38	1637.31	-7.26	21.79
1982-83	78175	361.36	46224.5	1855.11	11.51	26.35
1983-84	92187	373.02	40463.41	1623.9	17.92	3.23
1984-85	86187	384.29	44587.93	1789.43	-6.51	3.02
1985-86	83651	398	47578.63	1909.46	-2.94	3.57
1986-87	85843	460.67	53664.25	2153.69	2.62	15.75
1987-88	97179	531.2	54662.02	2193.73	13.21	15.31
1988-89	99777	597.85	59918.62	2404.69	2.67	12.55
1989-90	110843	634.99	57287.33	2299.09	11.09	6.21
1990-91	137667	856	62179.03	2495.41	24.2	34.81
1991-92	169875	1311.6	77209.71	3098.63	23.4	53.22
1992-93	206673	1713.7	82918.43	3327.74	21.66	30.66
1993-94	242505	2461	101482.44	4072.76	17.34	43.61
1994-95	307337	3575.3	116331.58	4668.7	26.73	45.28
1995-96	296277	3450.1	116448.46	4673.39	-3.6	-3.5
1996-97	378198	4077.6	107816.54	4326.96	27.65	18.19
1997-98	385818	4649.7	120515.37	4836.6	2.01	14.03
1998-99	302934	4626.87	152735.25	6129.67	-21.48	-0.49
1999-00	343031	5116.67	149160.57	5986.21	13.24	10.59
2000-01	440473	6443.89	146294.78	5871.2	28.41	25.94
2001-02	424470	5957.05	140340.9	5632.25	-3.63	-7.56
2002-03	467297	6881.31	147257.74	5909.84	10.09	15.52
2003-04	412017	6091.95	147856.76	5933.88	-11.83	-11.47
2004-05	461329	6646.55	144073.97	5782.07	11.97	9.1
2005-06	512163	7245.73	141473.12	5677.69	11.02	9.01
2006-07	612643	8363.52	136515.39	5478.72	19.62	15.43
2007-08	541701	7620.93	140685.18	5646.07	-11.58	-8.88
2008-09	602834	8607.95	142791.38	5730.6	11.29	12.95
2009-10	678436	10048.53	148113.16	5944.17	12.54	16.74
2010-11	813091	12901.46	158671.78	6367.92	19.85	28.39
2011-12	862021	16597.23	192538.58	7727.08	6.02	28.65
2012-13	928215	18856.26	203145.39	8152.76	7.68	13.61
2013-14	983756	30213.26	307121.48	12325.6	5.98	60.23

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Appendix 1.5 Seafood Exports from Kerala

Year	Production				% Share	
	Q (MT)	GR	V (Rs. Crores)	GR	Q	V
1995-96	60332	0	653	0	20	19
1996-97	90699	50.33316	887	35.83461	24	22
1997-98	90523	-0.19405	960	8.229989	23	20
1998-99	72400	-20.0203	850	-11.4583	24	18
1999-2000	84094	16.15193	970	14.11765	25	19
2000-01	97139	15.5124	1171	20.72165	22	18
2001-02	69828	-28.1154	917	-21.6909	16	15
2002-03	86893	24.43862	1113	21.37405	19	16
2003-04	73890	-14.9644	1062	-4.58221	18	17
2004-05*	87337	18.19867	1157.42	8.984934	19	17
2005-06*	97311	11.42013	1257.65	8.659778	19	17
2006-07*	108616	11.61739	1524.12	21.18793	18	18
2007-08*	100319	-7.63884	1430.95	-6.11304	19	19
2008-09*	100780	0.459534	1572.18	9.869667	17	18
2009-10*	107293	6.462592	1670.02	6.223206	16	17
2010-11*	124615	16.14458	2002.1	19.88479	15	16
2011-12*	155714	24.95606	2988.34	49.26028	18	18
2012-13*	166399	6.861939	3435.85	14.9752	18	18

Source: Director of Fisheries, 2010 and 2014

Appendix 1.6 Contribution of the Fisheries sector to the NSDP

Year	% contribution
1990-91	3.05
1995-96	2.85
1999-2000	2.24
2000-01	2.17
2001-02	2.08
2002-03	1.68
2003-04	1.50
2004-05	1.56
2005-06	1.81
2006-07	1.72
2007-08	1.50
2008-09	1.34
2009-10	1.17

Source: KSPB, 2010

Appendix 2.1 Share of Traditional Sector in Catch (1950-70)

Year	Catch	% share of Traditional sector
1950	202047	100.0
1951	191032	100.0
1952	129345	100.0
1953	111999	100.0
1954	107034	100.0
1955	105457	100.0
1956	152213	99.2
1957	309926	99.1
1958	294655	99.1
1959	191375	99.1
1960	344605	99.4
1961	267493	99.6
1962	191421	99.5
1963	202380	99.6
1964	314582	99.9
1965	334218	98.5
1966	338402	97.6
1967	359872	98.8
1968	342065	99.1
1969	266610	90.4
1970	340309	86.6

Source: CMFRI, 1969; Korakandi, 1987

Appendix 2.2 Species-wise Catch during 1951-1960

Year	Species and Catch (in tonnes)				
	Oil Sardine	Mackerel	Prawn	Others	Total
1951	15160	59314	0	116558	191032
1952	6617	24748	0	97980	129345
1953	42012	13875	0	56112	111999
1954	19276	7492	0	80266	107034
1955	20388	5345	0	79724	105457
1956	5065	8986	0	138162	152213
1957	175851	26187	0	107888	309926
1958	118971	55476	0	120208	294655
1959	62036	29332	288	99719	191375
1960	185929	35485	417	122774	344605
	651305	266240	705	1019391	1937641

Source: Korakandi, 1987

Appendix 2.3 Species-wise Catch during 1961-70

Year	Species and Catch (in tonnes)				Total
	Oil Sardine	Mackerel	Prawn	Others	
1961	166005	20044	20436	61009	267494
1962	91203	11938	29218	59062	191421
1963	59950	48917	21954	72559	203380
1964	190401	9657	35220	82696	317974
1965	219170	18048	14411	87544	339173
1966	202800	10747	28379	104818	346744
1967	235410	4500	27252	96967	364129
1968	247048	3600	25391	69262	345301
1969	139983	29981	34368	90455	294787
1970	191683	54659	36954	109584	392880

Source: Korakandi, 1987

Appendix 2.4 Share of Traditional and Mechanized Sector in Catch

Year	% Share of Traditional Sector	% Share of Mechanized Sector
1971	89.4	10.6
1972	86.9	13.1
1973	79.1	20.9
1974	75.9	24.1
1975	57.2	42.8
1976	82.3	17.7
1977	68.9	31.1
1978	68.6	31.4
1979	71.3	28.7
1980	51.7	48.3

Source: Korakandi, 1987

Appendix 2.5 Trawl Ban Period

Year	From	To	Days
1988	02.07.1988	31.08.1988	61*
1989	20.07.1989	31.08.1989	43
1990	28.06.1990	21.07.1990	24
1991	15.07.1991	13.08.1991	30
1992	21.06.1992	03.08.1992	44
1993	15.06.1993	15.07.1993	45
1994	15.06.1994	29.07.1994	45
1995	15.06.1995	29.07.1995	45
1996	15.06.1996	29.07.1996	45
1997	15.06.1997	29.07.1997	45
1998	15.06.1998	29.07.1998	45
1999	15.06.1999	29.07.1999	45
2000	15.06.2000	29.07.2000	45
2001	15.06.2001	29.07.2001	45
2002	15.06.2002	29.07.2002	45
2003	15.06.2003	29.07.2003	45
2004	15.06.2004	29.07.2004	45
2005	15.06.2005	29.07.2005	45
2006	15.06.2006	15.08.2006	62
2007	15.06.2007	31.07.2006	47
2008	15.06.2008	31.07.2008	47
2009	15.06.2009	31.07.2009	47
2010	15.06.2010	31.07.2010	47
2011	15.06.2011	31.07.2011	47
2012	15.06.2012	31.07.2012	47
2013	15.06.2013	31.07.2013	47

Source: Director of Fisheries, 2014; * Except Neendakara

Appendix 2.6 Marine Fish Production in Kerala 1950-2013

Year	Quantity (in tonnes)
1950	202047
1951	191032
1952	129345
1953	111999
1954	117034
1955	105457
1956	152213
1957	309926
1958	294655
1959	191375
1960	344605
1961	267494
1962	191421
1963	202380
1964	317974
1965	339173
1966	346744
1967	364829
1968	345301
1969	294787
1970	392880
1971	445347
1972	295618
1973	448269
1974	420257
1975	420836
1976	331047
1977	345037
1978	333739
1979	330509
1980	279543
1981	274395

1982	325367
1983	385817
1984	394372
1985	325536
1986	382791
1987	303286
1988	468808
1989	647526
1990	662890
1991	564161
1992	560742
1993	574739
1994	540813
1995	531646
1996	572005
1997	574774
1998	542696
1999	507287
2000	604113
2001	593783
2002	603286
2003	608525
2004	601863
2005	536215
2006	591902
2007	619255
2008	670095
2009	517720
2010-11*	560398
2011-12*	553177
2012-13*	530638

Source: CMFRI, 2009; KSPB, 2014

Appendix 2.7 Percentage share in Total Catch 1974-84

	Oil sardine	Mackeral	Prawns	Others
Kozhikode	25.0	23.9	6.5	7.6
Malappuram	11.2	9.6	3.0	5.2
Thrissur	12.7	9.9	2.3	4.0
Ernakulam	18.3	32.1	15.1	19.5
Alappuzha	25.2	13.8	9.0	16.7
Kollam	7.6	10.7	64.2	47.0
Total	100.0	100.0	100.0	100.0

Source: Worked out from Korakandy, 1987

Appendix 2.8 Sector-wise Share in Catch

Period	Traditional	Motorized	Mechanized	Total
1956-59	100.0	0.0	0.0	100.0
1960-66	96.0	0.0	4.0	100.0
1967-75	84.0	0.0	16.0	100.0
1976-80	69.0	0.0	31.0	100.0
1981-88	31.1	38.4	30.5	100.0
1989-2013	9.4	60.4	30.2	100.0

Source: Worked out from CMFRI data

Appendix 2.9 Micro Finance Scheme

District	Societies	Groups			Members			Amount (Rs. Lakhs)		
		M	F	T	M	F	T	M	F	T
TVM	37	385	2451	2836	5749	38180	43929	464	7437.14	7901.14
QLN	49	124	1488	1612	1258	13788	15046	92.6	2941.62	3034.22
ALP	57	328	2029	2357	4084	25329	29413	411.35	3335.75	3747.1
KTM	22	20	248	268	1541	3399	4940	50.63	580.1	630.73
EKM	56	353	2386	2739	3713	22680	26393	405.75	2935.05	3340.8
TCR	24	50	864	914	527	10490	11017	46.76	1639.2	1685.96
MPRM	28	91	518	609	922	5334	6256	97.9	690.01	787.91
KOZ	50	162	1297	1459	2077	13221	15298	221.6	2459.53	2681.13
KAN	17	40	386	426	563	4200	4763	39	414.99	453.99
KAS	22	90	362	452	915	3491	4406	157.02	493.35	650.37
Total	362	1643	12029	13672	21349	140112	161461	1986.61	22926.74	24913.35

Source: Director of Fisheries, 2014; M-Male, F-Female, T-Total

Appendix 3.1 District and Religion

District	Religion			Total
	Hindu	Christian	Muslim	
Kozhikode	26.7	0.7	72.7	100.0
Malappuram	4.7	0.0	95.3	100.0
Thrissur	32.7	67.3	0.0	100.0
Ernakulam	48.7	42.7	8.7	100.0
Alappuzha	36.7	63.3	0.0	100.0
Kollam	90.0	10.0	0.0	100.0
Total	39.9	30.7	29.4	100.0

Source: Survey data

Appendix 3.2 District and Gender

			Gender		Total
			Male	Female	
Area	Kozhikode	Count	39	111	150
		% within Area	26.0	74.0	100.0
		% within Gender	15.2	17.2	16.7
		% of Total	4.3	12.3	16.7
	Malappuram	Count	67	83	150
		% within Area	44.7	55.3	100.0
		% within Gender	26.2	12.9	16.7
		% of Total	7.4	9.2	16.7
	Thrissur	Count	41	109	150
		% within Area	27.3	72.7	100.0
		% within Gender	16.0	16.9	16.7
		% of Total	4.6	12.1	16.7
	Ernakulam	Count	16	134	150
		% within Area	10.7	89.3	100.0
		% within Gender	6.2	20.8	16.7
		% of Total	1.8	14.9	16.7
	Alappuzha	Count	41	109	150
		% within Area	27.3	72.7	100.0
		% within Gender	16.0	16.9	16.7
		% of Total	4.6	12.1	16.7
	Kollam	Count	52	98	150
		% within Area	34.7	65.3	100.0
		% within Gender	20.3	15.2	16.7
		% of Total	5.8	10.9	16.7
Total		Count	256	644	900
		% within Area	28.4	71.6	100.0
		% within Gender	100.0	100.0	100.0
		% of Total	28.4	71.6	100.0

Source: Survey data

Appendix 3.3 Area and Age Category

		Age Category						Total
		Below 20	20-30	31-40	41-50	51-60	Above 60	
Kozhikode	Count	1	17	41	42	34	15	150
	% within Area	0.7	11.3	27.3	28.0	22.7	10.0	100.0
	% within Age Category	100.0	34.7	17.3	14.1	16.0	14.6	16.7
	% of Total	0.1	1.9	4.6	4.7	3.8	1.7	16.7
Malappuram	Count	0	8	32	43	35	32	150
	% within Area	0.0	5.3	21.3	28.7	23.3	21.3	100.0
	% within Age Category	0.0	16.3	13.5	14.5	16.4	31.1	16.7
	% of Total	0.0	0.9	3.6	4.8	3.9	3.6	16.7
Thrissur	Count	0	7	37	56	33	17	150
	% within Area	0.0	4.7	24.7	37.3	22.0	11.3	100.0
	% within Age Category	0.0	14.3	15.6	18.9	15.5	16.5	16.7
	% of Total	0.0	0.8	4.1	6.2	3.7	1.9	16.7
Ernakulam	Count	0	8	39	56	41	6	150
	% within Area	0.0	5.3	26.0	37.3	27.3	4.0	100.0
	% within Age Category	0.0	16.3	16.5	18.9	19.2	5.8	16.7
	% of Total	0.0	0.9	4.3	6.2	4.6	0.7	16.7
Alappuzha	Count	0	7	51	48	32	12	150
	% within Area	0.0	4.7	34.0	32.0	21.3	8.0	100.0
	% within Age Category	0.0	14.3	21.5	16.2	15.0	11.7	16.7
	% of Total	0.0	0.8	5.7	5.3	3.6	1.3	16.7
Kollam	Count	0	2	37	52	38	21	150
	% within Area	0.0	1.3	24.7	34.7	25.3	14.0	100.0
	% within Age Category	0.0	4.1	15.6	17.5	17.8	20.4	16.7
	% of Total	0.0	0.2	4.1	5.8	4.2	2.3	16.7
Total	Count	1	49	237	297	213	103	900
	% within Area	0.1	5.4	26.3	33.0	23.7	11.4	100.0
	% within Age Category	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	% of Total	0.1	5.4	26.3	33.0	23.7	11.4	100.0

Source: Survey data

Appendix 3.4 Area and Education

		Educational Status					Total
		illiterate	Primary	upper primary	secondary	higher secondary	
Kozhikode	Count	4	46	66	18	16	150
	% within Area	2.7	30.7	44.0	12.0	10.7	100.0
	% within Education	14.8	11.8	18.6	20.0	42.1	16.7
	% of Total	0.4	5.1	7.3	2.0	1.8	16.7
Malappuram	Count	10	90	41	6	3	150
	% within Area	6.7	60.0	27.3	4.0	2.0	100.0
	% within Education	37.0	23.1	11.5	6.7	7.9	16.7
	% of Total	1.1	10.0	4.6	0.7	0.3	16.7
Thrissur	Count	8	73	54	9	6	150
	% within Area	5.3	48.7	36.0	6.0	4.0	100.0
	% within Education	29.6	18.7	15.2	10.0	15.8	16.7
	% of Total	0.9	8.1	6.0	1.0	0.7	16.7
Ernakulam	Count	0	36	80	25	9	150
	% within Area	0.0	24.0	53.3	16.7	6.0	100.0
	% within Education	0.0	9.2	22.5	27.8	23.7	16.7
	% of Total	0.0	4.0	8.9	2.8	1.0	16.7
Alappuzha	Count	5	74	63	7	1	150
	% within Area	3.3	49.3	42.0	4.7	0.7	100.0
	% within Education	18.5	19.0	17.7	7.8	2.6	16.7
	% of Total	0.6	8.2	7.0	0.8	0.1	16.7
Kollam	Count	0	71	51	25	3	150
	% within Area	0.0	47.3	34.0	16.7	2.0	100.0
	% within Education	0.0	18.2	14.4	27.8	7.9	16.7
	% of Total	0.0	7.9	5.7	2.8	0.3	16.7
Total	Count	27	390	355	90	38	900
	% within Area	3.0	43.3	39.4	10.0	4.2	100.0
	% within Education	100.0	100.0	100.0	100.0	100.0	100.0
	% of Total	3.0	43.3	39.4	10.0	4.2	100.0

Source: Survey data

Appendix 3.5 Activity and Individual Income Category

Activity	Individual Income (in percent)					Total
	Below 1500	1501-3000	3001-4500	4501-6000	Above 6000	
Motorized	0.00	12.20	71.40	12.20	4.10	100.00
Non-motorized	11.10	63.90	25.00	0.00	0.00	100.00
Mechanized	0.00	0.00	15.50	62.10	22.40	100.00
Others allied	54.10	43.40	1.80	0.60	0.10	100.00
Total	44.20	40.60	8.30	5.10	1.80	100.00

Source: Survey data

Appendix 3.6 Average Monthly Income

District	Activity	Gender	Mean
Kozhikode	Motorized	Male	3814.9286
		Total	3814.9286
	Non-motorized	Male	2604.1250
		Total	2604.1250
	Mechanized	Male	5010.2308
		Total	5010.2308
	other allied activities	Male	2437.5000
		Female	1707.3153
		Total	1732.7130
	Total	Male	3823.7179
		Female	1707.3153
		Total	2257.5800
Malappuram	Motorized	Male	3543.7500
		Total	3543.7500
	Non-motorized	Male	2652.5000
		Total	2652.5000
	Mechanized	Male	5110.0000
		Total	5110.0000
	other allied activities	Male	2432.1429
		Female	1236.5542
		Total	1477.9712
	Total	Male	3163.0597
		Female	1236.5542
		Total	2097.0600
Thrissur	Motorized	Male	3340.3333
		Total	3340.3333
	Non-motorized	Male	2340.6250
		Total	2340.6250
	Mechanized	Male	4740.4286
		Total	4740.4286
	other allied activities	Male	1788.1667
		Female	1597.1009
		Total	1616.0496
	Total	Male	2734.9512
		Female	1597.1009
		Total	1908.1133
Ernakulam	Motorized	Male	5500.0000
		Total	5500.0000
	Non-motorized	Male	2985.0000
		Total	2985.0000
	Mechanized	Male	5650.0000

		Total	5650.0000
	other allied activities	Female	1868.2836
		Total	1868.2836
	Total	Male	4798.4375
		Female	1868.2836
		Total	2180.8333
Alappuzha	Motorized	Male	4416.7500
		Total	4416.7500
	Non-motorized	Male	2664.6250
		Total	2664.6250
	Mechanized	Male	5851.0000
		Total	5851.0000
	other allied activities	Male	2913.8750
		Female	1430.3670
		Total	1698.0677
	Total	Male	3370.0488
		Female	1430.3670
		Total	1960.5467
Kollam	Motorized	Male	4043.5714
		Total	4043.5714
	Non-motorized	Male	2821.6667
		Total	2821.6667
	Mechanized	Male	5422.6429
		Total	5422.6429
	other allied activities	Male	2706.0000
		Female	1324.4898
		Total	1518.3860
	Total	Male	3650.8269
		Female	1324.4898
		Total	2130.9533
Total	Motorized	Male	3818.8367
		Total	3818.8367
	Non-motorized	Male	2637.5000
		Total	2637.5000
	Mechanized	Male	5266.1724
		Total	5266.1724
	other allied activities	Male	2539.1169
		Female	1556.3509
		Total	1661.3065
	Total	Male	3429.5820
		Female	1556.3509
		Total	2089.1811

Source: Survey data

Appendix 3.7 Activity and gender-wise percentage share in income

Gender				Percentage share category					Total
				20 and below	21-40	41-60	61-80	81 and above	
Male	Activity	Motorized	Count		0	7	35	7	49
			% within Activity		0.0	14.3	71.4	14.3	100.0
			% within Percentage share category		0.0	7.7	35.4	14.9	19.1
			% of Total		0.0	2.7	13.7	2.7	19.1
		Non-motorized	Count		7	39	23	3	72
			% within Activity		9.7	54.2	31.9	4.2	100.0
			% within Percentage share category		36.8	42.9	23.2	6.4	28.1
			% of Total		2.7	15.2	9.0	1.2	28.1
		Mechanized	Count		0	3	24	31	58
			% within Activity		0.0	5.2	41.4	53.4	100.0
			% within Percentage share category		0.0	3.3	24.2	66.0	22.7
			% of Total		0.0	1.2	9.4	12.1	22.7
		other allied activities	Count		12	42	17	6	77
			% within Activity		15.6	54.5	22.1	7.8	100.0
			% within Percentage share category		63.2	46.2	17.2	12.8	30.1
			% of Total		4.7	16.4	6.6	2.3	30.1
	Total		Count		19	91	99	47	256
			% within Activity		7.4	35.5	38.7	18.4	100.0
			% within Percentage share category		100.0	100.0	100.0	100.0	100.0
			% of Total		7.4	35.5	38.7	18.4	100.0
Female	Activit	other allied	Count	38	237	348	20	1	644
			% within Activity	5.9	36.8	54.0	3.1	0.2	100.0

	y	activities	% within Percentage share category	100.0	100.0	100.0	100.0	100.0	100.0
			% of Total	5.9	36.8	54.0	3.1	0.2	100.0
	Total		Count	38	237	348	20	1	644
			% within Activity	5.9	36.8	54.0	3.1	0.2	100.0
			% within Percentage share category	100.0	100.0	100.0	100.0	100.0	100.0
			% of Total	5.9	36.8	54.0	3.1	0.2	100.0
Total	Activity	Motorized	Count	0	0	7	35	7	49
			% within Activity	0.0	0.0	14.3	71.4	14.3	100.0
			% within Percentage share category	0.0	0.0	1.6	29.4	14.6	5.4
			% of Total	0.0	0.0	0.8	3.9	0.8	5.4
		Non-motorized	Count	0	7	39	23	3	72
			% within Activity	0.0	9.7	54.2	31.9	4.2	100.0
			% within Percentage share category	0.0	2.7	8.9%	19.3	6.2	8.0
			% of Total	0.0	0.8	4.3	2.6	0.3	8.0
		Mechanized	Count	0	0	3	24	31	58
			% within Activity	0.0	0.0	5.2	41.4	53.4	100.0
			% within Percentage share category	0.0	0.0	0.7	20.2	64.6	6.4
			% of Total	0.0	0.0	0.3	2.7	3.4	6.4
		other allied activities	Count	38	249	390	37	7	721
			% within Activity	5.3	34.5	54.1	5.1	1.0	100.0
			% within Percentage share category	100.0	97.3	88.8	31.1	14.6	80.1
			% of Total	4.2	27.7	43.3	4.1	0.8	80.1
	Total		Count	38	256	439	119	48	900
			% within Activity	4.2	28.4	48.8	13.2	5.3	100.0
			% within Percentage share category	100.0	100.0	100.0	100.0	100.0	100.0
			% of Total	4.2	28.4	48.8	13.2	5.3	100.0

Source: Survey data

Appendix 3.8 Bank account holding

District	Bank Account (in percent)		Total
	yes	no	
Kozhikode	72.7	27.3	100.0
Malappuram	34.7	65.3	100.0
Thrissur	40.0	60.0	100.0
Ernakulam	74.7	25.3	100.0
Alappuzha	45.3	54.7	100.0
Kollam	67.3	32.7	100.0
Total	55.8	44.2	100.0

Source: Survey data

Appendix 3.9 Savings

District	Savings (in percent)		Total
	Yes	No	
Kozhikode	40.7	59.3	100.0
Malappuram	28.7	71.3	100.0
Thrissur	43.3	56.7	100.0
Ernakulam	54.7	45.3	100.0
Alappuzha	44.0	56.0	100.0
Kollam	51.3	48.7	100.0
Total	43.8	56.2	100.0
Purpose of Savings (in percent)			
Marriage	27.4		
Education	12.7		
Treatment	36.5		
Daily Expenses	23.4		
Instrument (in percent)			
Cooperative	59.1		
Post office	26.4		
Chit funds	25.4		
At home	16		
As gold	12.5		
Insurance	14.1		

Source: Survey data

Appendix 3.10 Source of indebtedness

District	Source (in percent)				
	SHGs and Cooperatives	Private money lenders	Fisheries Department/Matsyafed	Others	Total
Kozhikode	53.2	2.1	43.6	1.1	100
Malappuram	43.5	19.4	37	0	100
Thrissur	54.1	5.5	40.4	0	100
Ernakulam	50.8	0	49.2	0	100
Alappuzha	52.5	5.9	38.6	3	100
Kollam	55.9	3.9	40.2	0	100
Total	51.6	6.2	41.5	0.7	100

Source: Survey data

Appendix 3.11 Purpose of Loan

Purpose	Percent
Day-to-day expenditure	18.4
Education	3.5
Treatment	4.6
Purchase of land	0.7
Construction/maintenance of house	29.6
Marriage	17.6
Input	15.3
Debt repayment	5.8
Others	4.6
Total	100

Source: Survey data

Appendix 3.12 Ownership of House

District	Where do you live (in percent)				
	Own /spouse's house	Parent's House	Rented House	Relatives House	Total
Kozhikode	60.0	23.3	10.7	6.0	100.0
Malappuram	45.3	30.0	15.3	9.3	100.0
Thrissur	53.3	18.0	18.7	10.0	100.0
Ernakulam	68.7	11.3	16.0	4.0	100.0
Alappuzha	49.3	20.0	16.7	14.0	100.0
Kollam	66.0	14.7	13.3	6.0	100.0
Total	57.1	19.6	15.1	8.2	100.0

Source: Survey data

Appendix 3.13 Type of House

District	Type of House (in percent)				
	Pucca	Semi-pucca	Serviceable Kutcha	Unserviceable Kutcha	Total
Kozhikode	27.3	39.3	26.0	7.3	100.0
Malappuram	6.7	23.3	40.0	30.0	100.0
Thrissur	10.7	25.3	41.3	22.7	100.0
Ernakulam	29.3	41.3	23.3	6.0	100.0
Alappuzha	10.0	27.3	44.7	18.0	100.0
Kollam	18.7	38.0	33.3	10.0	100.0
Total	17.1	32.4	34.8	15.7	100.0

Source: Survey data

Appendix 3.14 Area of the House

District	Area (in percent)			
	Below 5 Cents	5-10 Cents	Above 10 Cents	Total
Kozhikode	55.3	34.7	10.0	100.0
Malappuram	44.7	41.3	14.0	100.0
Thrissur	47.3	40.7	12.0	100.0
Ernakulam	58.7	32.0	9.3	100.0
Alappuzha	52.0	39.3	8.7	100.0
Kollam	60.0	34.0	6.0	100.0
Total	53.0	37.0	10.0	100.0

Source: Survey data

Appendix 3.15 Latrine Facility

	Latrine Facility		
District	yes	No	Total
Kozhikode	92.7	7.3	100.0
Malappuram	70.0	30.0	100.0
Thrissur	77.3	22.7	100.0
Ernakulam	94.0	6.0	100.0
Alappuzha	82.0	18.0	100.0
Kollam	90.0	10.0	100.0
Total	84.3	15.7	100.0

Source: Survey data

Appendix 3.16 Source of Water

District	Source of Water (percentage)					
	Own well	House Connection	Public Well	Public Tap	Others	Total
Kozhikode	36.0	31.3	4.7	27.3	0.7	100
Malappuram	18.7	22.7	16.7	42.0	0.0	100
Thrissur	24.0	24.0	16.0	26.7	9.3	100
Ernakulam	6.0	72.7	0.0	18.0	3.3	100
Alappuzha	26.0	21.3	12.7	40.0	0.0	100
Kollam	26.7	42.0	2.7	28.7	0.0	100
Total	22.9	35.7	8.8	30.4	2.2	100

Source: Survey data

Appendix 3.17 LPG Connection

District	LPG connection (in percent)		Total
	No	Yes	
Kozhikode	29.3	70.7	100.0
Malappuram	44.7	55.3	100.0
Thrissur	39.3	60.7	100.0
Ernakulam	18.0	82.0	100.0
Alappuzha	37.3	62.7	100.0
Kollam	31.3	68.7	100.0
Total	33.3	66.7	100.0

Source: Survey data

Appendix 3.18 Fuel used for Cooking

District	Main fuel used			Total
	Gas	Kerosene	Wood only	
Kozhikode	70.7	6.0	23.3	100.0
Malappuram	55.3	14.0	30.7	100.0
Thrissur	60.7	6.7	32.7	100.0
Ernakulam	82.0	1.3	16.7	100.0
Alappuzha	62.7	10.0	27.3	100.0
Kollam	68.7	8.0	23.3	100.0
Total	66.7	7.7	25.7	100.0

Source: Survey data

Appendix 3.19 Source of Light

District	Source of Light (in percent)		Total
	Electricity	Kerosene	
Kozhikode	94.0	6.0	100.0
Malappuram	86.0	14.0	100.0
Thrissur	94.0	6.0	100.0
Ernakulam	98.7	1.3	100.0
Alappuzha	94.0	6.0	100.0
Kollam	96.7	3.3	100.0
Total	93.9	6.1	100.0

Source: Survey data

Appendix 3.20 Household Assets

District	Radio (percentage)		TV (percentage)		Mobile phone (percentage)		Two Wheelers (percentage)	
	yes	no	yes	no	yes	no	yes	no
Kozhikode	20	80	89.3	10.7	84	16	24	76
Malappuram	28.7	71.3	79.3	20.7	73.3	26.7	31.3	68.7
Thrissur	59.3	40.7	97.3	2.7	84.7	15.3	30.7	69.3
Ernakulam	90.7	9.3	98.7	1.3	98.7	1.3	24.7	75.3
Alappuzha	43.3	56.7	94.7	5.3	89.3	10.7	33.3	66.7
Kollam	53.3	46.7	96.7	3.3	91.3	8.7	22	78
Total	49.2	50.8	92.7	7.3	86.9	13.1	27.7	72.3

Source: Survey data

Appendix 3.21 Health Status

District	Health Status (in percent)			Total
	Good	Average	Bad	
Kozhikode	38.7	36.7	24.7	100.0
Malappuram	29.3	36.0	34.7	100.0
Thrissur	28.0	44.7	27.3	100.0
Ernakulam	43.3	28.0	28.7	100.0
Alappuzha	27.3	34.7	38.0	100.0
Kollam	33.3	43.3	23.3	100.0
Total	33.3	37.2	29.4	100.0

Source: Survey data

Appendix 3.22 Gender and Health Status

Gender	Health Status (percentage)			
	Good	Average	Bad	Total
Male	30.5	37.1	32.4	100.0
Female	34.5	37.3	28.3	100.0
Total	33.3	37.2	29.4	100.0

Source: Survey data

Appendix 3.23 Health Status and Lost Work Days

Health Status	Days Lost (in percent)				Total
	No days	1-3 days	4-6 days	Above 7 days	
Good	87.7	10.7	1.7	0.0	100.0
Average	35.5	51.3	12.2	0.9	100.0
Bad	0.0	4.9	85.7	9.4	100.0
Total	42.4	24.1	30.3	3.1	100.0

Source: Survey data

Appendix 3.24 Living Standard

District	SLI			Total
	Low SLI	Medium SLI	High SLI	
Kozhikode	4.0	80.0	16.0	100.0
Malappuram	35.3	58.0	6.7	100.0
Thrissur	14.0	78.0	8.0	100.0
Ernakulam	1.3	72.0	26.7	100.0
Alappuzha	11.3	79.3	9.3	100.0
Kollam	2.7	82.0	15.3	100.0
Total	11.4	74.9	13.7	100.0

Source: Survey data

Appendix 3.25 Rural-Urban divide in SLI

	SLI (in percent)			
District	Low SLI	Medium SLI	High SLI	Total
Urban	2.7	78.0	19.3	100.0
Rural	20.2	71.8	8.0	100.0
Total	11.4	74.9	13.7	100.0

Source: Survey data

Appendix 3.26 Household Income and SLI

	SLI			Total
	Low SLI	Medium SLI	High SLI	
Below 3000	28.3	68.9	2.8	100.0
3001-4500	7.2	76.9	15.9	100.0
4501-6000	4.4	78.3	17.2	100.0
Above 6000	4.0	70.0	26.0	100.0
Total	11.4	74.9	13.7	100.0

Source: Survey data

Appendix 4.1 IFDP Scheme 2006-11(amount in Rs. lakhs)

No	District	Amount	Societies	Groups	Beneficiaries	Utilization (%)	Balance
1	Kollam	904.05	44	635	1336	902.62 (99.84)	1.43
2	Alappuzha	470.00	48	208	1047	437.42 (93.07)	32.58
3	Ernakulam	876.50	53	863	4128	576.71 (65.80)	299.79
4	Thrissur	359.22	26	0	0	359.22 (100.00)	0.00
5	Malappuram	498.86	34	79	604	436.26 (87.45)	62.60
6	Kozhikode	827.61	0	337	1467	615.59 (74.38)	212.02
Total		3936.24	205	2122	8582	3327.81 (84.54)	608.43
Kerala		**5104.08**	**363**	**3289**	**14934**	**4361.34 (85.45)**	**742.74**

Source: Matsyafed, 2011

Appendix 5.1 Area and Financial Inclusion

District	Financial Inclusion			Total
	Low	Medium	High	
Kozhikode	30.7	16.7	52.70	100.00
Malappuram	26.0	28.0	46.0	100.0
Thrissur	27.3	16.7	56.0	100.0
Ernakulam	15.3	19.3	65.3	100.0
Alappuzha	30.7	20.7	48.7	100.0
Kollam	23.3	24.0	52.7	100.0
Total	25.6	20.9	53.6	100.0

Source: Survey data

Appendix 5.2 Activity and Financial Inclusion

	Financial Inclusion			
Activity	Low	Medium	High	Total
Motorized	8.2	24.5	67.3	100.0
Non-motorized	15.3	27.8	56.9	100.0
Mechanized	8.6	27.6	63.8	100.0
Others	29.1	19.4	51.5	100.0
Total	25.6	20.9	53.6	100.0

Source: Survey data

Appendix 5.3 Poverty and Financial Inclusion

	Financial Inclusion			
Poverty	Low	Medium	High	Total
Poor	63.5	26.5	10.0	100.0
Non-poor	14.7	19.3	66.0	100.0
Total	25.6	20.9	53.6	100.0

Source: Survey data

Appendix 5.4 District and Development

District	Development					Total
	Low	Medium-low	Medium	Medium-high	High	
Kozhikode	0.7	5.3	31.3	60.0	2.7	100.0
Malappuram	42.7	49.3	8.0	0.0	0.0	100.0
Thrissur	1.3	16.0	80.7	2.0	0.0	100.0
Ernakulam	0.0	4.0	18.0	34.7	43.3	100.0
Alappuzha	3.3	24.0	72.0	.7	0.0	100.0
Kollam	0.0	0.0	18.0	81.3	.7	100.0
Total	8.0	16.4	38.0	29.8	7.8	100.0

Source: Survey data

Appendix 5.5 Gender and level of Development

Gender	Development					Total
	Low	Medium-low	Medium	Medium-high	High	
Male	7.8	16.8	34.8	33.6	7.0	100.0
Female	8.1	16.3	39.3	28.3	8.1	100.0
Total	8.0	16.4	38.0	29.8	7.8	100.0

Source: Survey data

QUESTIONNAIRE

Location

- ❑ Kozhikode
- ❑ Malappuram
- ❑ Ernakulam
- ❑ Thrissur
- ❑ Kollam
- ❑ Alappuzha

Cochin University of Science and Technology
Cochin 682022

PART I - SOCIO ECONOMICS AND LIVING STANDARDS

1. Name of the respondent……
2. Religion……
3. Caste……
4. Age .....
5. Gender: (1-Male, 2-Female) ❑
6. Marital status: (1-Single, 2-Married, 3-Divorced, 4-Widowed) ❑
7. Education: ❑

   (1-Illiterate, 2-Primary, 3-Upper primary, 4-Secondary, 5-Higher secondary and above)
8. Activity: ❑

   (1-Traditional, 2-Motorized, 3-Mechanized, 4-Others, specify)…….
9. Average monthly income. Rs……
10. Number of days per week/month you went for work during the last

    a. Week:……

    b. Month:...……
11. Number of working days lost due to illness during the last one month:……
12. Earning members in the family……. and total monthly family income:.....
13. Total number of members (including yourself) in your household

    Adults ..... Children .....
14. You are presently living in: (1-Own /spouse's house, 2- Parent's House, 3- Rented House, 4-Relatives House) ❑
15. Type of house:

    (1-Pucca, 2-Semi-pucca, 3-Serviceable kutcha, 4-Unserviceable kucha) ❑
16. Area of house: (1-below 5 cents, 2-6 to10 cents, 3- above 10 cents) ❑
17. Does your house has latrine facility: (1-yes, 0-no) ❑

18. Main source of drinking water in the household: (1-Own well, 2-House connection, 3-Public well, 4-Public tap, 5-Other, specify……) ❑
19. Is your household electrified (1-yes, 0-no) ❑
20. Does your household have LPG connection? (1-yrs, 0-no) ❑
21. Type of fuel used for cooking: (1-Wood, 2-Kerosine, 3-Gas) ❑
22. What amenities/valuables your household have? (Tick whichever applicable)
    ❑ Radio ❑ TV ❑ Mobile phones ❑ Two wheelers ❑mixer grinder
    ❑ refrigerator ❑ four wheelers
23. What is your overall health condition? (1-good, 2-Average, 3-bad) ❑
24. Do you hold/have the following membership/benefits (tick whichever applicable)
    ❑Ration card (APL❑/BPL❑) ❑ Voters ID
    ❑ Active Bank account ❑Cooperative membership
    ❑Insurance cover ❑ Health card
    ❑ Membership in political organizations
25. Do you have regular savings? (1-yes, 0-no) ❑
26. If yes, how often? ❑ (1- Daily, 2-Weekly, 3-Monthly, 4-other, specify.....)
27. Purpose of saving: ❑ (1-Daily expenses, 2-Education, 3-Marriage, 4-Treatment, 5-Others, specify……)
28. Where do you save? ❑ (1-Bank, 2-Post office, 3-Chit fund, 4-At home, 5-Gold, 6-Insurance, 7-Others, specify.....)
29. Details of monthly household expenses: ……
30. Do you have any indebtedness? (1-yes, 0-no) ❑
31. If yes,
    a. Source: (1-SHGs and Cooperatives, 2-Private money lenders, 3-Fisheries Department/Matsyafed, 4-Others, specify……) ❑

b. Purpose: (1- Day-to-day expenditure, 2-Education, 3-Treatment, 4-Purchase of land, 5-Construction/maintenance of house, 6-Marriage, 7-Input, 8-Debt repayment, 9- Others, specify……..) ❑

c. Repayment mode: (1-regular, 2-irregular, 3-defaulted) ❑

PART II - PERCEPTION ABOUT SHG

32. Benefits of membership in the SHG:

(coding: 1 – Strongly agree; 2 – Agree; 3 – Undecided; 4 – Disagree; 5 – Strongly disagree)	Coding
Improved living standard	
Sustainable livelihood option to the household	
Unity among the members	
Better interaction with outside community	
Increased political awareness	
Increased mutual trust and bonding	
Better contribution to the household income	
Awareness about government schemes	
Feeling of empowerment	
Skill Development	
Less dependence on money lenders	
Adequate funds to meet borrowing needs	
Better savings	
More participation in social activities	
Easy credit at low interest	

33. Perception of Fisher folks

(coding: 1 – Strongly agree; 2 – Agree; 3 – Undecided; 4 – Disagree; 5 – Strongly disagree)	Coding
Trust and bonding among group members	
Ability to withstand obstacles	
Greater role in decision making	
Lack of Technical Know-how	
Better Living Standards	
Better Contribution to Household Income	
Marketing Problem	
Input Problems	
Sustainable Livelihood Option	
Linkage Issues	
SHG as a Development Option	
Need of more government schemes/programmes	
Less dependence on Money Lenders	
Regular Debt Repayment	
Regular Savings	

34. Rate the level of development by working in the SHGs and Cooperatives on a scale of 0 to 100 …….

PART III - DETAILS OF THE SHG *(group level questionnaire)*

35. Relationship with the SHG ❑

    (1-Member, 2-President, 3-Secretary, 4-Treasurer)

36. Activity of the group: ……

37. Gender of the SHG (1-Male, 2-Female) ❑

38. Number of members in the SHG: ……

39. Person/motivator who helped to form SHG (1-Community Motivators, 2-Fisheries Dept. officials, 3-Matsyafed officials, 4- Office bearers of Cooperatives) ❑

40. Whether graded? (1-Yes, 0-No) ❑

41. If yes, grading agency: ……

42. Amount in the bank account: ……..

43. Whether the SHG has received Revolving Fund: (1-yes, 0-no) ❑

    If yes name the agency/agencies …….

    Purpose for which the revolving fund was utilized ❑

    (1-Inputs, 2-Marketing, 3-Loan to members)

PART IV - Evaluation of Activities and Functioning of the Group

1. **Notes about functioning of the group:**

5

PUBLICATIONS

Developing Country Studies
ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
Vol 2, No.5, 2012

www.iiste.org

Fishery Commodity Chain Trap vis-à-vis Global Quality Standards: An Analysis of the Kerala Marine Fishery

D Rajasenan* and Rajeev B

Centre for the Study of Social Exclusion and Inclusive Policy (CSSEIP), Athithi Bhavan Building, Cochin University of Science and Technology, Cochin -682022, Kerala, India

*E-mail of the corresponding author: rajasenan@gmail.com, rajasenan@cusat.ac.in

Abstract

The article examines the commodity chain trap of marine fishery in Kerala, at both material and value terms, and its ramifications in the globalised fishery chains. The marketing chains both material and value, are very complex in nature since they involve many types of markets and large number of intermediaries and participants. The article also scrutinizes the sensitivity of consumers' and country's responses in terms of dietary and hygienic standards relating to seafood trade. In addition, it discusses the devastating effect about the recent stipulations like the US Bio-Terrorism Act and Shrimp anti-dumping duty on the Kerala fishery products.

Keywords: commodity chain trap, marketing chain, marine fishery, quality assurance standards, sea food trade, material chain, price spread, value chain, bio-terrorism, shrimp anti-dumping.

1. Introduction

Kerala, the southernmost State of India with 2.8 percent of the population, having 10 percent of the Indian coastline, produces about 19 percent of the fisheries output and 17 percent value of the marine products exports from India. Moreover, Kerala is the hub of Indian seafood processing and export industry. Kerala's fishing industry like elsewhere, is widely recognized to manifest a number of acute economic and biological pressures. The prevailing fishing efforts in the state are beyond the sustainable level of fish stock signifying the ailments of both biological and economic overfishing. It is of considerable importance to analyse the fishery marketing chain, both domestic and export markets and its ramifications that lead to a fishery commodity chain trap. The competition and threat from various angles in the international marketing network enables to scrutinize the sensitivity of consumers' and country's responses in terms of dietary and hygienic standards relating to seafood trade.

2. Materials and Methods

The roots of Commodity Chain indeed lie in the 'dependency theory' of the 1970s, addressing the issue of who controls the global trade and industry and how agents are locked into lower value segments of trade and industry (Love, 1980). Channel management, between the fishermen and the end-user, influences both the effectiveness and flow of the product through the chain. The major supposition is that improvements in the market system will amplify the opportunities by retaining and adding value in the fisheries sector within the rural regions. Simultaneously, this will help to improve product quality and continuity of supply, benefiting the consumers (Kesavan et. al., 1992).

The article is based on secondary data published by various government agencies like the Central Marine Fishery Research Institute (CMFRI), the State Department of Fisheries, Marine Products Export Development Authority (MPEDA) and various issues of Kerala Economic Review. Data are analysed based on the theoretical framework of supply chain management in order to work out the marine fishery chain .This is first explained with respect to the material and then to the value chain. These are connected further to the chain related problems in the export sector, particularly the commodity chain trap in the form of technical barriers to fish trade, bio-terrorism and anti-dumping duties. It is very difficult to quantify the exact availability of each species in the chain and its valuation in a multi-species, multi-sector fishery like Kerala.

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ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
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3. The Commodity Chain Trap

When the catch from the marine fishery is in a declining level, it is vital to go for value addition to the output entering the process of exchange. This has increasingly become an important objective of all sectors of the industry over the past few decades. Fundamentally, heavy investment in the harvest and post-harvest sectors for those species meant for the international market, particularly the US, Japan and EU, has recently been embedded in a marine commodity chain trap. This is because majority of the importing countries stipulate many Non-Tariff Trade Barriers (NTB) in the form of Sanitary and Phyto-sanitary (SPS) and other legal measures. Hence, the benefits of liberalized market system that came into being as per the World Trade Organization (WTO) in the marine fishing sector could be undermined. To get relieved from the perils of the commodity chain trap, it is inevitable to ensure quality standards in harvesting and post-harvesting technology of the fishing sector.

4. Material and Value Chains

4.1 Material Chain

Fish marketing in Kerala, from its 222 fishing villages, is very complex as it involves many types of markets and large number of intermediaries and participants. Marketing chain in the fisheries structure refers to the path through which the fisheries output passes through several hands, right from the producer to the final consumer. But all marine fish produced are not consumed fresh and also not sold in the local market. This movement depends on the local specific demand patterns pertaining to different marine species, either in the form of fresh, processed, dried or value added products. Hence, the ordinary marine fish channel is very complex. Figure 1 clearly evinces 42 different marine fish flows in Kerala. Out of these, 24 are prominent chains, and 11 are export chains of which five are very prominent. The export chain is mostly related to shrimp (70 percent value of the marine products exports) and hence it is easy for the importing countries to get ensnared in the chain with intricacy in escaping.

Figure 1 (about here)

The limited number of wholesalers, their joint action in bidding and close understanding through their associations, negate the principle of competitive market structure. Inadequate competition at the wholesalers' level means that the commission agents take higher commission and the crippling effect of this is borne ultimately by the fishermen, who get lower prices. However, open auctioning of fish surplus by the wholesalers to retailers makes the market structure competitive at the retailer level in the final consuming markets. This implies that the market structure is not uniform at all levels. Exploitation, of producers as well as final consumers, prevails at varying levels, from the shore to the terminal market.

Figure 1 the flow of materials with distribution and volume of trade at different levels of market is based on 570013 MT of fish catch in 2009-10 (Economic Review, 2011). The market structure of marine fish is classified into three major market levels: primary markets, intermediate markets and terminal markets. Marine fishermen distribute their harvest to every level, but the highest share (40.1 percent) is sold to the primary markets. After purchasing fish from the auctioneers (including Matsyafed and other co-operatives), the marketing agents pool them to the various assembly markets. Out of the assembly markets/fish landing centers (236 numbers), some are managed by the Matsyafed agencies, a few by local specific co-operatives and other development agencies and the rest (majority of them) by private agencies. Besides, a considerable quantity is also entering into the secondary market without moving into the primary market.

The main share of the output sold by the Matsyafed, other co-operative marketing agencies and private fish agents in the assembly market is grabbed by wholesalers (59.8 percent of total fish volume) followed by retailers (17.8 percent) and fish processors/cold storage (19.2 percent). The wholesalers distribute most of the fish directly to the retailers (about 62.3 percent of what they get), out of which 5.1 percent is sold to processors. Fish transported to the neighbouring states are mostly low valued pelagic species. Processors have yet another route of processed fish distribution. Out of the total processed fish, 32.4 percent is distributed to the wholesalers, 14.2 percent directly to the retailers and the remaining 10.2 percent is exported (high quality, high valued species), mostly to USA, Japan and EU.

Developing Country Studies
ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
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Retailers are the last link in the channel before the fish reach the final consumers. From the marketing channel and percentage of marine fish distribution, it can be deduced that 80.6 percent of total marine catch is consumed domestically. Out of the total consumption, 53.2 percent is bought fresh and 27.4 percent is bought in processed forms. Exports account for 14.5 percent of total fish production, and the rest is either locally consumed or treated as waste and fishmeal. The marketing channels in rural areas consist mostly of small-scale wholesalers and retailers, and the fish traded are low-priced, small-size species that are affordable to the consumers.

4.2 Price Spread

Price spread analysis helps to determine the share of fishermen in the consumer's Rupee. Sales are classified into three types: local sale at production centers, sale to consumer centers located away from the production centers and sale to pre-processing and processing centers or agents of processing centers for export market. Inferior varieties of fish are mostly traded in the nearby markets or in the landing centers, and hence they are free from cost of packaging, icing, transporting and other trade margins. Therefore, only average and quality products with region specific demand move to consuming centers located further away from the landing center. But there is no uniformity in the price even for the high quality fish, temporarily and spatially, as the fish move to several intermediaries before reaching the final consumers. In this exchange process, the fishermen's share is the amount given to them by the first auctioneer in the marketing chain. The retailer in this chain gets the final price from the consumer as the consumer price. Several costs and commercial interests are involved in the first to the last part of the chain. The presence of too many intermediaries has placed the fishermen and consumers at disadvantageous positions. The present system of marketing, involving too many intermediaries, shows that collusion is rampant throughout the system, right from the shore to the final market. Some of the fishermen are overcoming the problem of price-spread as they themselves do the business of retailing and vending and in this case, fishermen's share in consumer Rupee is quite high. The fishermen's share decreases disproportionately with the increase in the number of intermediaries. Various studies conducted by the Central Marine Fisheries Research Institute (CMFRI), Kochi, in various places in Kerala show that fishermen's share in consumer Rupee varies from place to place in the range of 15 percent to 55 percent, depending upon the species. Fishermen's share in the export varieties is generally higher in comparison to the local and other regional demand varieties.

In the marketing chain, fishermen have control only in the first sale. Hence, it is of paramount importance for them to have the right to first sale of fish. This will help them to get more gain in the value chain. This is limited by market intervention in the traditional fishing villages of Kerala, the inter-linkage of credit and marketing relations. The first part envisages loans against commitment of future labour, while the other foretells loans against the commitment of future delivery of catch. So, the middlemen are free to exploit the fishermen at their will as they can fix the price for the latter's product as they desire. This monopoly power of the middlemen is the major reason for the fishermen's reduced share in the Consumer Rupee.

4.3 Value Chain

Rapid macro-economic developments and changes, in the expectations of consumers, have led to the diversification of product forms even in the domestic markets and value addition has become one of the focal features of the fish processing industry. Changing consumer preferences, in favour of easy-to-prepare processed fishery products brought about by the changing life styles associated with the MNCs' super market chains as well as increase in consumer purchasing power, have increased the demand for such value added fishery products. There is certainly an immense scope to take advantage of such potential for financially viable business opportunities, which would also help the impoverished fishing communities and the processors to realize better income and improved employment prospects. Value addition increases the economic value of the products and does not necessarily increase the nutritional value. It is aimed at the high-income groups rather than at the nutrition deficient weaker sections of the society. Value addition to under-utilized or low-value species will also help in improving their utility for direct human consumption, which otherwise may become animal feed. Value addition to often-discarded by-catch will contribute towards a more sustainable use of scarce fisheries resources, and will consequently result in higher income benefits for fishermen.

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It is vital to consider various ways in which value might be added to the output entering into the process of exchange when there is decreasing quantities within a supply chain. Value addition does not imply further processing of raw materials. On the other hand, it encompasses methods by which the market value of the catch can be enhanced via improved fish capture methods, improved handling, packing and transportation of fishery products. The trend in value addition differs in domestic and international markets. Regarding domestic markets, a trend towards developing 'ready-to-cook and ready-to-eat' products has been observed. In the Asian international market, increased seafood sales directly to the retail sector play an important role in the development of value-added products, particularly in Japan. The recent development in the US market is that US importers are willing to provide technical assistance to processors for producing value-added fish products for the US market. Unlike Japan and the US, European markets are still looking for raw materials rather than value-added products because of the presence of large re-processing industries. However, a shift of interest to value added fish products is noted in Southern European markets.

Considerable investment and restructuring have resulted in radical changes in the fish-processing sector over the last few years. The presence of high quality channels, between the harvested resource base and the market, has also important implications for the fisheries harvest policies and market signals. Overwhelmed by supply constraints, there is a growing, socially derived need to maintain by adding value within traditional supply chains. Channel management, between the fishermen and the end-user, influences both the effectiveness and flow of the product through the chain. The flows of raw material and information within the fish marketing chain make identification of the user groups and individuals easier. This will also help in the profiling of players present within each market including producers, fish selling agents, traders, buyers and the construction of descriptive models of information. Moreover, this will help to assess their positions in relation to the definitions provided by efficient market hypothesis (Ball, 1989).

A value chain analysis of Kerala's marine capture fisheries will allow the market or exchange system to carry out a quantitative estimation of the variables involved, from an economic point of view. It is possible to analyse the price volatility and variation, the source of a deal of income uncertainty in the fishing industry and the profit sharing ratio (p/c, where p is price and c is cost) for evaluating the important socio-economic inferences. Because of the difficulty in obtaining the specific data relating to the value added products (quantity and values) in the marketing chain, a schematic presentation is given in Figure 2 with the shore value and the terminal market value, including the export earnings. The shore value is worked out with the aid of the annual average price for various species (Rs. 43/Kg.) for the 2009-10 catch data of 570013 MT. The terminal value analysis, for the fresh and value added products in the domestic market, is a cumbersome process. However, it is arrived at an average annual retail price (Rs. 58/Kg.) for the difference in quantity after export, by considering wastage of 5000 tonnes while processing 458722 MT.

The profit sharing ratio, which varies from segment to segment, is to be calculated for each segment in the supply chain. If it is high in a segment, it indicates the dominance of the system. There is a possibility of supply chain reformation avoiding such dominant segments. Risk is usually higher in dominant areas, where profit is also high. The optimum configuration will be a blend of moderate profit with moderate risk rather than high profit with high risk, especially when the commodity is perishable.

Figure 2 (about here)

There is the concept of capacity of each segment in the supply chain. The capacity is price and quality sensitive along with other considerations, as it is a food item. In this area, a number of non-tariff and other specification barriers determine the segment capacity, especially in international fisheries trade. The price sensitivity has the effect of decreasing profitability in the segment as more and more material is pumped into it. In practice, the segments cross over to different countries where the currency values are different. This results in a situation in which the higher income countries exert a greater pull on the supply chain, drawing more materials and thereby establishing the supply to that extent.

The products can measure the competitive strength of the value chain and the marketing services' transaction value to its customers, and their rarity in the market place. In terms of value addition, performance, a margin between sales value and production costs, is dependent on the total market power of the value chain as a whole, compared to competing value chain and distribution among the participants in the chain. The source of market power is the

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participants' control of the demand and limited trade barriers, which form the industry's value chain structure (Trondsen, 2003).

5. Technical Barriers to Fishery Trade

5.1 Health Safety and Technical Barriers to Fish Trade

Seafood importing countries have adopted legislations for fishery products, with new requirements for domestic as well as foreign producers exporting to these markets. Codex Alimentarius Commission (CAC, 1996) recommended the adoption of a food safety management system, such as Hazard Analysis Critical Control Points (HACCP) in 1993. The CAC recommendations have been endorsed and made mandatory due to the WTO agreements on Sanitary and Phyto-Sanitary measures (SPS) and Technical Barriers to Trade [TBT] (WTO, 1995). The TBT covers all technical regulations, voluntary standards and procedures with the exception of sanitary and Phyto-sanitary measures. An important element of international standards, guidelines and recommendations is the compliance with HACCP, a management system for food safety. Many countries around the world including USA, Canada, Australia and the EU countries have adopted this system, both in domestic and global fish trade.

Bans were imposed due to non-compliance with the safety regulation (administrative detention) on Indian seafood's many a time. These bans caused severe grievances to the fisheries sector in India including Kerala, inasmuch as Kerala being the hub of India's sea food processing export industry (Henson, Saqib and Rajasenan, 2005). The industry sources realized that the ban has resulted in mammoth loss of foreign exchange, jeopardizing the livelihood of about 200,000 people engaged in fish harvesting, peeling, processing and marketing in Kerala. To win through the perils of ever increasing, tougher quality demands from the importing countries, it is high time that the industry responded more quickly by inducting modern technologies available in processing.

5.1.1 US Bio-Terrorism Act

Despite the fact that food is safer compared to any other point of time in history, with increasingly more stringent controls including Hazard Analysis Critical Control Point (HACCP) requirements, confidence in the global food supply has dwindled over the last 10 years. Terrorist attacks on the US on September 11, 2001 have spurred widespread concern about the vulnerability of food supply to intentional contamination, which initiated discussions on food safety issues of the nation. Under the regulation of the Bio-Terrorism Act 2002, every seafood consignment in the US would require prior notice to the Food and Drugs Administration (FDA). The introduction of traceability systems in the food supply sector is a relatively new concept that continues to gain momentum, particularly in the US. It is increasingly becoming a legal and commercial necessity, driven largely by the growing food safety issues including terrorism and demands by the consumer for detailed information on the nature, origin and quality of the food they are purchasing. This means physically tracing products through the distribution chain, and providing information on product ingredients and the effects of production and distribution on product quality and safety. The agency linked mechanism in US for traceability as per the new regulation and other stipulations will be detrimental to the ailing fish economy of Kerala.

5.1.2 US Shrimp Anti-Dumping Suit

The post WTO trade regime in the marine fisheries sector has not been congenial to the Indian fisheries sector due to multifarious reasons. The anti-dumping rule against the Indian shrimp is the recent worry among processors and exporters, following the WTO Appellate body ruling on the US 'Byrd amendment', the anti-dumping lawsuit against 5 countries including India. Shrimp is the most extensively consumed seafood in the US, but according to Federal Government, the US produces about 12 percent of what it consumes. The Seafood Exporters Association of India (SEAI) is of the view that the US move is the biggest challenge that the Indian seafood industry has ever faced. Like many other fisheries, the shrimp industry is also known for fluctuations. The price of shrimp sold in the US during 2009-10 dropped as much as around 40 percent, while the quality of imported shrimp has improved. Therefore, any protectionist move on the part of the US will bring this dispute before the WTO, as dumping tax on the member countries will make them lose the moral justification of their argument on the ground that such an imposition of an illegitimate tax runs counter to the principle of global free trade.

India has vehemently criticized the imposition on the ground that it was simply a protectionist measure calculated to

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shield the US shrimp farmers from cheaper and more competitive imports. India sources states that it is not engaging itself in 'dumping', and that its shrimp is cheaper compared to those of the US. It is also argued that since 90 percent of the shrimp consumed in the US is being imported, its consumers could also be hurt by the higher prices induced by the antidumping duty. Indian and Thai stakeholders also expressed their indignation at the alleged contradiction between the free trade rhetoric of the US and its own protectionist measures.

The best possible way to circumvent the duty will be moving into value-added, finished products like 'ready-to cook and eat' materials. This will equip the domestic producers to capture larger shares of the gains from trade, along the production chain. To do so successfully, the exporters will have to incur substantial marketing expenses by developing the necessary brand name involved in value-added products. Just below five percent of Kerala's current shrimp exports to the US are value-added. Kerala's shrimp producers believe that once the marketing infrastructure is in place, the development of necessary technology will not be an issue. For instance, the industry underwent a similar process in 1997, when the EU demanded higher health standards on many types of Indian Seafood.

6. Conclusion

The fish marketing chains, both material and value, are very complex in nature since they involve scores of markets and large number of intermediaries and participants. Value addition will indubitably open doors to financially viable business opportunities which will, in turn, enable the processors to realize better incomes and improved employment prospects. Value chain helps to work out the price volatility and variation, as well as the source of income uncertainty in the fishing industry along with the profit sharing ratio for evaluating the important socio-economic outcomes. The management of the channel between fishermen and end-users influences both the effectiveness and flow of the product through the chain. Heavy investment, in the harvest and post harvest sectors on those species meant for export market, has recently been embedded in a marine fishery commodity chain trap. As consumers' choice shifts from fresh fish to processed fish products, and as they become sensitive to both choice and quality in terms of dietary and hygienic standards, it is imperative to follow the quality standards in seafood trade. Any protectionist move like the Shrimp anti-dumping duty and Bio-Terrorism Act on the part of the US will have a devastating effect on the Indian fishery export sector in particular and the fishery sector in general. However, the question remains unanswered in the current debate on international fish trade: who will bear the extra cost of compliance? A higher consumer price in the importing countries for quality products will reduce the burden of the exporters in Kerala to implement quality standards for marine products. Consumers in the importing countries may have to pay more for safer seafood from developing countries.

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Developing Country Studies
ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
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Prof. (Dr.) D. Rajasenan is the Director at the Centre for the Study of Social Exclusion and Inclusive Policy (CSSEIP) and Professor, Econometrics and Mathematical Economics, Department of Applied Economics, Cochin University of Science and Technology (CUSAT), Kerala, India. He is also a former DAAD fellow, Commonwealth Senior Fellow and Indo-Canadian Shastri Fellow. Ph: +91-484-2577566; Email: rajasenan@gmail.com, rajasenan@cusat.ac.in.

Rajeev B is the Research Assistant at the Centre for the Study of Social Exclusion and Inclusive Policy (CSSEIP), Cochin University of Science and Technology (CUSAT), Kerala, India. E-mail: rajeevbhaskars@gmail.com, rajeevbhaskars@cusat.ac.in.

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ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
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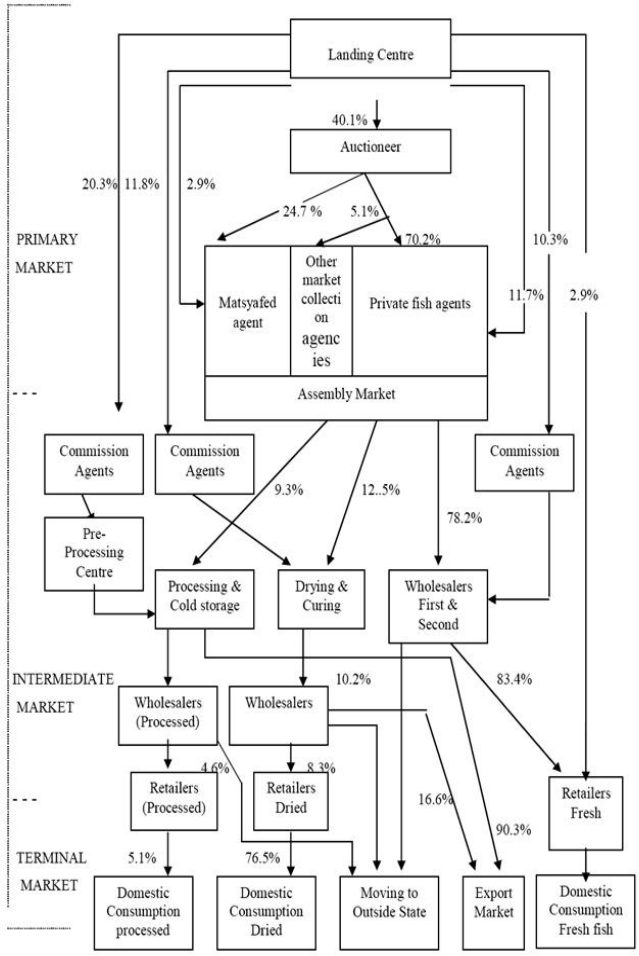

Figure 1. Material Flow of Marine Fish in Kerala

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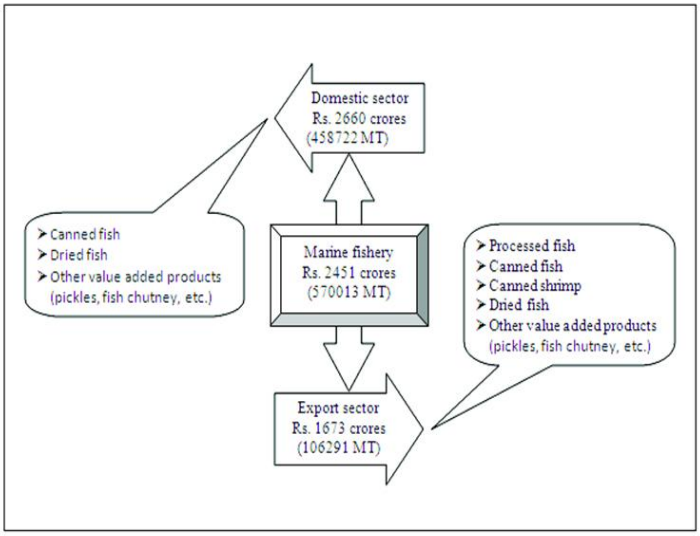


Figure 2. The Fishery Value-chain

Volume : 1 | Issue : 7 | April 2012 ISSN - 2249-555X

Research Paper Economics

Livelihood Security of Traditional Fishermen of Kerala: Analysing and Identifying the Roles of Self Help Groups

* (Dr.) D. Rajasenan ** Rajeev B.

* Director, Centre for the Study of Social Exclusion and Inclusive Policy (CSSEIP), Kochi

** Research Assistant, Centre for the Study of Social Exclusion and Inclusive Policy (CSSEIP), Kochi

ABSTRACT

Employment and income play an integral role in ensuring livelihood security of fishermen. SHGs and co-operatives in various fishing villages are functioning as an effective mechanism for overcoming the livelihood insecurity prevailing at present in the fishing sector of Kerala. 900 samples have been collected from the fishery related SHGs and co-operatives from twelve fishing villages of six districts coming under three zones based on number of SHGs and number of fishing crafts and gears used. The results obtained from the study show that their income from fishing and non fishing activities works as a reinforcing factor for their socio-economic development. Even though the fishermen community has benefitted from the new institutional set up, they still remain as outliers in the state requires requisite policy framework for the overall development of the fishing community of Kerala.

Keywords : Traditional fishermen, Livelihood security, Standard of Living Index, Quality of life

The fisheries sector in Kerala has undergone drastic changes with the advent of globalised economy. The traditional fisher folk are one of the outlier communities in the state and are left out of the overall development process mainly due to the marginalization of this community both in the sea and in the market due to modernization and mechanization of the sector during 1960s. These factors, together with resource depletion resulted in the backwardness experienced by the traditional fishermen compared to other communities who were reaping the benefits of the overall development scenario. Employment in this sector is seasonal in nature and technological advancement has made traditional fisher folk more marginalized from the mainstream society due to income inequality and livelihood insecurity. The SHGs in coastal Kerala have a greater role to play as a result of the reduction in employment opportunities in fish processing, peeling, etc. It is important to derive a strategy and best practice methods for the effective functioning of these SHGs so that the traditional fisherman can be saved from the waves of globalization and the tragedy of technology and the associated sustainable livelihood option.

Materials and Methods

The selection of 900 samples for analytical inference was done on the basis of active fishermen population in twelve fishing villages of six districts coming under three zones based on number of SHGs and number of fishing crafts and gears used. The north zone consists of Kozhikode and Malappuram with Beypur, Puthiyappa, Tanur and Tirur fishing villages; the central zone consists of Ernakulam and Thrissur with Malippuram, Elamkunapuzha, Nattika and Kadappuram fishing villages and the south zone belongs to Alappuzha and Kollam with fishing villages of Kanjiramchira, Mannancherry, Vellanathuruthu and Sakthikulangara. Samples are taken from SHGs coming under Matsyafed and inferences are derived mainly from inter and intra zone basis.

Results and Discussion

Livelihood- income, expenditure

Employment and income plays an integral role in ensuring livelihood security of an individual. Modernization of fishing techniques resulted in tremendous transformation in the employment pattern in the marine sector and the main worry is the re-distributional effect (Kurien and Paul, 2001; Kurien, 2005). The income level of the fishermen is highly fluctuating depending on the season, availability and catch. Apart from the demand and supply of fish resources, the income also depends on value or market price of the catch. Income varies according to the activity in which they are engaged in. Average monthly income depicted in Table 1 shows that motorised fisher folk draw an average income of Rs.3818.84, non-motorised groups draw an average income of Rs. 2637.50 and Mechanised groups draw about Rs. 5266.17. The average monthly income of fisher folk engaged in pre-harvest and post-harvest allied activities such as net making, peeling, fish vending, sales, etc., as well as those with an SHG activity groups is about Rs. 1661.30. It is pertinent to mention here that 89.3 percent of the respondents working in allied sectors are females and there is disparity in the average income of males and females. Oamjie (2009) also points out the difference in payments to males and females in the fisheries sector. Average income of females is Rs.1556.35 whereas that of males is Rs. 3429.58. However, the role of women in supporting the family through the additional income generated from these activities cannot be ignored.

Table 1 Average individual income based on activity and gender

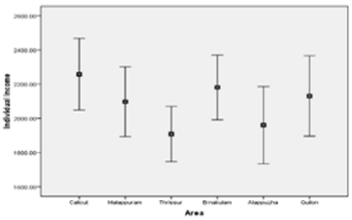
Activity	Average monthly income (in Rs.)	Gender	Average monthly income (in Rs.)
Motorised	3818.34	Male	3429.58
Non-motorised	2637.5		
Mechanised	5266.17	Female	1556.35
other allied activities	1661.3		
Total Average	2089.18		

From the District-wise average monthly income shown in Figure 1, it is evident that urban districts like Ernakulam, Kozhikode and Kollam are having higher average income compared to other less developed rural part connected fis-

Volume : 1 | Issue : 7 | April 2012 ISSN - 2249-555X

ing districts where data have been gathered. One reason may be that modernisation and mechanisation has been concentrated in these areas compared to centers like Malappuram, Thrissur and Alapuzha. Total average income is Rs. 2089.18/-Average income is the highest for Kozhikode (Rs. 2257.58/-) and the lowest for Thrissur (Rs.1908.11/-). Malappuram has the largest average monthly income compared to other traditional rural centers, mainly due to the fact that male-female ratio is lesser in Malappuram than other districts and as percentage of males is high, it is obvious that the average income will also be higher in consideration to other social indicators. Error plot in Figure 1 shows that all the districts illustrate high variation in individual incomes.

Figure 1 Error Plot for Individual Income



Average monthly family income and expenditure based on districts is depicted in Figure 2. Kozhikode has the highest average monthly family income (Rs.4649/-), followed by Ernakulam (Rs.4371/-) and Kollam (4224). The three districts have income higher than the total income of Rs.4162/-. Average monthly family income of Alapuzha, Malappuram and Thrissur are less than the total income. Expenditure also shows a similar pattern with Ernakulam, Kollam and Kozhikode having more than average of Rs.4233/- and the rest of the three districts (Alapuzha, Malappuram and Thrissur) have an expenditure less than the total average expense. However, all the districts have their average family income more than the family expenditure (Figure 2). Another important inference that can be made is that the northern districts Malappuram and Kozhikode have the highest average family income in the rural and urban categories, respectively, one of the reasons for this is that these regions are highly gender-biased compared to other areas as the individual income level for females are low. It was inferred from the primary data that females work in pre-and post harvest sectors commonly known as allied sectors as well as in activity groups of SHGs, whereas majority of males work in fishing activity. The income earned by those who work in fishing is more than those in allied activities. Hence, this variation in average monthly income is visible. Also, it is clear from Figure 3 that male income is more spread across a larger area than that of females. This is because women get more or less same income from most of the activities whereas income for men varies in proportionate to the nature of activity (e.g. a male working in mechanised may earn more than one working in non-motorised/motorized or allied sectors). Ernakulam district shows the highest variation in income of males.

However, irrespective of rural-urban bias, all the districts show more average family expenditure than income (see Figure 2). It can be further inferred from Figure 2 that Kozhikode has the highest average household income and expenditure among all districts. From the overall analysis of the total income and expenditure of the fishermen household, it can be identified that they have an expenditure pattern higher than their income and hence there might be a situation of borrowings. However, variation between income and expenditure is lesser in urban areas compared to the rural regions.

Figure 2 Error Plot Household Income and Expenditure

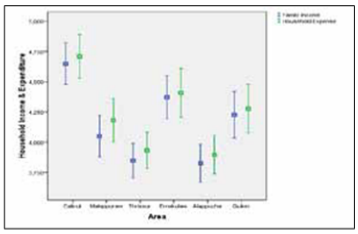
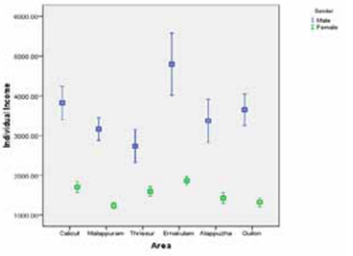


Figure 3 Error Plot Gender and Individual Income



Any increase in average monthly income of the individual will bring in an increase in their household income as well as expenditure. Hence, it may be noted that the individual income of the respondents is an important portion of the total family income and also plays a pivotal role in determining the total family expenditure. It is heartening to note that all the respondents are in the sample members of co-operative/ SHGs and they are able to draw income sufficient to lead a sustainable livelihood through these SHGs.

Financial habits

The disparity in bank account holding tendency of respondents is evident from Chi-Square result (Table 2), which shows significant difference in the tendency to have a bank account based on region.

Table 2 Chi-square – region and bank account holding tendency

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	96.038a	5	.000
Likelihood Ratio	98.182	5	.000
Linear-by-Linear Association	1.388	1	.239
N of Valid Cases	900		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 66.33.			

Indebtedness

It is already stated that the expenditure of the fisher folks is more than their income and the difference is met through borrowings. Majority of the respondents (51.67 percent) recorded their major and prime source of debt as Banks, followed by Matsyafed (41.50 percent). The fisher folks have been in the clinches of private money lenders and they are kept in a state of perpetual indebtedness. It is heartening to note that among the SHG members, dependence on private money

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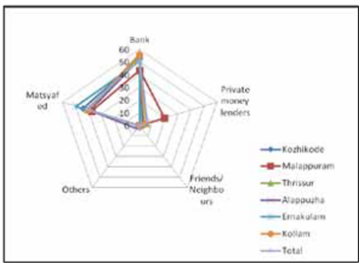
lenders is only 6.16 percent. Matsyafed (2010) identified that the thrift generated by SHGs is used for internal lending to the members at low interest rates and this was very helpful to the fishermen families who are otherwise forced to borrow from private moneylenders at exorbitant interest rates. However, if a district wise analysis is made, it can be inferred that the percentage of respondents depending on money lenders are the highest in Malappuram (19.44 percent) and zero in Ernakulam, whereas the percentage of respondents depending on Matsyafed are the highest in Ernakulam i.e. 49.17 percent and the lowest in Malappuram 37.04 percent. It is evident from Figure 4 that all districts other than Malappuram show almost same pattern, whereas Malappuram shows a bulge in the "private money lender" category. The overall analysis of source of indebtedness of the respondents throws light on to the fact that Matsyafed has emerged as one of the major sources of debt for the fisher folk, saving them from the clinches of private money lenders.

Figure 4 Source of debt



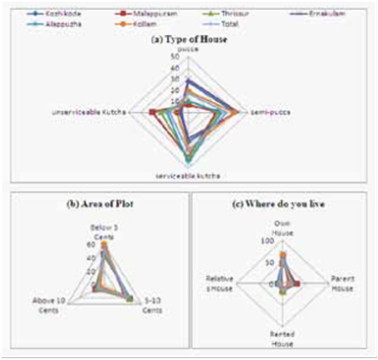
Quality of life

Analysing the overall facilities and amenities available to the fisher folk gives a clear picture about their living standards. They have remained as outliers in the overall economic as well as socio-cultural development of the state due to the proximity to sea and dependence on sea for their livelihood. One of the major reasons for the lack or poor quality of life is overcrowding. The whole process is like a vicious circle: poor quality of life leading to low income and further to increasing indebtedness and increasing population pressure in the coastal areas resulting in overcrowding a real espousal to the tragedy of the fishers leading to labour stickiness and the concomitant livelihood issues.

Overcrowding can be easily identified if data pertaining to the type of house they are living in is scrutinised (Figure 5 (a)). 17.1 percent of the total households live in pucca houses whereas 32.40 percent stays in semi pucca houses. 34.8 percent of the sample have serviceable kutcha house and 15.7 percent live in unserviceable house. Malappuram has the least percentage of pucca (6.7 percent) and the highest percentage of unserviceable kutcha (30 percent) houses, whereas it is almost reverse in Ernakulam (29.3 percent pucca and 6 percent unserviceable kutcha). Quality of housing has undergone a drastic change after the mid 80s, particularly after the formation of Matsyafed and other fishery co-operatives by fishermen themselves inter alia various government schemes and programmes as part of the fishermen welfare programmes.

The problem of overcrowding in the coastal areas is evident from Figure 5 (b) Majority of the respondents (53 percent) have an area of below 5 cents, followed by 5-10 cents (37 percent) and the rest above 10 cents. District-wise distribution of the sample also shows similar results.

Figure 5 Zone and Quality of life



District-wise ownership of house is presented in Figure 5 (c), 57.1 percent of the respondents reside in their own house, whereas 19.6 percent in their parental house, 15.1 percent in a rented house and 8.2 percent are with relatives. Ownership of house is a major determinant of the physical assets owned by an individual. Again in ownership pattern as well, urban and rural centres show a unique pattern.

Inferences from the field survey show considerable difference in the living standards of fisher folk based on region. To appraise this, a Standard of Living Index (SLI) was constructed along with a correspondence analysis. SLI is based on socio-economic conditions like ownership of house, drinking water, energy used for lighting, etc. Each indicator was given scores in the band of one to three, where 1 for minimum value i.e. low SLI, 2 for medium value or medium SLI and 3 for maximum value or high SLI.

A significant difference is identified between the districts and the SLI value which is portrayed in the form of correspondence chart shown in Figure 6. Majority of households in the high SLI category are from Ernakulam, whereas Kozhikode, Kollam, Alappuzha and Thrissur are closer to the medium SLI category. The number of households in low SLI category is huge in Malappuram.

Figure 6 Correspondence chart - Area and SLI

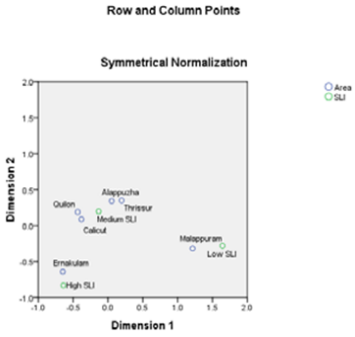


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Table 3 Correspondence Table – Region and SLI

	SLI			
Area	Low SLI	Medium SLI	High SLI	Active Margin
Urban	12	351	87	450
Rural	91	323	36	450
Active Margin	103	674	123	900

A rural-urban variation (Table 3) is also observed in SLI category, with majority of high and medium SLI households in urban centers (Ernakulam, Kozhikode and Kollam) whereas majority of low SLI households are in rural centers (Malappuram, Thrissur and Alappuzha).

Conclusion

Socio-economic analysis of the fisher folks in six districts shows that more urbanized centres (Kozhikode, Ernakulam and Kollam) have better socio-economic indicators than the other semi-urbanized/rural centres (Thrissur, Malappuram and Alappuzha). Individual income seems to be the major determining factor for the income and expenditure of the fisher folks. As this study is focused on fisher SHGs linked to co-operatives for carrying out their activities for fishing and non fishing, their income from these activities work as a reinforcing factor for their socio-economics. Inference derived from the district-wise analysis of the fishermen SHGs be evidence for the immense benefit they have obtained from the new co-operative setup. Still they are considered as outliers in the development process of the state, warrants appropriate institutional policy arrangements for placing them within the new development process. More disheartening is the existing regional disparities in the socio-economic conditions of the SHG members particularly in a rural urban divide.

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