

Sustainable Livelihood and Gender Equity in the Development of the Blue Economy with A Special Focus on Marine Fisheries



Image Source: Vivek R Nair.HT Photo
(Rekha Karthikeyan is India's first fisherwoman to get deep sea fishing license)

Team iCED and Ms. Maitri Verma, Intern

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About the Research Paper

Blue Economy sectors have attracted enhanced attention of the policymakers owing to untapped vast potential in the world's seas and oceans on the one hand, and concerns for managing the fragile blue environment and sustainability of the marine ecosystem on the another. Marine fisheries are one such sector that provides a source of livelihood to millions of people in India and to hundreds of millions of people worldwide. Ensuring gender equity in this sector holds a key towards ~~balanced~~ growth. It is in this context, this paper has been developed by Team iCED with inputs as applicable from an intern at iCED in June 2023, Ms. Maitri Verma.

This Research Paper is part of iCED's endeavour to improve accountability and inculcating professional excellence in the areas of environment and sustainable development.

iCED has initiated, from the year 2022, an Occasional Research Paper Series featuring different emerging areas of environment and sustainable development.

This paper on **“Sustainable Livelihood and Gender Equity in the Development of the Blue Economy with A Special Focus on Marine Fisheries”** forms a part of the Occasional Research Paper Series (Vol. X), with a special focus on the Blue Economy sectors. It is the tenth such volume in the series which was launched in May-June 2022. This also represents iCED's new pathway of emerging as a Centre of Excellence on Audit of the Blue Economy.

Feedback

We strive for constant improvement and encourage our readers to provide their valuable feedback/suggestions. Please send us your suggestions and comments about this Research Paper to iced@cag.gov.in.

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survey report are based on the data collected through surveys and analysis conducted within the scope of this research. While utmost care has been taken to ensure the accuracy and validity of the information presented, it's important to note that surveys are subject to various limitations such as individual interpretation of questions, recall bias and other inherent survey-related challenges and should be interpreted with consideration of these limitations. Hence, elements of personal judgement in interpretation of questions by the respondents and answers by team iCED might be present, although due care has been taken to avoid such judgements during analysis of survey responses. iCED disclaims all liability for actions taken or failed to be taken based on any content of this research paper.

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Declaration by Intern

I, **Maitri Verma** hereby declare that the Research Paper titled “**Sustainable Livelihood and Gender Equity in the Development of the Blue Economy with A Special Focus on Marine Fisheries**” submitted to iCED is my own work and no part of it has been published anywhere else in the past. The facts and figures given in the paper are true and authentic to the best of my knowledge. I concur with the modifications/corrections carried out during the report evaluation based on inputs provided by me.

Further, I affirm that the primary study of a survey, etc. utilised in this paper is the result of iCED's exclusive efforts, and I will not claim any ownership over this portion in the near future.

11th August 2023

**(Maitri Verma)
Intern, iCED**

Acknowledgement

I wish to express my deepest gratitude and sincere thanks to Ms. Sayantani Jafa, Additional Deputy Comptroller and Auditor General and Director General, iCED, for giving her invaluable guidance throughout the research work. I would like to express sincere gratitude to Dr. Nanda Dulal Das, Director (Training & Research), iCED for his valuable supervision and guidance and constructive suggestions in inputs for this research work covered during my internship at iCED. I also offer my sincere thanks for the help and feedback offered by Shri Kamal Kumar Sahal, Senior Administrative Officer, iCED and Shri Saurabh Sharma, Assistant Administrative Officer, iCED. This Research Paper would not have been possible without their generous support, constructive feedback and constant encouragement.

11th August 2023

(Maitri Verma)
Intern, iCED

Foreword



India is a peninsular country with a vast coastline of over 7,500 km, which is home to diverse marine biodiversity and coastal communities. The Blue Economy sectors in India include fisheries and aquaculture, coastal tourism, maritime transport, offshore oil and gas exploration, and renewable energy generation. Each of these sectors presents unique opportunities and challenges that need to be understood and addressed to harness their potential fully. India is one of the largest fish-producing countries in the world. The Indian fisheries sector has evolved over the years and become an important socio-economic attribute for the nation. This sector plays a crucial role in the national economy and is one of the key contributors to India's foreign exchange earnings.

Women play an essential role in the fisheries sector in India. They make an immense contribution by engaging themselves in varied downstream and upstream activities in this sector. They participate in various tasks relating to pre and post-harvesting, including working in seafood processing plants, apart from taking care of their families, building social connections, and preserving community traditions.

Though significant efforts have been initiated at various levels for promoting gender equity and mainstreaming gender discourse within the policy framework, there remains an evident gap between intent and the outcome, especially in the fisheries sector. This calls for a closer examination of the mechanisms in place and a renewed commitment to bridge the implementation gap. Therefore, it is imperative to focus on gender studies and mainstreaming gender equality within the fisheries sector.

iCED is under the aegis of the Comptroller and Auditor General of India. It is rather uniquely placed as a Global Training Facility (GTF) among all SAIs in being dedicated to capacity building on environmental audit and sustainable development issues. Recently, it has also been established as a Centre of Excellence on Audit of Blue Economy by the Hon'ble Comptroller and Auditor General of India Shri Girish Chandra Murmu. By opening this new pathway, iCED in this present study, continues its dynamic research-centric pedagogy, by exploring the theme of Blue Economy from the lens of Gender Equity and Sustainable Livelihoods.

A comprehensive approach, combining primary and secondary research methods to provide a well-rounded exploration of key facets is the aim of the present work. We utilise a mixture of research methodologies here - Structured questionnaires, formulation of these questionnaires in the local language (Malayalam), and data collection as per a pre-designed format to arrive at an insightful glimpse into the realities faced by vulnerable women in fishing and its allied communities. Our presentation of findings, through statistical charts, aims to provide an accessible avenue for the readers to grasp the socio-economic landscape and women's roles within these sectors. Additionally, this study also explored the policies and practices existing in Kenya and Indonesia, aiming to draw lessons from their experiences in promoting gender equality within the fisheries sector. By comparing international approaches, we aimed to identify successful strategies and policies that could be adapted to the local context, if required.

This paper is the cumulative and synergistic effort of the iCED Research Division and Ms. Maitri Verma, Intern. Dr. Nanda Dulal Das, Director (Training and Research) has coordinated the project. I would like to place on record the immense co-operation in obtaining the primary data we received from the Office of the Principal Accountant General (Audit-I), Kerala, Branch, Thrissur. I would also like to thank Shri Mehul Grover, Director (Administration) at iCED for strengthening the baseline observations with valuable inputs and insights. This Research Paper is the tenth volume of the Occasional Research Paper Series, undertaken since May-June 2022 at iCED.

I hope that this Research Paper will be useful for policymakers, researchers, and auditors, serving as a valuable tool to identify the areas to be strengthened and new approaches required to be developed in the Blue Economy sector in general. A gender audit of the marine fisheries sector in particular is what auditors can explore. The fact that iCED has been able to contemporize an area of interest in India's G-20 Presidency in 2023 and integrate it with SAI India's knowledge-sharing focus, proves its utmost dedication to building institutional capacity, in new research trajectories.

06th September 2023

Jaipur

(Sayantani Jafa)

Additional Deputy C&AG & Director General,
iCED, Jaipur

Message from the Director (Training and Research)

Achieving the Sustainable Development Goals entails the development of the present and future generations that are socially and economically inclusive while being environmentally sound. With the increasing focus on auditing different sectors of the Blue Economy, it becomes imperative to adopt the inclusion of gender and societal perspectives in the auditing paradigm. As the Marine Fisheries sector presents extensive economic prospects and abundant sources of nutritious food, it is crucial to address the inequity and lack of access to financial and institutional mechanisms, faced by women, in contrast to their male counterparts. Often, the involvement and contributions of women are marginalised, underestimated, and inadequately represented.

Considering the importance of this issue, this study was planned to be conducted to explore the roles of women in the fisheries sector, focusing on fishing and non-fishing coastal communities in the State of Kerala. The preliminary questionnaire survey conducted as part of this study was based on judgmental sampling and results from the preliminary survey are, at best, exploratory in nature and do not represent as comprehensive and conclusive evidence of the conditions of women in the fishing or agricultural communities in the State.

The study emphasises the significance of gender equality and highlights the challenges women face in accessing opportunities. The research underscores the need for targeted interventions, such as skill training, equal wages, and improved access to resources, to empower women and enhance their participation in the marine fisheries sector. By comparing policies and practices in Kenya and Indonesia, the study offers valuable insights for bridging gender gaps and achieving sustainable livelihoods in the Blue Economy. Ultimately, the study can serve as a toolkit to guide audits and inform strategies that promote gender equality and economic development in fishing communities.

I am sincerely grateful to Ms. Sayantani Jafa, Additional Deputy Comptroller and Auditor General and Director General, iCED for leading us with her visionary insights and constant encouragement to take the efforts ahead. I would also like to acknowledge the contributions of all those who directly or indirectly contributed to making this paper a reality and appreciate their efforts. I sincerely believe that this Occasional Research Paper would serve as a good source of information on gender issues in the marine fisheries sector and provide new perspectives and tools which can

be suitably adopted during various stages of audits, to promote sustainable livelihood and gender equity in development of the Blue Economy.

06th September 2023

Jaipur

(Dr. Nanda Dulal Das)

Director (Training and Research)

Abstract

The paper uniquely combines several features encompassing a comprehensive analysis of gender dynamics within the fisheries sector vis-à-vis the agricultural sector. Through field survey analysis, this study has highlighted the issues of access to facilities like banking and the internet, while bringing out the extent of apparent discrimination against women in fishing communities in terms of wage and work opportunities, offering a direct and authentic perspective on their roles and challenges.

A distinctive aspect of the paper is its comparative study, where policies and practices from Kenya and Indonesia are explored. This cross-country analysis enriches the findings by providing a broader perspective on promoting gender equality within the fisheries sector. Additionally, the incorporation of a SWOT analysis, evaluating the Strengths, Weaknesses, Opportunities, and Threats of gender mainstreaming efforts, adds depth to the understanding of internal and external factors that impact these initiatives.

Overall, the paper's multifaceted features—from survey analysis and cross-country comparisons to local language integration and advocacy—collectively contribute to its impactful exploration of gender dynamics within the fisheries sector, offering insights and recommendations for a more equitable future within the Blue Economy.

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1. Introduction

India has a coastline of over 7500 km spread across nine States and four Union Territories (UTs) including two island UTs. India's blue economy supports 95 per cent of the country's business through transportation (Juneja 2021). All the sectors related to the Blue Economy such as fisheries, aquaculture, ecotourism, seaweed farming, shipping, and port activities, support the livelihood of a large workforce. Oceans cover about 71 per cent of our blue planet and hold about 96.5 per cent of the planet's water (Water Sciences School, USGS 2019). Oceans are, thus, seen as the next great economic frontier. Numerous ocean-based industries have grown in the recent past and are expected to increase in the near future. The economic richness of the oceans is represented by the variety of living resources, material goods, services and renewables. The seas and oceans have attracted humanity towards the coastline being their provider of employment and various livelihoods (Sukhija 2017). At the same time, there is a widespread perception that the seas are a limitless source of resources and an infinite sink for carbon and other pollutants. Over the last few decades, this has resulted in widespread degradation of ocean health. It is a recognition that the oceans are not only a source of vast economic opportunities but also a vital component of our global ecosystem. As nations worldwide increasingly turn their attention towards the sustainable development of the blue economy, there is a growing understanding that this transformation must prioritise the creation of livelihoods that are both ecologically responsible and socially inclusive.

Marine fisheries play a pivotal role in the blue economy, contributing significantly to global food security, economic growth, and employment. However, the fisheries sector faces an array of challenges, including overfishing, habitat degradation, and the effects of Climate Change. These challenges threaten the sustainability of the sector and the livelihoods it supports. Moreover, it is crucial to recognise that the impact of these challenges is not gender-neutral; it disproportionately affects women in fishing communities. Historically, gender disparities in the fisheries sector have been overlooked. Women are often engaged in post-harvest activities, including processing, marketing, and trading of fish. Their contributions to the sector are substantial.

The promotion of gender equity in the development of the blue economy is not just a matter of social justice but also an economic necessity. Ensuring that women have equal access to resources, training, and decision-making processes in the fisheries sector can enhance the sector's overall resilience and sustainability. When women are empowered in these roles,

communities can better adapt to environmental changes, mitigate risks, and secure their livelihoods. Through equitable participation, resource management, and targeted policies, it is possible to build a more resilient and sustainable blue economy that benefits all, regardless of gender, while safeguarding our oceans and the communities dependent on them.

Advancement of technology and development in the new sectors of Blue Economy are impacting the lives of the coastal communities, many of whom depend on marine fisheries for their livelihood. India is the second largest fish-producing country in the world accounting for 7.56 per cent of global production, contributing about 1.24 per cent to the country's Gross Value Added (GVA) and over 7.28 per cent to the agricultural GVA (Ministry of Fisheries, Animal Husbandry and Dairying 2021). The sector provides livelihood support to about 280 lakh people at the primary level and almost twice the number along the value chain. Therefore, fishing industries in India hold immense economic importance.

The Fisheries sector in India has exhibited strong growth of about 8 per cent per year on average with aquaculture growing at an annual average of more than 10 per cent. The fisheries sector has been recognised as a 'Sunrise Sector' and has demonstrated an outstanding double-digit average annual growth of 10.87 per cent since 2014-15, with record fish production of 162.48 lakh tonnes at the end of 2021-22.

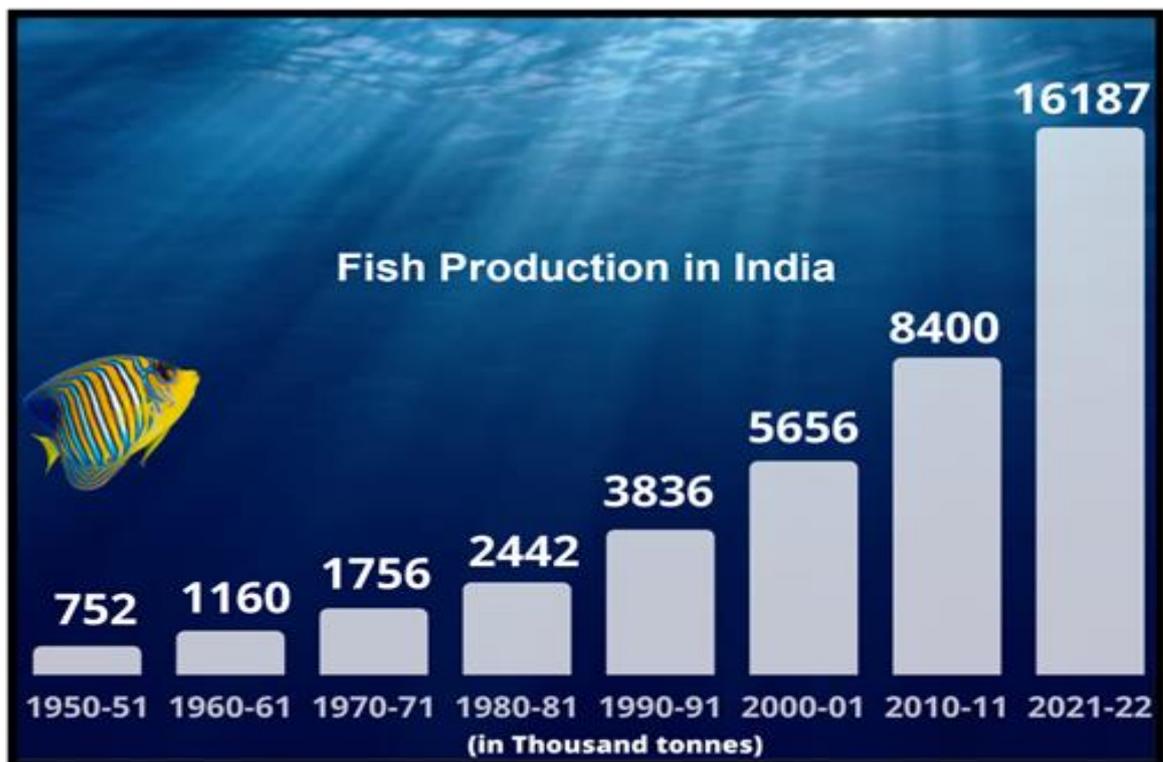


Figure 1: Fish Production in India, Source: Press Information Bureau

Further, national fish production for the year 2022-23 is also expected to touch or exceed 174 lakh tonnes (provisional figures), an 81 per cent increase when compared to 2013-14 (Ministry of Fisheries, Animal Husbandry and Dairying 2023).

Recognising the importance of the fisheries sector, the Department of Fisheries was created in February 2019 to provide sustained and focussed attention to the development of the sector. This was followed by the creation of an independent Ministry of Fisheries, Animal Husbandry and Dairying in June 2019.

Investment in various Fisheries Schemes

From Independence till 2014, only ₹ 3,682 crore had been invested by the Central government in the fisheries sector. From 2015, the central government has approved or announced cumulative investments to the tune of ₹ 38,572 crore. These include:

₹ 5,000 crore investment under Blue Revolution Scheme

₹ 7,522 crore Fisheries and Aquaculture Infrastructure Development Fund (FIDF)

₹ 20,050 crore investment under Pradhan Mantri Matsya Sampada Yojana (PMMSY)

₹ 6,000 crore Sub-scheme under PMMSY, announced in Union Budget 2023-24

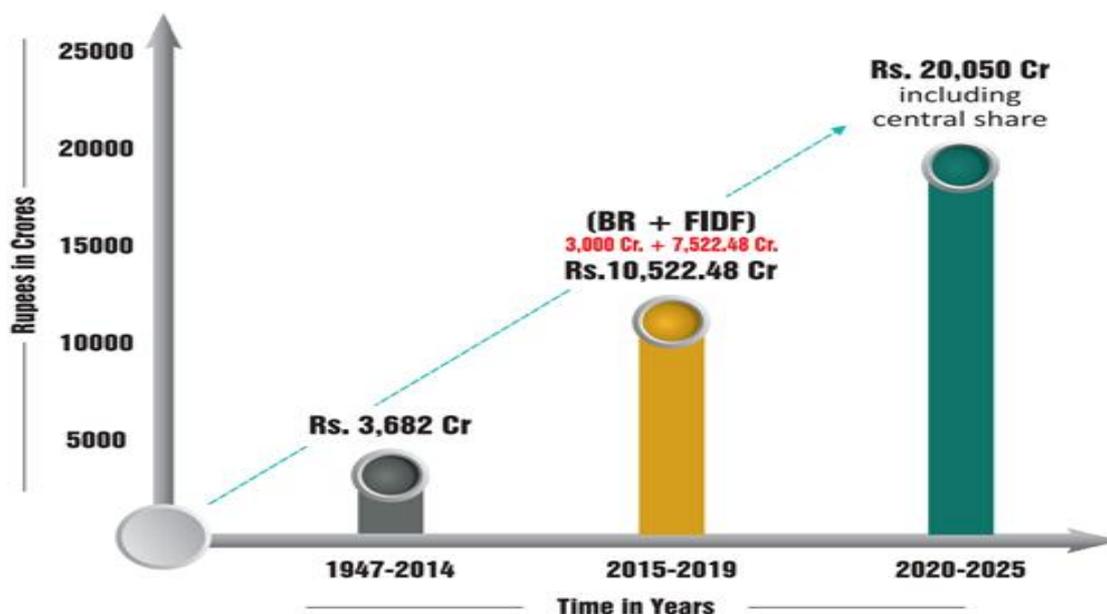


Figure 2: Budget allocation for Fisheries Sector

Source: Press Information Bureau

The Flagship Scheme PMMSY is under implementation since 2020-21 and it is, by far, the highest-ever investment in the Fisheries and Aquaculture Sector in the country. Projects worth of ₹ 14,656 crore have been approved under PMMSY during the last three years from 2020-21 to 2022-23 for the States/UTs and other implementing agencies, thus, 73 per cent of the envisaged investment has been achieved.

Fish being an affordable and rich source of animal protein is one of the healthiest options to mitigate hunger and nutrient deficiency thereby contributing in the fulfilment of the Sustainable Development Goals (SDGs). The Government has been taking multi-pronged approaches to maximise the potential of 'Fish for Health and Fish for Wealth' (Ministry of Fisheries, Animal Husbandry and Dairying 2022).

This study seeks to identify the scope of sustainable livelihood and gender equity with a special focus on marine fisheries in the development of the Blue Economy. A sustainable livelihood refers to a way of living that allows individuals, households, or communities to meet their

Key Achievements and Initiatives

- Doubling of Inland and Aquaculture Production: The inland fisheries and aquaculture production has doubled as it increased from 61.36 lakh tonnes at the end of 2013-14 to 121.12 lakh tonnes at the end of 2021-22.
- Doubling of Seafood Exports: The seafood exports of India have more than doubled since 2013-14.
- Doubling of Brackish Water Aquaculture Production: The shrimp exports have more than doubled with an increase of 123 per cent from ₹ 19,368 crore at the end of 2013-14 to ₹ 43,135 crore at the end of 2022-23.
- Institutional Credit through Kisan Credit Card (KCC) for Fishers and Fish farmers.
- Focus on the creation of Infrastructure in Fishing Harbours (FHs) and Fish Landing Centres (FLCs).
- Group Accident Insurance Scheme (GAIS) under PMMSY.
- Strengthening of Co-operatives and Fish Farmers Producers Organisations (FFPOs).
- National rollout of Vessel Communication and Support System on Marine Fishing Vessels for the Safety of Fishermen at sea: Under the PMMSY, approved ₹ 364 crore for installing satellite-based Vessel Communication and Support System on one lakh fishing vessels for implementation through New Space India Limited.

present needs while also ensuring the ability to sustainably meet their future needs (United Nations Environment Programme 2007). The participation of women plays an important role in the development of the Blue Economy with their contribution to not only marine fishing, but also the associated activities like eco-tourism, seaweed farming, and waste management. Within the fisheries sector, there are several upstream (processing industries and marketing operations) and downstream (making of boats, fishing nets, etc.) activities that have widespread participation of women, requiring their protection and promoting gender equity.

With public interventions at the Central and State levels, the participation of women in fishery-related activities has increased with the rise of their participation in the workforce in this sector. However, their contribution to the development of this sector was not fully recognised or rewarded suitably (R.Narayana Kumar 2003). Against this backdrop, this study has been undertaken.

2. Research Objectives

The objectives of this research were:

- To identify policies relating to sustainable livelihood opportunities in the context of marine fisheries.
- To analyse the role of women, and challenges faced by them and explore plausible solutions in the context of marine fisheries.
- To examine the effectiveness of the policies implemented and suggest potential areas for auditing/gender auditing.

3. Scope and Methodology

Both quantitative and qualitative techniques have been used in this study. This paper consists of two parts- primary and secondary study. The secondary study comprises a comprehensive analysis of policies and Government initiatives implemented in countries with extensive coastal areas, namely Kenya and Indonesia. In addition, the study includes an examination of envisaged policy paradigms in India, with a particular focus on state-level initiatives in Kerala¹. The study subsequently performs a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis to identify the strengths and weaknesses of the existing policies, highlighting the opportunities for further development and possible threats, the policy may have due to changing

¹ The Draft Blue Economy Policy is currently under active consideration of the Government of India and in its stage of finalisation.

circumstances (Bigelow 2023). The study design is provided in the following diagram (Figure 3).

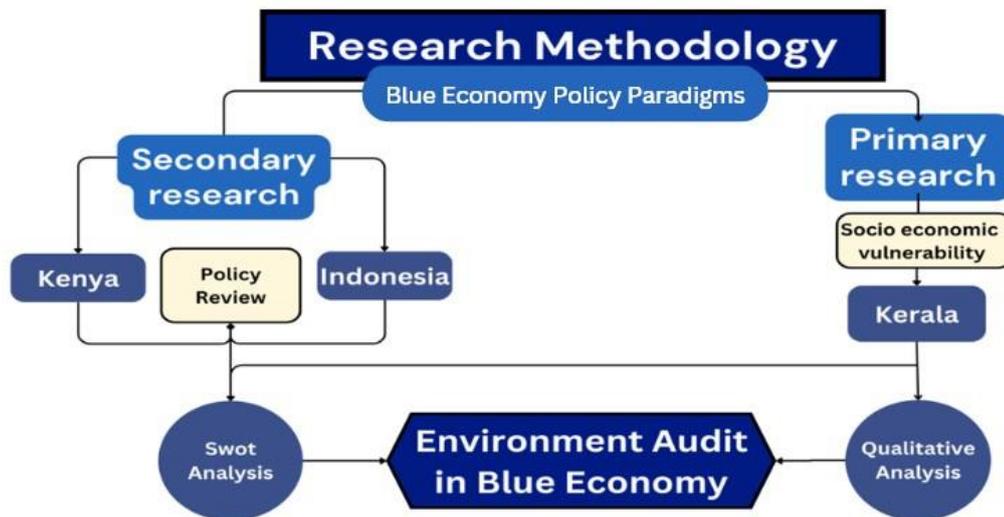


Figure 3: Research Methodology

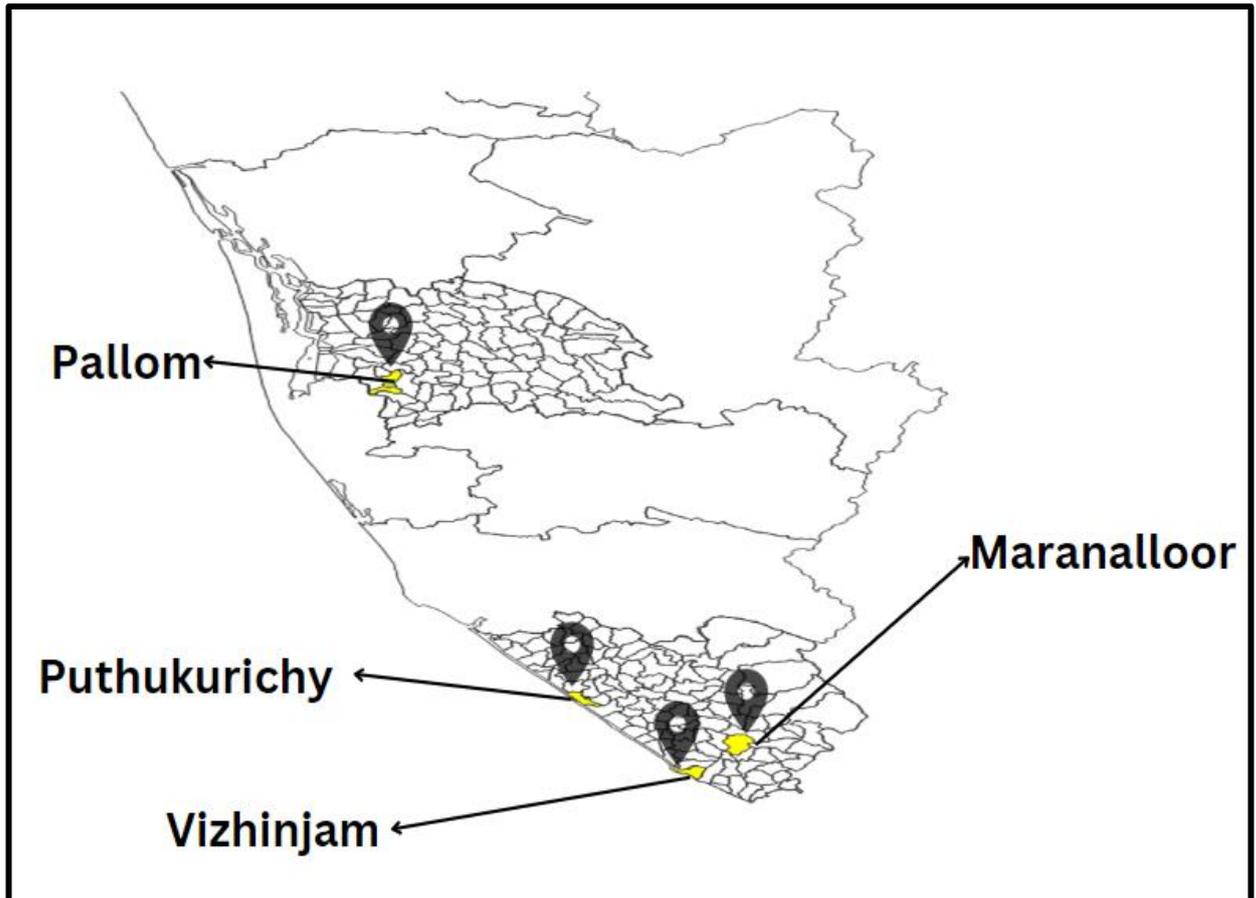
The primary study covers the assessment of the socio-economic conditions of two coastal villages/communities in Kerala with a comparative analysis of socio-economic conditions in two nearby agricultural villages/communities. A survey questionnaire was used for the collection of data from the households in these villages/communities. The survey covered two fishing villages/communities from Kerala i.e. Puthukurichy (mostly urbanised) and Vizhinjam, along with two agricultural villages/communities from Kerala i.e. Pallom (mostly urbanised) and Maranalloor, to provide a comprehensive understanding of the socio-economic conditions and women's participation in fishing vis-à-vis agriculture sectors. A total of twenty households were surveyed in each of these villages, which included eighty households.

The selection of villages/communities was based on various parameters such as location, accessibility, population of fishing community etc. (Map 1). The description of fishing and agricultural villages of Kerala state selected for this study are given as under:

Description of villages	Socioeconomic parameters of village
Village: Puthukurichy (Fishing village/community) Block: Kazhakootom District: Thiruvananthapuram	Puthukurichy village has a total of 2660 houses and 2710 households are located there. Among them, 57 households are landless or presently living as a joint family. 1342 persons from the fisher folk community are insured by the

	Fisheries Board (Matsya Board). To mention the fisheries-specific infrastructure and facilities, it is stated that 34 country fishing boats are available in this village (Kerala State Coastal Area Development Corporation Ltd. n.d.).
Village: Vizhinjam (Fishing village/community) Taluk: Neyyattinkara District: Thiruvananthapuram	Vizhinjam is the only village in the Neyyattinkara Taluk which belongs to Thiruvananthapuram Corporation. The total population of this village is 20714 with 10277 males and 10437 females as per the 2011 Census Report. The population of this village includes mainly farmers, daily labourers, small-scale traders, and fishermen. The majority of the people are middle-class and have normal living standards. This village shares some portion of its boundary with the Arabian Sea (Vizhinjam Village Office n.d.).
Pallom (Agriculture-based, mostly urbanised) Block: Pallom District: Kottayam	Pallom is a mostly urbanised community, which also depends on agriculture, located in the Kottayam district of Kerala (onefivenine.com n.d.).
Maranalloor (Agriculture-based village/community) Taluk: Neyyattinkara District: Thiruvananthapuram	There were 9679 households, spreading over 2513 hectares, with 36550 people in Maranalloor village in 2011. There were about 49 per cent male and 51 per cent female population (Census of India 2011).

The assessment focussed on various aspects, including the socio-economic status of the local population, their access to resources, their views on sustainable livelihood, challenges encountered by women in the sector, and potential opportunities for their advancement.



Map 1: Map of Kerala showing villages taken up for the Primary Survey

The secondary study encompasses regulatory and policy analysis focussed on marine fisheries, especially artisanal fisheries, which often involve individuals and communities with limited financial resources. Artisanal fishers typically operate on a small scale, using traditional and low-tech fishing methods. They may use simple fishing boats, hand tools, and basic equipment to catch fish, often with limited access to modern technology or large fishing vessels. Most artisanal fishers are found in developing or poor nations, where fishing is a significant livelihood for coastal communities. These individuals and communities heavily rely on fishing for their sustenance and income. There are a number of factors which decide the socioeconomic well-being of fisher folk. This includes fish abundance, beach level price, number of fishing days and cost of fuel. Conventionally in most regions of the world, women are less involved in offshore and long-distance capture fishing. Instead, they have been engaged in activities such as processing and selling fish, supporting the fishing operations from the shore, or engaging in small-scale fishing near the coast. It is essential to recognise and address the gender disparities within the fishing industry and create opportunities for women to participate in various aspects of the sector.

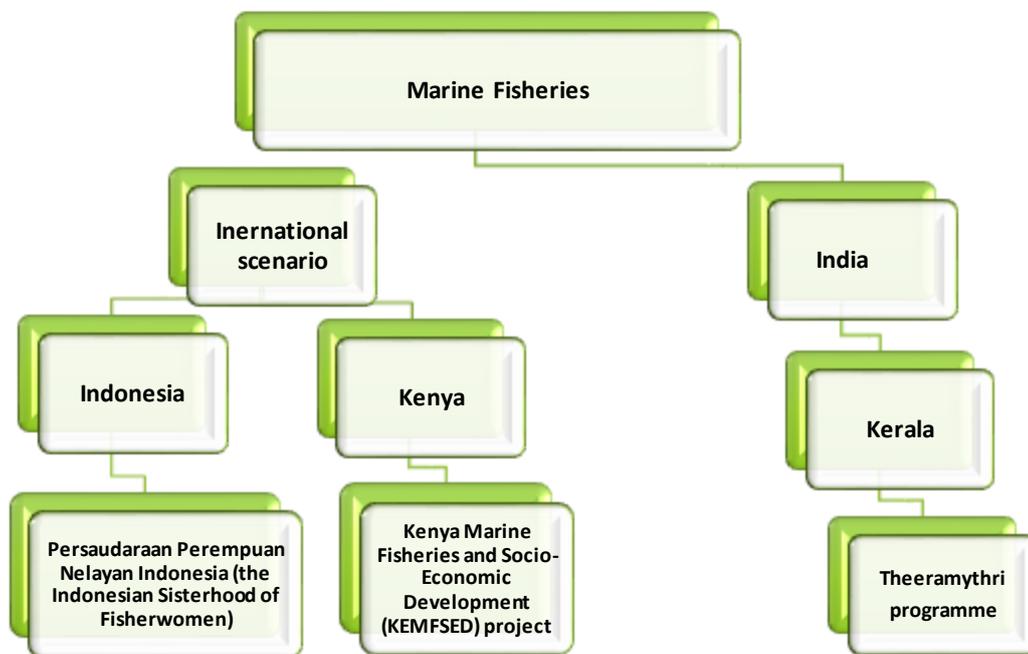


Figure 4: Flow and particulars of policies analysed in the secondary study

The policies for fishers in countries like Kenya and Indonesia have been examined to identify best practices that can be experimented with and adopted in Indian conditions (Figure 4). Studying the experiences of Kenya and Indonesia in managing their fishing industries has provided some valuable lessons to enhance women's participation, economic empowerment, and access to resources as discussed in the succeeding section. An analysis of marine fisheries policy in Kerala has been done to highlight the best practices in India, having scope for replication in other States in the country.

This study highlights the socio-economic status of women in fishing villages and highlights their challenges to trace probable solutions in ensuring sustainable livelihood and gender equity in the marine fisheries sector. The outcome of this analysis provides useful pointers to the auditors in auditing marine fisheries and associated sectors and in suggesting solutions for livelihood sustainability and gender equity in the marine fisheries sector for the development of a resilient Blue Economy in the Indian context.

4. Results and Discussion

4.1 Important Findings from the Primary Study

The survey results serve as valuable indicators for analysing the socio-economic status of fishers, especially the fisherwomen engaged in marine fisheries. This also provides essential data points to assess the well-being, livelihoods, and economic conditions of individuals and

communities reliant on marine fishing vis-à-vis agricultural activities. By leveraging the survey findings, policymakers, researchers and auditors can make informed choices and implement or suggest targeted interventions to address the specific needs and challenges faced by marine fishers.

The following criteria have been developed to ensure that effective results are obtained from the survey responses:

Sl. No.	<i>Pointers included in the survey</i>	<i>Data analysis approach</i>
1.	Engagement of women in fishing and related activities	The engagement of women in fishing is identified by direct questions on women's participation (women in the productive age) in fishing/agriculture in the family.
2.	Access to facilities	Access to bank accounts and internet have been taken as measures of female empowerment.
3.	Knowledge and skills	Knowledge and skills are assessed by participation in training programmes.
4.	Pay-parity and gender discrimination	The absence of pay parity and gender-based discrimination in the workplace was highlighted based on the aggregate response of the respondents at the village level.
5.	Awareness	If women have been denied opportunities in economic activities, the same has been identified by utilisation of the direct questions method.
6.	Environmental awareness	Awareness about Climate Change and its impact on fishing/agriculture have been assessed by the response on the kind of difficulties faced due to Climate Change in the lives of the respondents.
7.	Feedback	The feedback from the respondents for improvement of the current scenario has been analysed.

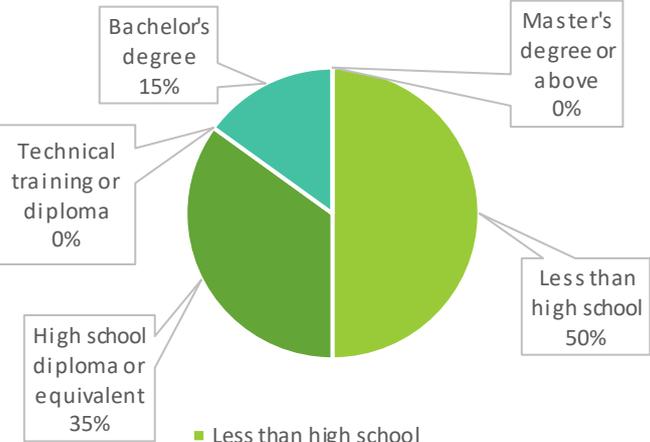
4.1.1 Survey results for Puthukurichy fishing village/community in Kerala

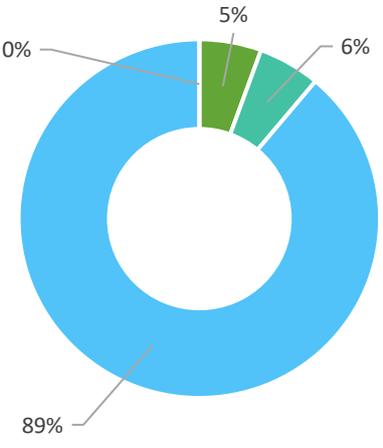
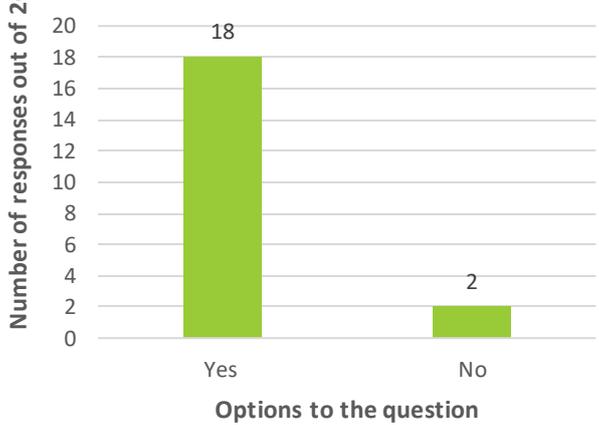
Puthukurichy, a quaint coastal town situated in the state of Kerala, holds significant importance in the lives of fishing communities. In order to gain a deeper insight into the socio-economic

conditions of households engaged in fishing activities, particularly focusing on women's participation, a comprehensive survey questionnaire was framed. To ensure inclusivity and accuracy, the questionnaire was translated into the local language, Malayalam, allowing respondents to comprehend and respond to the questions with ease.

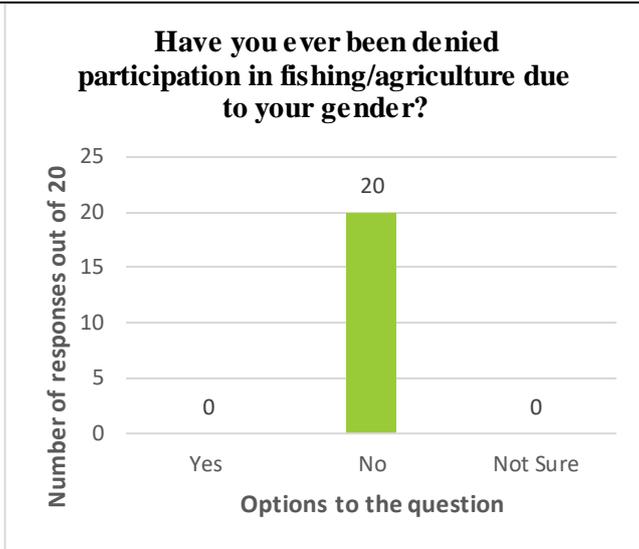
The outcomes of the survey are presented below (Table 1):

Table 1: Summary of outcomes emerged from the survey in Puthukurichy fishing community

Area focussed	Infographics of responses	Key findings												
Educational Status of Household	<p style="text-align: center;">Highest level of education completed in the household</p>  <table border="1" data-bbox="464 725 1114 1167"> <thead> <tr> <th>Education Level</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Less than high school</td> <td>50%</td> </tr> <tr> <td>High school diploma or equivalent</td> <td>35%</td> </tr> <tr> <td>Bachelor's degree</td> <td>15%</td> </tr> <tr> <td>Technical training or diploma</td> <td>0%</td> </tr> <tr> <td>Master's degree or above</td> <td>0%</td> </tr> </tbody> </table>	Education Level	Percentage	Less than high school	50%	High school diploma or equivalent	35%	Bachelor's degree	15%	Technical training or diploma	0%	Master's degree or above	0%	<p>As per the sample, the highest education level within households is generally low as:</p> <ul style="list-style-type: none"> • None of them possess a Master's degree. • Only 15 per cent hold a Bachelor's degree. • None of them have received technical training or obtained a Diploma. • Around 35 per cent possess a high school education, while 50 per cent have not completed schooling at High school.
Education Level	Percentage													
Less than high school	50%													
High school diploma or equivalent	35%													
Bachelor's degree	15%													
Technical training or diploma	0%													
Master's degree or above	0%													

<p>Economic Status of Household</p>	<p style="text-align: center;">Average monthly income of the household (in ₹)</p>  <p style="text-align: center;"> ■ Less than or equal to 5000 (per month) ■ Between 5000 and 10000 (per month) ■ Between 10001 and 15000(per month) ■ Greater than 15000(per month) </p>	<p>The trend from the sample reveals that a significant portion, specifically 89 per cent, of fishing families are earning within the income range of ₹ 10,000 to ₹ 15,000. This indicates that the majority of families within the fishing community have a relatively consistent and moderate income level. Nonetheless, family size largely impacts the distribution of income impacting the quality of life in the study area. However, the presence of 11 per cent of families earning less than ₹ 10,000 underscores that there is still a segment of the fishing population facing economic challenges.</p>
<p>Access to a Bank Account</p>	<p style="text-align: center;">Do the female members in the family have a Bank Account?</p>  <p style="text-align: center;">Options to the question</p>	<p>As seen from the analysis of sample households, 90 per cent of women have access to a bank account.</p>

Access to Equal Opportunities in Employment



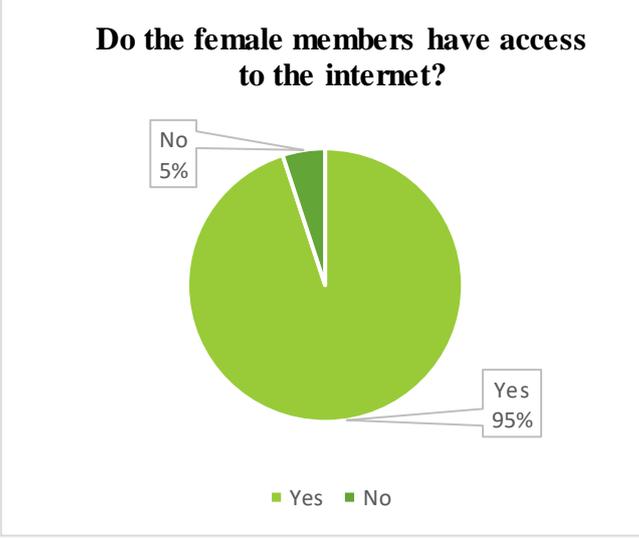
Analysis of sample households indicates that efforts are on the right track to ensure a more supportive and equitable environment for women's participation in fishing and other activities. However, as the sample is judgmental, this criterion may require further analysis.

Equity in Terms of Payment of Equal Wages in the Workplace

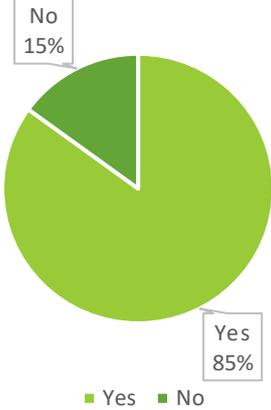
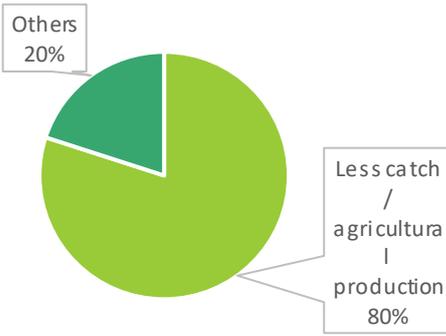
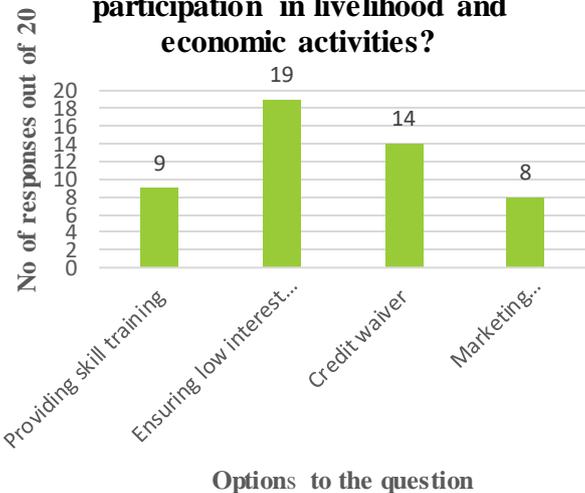


The sample survey indicates a potential issue of wage discrimination and raises concerns, which requires further examination and corrective measures to ensure fair and equal wages for all employees, regardless of gender.

Fisherwomen's Access to the Internet



The sample survey indicates that technological advancements and internet infrastructure have reached a significant portion of women engaged in fishing activities, potentially opening various opportunities for them to access information and resources on marine fishing.

<p>Impacts of Climate Change on Fishing</p>	<p>Do you perceive that Climate Change is impacting your livelihood activities?</p>  <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>85%</td> </tr> <tr> <td>No</td> <td>15%</td> </tr> </tbody> </table>	Response	Percentage	Yes	85%	No	15%	<p>In this sample, the high rate of women perceiving, that Climate Change is affecting their lives, indicates that the fishing households are well aware of the challenges posed by Climate Change and its potential consequences on their economic activities and way of life. However, as the sample is judgmental, this criterion may require further analysis.</p>				
Response	Percentage											
Yes	85%											
No	15%											
<p>Awareness of Climate Change Impact</p>	<p>If you think Climate Change is impacting such activities, what are the kinds of impacts seen?</p>  <table border="1"> <thead> <tr> <th>Impact</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Less catch / agricultural production</td> <td>80%</td> </tr> <tr> <td>Other fish/crop varieties becoming more prominent</td> <td>0%</td> </tr> <tr> <td>Others</td> <td>20%</td> </tr> </tbody> </table>	Impact	Percentage	Less catch / agricultural production	80%	Other fish/crop varieties becoming more prominent	0%	Others	20%	<p>The sample shows that there are widespread perceptions within the fishing community of Puthukurichy that Climate Change is adversely affecting their fishing yields. It emphasises the urgency of implementing measures to address and adapt to the changing climatic conditions.</p>		
Impact	Percentage											
Less catch / agricultural production	80%											
Other fish/crop varieties becoming more prominent	0%											
Others	20%											
<p>Measures for Improvement of Women's Participation in Livelihood and Economic Activities</p>	<p>In your opinion, what measures can be taken to enhance women's participation in livelihood and economic activities?</p>  <table border="1"> <thead> <tr> <th>Options to the question</th> <th>No of responses out of 20</th> </tr> </thead> <tbody> <tr> <td>Providing skill training</td> <td>9</td> </tr> <tr> <td>Ensuring low interest...</td> <td>19</td> </tr> <tr> <td>Credit waiver</td> <td>14</td> </tr> <tr> <td>Marketing...</td> <td>8</td> </tr> </tbody> </table>	Options to the question	No of responses out of 20	Providing skill training	9	Ensuring low interest...	19	Credit waiver	14	Marketing...	8	<p>Higher responses like "ensuring low-interest credit" and "credit waiver" indicate a concern among fishing households. It indicates that sample households have a preference for proactive financial intervention on the part of the Government to make them self-reliant. It substantiates the importance of targeted financial assistance to support sustainable growth and development within the fishing sector.</p>
Options to the question	No of responses out of 20											
Providing skill training	9											
Ensuring low interest...	19											
Credit waiver	14											
Marketing...	8											

Source: Primary Survey, 2023

4.1.2 Survey results for Vizhinjam fishing village/community in Kerala

Vizhinjam is a village in Neyyattinkara Taluk in Thiruvananthapuram District. The same survey version, which was used in Puthukurichy village, was also used to gather responses from the fishing community in Vizhinjam village, covering twenty households.

Using a standardised survey questionnaire in both villages enables a comparative analysis of socio-economic conditions and women's participation in fishing activities between the two locations. This approach has offered valuable insights into similarities and differences within the fishing communities of Vizhinjam and Puthukurichy, allowing for targeted interventions and policy measures to address specific needs and challenges in each region.

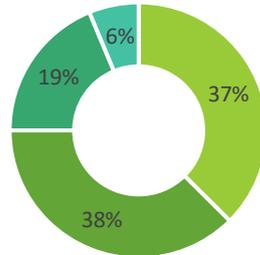
The outcomes of the survey are presented below (Table 2):

Table 2: Summary of outcomes from a survey in Vizhinjam fishing village

Area focussed	Infographics of responses	Key findings												
Educational Status of Household	<p style="text-align: center;">Highest level of education completed in the household</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Data for Educational Status of Household</caption> <thead> <tr> <th>Education Level</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Less than high school</td> <td>40%</td> </tr> <tr> <td>High school diploma or equivalent</td> <td>30%</td> </tr> <tr> <td>Technical training or diploma</td> <td>30%</td> </tr> <tr> <td>Bachelor's degree</td> <td>0%</td> </tr> <tr> <td>Master's degree or above</td> <td>0%</td> </tr> </tbody> </table>	Education Level	Percentage	Less than high school	40%	High school diploma or equivalent	30%	Technical training or diploma	30%	Bachelor's degree	0%	Master's degree or above	0%	<p>As per the sample, the highest education level within households is generally low as:</p> <ul style="list-style-type: none"> • None of them possess a Master's degree and Bachelor's degree. • 30 per cent acquired Technical training or Diploma. • Around 30 per cent possess a High school Diploma or equivalent, while 40 per cent have not completed schooling at High school.
Education Level	Percentage													
Less than high school	40%													
High school diploma or equivalent	30%													
Technical training or diploma	30%													
Bachelor's degree	0%													
Master's degree or above	0%													

Economic Status of Household

Average monthly income of the household (in ₹)

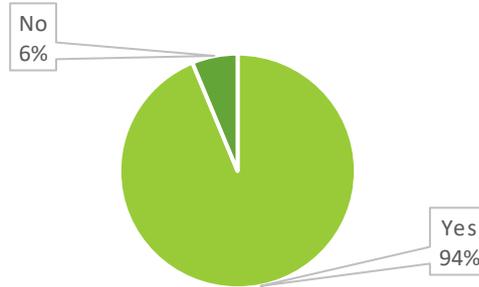


- Less than or equal to 5000 (per month)
- Between 5000 and 10000 (per month)
- Between 10001 and 15000(per month)
- Greater than 15000(per month)

The income distribution data, from the sample households, highlights a significant disparity in earnings within the fishing community. Specifically, 37 per cent of families have a monthly income of less than ₹ 5,000, while an additional 38 per cent fall within the income range of ₹ 5,000 to ₹ 10,000. This suggests that a substantial proportion of fishing families are operating with relatively low incomes, which may indicate economic challenges and difficulties in meeting basic needs.

Access to a Bank Account

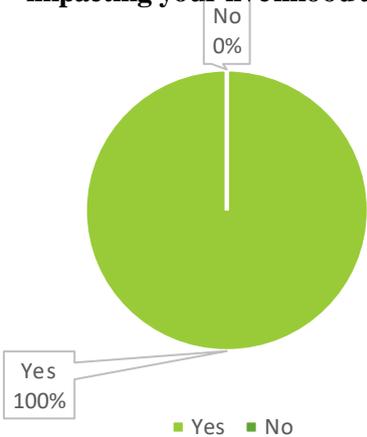
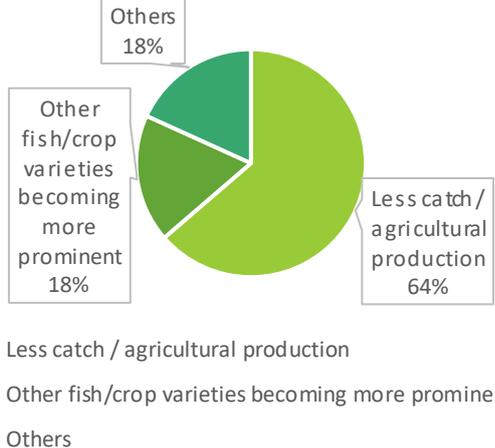
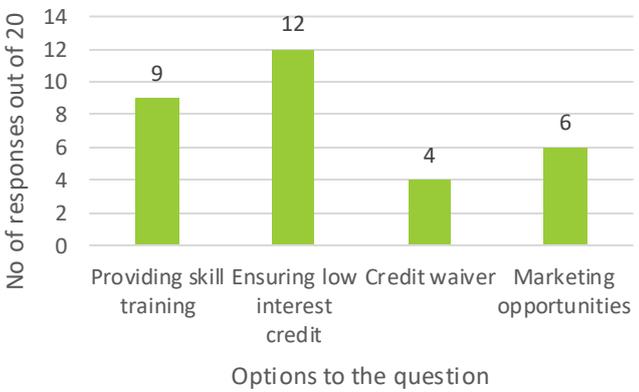
Do the female members in the family have a bank account?



- Yes
- No

The sample analysis suggests that 94 per cent of women have access to a bank account.

<p>Access to Equal Opportunities in Employment</p>	<p>Have you ever been denied participation in fishing / agriculture due to your gender?</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>6%</td> </tr> <tr> <td>No</td> <td>88%</td> </tr> <tr> <td>Not Sure</td> <td>6%</td> </tr> </tbody> </table>	Response	Percentage	Yes	6%	No	88%	Not Sure	6%	<p>The sample analysis indicates that efforts are on the right track to ensure a more supportive and equitable environment for women's participation in fishing activities. However, as the sample is judgmental, this criterion may require further analysis.</p>
Response	Percentage									
Yes	6%									
No	88%									
Not Sure	6%									
<p>Equity in Terms of Payment of Equal Wages in the Workplace</p>	<p>If you are working on daily or monthly wage, are you paid less than a male worker?</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>50%</td> </tr> <tr> <td>No</td> <td>31%</td> </tr> <tr> <td>Not applicable</td> <td>19%</td> </tr> </tbody> </table>	Response	Percentage	Yes	50%	No	31%	Not applicable	19%	<p>The sample survey indicates a potential issue of pay inequity and raises concerns about the need for further examination and corrective measures to ensure fair and equal wages for all employees, regardless of gender.</p>
Response	Percentage									
Yes	50%									
No	31%									
Not applicable	19%									
<p>Fisherwomen's Access to Internet</p>	<p>Do the female members have access to the internet?</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>75%</td> </tr> <tr> <td>No</td> <td>25%</td> </tr> </tbody> </table>	Response	Percentage	Yes	75%	No	25%	<p>The sample survey indicates that technological advancements and internet infrastructure have reached a significant portion of women engaged in fishing activities, potentially opening various opportunities for them to access information and resources.</p>		
Response	Percentage									
Yes	75%									
No	25%									

<p>Impacts of Climate Change on fishing</p>	<p>Do you perceive that Climate Change is impacting your livelihood activities?</p>  <p>Yes 100% No 0%</p>	<p>In this sample, this affirmative reply indicates that the fishing households are aware of the challenges posed by Climate Change and its potential consequences on their economic activities and way of life. However, as the sample is judgmental, this criterion may require further analysis.</p>
<p>Awareness of Climate Change impact</p>	<p>If you think Climate Change is impacting such activities, what are the kinds of impacts seen?</p>  <p>Less catch / agricultural production 64% Other fish/crop varieties becoming more prominent 18% Others 18%</p>	<p>The sample shows that there is widespread perceptions within the fishing community of Vizhinjam that Climate Change is adversely affecting their fishing yields and emphasises the urgency for implementing measures to address and adapt to the changing climatic conditions.</p>
<p>Measures for Improvement of Women's Participation in Livelihood and Economic Activities</p>	<p>In your opinion, what measures can be taken to enhance women's participation in livelihood and economic activities?</p>  <p>No of responses out of 20</p> <p>Options to the question</p>	<p>Analysis of the sample highlights the community's belief that "ensuring low-interest credit" is the most suitable measure, after considering other options like skill training, enhancing marketing opportunities and credit waiver.</p>

Source: Primary Survey, 2023

The above analysis of two fishing villages highlights that there are some dissimilarities between the two. There is the apparent existence of some extent of gender discrimination in the Vizhinjam village, with the need for higher access to the internet and skill and capacity-building training. Both the villages perceive that Climate Change is impacting their livelihood.

4.1.3 Survey results for Pallom village in Kerala

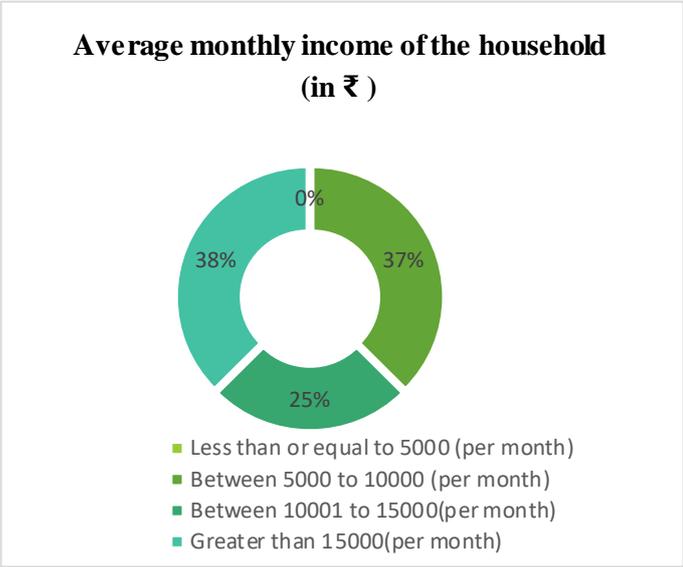
Pallom is a block situated 6.5 km south of Kottayam town and 12.4 km north of Changanassery, in the Kerala State. The major community of this village is reliant on agriculture-based activities with strong linkages to seasonal paddy cultivation.

The outcomes of the survey are presented below (Table 3):

Table 3: Summary of outcomes from survey in Pallom village, reliant on agriculture/other activities

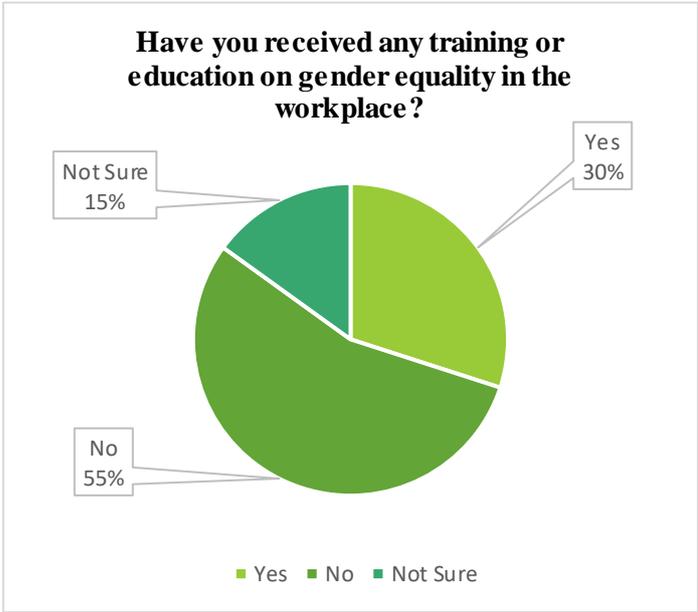
Area focussed	Infographics of responses	Key findings												
Educational Status of Household	<p style="text-align: center;">Highest level of education completed in the household</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Education Level</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Less than high school</td> <td>53%</td> </tr> <tr> <td>High school diploma or equivalent</td> <td>32%</td> </tr> <tr> <td>Technical training or diploma</td> <td>10%</td> </tr> <tr> <td>Bachelor's degree</td> <td>5%</td> </tr> <tr> <td>Master's degree or above</td> <td>0%</td> </tr> </tbody> </table>	Education Level	Percentage	Less than high school	53%	High school diploma or equivalent	32%	Technical training or diploma	10%	Bachelor's degree	5%	Master's degree or above	0%	<p>As per the sample, the highest education level within households is generally low as:</p> <ul style="list-style-type: none"> • None of them possess a Master's degree and only 5 per cent possess Bachelor's degree. • Only 10 per cent acquired technical training or Diploma. • Around 32 per cent possess a high school education, while 53 per cent have not completed schooling at High school.
Education Level	Percentage													
Less than high school	53%													
High school diploma or equivalent	32%													
Technical training or diploma	10%													
Bachelor's degree	5%													
Master's degree or above	0%													

Economic Status of Household

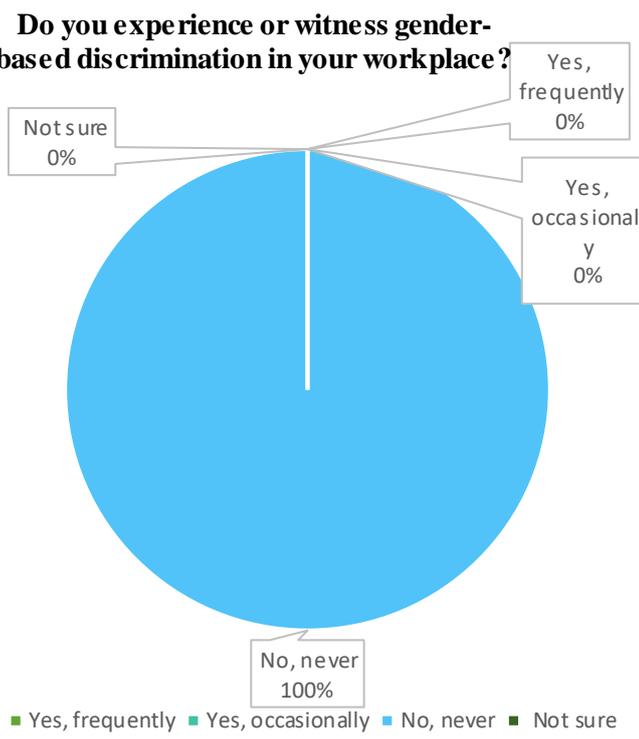
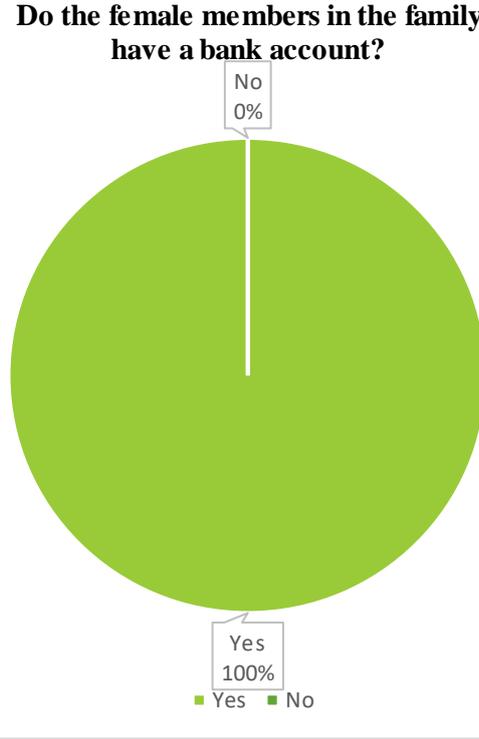


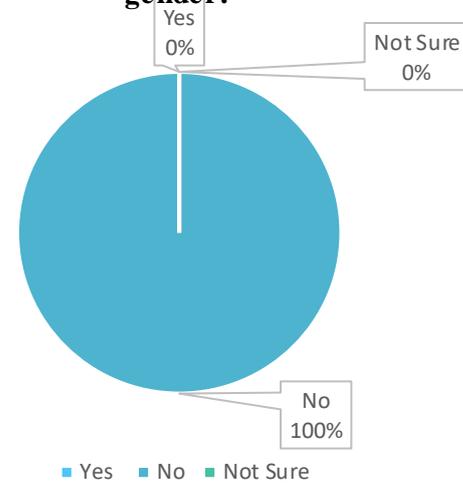
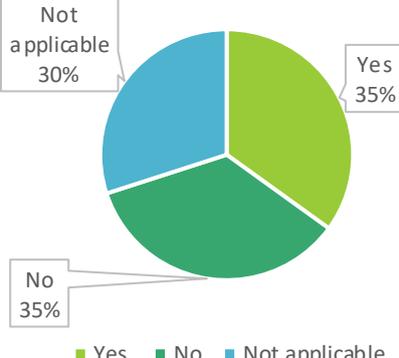
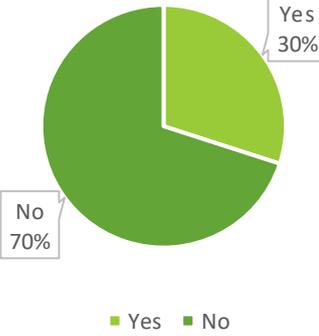
The income distribution of the sample households for Pallom suggests a different economic landscape compared to the other fishing villages. In Pallom, 38 per cent of families are earning more than ₹ 15,000, while no one falls into the category of earning less than ₹ 5,000. 37 per cent of families are earning between ₹ 5,000 to ₹ 10,000 while 25 per cent is in the range of ₹ 10,000 to ₹ 15,000. This indicates a more favourable income distribution within Pallom, with a significant portion of families earning relatively fair incomes.

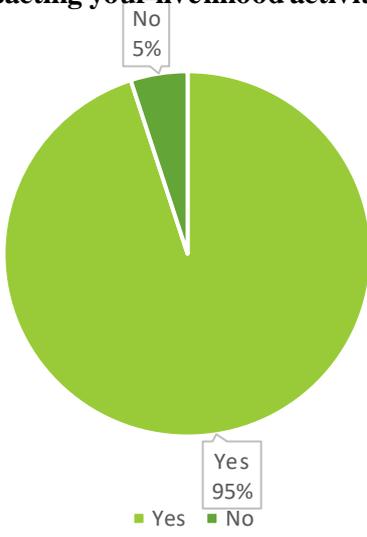
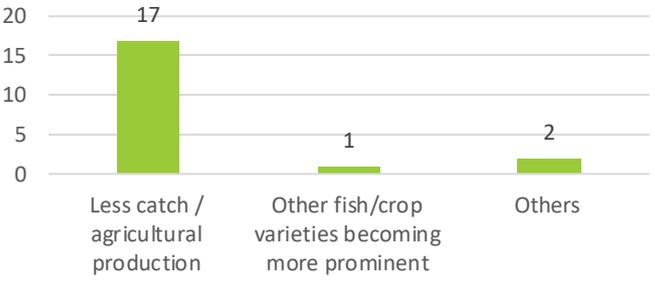
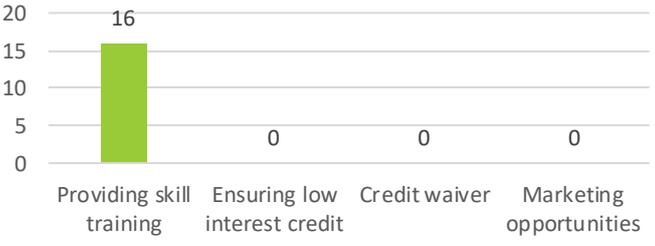
Capacity Building



In this sample, fishing community have received more training on gender equality compared to the agricultural-based community. However, it is crucial to ensure that both communities receive adequate training on gender equality.

<p>Gender Discrimination at Workplace</p>	<p>Do you experience or witness gender-based discrimination in your workplace?</p>  <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes, frequently</td> <td>0%</td> </tr> <tr> <td>Yes, occasionally</td> <td>0%</td> </tr> <tr> <td>No, never</td> <td>100%</td> </tr> <tr> <td>Not sure</td> <td>0%</td> </tr> </tbody> </table>	Response	Percentage	Yes, frequently	0%	Yes, occasionally	0%	No, never	100%	Not sure	0%	<p>The sample survey results indicate that gender discrimination is more prevalent in fishing villages, while it is negligible in the agriculture sector. This suggests that women in fishing communities may encounter more challenges and barriers at workplace, compared to their counterparts in the agricultural sector.</p>
Response	Percentage											
Yes, frequently	0%											
Yes, occasionally	0%											
No, never	100%											
Not sure	0%											
<p>Access to a Bank Account</p>	<p>Do the female members in the family have a bank account?</p>  <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>100%</td> </tr> <tr> <td>No</td> <td>0%</td> </tr> </tbody> </table>	Response	Percentage	Yes	100%	No	0%	<p>The sample survey results reveal that women engaged in agriculture have relatively higher access to a bank account compared to those involved in fishing activities.</p>				
Response	Percentage											
Yes	100%											
No	0%											

<p>Access to Equal Opportunities in Employment</p>	<p>Have you ever been denied participation in fishing / agriculture due to your gender?</p>  <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>0%</td> </tr> <tr> <td>No</td> <td>100%</td> </tr> <tr> <td>Not Sure</td> <td>0%</td> </tr> </tbody> </table>	Response	Percentage	Yes	0%	No	100%	Not Sure	0%	<p>The sample survey results indicate that access to equal opportunities is better in agricultural villages compared to their fishing counterparts, and indicate more progress in the agricultural sector/ other sector. It also implies that there is still room for improvement in the fishing sector. However, as the sample is judgmental, this criterion may require further analysis.</p>
Response	Percentage									
Yes	0%									
No	100%									
Not Sure	0%									
<p>Equity in Terms of Payment of Equal Wages in the Workplace</p>	<p>If you are working on daily or monthly wage, are you paid less than a male worker?</p>  <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>35%</td> </tr> <tr> <td>No</td> <td>35%</td> </tr> <tr> <td>Not applicable</td> <td>30%</td> </tr> </tbody> </table>	Response	Percentage	Yes	35%	No	35%	Not applicable	30%	<p>The sample survey findings indicate that there are issues in both the agriculture and fishing sectors regarding parity in wages, with women typically earning less than men. This disparity in wages between genders highlights an existing gender-based wage gap in both sectors.</p>
Response	Percentage									
Yes	35%									
No	35%									
Not applicable	30%									
<p>Agriculturist Women's Access to Internet</p>	<p>Do the female members have access to the internet?</p>  <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>30%</td> </tr> <tr> <td>No</td> <td>70%</td> </tr> </tbody> </table>	Response	Percentage	Yes	30%	No	70%	<p>The sample survey results reveal that women in the fishing sector have more access to the internet than women in the agriculture sector are indeed interesting. This finding indicates that the fishing community is equipped with more digital connectivity and technology compared to the</p>		
Response	Percentage									
Yes	30%									
No	70%									

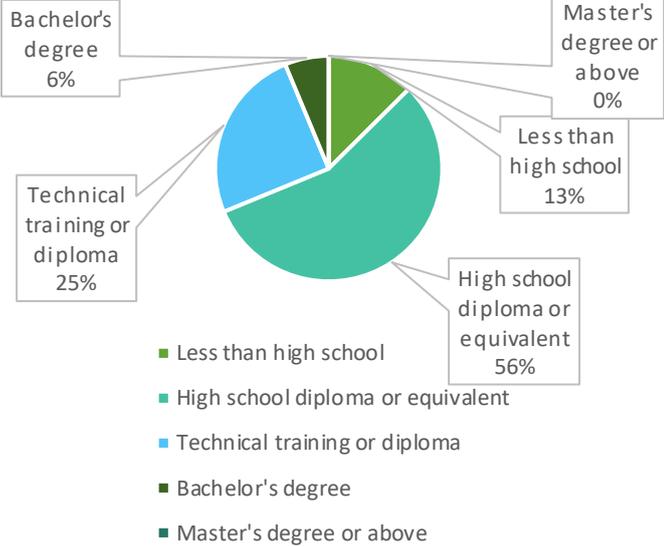
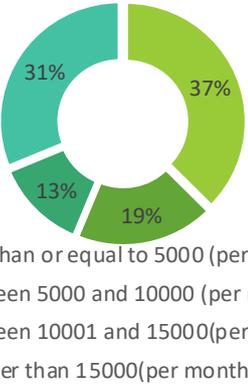
		agricultural community.										
Impacts of Climate Change on Agriculture	<p style="text-align: center;">Do you perceive that Climate Change is impacting your livelihood activities?</p>  <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>95%</td> </tr> <tr> <td>No</td> <td>5%</td> </tr> </tbody> </table>	Response	Percentage	Yes	95%	No	5%	<p>In this sample, the affirmative responses indicate that the agricultural households are aware of the challenges posed by Climate Change on agricultural sector. However, this response needs to be cross-checked with a wider sample for accuracy of respondent views across all sectors.</p>				
Response	Percentage											
Yes	95%											
No	5%											
Awareness of Climate Change Impact	<p style="text-align: center;">If you think Climate Change is impacting such activities, what are the kinds of impacts seen?</p>  <table border="1"> <thead> <tr> <th>Impact Type</th> <th>Number of Respondents</th> </tr> </thead> <tbody> <tr> <td>Less catch / agricultural production</td> <td>17</td> </tr> <tr> <td>Other fish/crop varieties becoming more prominent</td> <td>1</td> </tr> <tr> <td>Others</td> <td>2</td> </tr> </tbody> </table>	Impact Type	Number of Respondents	Less catch / agricultural production	17	Other fish/crop varieties becoming more prominent	1	Others	2	<p>The sample shows that there is widespread perceptions within the agricultural community of Pallom that Climate Change is adversely affecting their produces. However, this response needs to be cross-checked with a wider sample for accuracy of respondent views across all sectors.</p>		
Impact Type	Number of Respondents											
Less catch / agricultural production	17											
Other fish/crop varieties becoming more prominent	1											
Others	2											
Measures for Improvement of Women's Participation in Livelihood and Economic Activities	<p style="text-align: center;">In your opinion, what measures can be taken to enhance women's participation in livelihood and economic activities?</p>  <table border="1"> <thead> <tr> <th>Measure</th> <th>Number of Respondents</th> </tr> </thead> <tbody> <tr> <td>Providing skill training</td> <td>16</td> </tr> <tr> <td>Ensuring low interest credit</td> <td>0</td> </tr> <tr> <td>Credit waiver</td> <td>0</td> </tr> <tr> <td>Marketing opportunities</td> <td>0</td> </tr> </tbody> </table>	Measure	Number of Respondents	Providing skill training	16	Ensuring low interest credit	0	Credit waiver	0	Marketing opportunities	0	<p>The sample survey results highlight the community's belief that providing skill training is the most effective approach to increasing women's participation in livelihood and economic activities.</p>
Measure	Number of Respondents											
Providing skill training	16											
Ensuring low interest credit	0											
Credit waiver	0											
Marketing opportunities	0											

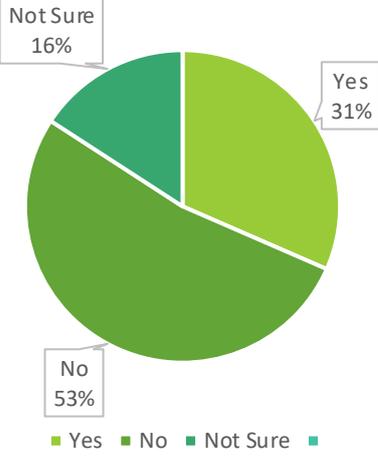
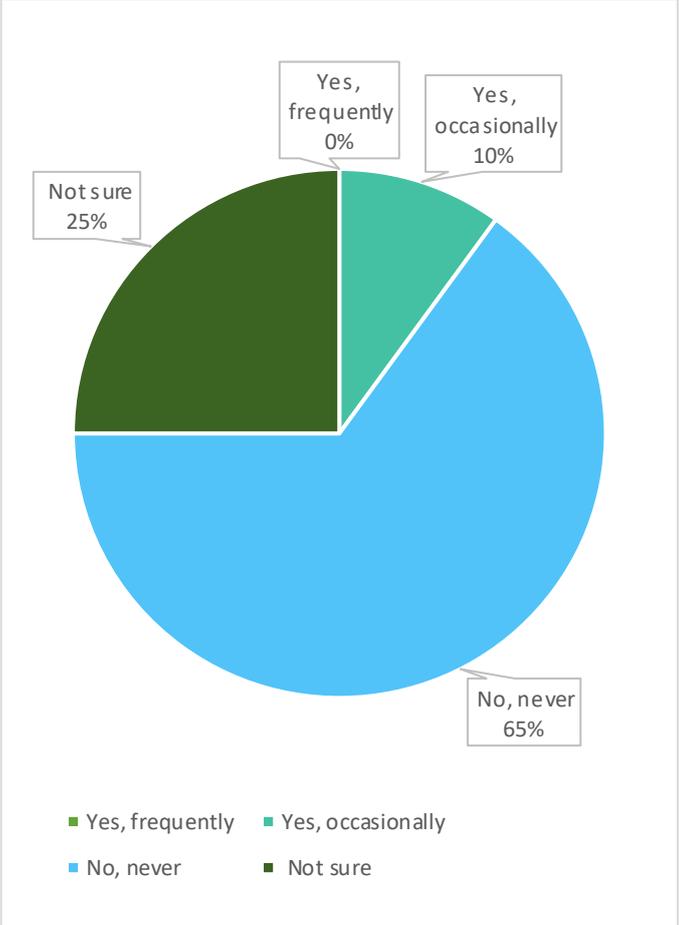
4.1.4 Survey results for Maranalloor village in Kerala

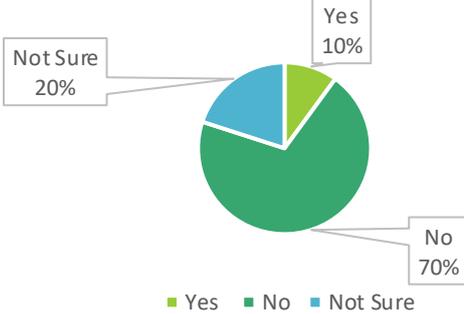
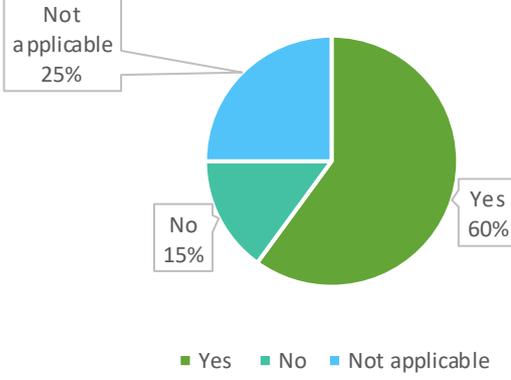
Maranalloor is a village in Thiruvananthapuram district in the state of Kerala. The village is mainly reliant on agriculture or sectors other than fishing. The same survey version was used to gather responses Maranalloor village, covering twenty households.

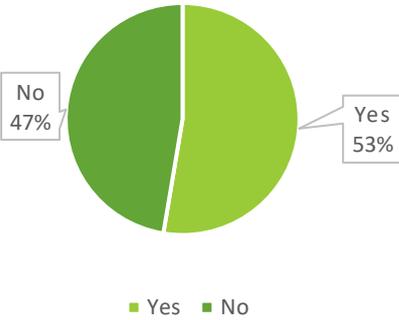
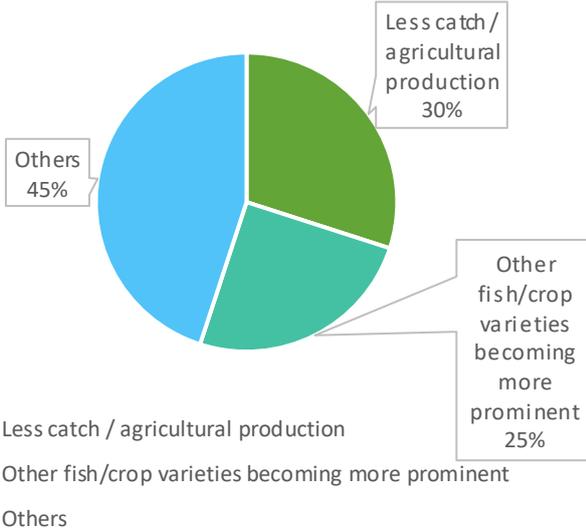
The outcomes of the survey are presented below (Table 4):

Table 4: Summary of outcomes from the survey in Maranalloor village, reliant on agriculture/other activities

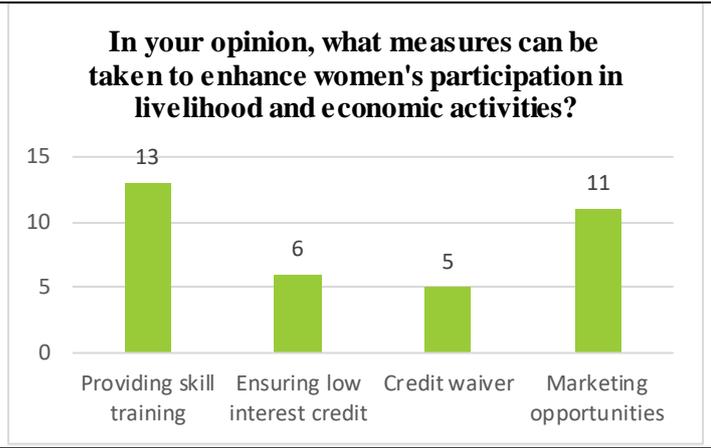
Area focussed	Infographics of responses	Key findings												
Educational Status of Household	<p style="text-align: center;">Highest level of education completed in the household</p>  <table border="1" data-bbox="491 779 1155 1326"> <thead> <tr> <th>Education Level</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>High school diploma or equivalent</td> <td>56%</td> </tr> <tr> <td>Technical training or diploma</td> <td>25%</td> </tr> <tr> <td>Less than high school</td> <td>13%</td> </tr> <tr> <td>Bachelor's degree</td> <td>6%</td> </tr> <tr> <td>Master's degree or above</td> <td>0%</td> </tr> </tbody> </table>	Education Level	Percentage	High school diploma or equivalent	56%	Technical training or diploma	25%	Less than high school	13%	Bachelor's degree	6%	Master's degree or above	0%	<p>As per the sample, the highest education level within households is generally low as:</p> <ul style="list-style-type: none"> • None of them possess a Master's degree and only 6 per cent possess Bachelor's degree. • Only 25 per cent acquired technical training or Diploma. • Around 56 per cent possess a high school education, while 13 per cent have not completed schooling at High school.
Education Level	Percentage													
High school diploma or equivalent	56%													
Technical training or diploma	25%													
Less than high school	13%													
Bachelor's degree	6%													
Master's degree or above	0%													
Economic Status of Household	<p style="text-align: center;">What is approximate average monthly income of the household (in ₹)?</p>  <table border="1" data-bbox="715 1554 963 1944"> <thead> <tr> <th>Income Range (₹)</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Greater than 15000 (per month)</td> <td>37%</td> </tr> <tr> <td>Less than or equal to 5000 (per month)</td> <td>31%</td> </tr> <tr> <td>Between 10001 and 15000(per month)</td> <td>19%</td> </tr> <tr> <td>Between 5000 and 10000 (per month)</td> <td>13%</td> </tr> </tbody> </table>	Income Range (₹)	Percentage	Greater than 15000 (per month)	37%	Less than or equal to 5000 (per month)	31%	Between 10001 and 15000(per month)	19%	Between 5000 and 10000 (per month)	13%	<p>The income of sample households in Maranalloor agricultural village shows a relatively stable condition when compared with the other three communities. Specifically, 31 per cent of families are earning more than ₹ 15,000, and an additional 13 per cent fall within the income range of ₹ 10,000 to ₹ 15,000. This indicates that a large proportion of households in Maranalloor village falls</p>		
Income Range (₹)	Percentage													
Greater than 15000 (per month)	37%													
Less than or equal to 5000 (per month)	31%													
Between 10001 and 15000(per month)	19%													
Between 5000 and 10000 (per month)	13%													

		in the stable income group.										
Capacity Building	<p style="text-align: center;">Have you received any training or education on gender equality in the workplace?</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>31%</td> </tr> <tr> <td>No</td> <td>53%</td> </tr> <tr> <td>Not Sure</td> <td>16%</td> </tr> </tbody> </table>	Response	Percentage	Yes	31%	No	53%	Not Sure	16%	<p>The sample analysis shows that the fishing community receives more training on gender equality compared to the agricultural-based community, indicating a positive and proactive approach towards promoting gender equity within the fishing sector.</p>		
Response	Percentage											
Yes	31%											
No	53%											
Not Sure	16%											
Gender Discrimination at Workplace	<p style="text-align: center;">Do you experience or witness gender-based discrimination in your workplace?</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes, frequently</td> <td>0%</td> </tr> <tr> <td>Yes, occasionally</td> <td>10%</td> </tr> <tr> <td>No, never</td> <td>65%</td> </tr> <tr> <td>Not sure</td> <td>25%</td> </tr> </tbody> </table>	Response	Percentage	Yes, frequently	0%	Yes, occasionally	10%	No, never	65%	Not sure	25%	<p>The sample survey results indicate that gender discrimination is more prevalent in fishing villages, while it is relatively negligible in the agriculture sector. This suggests that women in fishing communities may encounter more challenges and barriers related to gender disparity compared to their counterparts in the agricultural sector.</p>
Response	Percentage											
Yes, frequently	0%											
Yes, occasionally	10%											
No, never	65%											
Not sure	25%											

<p>Access to a Bank Account</p>	<p>Do the female members in the family have a bank account?</p>  <p>A pie chart with a single green slice representing 100% 'Yes' and a very thin white slice representing 0% 'No'. A legend below the chart shows a green square for 'Yes' and a white square for 'No'.</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>100%</td> </tr> <tr> <td>No</td> <td>0%</td> </tr> </tbody> </table>	Response	Percentage	Yes	100%	No	0%	<p>The sample survey results reveal that women engaged in agriculture have relatively higher access to banking accounts compared to those involved in fishing activities.</p>		
Response	Percentage									
Yes	100%									
No	0%									
<p>Access to Equal Opportunities in Employment</p>	<p>Have you ever been denied participation in fishing / agriculture due to your gender?</p>  <p>A pie chart with three slices: a large green slice for 'No' (70%), a blue slice for 'Not Sure' (20%), and a small white slice for 'Yes' (10%). A legend below the chart shows a green square for 'Yes', a white square for 'No', and a blue square for 'Not Sure'.</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>10%</td> </tr> <tr> <td>No</td> <td>70%</td> </tr> <tr> <td>Not Sure</td> <td>20%</td> </tr> </tbody> </table>	Response	Percentage	Yes	10%	No	70%	Not Sure	20%	<p>The sample survey results indicate that access to equal opportunities is better in agriculture when compared to fishing and indicate commendable progress in the agricultural sector/ another sector. However, as the sample is judgmental, this criterion may require further analysis.</p>
Response	Percentage									
Yes	10%									
No	70%									
Not Sure	20%									
<p>Equity in Terms of Payment of Equal Wages in the Workplace</p>	<p>If you are working on daily or monthly wage, are you paid less than a male worker?</p>  <p>A pie chart with three slices: a large green slice for 'Yes' (60%), a blue slice for 'Not applicable' (25%), and a teal slice for 'No' (15%). A legend below the chart shows a green square for 'Yes', a teal square for 'No', and a blue square for 'Not applicable'.</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>60%</td> </tr> <tr> <td>No</td> <td>15%</td> </tr> <tr> <td>Not applicable</td> <td>25%</td> </tr> </tbody> </table>	Response	Percentage	Yes	60%	No	15%	Not applicable	25%	<p>The sample survey findings indicate that there are issues in both the agriculture and fishing sectors regarding monthly wages, with women typically earning less than men.</p>
Response	Percentage									
Yes	60%									
No	15%									
Not applicable	25%									

<p>Agriculturist Women's Access to Internet</p>	<p>Do the female members have access to the internet?</p>  <p>■ Yes ■ No</p>	<p>The sample survey results reveal that women in the fishing sector have more access to the internet than women in the agriculture sector.</p>
<p>Impacts of Climate Change on Agriculture</p>	<p>Do you perceive that Climate Change is impacting your livelihood activities?</p>  <p>■ Yes ■ No</p>	<p>In this sample, the affirmative reply indicates that the agricultural households are aware of the challenges posed by Climate Change in agricultural sector. However, this response needs to be cross-checked with a wider sample for accuracy of respondent views across all sectors.</p>
<p>Awareness of Climate Change Impact</p>	<p>If you think Climate Change is impacting such activities, what are the kinds of impacts seen?</p>  <p>■ Less catch / agricultural production ■ Other fish/crop varieties becoming more prominent ■ Others</p>	<p>The sample shows that there is widespread perceptions within the agricultural community of Maranalloor that Climate Change is adversely affecting their produces. However, this response needs to be cross-checked with a wider sample for accuracy of respondent views across all sectors.</p>

Measures for Improvement of Women's Participation in Livelihood and Economic Activities



The survey results highlight the community's belief that providing skill training is the most effective approach to increasing women's participation in livelihood and economic activities.

Key Findings from the Primary Study

The sample survey results reveal that most of the women think that they don't perceive explicit gender discrimination, yet they acknowledge receiving lower wages compared to men. This could indicate a complex situation where gender bias might be less visible on the surface but still influencing the wage disparities. It could also suggest that while explicit forms of discrimination might be less prevalent, there could be indirect factors at play that result in unequal pay. This apparent contradiction highlights the multifaceted nature of gender-related issues and emphasises the importance of examining other factors in depth that influence women's wages and overall work environment. As far as the case of Capacity Development, the fishing activities often involve technical skills and training to ensure successful and sustainable operations. In contrast, agricultural activities require less skill and specialisation. This possibility could likely explain the survey's findings indicating that women engaged in fishing business receive more training as compared to women engaged in the agriculture sector.

The study reveals that women face more discrimination in the fisheries sector with low-skilled jobs and artisanal involvement in fish processing and post-harvest activities than in the agriculture sector. The survey findings do not indicate a significant presence of equal wages for women in the workplace, highlighting a disparity in terms of financial empowerment. While the majority of respondents denied experiencing or witnessing gender-based discrimination in their workplaces, further responses to supplementary questions reveal concerns regarding unequal wages for women, indicating a need for deeper investigation and the implementation of corrective measures. Despite some extent of Government interventions to strengthen women's financial status, they are still paid less for the same work. In agriculture, women need more access to the internet, skills, and training to enhance their participation in related activities, while in fisheries, financial assistance through low interest credit can empower the women

engaged in fishing business. The relationship between low income and need for financial assistance indicates inferior economic conditions for women. They also need insurance facilities, transportation, health facilities, hygiene and sanitation facilities, appropriate machinery and equipment, market access, technology, and seed capital support.

4.2 Important Findings from the Secondary Study

With the aim to give resource ownership in the hands of women, the policies in Indonesia and Kenya for women have been studied. Both countries have some gender-specific programmes for coastal communities.

The Kenya Marine Fisheries and Socio-Economic Development (KEMFSED) project is aligned with the World Bank Gender Strategy FY16-23, implemented by the Government of Kenya with support from the World Bank (KEMFSED n.d.). It includes activities targeting the improvement of women in fishing communities. The project uses instruments like the PDO (Project Development Objective) indicator to assess the effectiveness of the project. Women, Youth, and Vulnerable, and Marginalised Groups (VMGs) are specifically targeted by creating opportunities along the value chain. Grants specifically target women and ensure that women participate in all stages of the sub-project cycle (e.g., planning, screening, appraisal, implementation, monitoring and evaluation, grievance redress mechanism), including decision-making processes (MoALFI, Republic of Kenya 2019).

Indonesia established Law No. 7 the year 2016 on Protection and Empowerment of Fisher folks, Fish Farmers, and Salt Farmers which has a mandate to give a protection to Indonesian fishers by providing fisher insurance. But there are no female beneficiaries of the scheme as they are not registered as fishers (UNDP 2019). The women in Indonesia have formed a collective action community- Persaudaraan Perempuan Nelayan Indonesia (PPIN- the Indonesian Sisterhood of Fisherwomen) to strengthen fisherwomen by providing with organisational structure, development of social capital by providing a platform for social network and generating awareness among fisherwomen to have their rights and live with dignity. The PPIN functions to find out their common interests so that they can be addressed with priority. It partners with Non-Governmental organisations and individuals to work in coordination at the national and regional levels. It promotes women to become self-sufficient and encourages their participation in international-level discussions. This also provides a platform for women to discuss ideas and allows the sharing of policies and regulations that are beneficial for them (Annisa and Meutia 2018).

The policies for fishers in India are a State subject as per the Constitution of India. In Kerala, there are several schemes that focus on the welfare of fishers with very little focus on enhancing women's participation. However, the Society for Assistance to Fisherwomen (SAF) under the Department of Fisheries, Kerala has been working on empowering the fisherwomen of the State by promoting livelihood opportunities by forming Self Help Groups of fisherwomen (Fisheries Department, Kerala 2023). The organisational structure of the programme is given below (Figure 5):

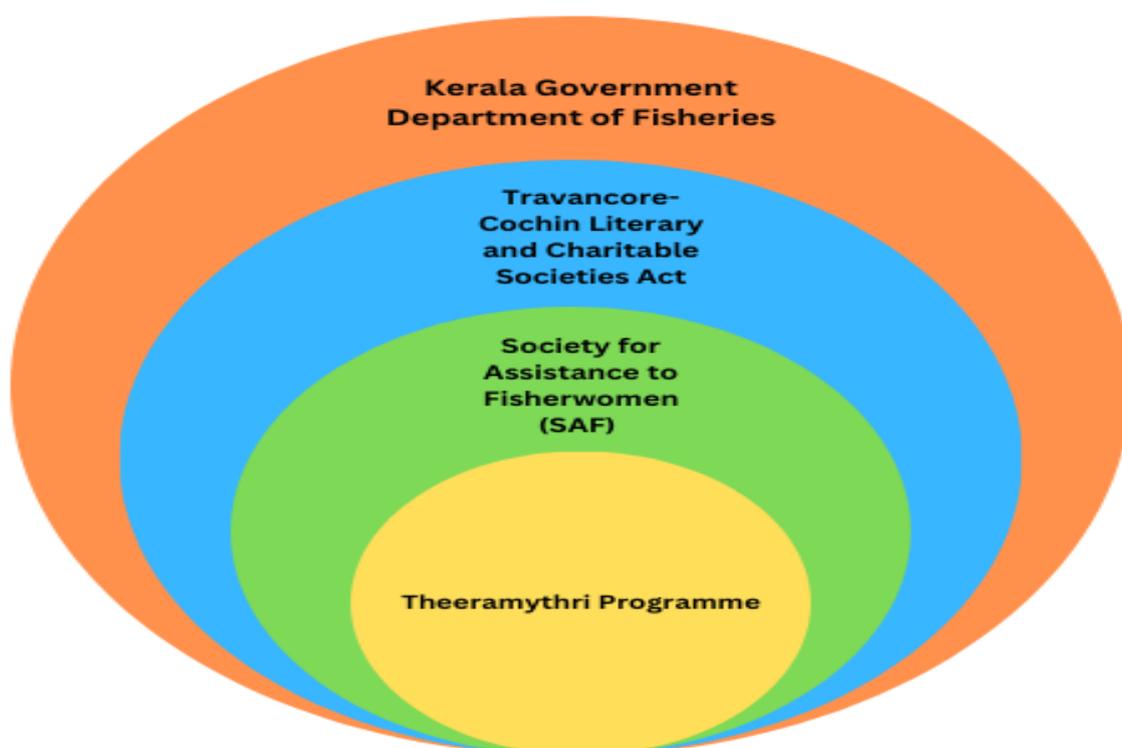


Figure 5: Organisational structure of Theeramythri Programme

Entrepreneurship opportunities are created for fisherwomen by the development of alternative livelihoods like apparel microenterprises along with the marketing facility to help them achieve sustainable livelihood. It provides employment opportunities to fisherwomen involving training, technical support, operation, management and marketing (Fisheries Department, Kerala n.d.). However, there is no provision to evaluate the effectiveness of these measures concerning its reach to the target population. The schemes that involve holistic development of fishers hardly recognise women participation. Women are involved in post-catch activities without the availability of proper equipment and machinery, and they have to work in unhygienic conditions often leading to health issues. The lack of adequate medium for information dissemination about these policies is a challenge. This also causes a concern for

resource inaccessibility and social vulnerability of women, measures to address intergenerational vulnerability, and whether the policy relates to demand and supply of needs of local women. The joint liability groups ensure the financial inclusion of the fisherwomen by providing them credit and removing their exploitation by private moneylenders. The transparency in resource allocation seems to be neglected in the schemes sometimes. There is no gender-focussed social impact analysis done for integrating the status of women with the solutions for overcoming the challenges faced in policy development and implementation.

4.3 SWOT Analysis

The SWOT analysis shows the strengths and weaknesses of the policies for fisheries in the development of the Blue Economy and the scope for further opportunities and possible threats in the sector. The analysis is done based on findings from the primary and secondary studies.

The following are the major identified Strengths of fisheries sectors in India:

- The long coastline of the Indian sub-continent;
- Rising demand calls for the engagement of more people including women in fisheries;
- Artisanal fisheries and their expansion through the exportation of multiple varieties of products are strengths of the Indian fishing community;
- Availability of training and support, not only for the male but also for the female workforce;
- Large-scale availability of an unexplored variety of resources and processed products in aquaculture and
- Already established infrastructure that needs to become more feasible for women.

STRENGTHS

- Vast area of coastline
- Sizeable seafood resources with rising demand
- Fisheries development in Blue Economy policy framework
- Exportation of the processed sea products
- Large female workforce available at competitive wages
- Abundant untapped resources for aquaculture
- Well-developed processing infrastructure
- Formation of women collectives like Self Help

WEAKNESSES

- Efforts are largely confined to the inshore waters
- Women are confined to few isolated pockets
- Data unavailability of socio-economic condition of fisherwomen in coastal villages
- No social impact assessment before policy implementation
- Lack of expertise and slow technological change
- Untraceable policy benefits
- Lack of decision making power

OPPORTUNITIES

- New development of women in Blue Economy
- Increasing awareness among women about their rights
- Training and Capacity Building
- Recognition of female contributions
- Livelihood security to women
- Access to market and resources
- Modernisation of infrastructure

THREATS

- Climate Change impact on fisheries
- Women at exposure to high risk during calamities
- Inter-sectoral disparity within the fisheries industry
- Under-utilisation of established infrastructure
- Conflict between sustainable environment and economic growth
- Degeneration of traditional fishing practices
- Women departing from the traditional role

SWOT Analysis

Figure 6: SWOT Analysis, Source: Own compilation

The following are the major Weaknesses in this sector:

- Less effort to explore offshore waters and women being mainly isolated inside the processing industry.
- Lack of support for mobilisation.
- Availability of reliable data about the socio-economic conditions of women in fisheries
- Lack of social impact assessments which are crucial for understanding the conditions of women in the coastal area.
- Lack of policy-evaluation with a gender perspective, posing a challenge for tracing the female beneficiaries for targeted interventions.
- Absence of participation in decision-making process while adopting a participatory approach for programme development.

The following are the major Opportunities in this sector:

- Need for recognition of women's contributions to industry and economic growth.
- Efforts to expand the participation of women in training and capacity building.
- Demand for financial assistance, including access to credit facilities and insurance benefits for women.
- Necessity to modernise the related infrastructure with advanced technical machinery and equipment.

The following are the major Threats in this sector:

- Vulnerability of low-skilled women to job displacement;
- High risk for women in the face of hazards or calamities;
- Possibility of intersectional disparities among fisherwomen based on skills;
- Concerns about under-utilisation of infrastructure due to social and cultural barriers and
- Potential loss of indigenous coastal knowledge of women due to technological advancements.

5. Pointers for Gender Audits

The research paper holds significant potential in contributing to the attainment of Sustainable Development goal targets 5a (“Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws”) and

5c (“*Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels*”) within SDG 5 which focussed on attaining gender equality and ensuring women’s equal participation. In addition to its impact on SDG 5, this paper can also contribute inputs towards the achievement of SDG 8 which centered on “*Promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*”. The primary survey conducted can form a baseline to developing an audit design matrix. The matrix will help in identifying and structuring areas for potential audits, of gender and sustainable livelihoods. Moreover, the research findings can also be used to develop indicators aimed at assessing progress towards gender equity which in turn will aid policy formulation in the critical areas.

Several key areas can be scrutinised while conducting an audit focussed on sustainable livelihood and gender equity with a special emphasis on marine fisheries. The audit can encompass an evaluation of resource management practices to ensure sustainability and examine policies and regulations to identify gender-inclusive measures. Access to fishing resources, livelihood diversification options, and income levels can also be assessed with attention to potential gender disparities. Additionally, the audit can analyse the role of women in post-harvest activities, and capacity-building initiatives, and assess working conditions, health, and safety for both men and women in the fisheries sector. Participation of women in decision-making processes, environmental impact mitigation, and the impact of institutional barriers can be examined. Market access, infrastructure, services, and the legal framework governing fisheries can also be assessed for their effects on gender equity. Ultimately, the audit can culminate in providing recommendations and an action plan to promote sustainable livelihoods and gender equity in marine fisheries, with a focus on best practices and successful initiatives in the sector.

Under the guiding philosophy for India's presidency of G20, Vasudhaiva Kutumbakam (One Earth, One Family, One Future), the Blue Economy has been identified as one of the key areas of focus. The Audit Report of the Comptroller and Auditor General of India on Conservation of Coastal Ecosystems (2022) highlighted various shortfalls in the achievement of SDG 14. Further, many other State-specific audit reports i.e. Performance Audit on development, welfare and relief schemes - Marine Fisheries in Tamil Nadu (C&AG India 2019) and Performance Audit on Working of Fisheries Department of Gujarat (C&AG India 2018) assessed the economy, efficiency, and effectiveness of Government initiatives but incorporating a specific focus on gender equity adds a crucial dimension to ensure inclusivity and fairness. This research

paper will help in auditing the need for sustainable livelihoods and promoting the role of women in the Blue Economy sector, specifically in the fisheries sector, through Government policies and initiatives. Further, it can also serve as a toolkit for Audit to identify the areas to be strengthened and new approaches required to be developed so that the gap toward achieving sustainable livelihood and gender equity in the development of Blue Economy, can be plugged.

The areas needing the attention of audit for ensuring gender equity are:

- Socio-cultural vulnerability in the context of existing values, norms, and practices adopted in the society that define gender roles.
- Ensuring equal wages for women as men for the same amount of work.
- Financial assistance through credit-based incentives like low-interest credit and insurance facilities.
- Development of social capital through a structured and organised web of networks among the fisherwomen.
- Adequate training and capacity building with the integration of appropriate technologies and equipment.
- Uninterrupted flow of information related to the schemes and benefits reaching the target audience to enhance participation.
- Prevention of hazards and calamities with the training for women to generate the ability to cope with the challenges.
- Assistance for mobilisation, processing and marketing of fish/agriculture products to women.
- Provisions for adequate health facilities and livelihood security for women of all ages.
- Participatory approach involving women in the decision-making process during programme implementation.

6. Conclusion and Way Forward

Sustainable livelihoods and gender equality in the fishing sector share a symbiotic relationship, with each reinforcing their importance. Gender equity involves the assurance that women and men have equal access to opportunities, resources, and decision-making processes. When achieved within the context of fishing communities, gender equality can significantly contribute to the sector's sustainability.

Gender discrimination within the fishing industry is a pervasive issue that restricts women's full participation and hinders their access to resources, opportunities, and decision-making processes. In the fishing industry, traditional gender discrimination is deeply rooted in the traditional practices that privilege men and tend to place women in comparatively marginalised positions. The prevalent policies and practices often fall short of adequately addressing gender disparities in the fishing sector, leading to inadequate opportunities for inclusive and sustainable development of women.

The initiatives in Kenya and Indonesia to promote gender equality in the fishing sector offer valuable insights that can be linked to India's efforts in a similar direction. Just as the Kenya Marine Fisheries and Socio-Economic Development (KEMFSED) project in Kenya aligns with the World Bank Gender Strategy and focuses on empowering women in fishing communities, Governmental agencies in India may like to consider an acceleration of a comprehensive strategy that integrates gender considerations into its development projects. Furthermore, in Indonesia, the establishment of laws that protect and empower fisher folk could be a paradigm for developing regulations that specifically address gender disparities and promote women's rights in the fisheries domain.

Both the Kenyan and Indonesian experiences underscore the importance of proactive policies, targeted interventions, and collaborative networks to drive gender equality in the fishing sector. Gender Audits in India can utilise these paradigms to assess adjacent schematic interventions in India.

This study which comprised both policy review and field surveys has yielded some valuable insights and some of the key issues that emerged to foster gender equity and inclusivity within the industry are described below:

- Implement gender-sensitive policies promoting women's participation and equal opportunities in the fishing sector.
- Provide specialised training and skill development programmes for women fishers to enhance their capabilities.
- Facilitate access to credit and financial services for women in fishing communities.
- Conduct awareness campaigns to challenge gender stereotypes and promote women's active involvement.
- Promote women's representation in decision-making bodies and leadership roles.

- Identify empowerment models in other regions and adapt them to the local context.

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