



# An Analysis Of The Techno Socio-Economic Factors And The Means Of The Fishermen On Rameswaram Island

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## ABSTRACT:

Rameswaram Island, located in the southern Indian state of Tamil Nadu, has a significant fishing community. The island's fishermen face various challenges, including, Inadequate fishing gear, boats, and infrastructure, Depletion of fish stocks due to excessive fishing. Rising sea levels, changing weather patterns, and increased frequency of extreme weather events. Plastic pollution, oil spills, and chemical runoff affecting marine life. Limited access to markets, resulting in low prices for their catch. Risk of accidents, pirate attacks, and crossing international borders. Compliance with fishing regulations, permits, and licenses. Despite these challenges, the fishermen of Rameswaram Island continue to play a vital role in the local economy and culture, with many relying on traditional fishing practices passed down through generations. Efforts are being made to support sustainable fishing practices, improve infrastructure, and enhance the livelihoods of these fishermen.

**Key Words:** Fishermen, Technology, Tools, Recreational fishing, Aquaculture, Livelihood, Conservation.

**Introduction:**

"Rameswaram, a picturesque island in southern India, is synonymous with the majestic Pamban Bridge and the sacred Rameswaram Temple. However, beyond its religious and tourist significance, Rameswaram is also home to a vibrant community of fishermen who have been the backbone of the local economy for centuries. Their livelihoods, deeply rooted in the island's marine resources, are a testament to their skill, hard work, and harmony with the sea.

Yet, the fishermen of Rameswaram face numerous challenges that threaten their very existence. The impact of climate change, the pressure of overfishing, and the strain of competing with large-scale industrial trawlers have all taken a toll on their traditional way of life. This article aims to shed light on the lives of these unsung heroes, exploring the intricacies of their occupation, the struggles they encounter, and the initiatives being undertaken to safeguard their livelihoods and the marine ecosystem they depend on."

India has seen an average annual growth of 7.53% in fish production from 2014-15 to 2018-19, which stood at an all-time high of 137.58 lakh metric tons, indicating a positive trend for the industry. The fisheries sector contributes around 1% to India's GDP and 5.5% to the GDP from Agriculture, Forestry and Fishing, making it a significant contributor to the economy. The fisheries sector can promote sustainable growth in India by focusing on sustainable fishing practices, reducing waste and improving the quality of fish production. Fish consumption helps in attaining nutritional security, which is essential for a healthy population, and a healthy population is essential for economic growth. Fishing is a resilient economic activity across the globe, and in India, the fisheries sector has been gaining recognition for its contribution to the economy.

**OBJECTIVE OF THE STUDY:**

"The objective of this study is to investigate the challenges faced by fishermen in Rameswaram Island, with a focus on:

1. Identifying the key factors contributing to declining fish stocks and the impact on fishermen livelihoods.
2. Examining the market dynamics and trade practices that affect fishermen access to fair prices and markets.
3. Assessing the impacts of climate change and extreme weather events on fishing practices and communities.
4. Evaluating the awareness and adoption of sustainable fishing practices among fishermen.
5. Exploring potential solutions and strategies to address these challenges and promote sustainable fisheries management.

**REVIEW OF LITERATURE:**

**Dr. G. Yoganandham<sup>1</sup> , Mr. E. Mohammed Imran Khan<sup>2</sup>(2023):**The researcher examine the impact of COVID-19 pandemic in fisheries, Agriculture and its allied activities are continues to be the largest employer in Tamil Nadu. Tamil Nadu's economic growth has been made possible by the State government's aggressive measures to draw in investments, create jobs, and implement policy changes for all-encompassing and sustainable growth. Tamil Nadu has a diverse manufacturing sector and is a global leader in a number of sectors, including engineering, pharmaceuticals, apparel, textiles, leather goods, chemicals, plastics, and auto motives and auto components. The nominal GSDP growth of the State is anticipated to remain at the level of 14% for the years 2023– 2024, as predicted for 2022–2023. The nominal GSDP growth is predicted to be 13% in the following years for 2024–2025 and 12% in 2025–2026, respectively. The GSDP for Tamil Nadu is expected to rise by 14% in 2022–2023 and the economy of India would grow by 7.5% in 2023–2024 as a consequence of the global economic uncertainties. Technology improvements have led to a boom in the service sector in Tamil Nadu. The largest contributor is the government, which is followed by domestic and private investors.

**Anitha Mary Alex, Dr. S.V. Murugesan, Dr. Jacob. P. M (2023):** researcher mainly conclude their research Digitization in business. Digitization causes changes for companies due to the adoption of digital technologies in the organization or in the operation environment. This paper discusses digitization from the viewpoint of diverse case studies carried out to collect data from several companies, and a literature study to complement the data. This paper describes the first version of the digital transformation model, derived from synthesis of these industrial cases, explaining a starting point for a systematic approach to tackle digital transformation.

**R. Sathishkumar, K. Ramesh Kumar (2023):** Seaweed farming, a primary source of income for many women in Tamil Nadu's Ramanathapuram district, is threatened due to increasing environmental and social challenges. Reduced number of working days due to increasing cyclones, shrinking space to farm seaweed, decreasing quality of seaweed due to global warming and gender-based discrimination in the society, push the women farmers to pursue alternate sources of income. Meanwhile, India aims to increase seaweed output to at least one million tons annually by 2025 and has started the construction of the country's first multipurpose seaweed park in Tamil Nadu. The changing perspective of women role in the seaweed business is seen as a positive change and more appreciated and able to maximize the use of energy in increasing the productivity of seaweed in the future.

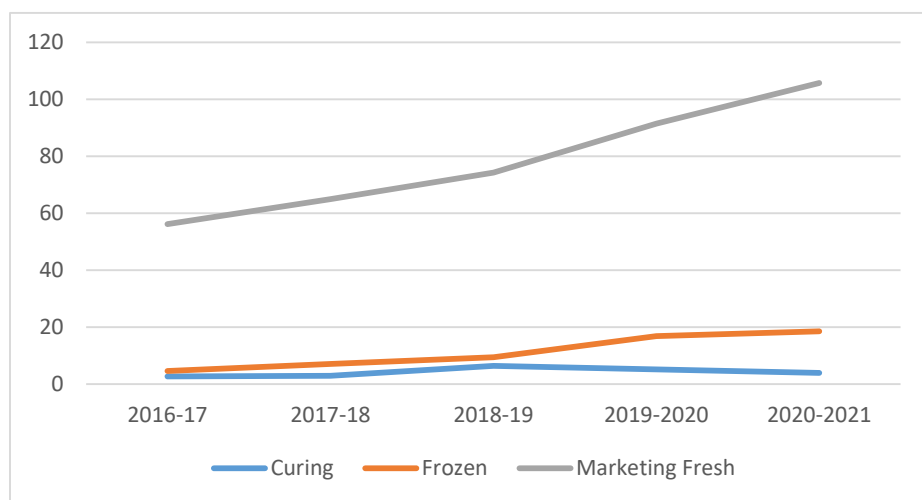
**Modern technology can help fishermen in numerous ways:**

- ✚ 1. **Fish Finders:** Sonar and GPS technology help locate fish schools and underwater structures.
- ✚ 2. **Navigation Systems:** GPS and chart plotters enable precise navigation and route planning.
- ✚ 3. **Communication Devices:** Satellite phones and radios facilitate real-time communication with shore and other vessels.
- ✚ 4. **Weather Forecasting:** Accurate weather predictions help fishermen prepare for and avoid harsh conditions.
- ✚ 5. **Autonomous Underwater Vehicles (AUVs):** AUVs can monitor water conditions, detect fish, and inspect gear.
- ✚ 6. **Electronic Monitoring Systems:** Cameras and sensors monitor catches, reducing by catch and improving compliance.
- ✚ 7. **Data Analytics:** Software helps analyze catch data, optimizing fishing practices and reducing waste.
- ✚ 8. **Digital Marketplaces:** Online platforms connect fishermen with buyers, improving market access and prices.
- ✚ 9. **Safety Equipment:** Emergency beacons and safety devices enhance personal safety.
- ✚ 10. **Training and Education:** Online resources and simulations improve fishing skills and knowledge.
- ✚ These technologies can increase efficiency, productivity, and sustainability, while also improving the safety and livelihoods of fishermen.

<b>Contribution of India to world Fish Production selected years</b>						
<b>World production(In MMT)</b>				<b>Contribution of India (In MMT)</b>		
Year	Total	Marine	Inland	Total	Marine	Inland
2017	172.7	111.2	61.5	12.6	3.7	8.9
2018	178.93	115.36	63.57	13.6	3.9	9.7
2019	177.83	112.40	65.43	14.2	3.8	10.4
2020	179.00	112.00	67.00	14.73	3.5	11.23

Source:Food and Agriculture Organization

## Year Wise Fish Production



Source: Food and Agriculture Organization

## NABARD:

- ✦ The National Bank for Agriculture and Rural Development (NABARD) offers the following schemes to fishermen Fisheries and Aquaculture Infrastructure Development Fund (FIDF): This scheme provides subsidized interest rates and a two-year moratorium on repayment of the principal amount. Loans up to 80% of the estimated/projected cost. Interest subvention of up to 3% per annum. Development of fisheries infrastructure facilities in both marine and inland sectors. Boost to fish production by 67% in four years. Generation of over 9.40 lakh direct and indirect employment opportunities. Maximum repayment period of 12 years, including a moratorium of two years on the principal amount. These schemes aim to support the development of the fisheries sector, improve fish production, and provide employment opportunities for fishermen and others in the industry. Banks can help fishermen in several ways
- ✦ **Financed purchases:** Banks can finance the purchase of fishing equipment, such as trawlers, boats, and engines, enabling fishermen to upgrade their gear and increase their catch.
- ✦ **Credit facilities:** Banks can provide credit facilities to fishermen, allowing them to purchase necessary inputs, pay for fuel and maintenance, and meet other expenses.
- ✦ **Improved market access:** Banks can help fishermen access new markets and customers, enabling them to sell their catch at better prices.
- ✦ **Increased income:** By providing access to credit and market facilities, banks can help fishermen increase their income and improve their livelihoods.
- ✦ **Reduced dependence on auctioneers:** By providing credit facilities, banks can reduce fishermen dependence on auctioneers, who often charge high interest rates and commission fees.

**Infrastructure development:** Banks can finance infrastructure development projects, such as fishing ports, landing piers, and storage facilities, which can benefit fishermen and the fishing industry as a whole.

<b>Growth Rate (%) of Gross Value Addition (GVA)(Constant price:2011-12)</b>				
<b>Years</b>	<b>Y-O-Y Growth Rate(Fisheries sector)</b>	<b>Average Growth Rate (%) (Fisheries Sector)</b>	<b>Y-O-Y Growth Rate(National)</b>	<b>Average Growth Rate (%) (National)</b>
2014-15	7.51	<b>10.87</b>	7.15	<b>7.16</b>
2015-16	9.70		8.03	
2016-17	10.45		7.97	
2017-18	14.68		6.59	
2018-19	12.05		6.04	

Source: National Statistical Office

<b>Share of Gross Value Addition (GVA) Of Fisheries Sector (Constant price :2011-12)</b>			
<b>Years</b>	<b>GVA of fisheries Sector (rs in crore)</b>	<b>National GVA (Rs in crore)</b>	<b>Share of fisheries Sector(%)</b>
2014-2015	82,232	97,12,133	0.85
2015-2016	90,205	1,04,91,870	0.86
2016-2017	99,627	1,13,28,285	0.88
2017-2018	1,14,248	1,20,74,413	0.95
2018-2019	1,28,011	1,28,03,128	1.00

Source: National statistical office

**METHODOLOGY:**

This study employed a mixed-methods approach, combining both quantitative and qualitative data collection and analysis methods.

**DATA COLLECTION**

**Surveys:** Conducted interviews with 100 fishermen in Rameswaram Island, using a structured questionnaire to gather information on their demographics, fishing practices, and perceptions.

**Catch Data:** Collected data on catch composition, weight, and value from 50 fishing trips.

**Observations:** Conducted participant observations on 20 fishing trips to gain insights into fishing practices and gear usage.

## DATA ANALYSIS

**Descriptive Statistics:** Used to summarize demographic and catch data.

**Thematic Analysis:** Employed to identify patterns and themes in survey and observational data.

**Regression Analysis:** Conducted to examine the relationship between fishing practices and catch composition.

## Study Area

The study was conducted in Rameswaram Island, a coastal fishing community in Tamil Nadu, India.

## Study Period

The study was conducted over a period of 6 months, from January to June 2024.

## Sample Size

The sample size consisted of 100 fishermen and 50 fishing trips.

## Sampling Technique

Snowball sampling was used to recruit participants, with initial contacts leading to further referrals.

## STATEMENT OF THE PROBLEM:

"The scope of this study is to investigate the challenges faced by fishermen in Rameswaram Island, with a focus on:

This study will focus on the fisheries sector in Rameswaram Island, with a specific emphasis on the experiences and perspectives of fishermen and other stakeholders. The study will employ a mixed-methods approach, combining both quantitative and qualitative data collection and analysis methods. By focusing on the specific challenges and experiences of fishermen in Rameswaram Island, this study aims to provide actionable insights and recommendations for promoting sustainable fisheries management and supporting the well-being of fishing communities."

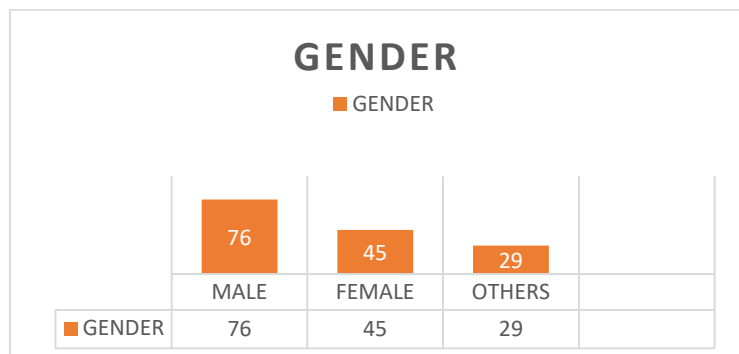
## TOOLS OF ANALYSES:

The data has been analyzed the researcher using various statistical data multiple techniques, like frequency, percentage calculated variable in Chi-square method. The data collected through interview schedule and secondary data have been analyzed with help of various statistical tools.

### 1.6 ANALYSES THE DATA AND INTERPRETATION:

#### Demographic profile:

#### GENDER



#### Source: Primary Data

Among the participants of the current study, about 150 participants had responded. Most of the respondents has male, 22% of the respondents were Female and rest of the participants were others.

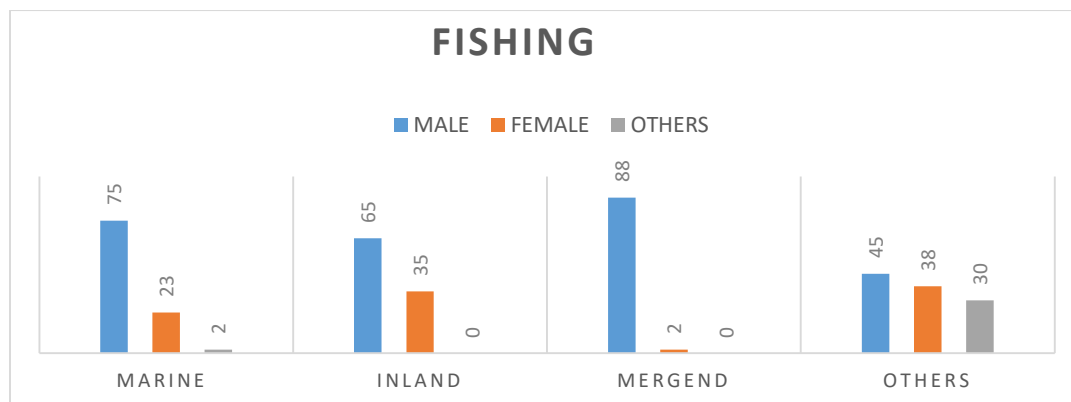
#### MATRIAL STATUS

MARITAL STATUS	FREQUENCY	PERCENT	CUMULAATIVE PERCENTAGE
Married	100	66	66
Unmarried	50	34	100
Total	150	100	

#### Source: Primary data

Material status is very important factor for analyse the problems of fishermen in Ramanathapuram District. It is clearly explaining in this study. 66% are found to be married and the remaining 34% are unmarried.

#### Fishing method:

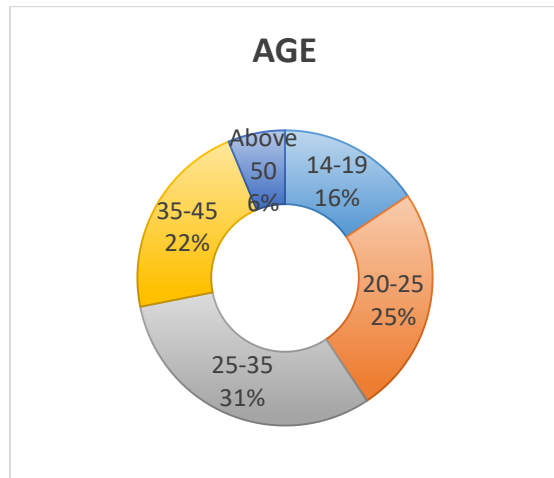


#### Source: Primary Data



Among the participants of the current study, about 150 participants had responded. Marine, inland, mergend, and other business people the respondents were male in three categories, highest respondents are mergend, compare then female others male respondents are male in all the categories of business.

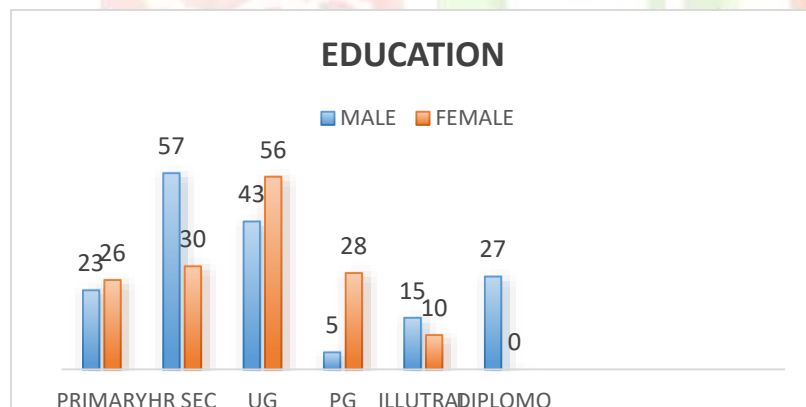
**AGE:**



**Source: Primary Data**

According to the analyses wise 31% of respondents are 20 to 25 age people,second highest respondents are 25 to 35 age group are 25% and 22% respondents are 35 to 45 age respondents ,third 16% respondents are 14 to 19 age people and finally very low percentage respondents are above 50 age people.

**EDUCATION:**



**Source: Primary Data**

The majority of the respondents are comparing then male , women are educated while 100 respondents were pursuing /had completed their master .The male respondents were a mixed group comparing higher school and ug level .There were a smaller number of respondents who were pursuing or had completed their post graduate education .

## HOUSING AND ELECTRICITY FACILITIES OF THE RESPONDENT

**Housing type of Respondent**

VARIABLE	FREQUENCY	PERCENTAGE	CUMULATIVE PERCENTAGE
Hut	40	26.6	26.6
Tiled House	67	45	45
Concrete	43	28.4	100
Total	150	100	

**Source: Researcher computed**

The above results show that 26.6% belongs to the hut, 45% of people belong to tiled house and 100% of families belong to concrete among 150 respondents. Respondents with concrete houses are larger in this case.

**ELECTRICITY****Electricity facilities of the Respondents**

VARIABLES	FREQUENCY	PERCENTAGE	CUMULATIVE PERCENTAGE
Electricity	226	90.4	90.4
Non-Electricity	24	9.6	100
Total	250	100	

**Source: Researcher computed**

In this paper, the researcher found that 90.4% of the respondents have electricity in their houses. Moreover, the rest are depending on lamps, and candles to light up their houses 9.6%.

## PER TRIP WAGES OF THE RESPONDENTS

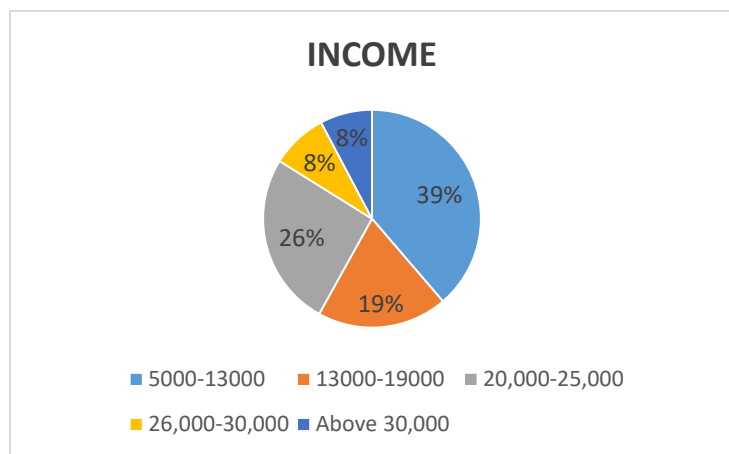
**per day trip Wages of the Respondents**

S.NO	PER TRIP WAGES	NO.OF RESPONDENT	PERCENTAGE	CUMULATIVE PERCENTAGE
1	Below -5000	27	18	18
2	5000 – 10,000	43	27	45
3	10,000– 20,000	51	34	79
4	Above 30,000	29	21	100
<b>Total</b>		<b>150</b>	<b>100</b>	

**Source: Primary Data**

Fishing community per trip wages is very much important for the fishermen. Wages are an important factor to analyse the problems and prospects of fishermen. It is clear from this study, 18% of the respondents have per trip wages less than rupees 5000, 27% of the respondents have per trip wages less than rupees 10,000. 34% of the respondents have per trip wages less than 20,000 and 21% of the respondents have per trip wages belong to above 30,000.

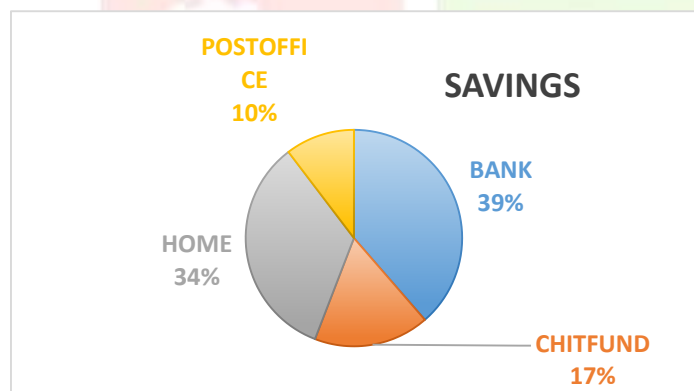
**INCOME:**



**Source: Primary Data**

As per the analyses income is very much important for the fishermen. income is the important factor to analyse the problems and prospects of fishermen. It is clear from this study, 39% of the respondent have per trip wages less than rupees 5000, 19% of the respondents have per trip wages less than rupees 13, 000. 26% of the respondents have per trip wages less than 20,000 and 8% of the respondents have per trip wages belong to above 30,000.

**SAVINGS:**



**Source: Primary Data**

According to the survey savings important factor to analyze the problems and prospects of fishermen. It is clear from this study, 39% of the respondent have save their money in bank, 34% of the respondents have save their money in home /self-savings. 17% of the respondents have maintain their income in chit fund and 10% of the respondents have save their money in post office.

**Difference between Age, Monthly Income and Savings-One Way ANOVA Test:**

Regarding the factor analyses, the fishermen problem based upon their age, monthly income and savings based analyzed total variance, the researcher using the one-way ANOVA method **calculate** the f-test ratio method. Age is an independent variable; it is used to measure the total variance of the groups.

For calculated the F value, The Researcher using the following formula.

$$F = \frac{\text{between column variance}}{\text{within column variance}}$$

**ONE WAY ANOVA TEST**

Age and Monthly Income

**Null hypothesis:** There’s no significant relationship between the age and monthly income and savings of the respondent

Result of the ANOVA test

**Table for One Way ANOVA Test**

The

Source of variation	ss	d.f	ms	F-ratio	F ratio 5% from F - distribution Table
Between sample	182	2	91	7.815	F(2,10)=4.10
Within sample	2652	10	265	6.51	
Total	2834	12	236		

calculation value is less than table value, the hypothesis is acceptable. Hence there is no significant difference between the age and the monthly income of the respondent

**FINDINGS AND CONCLUSION:**

Fishermen face a range of challenges, including financial difficulties, unpredictable weather conditions, and limited access to resources and markets. To address these issues, a multi-faceted approach is necessary, involving government support, technological innovation, and community-based initiatives. "In conclusion, this study has investigated the challenges faced by fishermen in Rameswaram Island and identified key factors contributing to declining fish stocks, limited market access, and vulnerability to climate change. The findings highlight the need for sustainable fisheries management practices, improved market infrastructure, and enhanced support for fishing communities.

The study's recommendations include:

1. Implementing catch limits and fishing gear restrictions to conserve fish stocks.
2. Establishing community-led fisheries management committees to promote participatory decision-making.
3. Developing market infrastructure and alternative marketing channels to improve fishermen's access to fair prices.

4. Providing training and capacity-building programs for fishermen on sustainable fishing practices and climate resilience.
5. Strengthening policy frameworks and enforcement mechanisms to support sustainable fisheries management.

By addressing these challenges and implementing these recommendations, it is possible to promote sustainable fisheries management, support the well-being of fishing communities, and contribute to food security and sustainable development in Rameswaram Island.

This study contributes to the existing body of knowledge on fisheries management and sustainability, highlighting the importance of context-specific solutions and community-led initiatives. Further research is recommended to explore the effectiveness of these recommendations and identify areas for scaling up and replication.

Ultimately, this study aims to inform policy and practice, supporting the development of a more sustainable and equitable fisheries sector that benefits both people and the planet."

Leveraging technology, such as fish finders and monitoring systems Enhancing safety and emergency response measures. By addressing these challenges and implementing these solutions, we can work towards improving the livelihoods of fishermen, promoting sustainable fishing practices, and supporting the long-term health of marine ecosystems.

#### REFERENCE:

1. Economic Development in Tamil Nadu - A Theoretical Assessment Dr. G. Yoganandham<sup>1</sup> , Mr. E. Mohammed Imran Khan<sup>2</sup>International Journal of All Research Education and Scientific Methods (IJARESM), ISSN: 2455-6211, Volume 11, Issue 5, May-2023, A
2. Impact of Digitalization on Select Industrial units in Thrissur District, **Anitha Mary Alex, Dr. S.V. Murugesan, Dr. Jacob. P. M (2023)**
3. **R. Sathishkumar, K. Ramesh Kumar (2023)**Rabindra Bharati University Journal of Economics ISSN : 0975-802X
4. Analysis of Socioeconomics and Occupational Dimensions of Shrimp Farmers of Tamil Nadu (2023)
  - a. S. Agnes Daney Angela, Arpita Sharma
5. Potential Solutions to Environmental Conflict on Exploitation of Fish Stocks in Palk Strait among Fishermen of India and Sri Lanka **S. Sivaramanan(2023)** Environmental Impact Assessment Unit, Environmental Management and Assessment Division, Central Environmental Authority, Battaramulla, Sri Lanka.

6. The economic diversification of kanyakumari coastal community n. Arokiadas , p. Jeyabalakrishnan (mentor)(2023)
7. Marine Macrophyte - An Alternative Livelihood for Coastal Community Asirvatham Doss1,\*, Duraisamy Radhika2 , Ramakrishnan Rajalakshmi(2023)
8. Local Adaptation to Climate Change in South IndiaChallenges and the Future in the Tsunami-hit Coastal Regions ByDevendraraj Madhanagopa(2023)
9. Influencing intertidal food web: Implications of ocean acidification on the physiological energetics of key species the ‘wedge’ clam *Donax faba*. Prakash, Amit Kumar(2024)
10. The Bleaching of Coral Reefs: A Bellwether of Climate Change Praveen Kumar A

