

Assessing the Impact of Fishing Activities on the Livelihoods of Coastal Communities: A Case Study

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ABSTRACT

Fishing and fisheries sector is an important sector in the economy. The socio-economic conditions of fisherman is quite significant. The government introduces different types of policies and schemes for fishermen folks for improving their living and also providing the food security, new methods of fishing, funds to the fisheries sector etc. The main objective of the fishing and fisheries sector is to balance between economic prosperity, environmental sustainability, social equity, and food security for present and future generations. The study also tries to find out the problems and challenges faced by the fishing and fisheries sector.

Keywords: Fishing, economic prosperity, environmental sustainability

INTRODUCTION

Fisheries is an important sector in India, it provides employment to millions of people and contributes to food security of the country. Kerala, located in the south western part of India is renowned for its vibrant fisheries and fishing industry. The state's fisheries sector is not only vital for its economy but also plays a crucial role in providing employment and sustaining the livelihoods of many coastal communities.

Fisheries sector aims at sustainable resource management, economic development, food security, environmental conservation, social welfare, technology and innovation and market access and trade. By pursuing these goals collectively, the fishing and fisheries sector aims to achieve a balance between economic prosperity, environmental sustainability, social equity, and food security for present and future generations.

The government plays a crucial role in the fishing and fisheries sector in Kerala through various initiatives and policies and schemes like Housing scheme, saving cum relief scheme, educational concessions, "Matsya Samrudhi", pension to fishermen etc. The aquatic biodiversity and fish wealth of Kerala sustain more than 10 lakh fisherfolk and supports numerous additional activities including commercial fishing, aquaculture, tourism, education, recreation etc. The growing population, diverse culture, and expanding economy will continue to place additional demands on the state's marine resources, and make management of these resources increasingly complex. Alappuzha (1.90 lakh) is the district with largest fishermen population, followed by Thiruvananthapuram (1.70 lakh) and Ernakulam (1.36 lakh). Kerala fisheries sector contributes around 1.58% to the total GDP and the export of marine products has set ever time record of Rs 5919.02 Crores during the year 2017-18.

India is the third largest fish producing country, contributing 8 percent to the global fish production and

ranks second in aquaculture production. The fish production in 2021-22 is 16.24 million tonnes comprising of marine fish production of 4.12 million tonnes and 12.12 million tonnes from aquaculture. Since the launch of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) in the year 2020-21, the overall fish production in the country has shown an increasing trend, registering a fish production of 162.48 lakh tonnes in 2021-22 from 141.64 lakh tonnes in 2019-20.

Fishing is important globally as it provides nutritious food, supports livelihoods, and contributes to the local economy of coastal communities. It is also crucial for food security and addressing hunger and malnutrition, especially in developing countries. Additionally, fishing plays a vital role in the adaptation of vulnerable populations to climate change. Small-scale fisheries and aquaculture are particularly significant, as they contribute to employment, food security, and trade, especially in developing countries. However, there are challenges such as overexploitation of fisheries and the need for sustainable management and regulation. The data from Chellanam Grama Panchayat, Ernakulam is selected for a detailed survey.

OBJECTIVES

The objectives of the study are:

- To examine the problems and challenges faced by the fishermen folks
- To study the overall socio-economic conditions of fishermen in the fisheries sector
- To support informed decision making, sustainable development and the wellbeing of coastal communities.

METHODOLOGY

The study is based on primary source of data, Primary source of data was collected through questionnaire from a diversified sample of 50 Fishermen from Chellanam Grama Panchayat in Ernakulam district, Kerala. Data was collected directly from fishermen. The collected data was analyzed by using percentage method.

The study was concentrated on a rural area of Kerala. The area chosen for study was Chellanam Grama Panchayat in Ernakulam district. Chellanam is famed in state for fish industry.

In the research investigation, a quantitative approach was utilized to gather information from a group of 50 fishermen residing in Chellanam Grama Panchayat. The selection of participants was carried out through a random sampling technique, guaranteeing an equal opportunity for every member of the population to be included.

An overview of the fishing sector in Kerala

Kerala, God's own country blessed with 590 km of rich coastline, 44 rivers and innumerable numbers of waterbodies plays an important role in ecological diversity sustenance and livelihood. Many species of fish, invertebrates, plants, algae and other aquatic living organisms occupy a wide variety of habitats along the vast coastline and associated waters. The aquatic biodiversity and fish wealth of Kerala sustain more than 10 lakh fisherfolk and supports numerous additional activities including commercial fishing, aquaculture, tourism, education, recreation etc. The growing population, diverse culture, and expanding economy will continue to place additional demands on the state's marine resources, and make management of these resources increasingly complex.

Kerala fisheries sector contributes around 1.58% to the total GDP and the export of marine products has set ever time record of Rs 5919.02 Crores during the year 2017-18. Currently, there are 222 fishing villages

in the marine and 113 fishery villages in the inland sector, where fishing and relative aspects provide livelihood to a vast majority of the population. In 2023 the fish production in Kerala was about 921.000 ton than 826.000 in 2022.

The Ernakulam district covers an area of 3,032 sq.km. the population of the district is 32,82,388. The sea along the entire coast of the district and the backwaters is abound in various kinds and it offer enormous natural facilities for both marine and inland fisheries. The city also has facilities of education and research in the field of fisheries like Central Marine Fisheries Research Institute (CMFRI), The Central Institute of Fisheries Nautical and Engineering Training (CIFNET), Central Institute of Fisheries Technology (CIFT). Chellanam

Chellanam is located in Ernakulam District. Chellanam is on a narrow landform about 10 km in length sandwiched between the Arabian sea on the west and backwaters to the east. Width varies between 150m and 180m. Chellanam coast has been suffering with sea erosion and huge tidal attack. Chellanam village is a thickly populated fishing village. More than 15,000 people reside in Chellanam village with around 1,000 houses situated very close to sea. These areas are highly prone to action of sea waves in non-monsoon months.

Results and Discussions

AGE CLASSIFICATION OF THE SAMPLE RESPONDENTS

Table below shows the age group of the individuals that belong to different age categories.

Table 1

The Age group of the respondents is shown below.

Age Group	Number of Respondents	Percentage
26 – 35	9	18%
36 – 45	16	32%
46 – 55	25	50%
Total	50	100%

Source: Primary data

GENDER WISE CLASSIFICATION OF THE RESPONDENTS

The table shows the response of the respondents on a gender basis.

Table 2

Gender	Number of Respondents	Percentage
Male	50	100%
Female	0	0%
Total	50	100%

Source: Primary data

It's clear from the table that the respondents are only males (100%)

Note: Capturing fish in coastal and deep-sea waters is traditionally the role of men.

MARITAL STATUS OF THE RESPONDENTS

The table shows the marital status of the respondents.

Table 3

Marital status	Number of Respondents	Percentage
Married	44	88%
Unmarried	6	12%
Total	50	100%

Source: Primary data

The table shows that the majority of the respondents (88%) are married and 12% are unmarried.

EDUCATIONAL QUALIFICATION OF THE SAMPLE RESPONDENTS

Education is the transmission of knowledge, skills, and character traits and manifests in various forms. Here, the table shows the level of education of the fishermen.

Table 4

Level of Education	Number of respondents	Percentage
LP (upto 4 th Std)	13	26%
UP (upto 7 th Std)	9	18%
High School-HS (upto 10 th Std)	24	48%
Higher Secondary (HSS)	3	6%
Diploma	1	2%
Total	50	100%

Source: Primary data

The table shows that the majority of the respondents have a high school education (48%).

TYPE OF FAMILY OF THE SAMPLE RESPONDENTS

The table shows the family type of respondents, whether they are nuclear or joint families.

Table 5

Family Type	Number of Respondents	Percentage
Joint Family	21	42%
Nuclear Family	29	58%
Total	50	100%

Source: Primary data

The table shows the family type of respondents, whether they are nuclear or joint families.

RATION CARD STATUS OF THE RESPONDENTS

Table shows the ration card type of the respondents

Table 6

Ration Card Type	Number of Respondents	Percentage
Yellow Card	0	0%
Pink Card (BPL)	50	100%
Blue Card (APL)	0	0%
White Card	0	0%

Total	50	100%
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Source: Primary data

It's evident from the table that all respondents (100%) belong to BPL Card (Below Poverty Line).

FEEDBACK OVER THE INVOLVEMENT IN FISHING ACTIVITIES

Table shows the responses of the respondents about how they are engaged in or going fishing in the deep sea.

Table 7

Engage in fishing activity	Number of respondents	Percentage
Daily	47	94%
Weekly	3	6%
Monthly	0	0%
Rarely	0	0%
Total	50	100%

Source: Primary data

It is clear from the above table that the majority of participants (94%) are engaging in fishing activities daily.

RESPONSE REGARDING METHOD OF FISHING

The table shows the responses of the respondents about how the fishermen are fishing and what kind of method they are using for fishing.

Table 8

Method of fishing	Number of respondents	Percentage
Traditional	50	100%
Modern	0	0%
Both	0	0%
None	0	0%
Total	50	100%

Source: Primary data

The table indicate that all respondents (100%) are using traditional methods of fishing, which include using various nets like gill nets, traps and trawl nets.

FISHERMEN VIEW ON THE FISHING SECTOR AS CRUCIAL TO KERALA'S ECONOMY

The table shows the responses of respondents about the importance of fisheries sector to the economy of Kerala in the opinion of fishermen.

Table 9

Response	Number of respondents	Percentage
Extremely important	48	96%
Somewhat important	2	4%
Not very important	0	0%
I do not know	0	0%
Total	50	100%

Source: Primary data

The table show that the majority of respondents (96%) responded that the fisheries sector is extremely important to the economy of Kerala.

RESPONSE ON THE EFFECT OF COVID-19 PANDEMIC IN FISHING INDUSTRY

The table shows the respondents responses to the effect of the COVID-19 pandemic on the fishing industry.

Table 10

Response	Number of respondents	Percentage
Positively	0	0%
Negatively	50	100%
No impact	0	0%
I do not know	0	0%
Total	50	100%

Source: Primary data

The table shows that the COVID-19 pandemic affects the fishing industry 100% negatively.

FEEDBACK ON KERALA’S DEMAND FOR FISH PRODUCTS

The table shows the responses of respondents about how the demand for fish products in Kerala has changed in the recent years.

Table 11

Demand of fish products	Number of respondents	Percentage
Increased	50	100%
Decreased	0	0%
Remained the same	0	0%
I do not know	0	0%
Total	50	100%

Source: Primary data

The table shows that the demand for fish products in Kerala has increased (100%) in recent years.

RESPONSE OVER PROBLEMS ARISING FROM CLIMATIC CONDITIONS

Challenges related to weather conditions, including climate change, such as changes in ocean temperatures and ocean acidification, can affect marine fisheries in multiple ways, including changes in fish species distribution, fish reproduction, fish species etc. The table shows how the respondents respond to the weather conditions that affect fishing.

Table 12

Response	Number of respondents	Percentage
Rarely	21	42%
Occasionally	29	58%
Frequently	0	0%
Always	0	0%

Total	50	100%
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Source: Primary data

The table shows that majority of the respondents (58%) are facing challenges of weather conditions occasionally. 42% are rarely facing difficulties in fishing during climate change.

RESPONSE ON BARRIERS TO OBTAINING FISHING INSTRUMENTS AND EQUIPMENT

The table shows the main obstacles that are encountered with fishing equipment and tools.

Table 13

Options	Number of respondents	Percentage
High costs	9	18%
Limited availability	41	82%
Poor quality	0	0%
Other	0	0%
Total	50	100%

Source: Primary data

It is clear from the above table that the majority of the respondents have limited access of fishing equipment and tools (82%).

RESPONSE REGARDING THE SUPPORT AND ASSISTANCE PROVIDED BY GOVERNMENT

The table shows the responses of the respondents on the satisfaction of support and assistance like housing scheme, saving cum relief scheme, Matsya Samrudhi, pension to fishermen, etc., and the necessary needs for fishing and marketing from the government to the fishermen.

Table 14

Options	Number of Respondents	Percentage
Very satisfied	0	0%
Satisfied	20	40%
Neutral	25	50%
Dissatisfied	5	10%
Total	50	100%

Source: Primary data

The table indicate that half number of the respondents (50%) are neutrally satisfied, 10% are dissatisfied and rest are satisfied (40%) with the provision and support of the government.

RESPONSE ON FISH CATCH MARKETING AND SALES

The remarks of the respondents to the difficulties they encountered in marketing and selling their fish catch are displayed in the table.

Table 15

Response	Number of Respondents	Percentage
Rarely	14	28%
No	3	6%

Yes	16	32%
Occasionally	17	34%
Total	50	100%

Source: Primary data

The above table show the majority of the respondents are facing challenges occasionally (34%) in the market and selling areas.

FEEDBACK ON THE AVAILABILITY OF HEALTH CARE SERVICES FOR FISHERMEN

The availability of health care services for fishermen often varies based on the region and the local government’s investment in health infrastructure, which includes PHCs, health insurance schemes, awareness programs etc. The table shows how well the respondents are satisfied with this factor.

Table 16

Response	Number of Respondents	Percentage
Very Good	1	2%
Good	37	74%
Fair	12	24%
Poor	0	0%
Total	50	100%

Source: Primary data

It is clear from the above table that the majority of the respondents (74%) are satisfied with the health care services.

RESPONSE ON THE PRIMARY SOURCE OF INCOME OF THE FISHERMEN

The table shows the primary source of income for the fishermen.

Table 17

Options	Number of Respondents	Percentage
Fishing	50	100%
Agriculture	0	0%
Other livelihood	0	0%
Combination of Sources	0	0%
Total	50	100%

Source: Primary data

It is clear from the above table that the primary source of income depends on fishing (100%).

RESPONSE ON THE LEVEL OF EDUCATION AND LITERACY

In addition to being considered one of the most fundamental human wants, education is also seen as a way to address other needs. It demonstrates the fishermen's degree of literacy and education.

Table 18

Options	Number of respondents	Percentage
High	0	0%
Moderate	37	74%
Low	13	26%

Very Low	0	0%
Total	50	100%

Source: Primary data

The majority of people (74%) are thought to have a moderate level of reading and education, according to the table above. Low education is voted for by 26% of voters.

REACTION ON THE FISHERMEN’S SKILL DEVELOPMENT AND TRAINING PROGRAMMES

The table shows the opportunities for skill development and training programmes for fishermen.

Table 19

Options	Number of Respondents	Percentage
Yes, Plenty	0	0%
Limited Opportunities	13	26%
Rarely Available	15	30%
None	22	44%
Total	50	100%

Source: Primary data

We can observe from the data above that fishermen are offered less opportunities (44%).

RESPONSE ON INFRASTRUCTURE SUPPORT FOR FISHERMEN

Construction and commissioning of a number of fishery harbours and landing centers, the introduction of new generation fishing crafts and gear, both in traditional and mechanized sector. Various social welfare measures have been taken to improve the living standards of fishermen like housing, roads, water supply schemes, fisheries schools etc. The responses of the respondents to the total infrastructural assistance for fisherman in terms of landing locations and harbours are displayed in the table.

Table 20

Options	Number of respondents	Percentage
Excellent	15	30%
Good	33	66%
Fair	2	4%
Poor	0	0%
Total	50	100%

Source: Primary data

The aforementioned table demonstrate that the fishermen in the area have strong infrastructure facilities (66%) in place.

RESPONSE OVER DIFFICULTIES WITH LAWS OR RULES IN THE FISHING SECTOR

The table shows the challenges that are faced due to legal formalities or regulations in the fishing industry and the responses from the respondents.

Table 21

Options	Number of respondents	Percentage
Rarely	35	70%
Occasionally	15	30%
Frequently	0	0%
Always	0	0%
Total	50	100%

Source: Primary data

It is clear from the above table that 70% of respondents are rarely facing legal issues related to fishing.

RESPONSE REGARDING AWARE OF FISHING PRACTICES AND MARINE CONSERVATION

The table shows the responses about being aware of sustainable fishing practices and marine conservation.

Table 22

Options	Number of respondents	Percentage
Very aware	0	0%
Somewhat aware	11	22%
Not very aware	25	50%
Not aware at all	14	28%
Total	50	100%

Source: Primary data

It is clear from the table that half of the respondents (50%) are not very aware of the importance of marine conservation and sustainable fishing practices.

RESPONSE OVER INVOLEMENT IN COASTAL CONSERVATION AND ENVIRONMENTAL PROTECTION

The table shows the responses of the respondents on their participation in coastal conservation and environmental protection.

Table 2

Options	Number of respondents	Percentage
Regularly	0	0%
Occasionally	1	2%
Rarely	19	38%
Never	30	60%
Total	50	100%

Source: Primary data

The majority of the respondents, 60% do not participate in community initiatives or programs aimed at coastal conservation and environmental protection.

RESPONSE OVER THE EXTENT TO WHICH FISHERMEN COOPERATE AND TEAM UP

The table shows the responses of the respondents among the fishermen about the level of cooperation and collaborations.

Table 24

Options	Number of Respondents	Percentage
High	11	22%
Moderate	27	54%
Low	12	24%
Very low	0	0%
Total	50	100%

Source: Primary data

Half of the respondents (54%) are observing the level of cooperation and collaboration among fishermen.

RESPONSE REGARDING SUFFICIENT RESOURCES AND ASSISTANCE FOR DISASTER RELIEF

The table shows the responses of the respondents about the adequate resources and support for disaster preparedness and response in the coastal community.

Table 25

Options	Number of Respondents	Percentage
Yes, sufficient	8	16%
Insufficient	0	0%
Limited resources	34	68%
No resources available	8	16%
Total	50	100%

Source: Primary data

68% of respondents are of the opinion that there are limited resources for the adequate assistance and support for the disaster management.

RESPONSE OVER A GENERAL EVALUATION OF THE PROGRAMMES AND POLICIES OF GOVERNMENT

The table shows the responses of respondents on the rating of the overall government policies and programmes aimed at the development of coastal communities.

Table 26

Options	Number of Respondents	Percentage
Effective	10	20%
Somewhat effective	17	34%
Ineffective	11	22%
No impact	12	24%
Total	50	100%

Source: Primary data

It is clear from the table that there is a mixed opinion on the rating of overall government performance in the coastal area.

CONCLUSION

The research study on Kerala's fishing industry reveals that most respondents are middle-aged married

men with high school education, living in nuclear families, and facing poverty. They depend on traditional fishing methods and regard the sector as crucial to the economy, yet they encounter challenges such as adverse weather, limited equipment, and market difficulties. The COVID-19 pandemic has exacerbated these issues despite an increased demand for fish products. While respondents value government support, they stress the need for enhanced skill development, training programs, and disaster management resources. Although there is some community cooperation, there is a lack of awareness about marine conservation and sustainable practices. Approximately one-third of respondents view infrastructure support positively, and legal issues are not significant concerns. The study highlights the economic importance of the fishing industry and the necessity for better support in skill development, disaster management, and sustainable practices to improve the well-being and sustainability of Kerala's fishing community.

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