

## **Social Economy of Dried Fish in Kerala State Proposed Study**

### **Introduction:**

Marine fish, both fresh and dried, constitutes an essential food item in the consumption basket of people in Kerala. Delivery of various types of fresh and dried fish directly to consumers by small-scale traders, either daily in the case of fresh fish or weekly or biweekly in the case of dried fish, has a long history in the state. Historically, these fish vendors were women from traditional fishing communities, but over time men from non-fishing communities also joined the trade. Many of the women vendors had male members in their families who engaged in fishing, and it was often the unsold or excess fish that were sun dried or salted and sold as dried fish. As in fish marketing, women have historically played a prominent role in the drying of fish for both sale and household consumption.

Over the 20th century as technological and economic changes unfolded, such as commercial development by the British during the colonial era or mechanization and improved infrastructure development during the postcolonial period, the processing and marketing of fish, especially fresh fish, also underwent considerable changes. The establishment of plantations inland drove increased demand for dried fish. Men on bicycles, mopeds etc. competed with, and in some cases replaced, the marketing of fish by women by headloads. Later, mechanization, increased landings and improved transportation facilities led to commercialization of market systems and the emergence of regionally and nationally integrated markets. Kerala witnessed further changes in the marketing of fish in several places with the emergence of temporary stalls/carts at specified locations in smaller towns and villages, facilitating the availability of better quality and variety of fishes. Moreover, in line with the fast-changing consumer habits and preferences, some of the stalls started providing value-added services like cleaning, descaling, cutting etc. Recently fresh fish e-retail in urban areas and smaller towns are available. While the markets for fresh fish became more widespread and underwent considerable changes, not much information is available on the status of consumption of the dried fish and its market.

With the easy availability of fresh fish and other animal protein sources like broiler chicken and beef, the demand for dried fish consumption seems to have changed considerably. As compared to when consumption of fish depended on local catch and fish were dried for off season consumption, the consumer has more choices now. Consumers at the same time perceive both health benefits and risks of eating dried fish. While the dried fish plays an essential role in providing food and nutrition security, the health concerns arising from the increased salt intake from dried fish consumption, preservatives, and often low-quality dried fish are substantial. The taste of dried fish that generally has a strong flavour and smell seems like an acquired one, varying across different age groups or generations, genders, and even culturally and regionally. Consumer preferences appear to be closely differentiated by their socio-economic and demographic characteristics apart from other geographic and climatic factors. Against this background, a study on consumer behaviour and consumption patterns would help understand the drivers and barriers to dried fish consumption in the state. Understanding changes in the market for dried fish and consumers' behaviour over time is vital for designing effective policies for hygienic and safe production and the marketing of dried fish while ensuring livelihood security of the producers and health and food safety of the consumers.

## Objective:

The objective of this study is to "map" the social economy of dried fish in Kerala State. Utilizing a feminist commodity chain approach, we propose to conduct a historical spatial analysis of dried fish production (processing), trade, and consumption in order to understand the changing geography and social economy of dried fish, and how women's roles in the dried fish economy have changed as a result of broader economic, technological and geographic changes (e.g., introduction of trawling and its impacts on the geography of fish harvests, processing and trade locally and nationally). Importantly, we are interested in understanding how broad socio-economic and technological changes (e.g., mechanization, export markets, alternative proteins, fishmeal industry, migration) have impacted dried fish production/trade/consumption; and how consumption (changing consumer preferences) has impacted the structure and dynamics of dried fish value chains.

The project will consist of two interrelated components. One will examine processing and trade; the other consumption. Although nominally distinct, ongoing dialogue and discussion between team members assigned to each component will foster a synthetic analysis and produce a final, integrative report in addition to scoping reports related to each value chain node under investigation: processing, trade, and consumption.

With respect to **processing and trade**, the research objectives will be to:

- Understand how fish flows across value chain nodes, i.e., from point of capture/harvest to processing, marketing, and finally consumption and how this has changed over time;
  - Map the dried fish market system, identify key sites for fish procurement (landing /harvest sites), processing, and distribution and their relationships to one another;
  - Assess if/how the geography of the dried fish market system has changed within the broader economic changes prompted by state-led fisheries development since circa 1959, noting when and key sites emerged or shifted and why.
- Analyze labor relations within and across value chain nodes, including divisions of labor (such as gender and communal divisions), the role of financial (credit) relations in structuring the market system, and the relationship between productive, reproductive and household labor in structuring the value chain and how these have changed over time;
  - Understand how different groups of actors are connected to dried fish value chains and the power relations underlying the dried fish social economy, particularly focusing on processing and marketing;
  - Investigate how dried fish value chains and the social economy of dried fish is gendered in this region. Has this changed over time? If so, what factors have driven this change? What role do large-scale fisheries, demand for fresh fish, freezing and exporting, and FMFO sector, for example, play in the availability and access of fish for drying, especially from a gender perspective?
- Identify potential areas for intervention, assistance, and/or advocacy, such as technology improvement, rights, credit, etc.

Key Research Questions will investigate:

1. What are the organizational structures of the dried fish economy in Kerala, and how have these changed over time? What are the divisions of labor (including gender divisions of labor) within and across nodes? Who are the key actors at each node? How are their activities (or businesses) organized (e.g., paid labor, unpaid labor, self-employed)? How are different groups of actors (e.g., processors, traders) linked to this economy? What are the key social, cultural, economic, technological, and institutional factors that underlie and define the way different groups of actors/workers are linked to the economy (e.g., credit relations, wages, unpaid labor, social relations/obligations) and how do these factors mediate change over time?
2. In what ways are households connected to dried fish value chains, and how have these changed over time? In what ways does household labor contribute to the structure and functioning of the dried fish economy? What specific roles do women and girl workers play in the dried fish economy? In what ways does their productive and reproductive labor support fish value chain organization and function? In what ways do social and cultural norms influence the way they are linked to dried fish value chains?
3. What specific challenges do women dried fish workers (processors and traders) face in their work within the dried fish economy? Are there potential innovations or interventions that could support their economic activities/livelihoods?

With respect to **consumption**, the research objectives will be to:

- Analyse the trends and patterns in dried fish consumption across different geographical regions in Kerala during the postcolonial period.
  - The aim will be to present an overview of dried fish consumption in Kerala by (a) tracing an oral history of dried fish consumption in different geographical regions in Kerala; (b) analysing changes in the quality and quantity of dried fish produced consumed (based on the availability of secondary data).
- Understand consumer behaviour dynamics concerning dried fish consumption vis-à-vis fresh fish and other substitutes like chicken and beef.
  - What is the role and relevance of dried fish in the food basket of people and what are the determinants of the consumer spending on dried fish? How is dried fish perceived as a food of choice in different contexts either in the presence or absence of close substitutes like fresh fish or chicken? What meanings do consumers assign to dried fish and how are decisions around its consumptions made? Are there any intra-household and gender differences in dried consumption behaviour? If so, what are they and why? How does dried fish matter (or not matter) across different strata of the society (including community, religion, income group, region)?
- Identify some of the critical drivers of and barriers to, if any, the consumption of dried fish.
  - What are some of the critical price and non-price factors driving and acting as barriers to consumption? How do consumers perceive dried fish culturally such as their religious beliefs, hygiene practices, expectations on quality etc.?
- Derive insights from the analysis of consumer behaviour for designing effective policies for hygienic and safe production and marketing of dried fish while ensuring livelihood security of the producers and health and food safety of the consumers. Assess if there is trade-off between

quality and price as well as formal and informal structure which can have implications on affordability of dried fish, especially among the poor.

Key Research Questions will be:

1. What has been the role and significance of dried fish in people's food baskets since the early years of Independence? How and why it has changed over time? Are there regional differences in the consumption pattern of fish and dried fish in Kerala? If so, what are the proximate and underlying factors explaining the differences? How vital is dried fish consumption for the households today?
2. How much do consumers spend on dried fish? How frequently and in what forms do they consume dried fish? Are there any product, seasonal or regional specific preferences for dried fish? If so, what are they and what are the reasons for such choices? Does the like or dislike of dried fish of some family members act as a facilitator or barrier to family's consumption of dried fish? Does the difficulty in the preparation or lack of necessary skills prevent households from consuming dried fish? How have the practices around dried fish cooking changed or not changed over the years? What factors are important to influence choice of dried fish over other meat sources or vice versa?
3. What are the major drivers of and barriers to dried fish consumption? What are the consumers' perceptions regarding 'quality' vs 'price' of dried fish in determining its consumption? How important is dried fish in the cuisine (understand its position culturally)? How is dried fish perceived as food in the households, (understand its social position as food in the household)? What are such perceptions based on (such as on religion, region, caste, the impact of the neighbourhood, influence of children, elderlies, men or women, etc)?

## **Methodology:**

### **Part I - Processing and Trade:**

Investigation will center first on Ernakulam, Alleppey, and Kozhikode Districts (and Kasaragod?), which are important contemporary and/or historical centers of dried fish production in the state. Our intent is to conduct focused work in these areas. If time and resources permit, we will conduct a rapid appraisal of fish processing and marketing in other coastal districts, including Trivandrum, Kollam, Trichur, and Kasaragod (others? Kannur, Malappuram?).

Step 1: We will identify key marketplaces in each district (e.g., in Ernakulam - Aluva, North Paravoor, Varapuzha, and Ernakulam) and the retail outlets that extend from them. Through observations of market transactions and interviews with key actors in the value chain (commission agents, wholesale merchants, retail vendors), we will map the fish market system of the region, tracing from where fish arrives and to what other markets it then travels. Subsequent interviews may be conducted with traders and other key agents in secondary markets linked to these marketplaces.

Step 2: Survey and/or interviews with dried fish processors to understand their different modes of operation and how they are connected to the dried fish economy and specific fish value chains and how this has changed over time.



Map markets and market chains			X	X	X	X								
Interviews w/traders				X	X	X								
Draft Scoping Report							X							
<b>Manuscript Prep</b>									X	X	X	X	X	
GAF 2022 – draft Paper & organize special session on dried fish												X	X	
Popular articles												X	X	
Synthesis Report														X

**Deliverables:**

1. Dried Fish Market Scoping Report
2. Dried Fish Processing Scoping Report
3. Synthesis Report of Dried Fish Processing, Trade and Consumption
4. 1 academic paper
5. 2 popular audience articles

**Part 2 - Consumption:**

**Theoretical approach**

The study proposes to use the approach of behavioural economics and plans to analyse the consumer behaviour concerning dried fish consumption using the *Theory of Planned Behaviour*. We assume that the consumer's behaviour or preference for dried fish consumption is influenced by a set of price and non-price factors. Apart from various socio-economic, demographic, and geographical factors, this will include consumers' perceptions, beliefs, and attitudes towards fish consumption. The study will give due importance to the 'sensory perceptions', such as the perceptions related to taste, smell, texture, etc. The consumers use these to assess the freshness of the dried fish in their buying or consumption decisions. The study will also focus on the intra-household age and gender-specific preferences that are likely to influence the family's overall dried fish consumption. Moreover, the perception of health risks versus health benefits from dried fish consumption and the perception about 'quality' versus 'prices' of dried fish to fresh fish and other substitutes of animal protein like chicken and beef also will be

explored. The study will use available secondary and primary data collected from different consumer segments across various regions in Kerala.

### **Sample selection**

We considered two significant aspects or criteria for selecting the study locations. One is the physiographic factors influencing land use and consumption habits culturally. The other is the economic status or the households' poverty levels that affect households spending on different items in their consumption basket.

In the first step, we decided the physiographic regions for the sample selection. Kerala, characterised by a distinct asymmetrical topography has three elevation zones known as the lowland, midland and highland/upland areas. The lowland region ranges from nearly level to gently sloping strip of land along the coast bordering the Arabian sea occupying about 10 percent of the total area. With altitudes ranging from 7.5 to 75 meters above mean sea level, the midland covers about 42 per cent of the entire area. The highland is about 75 to 750 meters above the mean sea level and comprises about 43 per cent of the total geographical area. These regions have vastly different land use and cropping patterns that are also intrinsically related to the population's food and cultural habits in the regions. Historically, the lowlands had a rice-based cropping pattern wherein people prefer fresh fish to dried ones in regular times. The population pressure in the lowlands led to farmers' movement from the land-scarce areas to places that offered the tremendous potential for cultivation, that is the midland and highland regions. As the migrant population established cultivation in the midlands and highlands, tapioca and other root crops became their staple food, and dried fish was one of the essential condiments for them. The dried tapioca and dried fish combination was their primary diet, especially in the early years of migration when rice and other food items were scant in the region due to lack of proper roads and other infrastructural facilities. Later with improvements in infrastructural facilities, and also in line with the overall changes happening to the economy and society and the introduction of plantation crops and changes in the work profile, food habits and consumption habits seem to have changed across the regions in Kerala. Fresh chicken and beef have become cheaper substitutes for fish as sources of animal protein. All these factors are assumed to influence the consumption demand and pattern of dried fish in the state. Therefore, we decided to select sample study locations from each of these physiographic regions.

Further, we divided all 14 districts into two categories based on available poverty estimates or Head Count Ratios (HCR) using the National Sample Survey Organisation's 68th round survey data. Malappuram, Alappuzha, Wayanad, Kozhikode, Kannur and Kasargod districts had HCR's above the state average. The remaining Idukki, Thiruvanthapuram, Kottayam, Pathanamthitta, Kollam, Thrissur, Ernakulam and Palakkad had HCRs below the state average.

We selected one district from each of these two categories that belonged to the three different physiographic regions. Thus Wayanad (highland), Malappuram (midland), and Alappuzha (lowland) from the first category and Idukki (highland), Kottayam (midland) and Thrissur (lowland) districts from the second category have been selected for the survey. We chose these districts so that they are also representative of various religious and social groups. We plan to survey about 50 households from each of these selected districts.

For selecting the sample households, at first two sub-districts, and then a panchayat or municipality representing rural and urban areas will be selected from these sub-districts. A panchayath ward in rural

areas and a municipal ward in urban areas will be selected for household surveys. We plan to survey twenty-five households from each of these wards that will be selected based on a systematic random walk procedure from an identified key starting or entry point.

To get in-depth understanding of food consumption practices from socio-cultural perspectives we propose to conduct an ethnographic study on the low-income consumers of dried fish in the proposed study area. We intend to collect at least forty to fifty in-depth interviews from communities living in the different districts that are selected for our study based on their topographical as well as difference in cultural predominance. Focus groups discussions and observations will also be conducted according to the requirements to understand the practices around and cultural meaning of dried fish consumption. Though in qualitative research the data saturation cannot be predicted hence this number of samples may change depending on data collected. A purposive sampling will be done to select respondents to get as in-depth information as possible about the food practices around dried fish consumption and choice making. We will also try to understand through the same their relationship with traders of dried fish. Through this study we will not only be able to capture the sociocultural practices around the dried fish consumption but also the social relational aspect of dried fish consumer and trader’s relations.

**Tools and methods of data collection and analysis**

We plan to conduct focus group discussions with the members of the 'kudumbashree' or neighbourhood groups of the respective wards using a checklist of questions. Household surveys will follow this. The respondent will be a family member who takes critical food purchase decisions and or primarily cook and serve food for the family. Surveys will be carried out face to face by trained investigators in the local language.

We plan to use questionnaires with both open-ended and closed-ended questions for the survey. The questionnaire will include questions on households identification and social and demographic characteristics, dietary intake of fresh and dried fish and other sources of animal protein, types, quantity, frequency of consumption, price and quality-related questions, sources of purchase or procurement and market-related issues, types and methods of preparation, the importance of fish and dried fish in the households diet, inquiries related to cultural beliefs and practices about food and dried fish, knowledge and attitude towards dried fish and dried fish products etc. The questions will capture the intra-household, and gender-specific factors influence the consumption of dried fish by the families. There will be questions to know the reasons or barriers for households who do not consume fish or dried fish.

We will use both quantitative and qualitative tools and techniques for data processing and analysis. Statistical and qualitative data analysis software such as SPSS, STATA and Atlas-ti will be used.

**Timeline:**

	Feb-Mar '21	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan '22	Feb	Mar	Apr-May
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Literature /secondary data	X	X													
Interview guides/ pilot visits		X	X												
Hire and train RA/field investigators		X													
Interviews/Focus Groups			X	X	X			X							
Data coding and analysis					X	X	X	X	X						
Draft Scoping Report											X				
Manuscript Prep										X	X	X	X	X	
Draft Paper													X	X	
Popular articles Synthesis Report													X	X	X

**Deliverables:**

1. Dried Fish Consumer Scoping Report
2. Synthesis Report of Dried Fish Processing, Trade and Consumption (also listed above)
3. 1 academic paper
4. 2 popular audience articles (1 in regional language; 1 in English)

**Research Team Members:**

**Holly Hapke**, PhD, Research Scientist, University of California, Irvine - Project co-leader; principal investigator on processing and trade component

**Nikita Gopal**, PhD, Principal Scientist, Central Institute of Fisheries Technology, Ernakulam - Project co-leader; principal investigator on processing and trade component

**Amalendu Jyotishi**, PhD, Professor, School of Development, Azim Premji University - Co-principal investigator on processing and trade component (and consumption?)

**Jeena T.S.**, PhD, Associate Professor, Centre for Economic and Social Studies, Hyderabad - Principal investigator on consumption component

**Priya Gupta**, PhD, Assistant Professor, Amrita Viswa Vidyapeetham, Bangalore Campus - Co-principal investigator on consumption component

**Ramachandra Bhatta**, PhD, President, Snehakunja Trust, Project advisor and co-principal investigator on processing and trade component

**Research Assistants (2)** - TBD - one assigned to processing and trade component, the other to consumption component

**Field Enumerators (2-4)** - to assist research assistants in data collection

**Budget:**

Activity	Amount in INR	Amount in CAD	Budget to CESS Consumption study	Budget to Snehakunja Market and Processing study
Travel Expenses for Holly (paid directly to Holly from UoM)	N/A	4000	*	
Balance = CA\$22,000				
Travel Expenses for Priya, Jeena, Nikita, Prof. Bhatta and Amal	260,000	4561	2280	2281
Research Associate/Assistant (2 Nos) @ 25,000 per month for 9 months each	450,000	7895	3948	3947

**Commented [1]:** One more Research Associate/Assistant is required for collecting in-depth qualitative data and interviews. Assistance is also required to RA to transcribe as well as help in coding the data as data collected will be in local language. Additional financial requirement  
 Salary = 1\*9months@INR25000= 225000  
 Travel and field expenses: INR 75000  
 Total = INR 300000/-

Field Investigators 12 months equivalent (flexible in terms of number of months and number of investigators that add-up to total 12 months) @ 20,000	240,000	4210	2105	2105
Travel Expenses for RA and field Investigators	150,000	2631	1315	1316
Total	1,100,000	19,297	9648	9,649
Contingency	39,900	1430	500	930
Administrative Support – approx. 10%	xxx	1273	0	1273
Grand Total	1,139,000	26, 000	10,148	11,852