

The Changing Dynamics Of Fisheries In Kerala: An Analysis Of Modes Of Production

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Abstract : *The origin and growth of human societies can be better understood by examining the various modes of production and the accompanying social formations. Human needs and wants are inherently unlimited, and in order to fulfil them, individuals are compelled to engage in diverse productive activities. The capacity of people to produce is shaped not only by their knowledge, skills, and efficiency, but also by the availability of tools, machines, raw materials, and natural resources that support production. In the process of engaging in such activities, individuals inevitably interact with one another, leading to the establishment of production relations. These relationships are not random but correspond to a specific stage in the development of productive forces at any given point in history. Thus, modes of production form the foundation upon which the structure of society evolves. Every economic sector—be it agriculture, industry, or fisheries—passes through its own unique path of transformation, shaped by the interplay of productive forces and relations. The analysis of these transitions through the lens of modes of production and social formations provides critical insights into the historical trajectory of development and the structural changes within society. In Marxist analysis, the periodisation of history through modes of production helps to distinguish the various phases in the formation and development of societies by examining the interconnections among their different practices and structures. However, the Marxist approach does not assume that all societies must necessarily pass through every mode of production in a fixed or linear sequence. Likewise, it acknowledges that multiple modes of production may coexist and operate simultaneously within a society. Grounded in this perspective, the study explores the evolution of Kerala's fish economy, tracing its different phases of production relations as well as the dynamics of its marketing practices.*

Keywords: *Mode of production, fisheries, marketing, mechanization, motorization*

INTRODUCTION

The evolution of human societies is closely linked to the development of productive activities and the social relations they generate. Human needs and desires are unlimited, compelling individuals to engage in diverse forms of production, which are shaped not only by their skills and knowledge but also by the availability of tools, technology, and natural resources. In this process, social and economic relationships emerge, reflecting the stage of productive forces at a given point in history. The concept of modes of production provides a framework for understanding how societies transform over time. Each economic sector—agriculture, industry, or fisheries—follows a unique trajectory influenced by the interaction between productive forces and production relations. Marxist analysis highlights that while societies may move through distinct modes of production, these transitions are neither uniform nor strictly linear, and multiple modes may coexist within the same society.

Applying this perspective to Kerala's fisheries sector, this study examines the historical evolution of production and marketing practices. It traces how technological, social, and economic changes have shaped the organization of fishing, the types of crafts and gear used, and the marketing channels through which fish are distributed. This approach provides insights into both the structural transformations within the fish economy and the broader socio-economic dynamics of Kerala.

Productive Forces and Relations in Fisheries: At every stage of development, production is shaped by two key elements: **productive forces** and **relations of production**. Productive forces include the means of production—tools, technology, and natural resources—together with human labour and skills. Their growth depends on advances in technology and improvements in knowledge. Relations of production arise from the way people organise themselves in the process of creating wealth. These may be technical, determined by methods of production and division of labour, or economic, influenced by ownership and control over resources (Nikitin, 1983). In Kerala's fisheries, the production cycle involves fishermen, gear and craft owners, merchants, middlemen, transport operators, and consumers, forming a complex web of interactions (Klausen, 1968).

Ownership plays a decisive role in shaping these relations. Cooperative ownership fosters mutual assistance, while private ownership often leads to exploitation. In the fisheries sector, this became evident with the mechanization drive initiated by the Indo-Norwegian Project of 1953. Although mechanized boats were initially distributed among fishing groups, ownership soon concentrated in individuals, strengthening capitalist relations and marginalizing traditional fishermen (Klausen, 1968). According to Marxist analysis, the interaction of productive forces and relations of production forms the **mode of production**, which in turn shapes the broader socio-economic structure. Over time, contradictions arise when outdated relations of production obstruct the development of new forces, giving way to class conflict and social transformation. Human history, in this sense, can be understood as a succession of socio-economic formations, each defined by its economy, institutions, and worldview.

OBJECTIVES

1. To analyse the evolution of Kerala's fish economy through the framework of modes of production and social formations.
2. To examine how productive forces and relations have shaped different phases of production in the fisheries sector.
3. To explore the coexistence and transition of multiple modes of production within Kerala's fisheries across historical periods.
4. To study the dynamics of marketing practices in the fisheries sector and their role in restructuring production relations.

MATERIALS AND METHODS

The study is qualitative in nature and follows a historical-analytical approach. Secondary data has been primarily used, supported by field-level observations where relevant.

Sources of Data:

- **Secondary Sources:** Academic books, journal articles, government reports, and publications of fisheries departments were consulted to trace the historical development of Kerala's fish economy.
- **Archival Records:** Statistical abstracts, census reports, and trade documents provided information on production, labour relations, and marketing structures in different time periods.
- **Contemporary Studies:** Reports of research institutes, NGOs, and cooperatives working in the fisheries sector were examined to understand recent transformations.

Analytical Framework

- The Marxist approach of modes of production was adopted to examine the interplay between productive forces (tools, technology, labour skills, natural resources) and relations of production (ownership, labour arrangements, class relations).
- Periodisation was done to identify the phases of transition in the fish economy, marking shifts from traditional systems to mechanized and globalized forms of production.
- The study also analyzed the coexistence of multiple modes of production within the sector, such as artisan, mechanized, and industrialized fishing practices.

Method of Analysis

- A comparative historical analysis was employed to trace continuities and changes in production and marketing practices.
- Case studies of specific fishing communities and cooperative societies were incorporated to highlight lived experiences and institutional responses.
- The evolution of marketing practices—from local markets and traditional auctions to cooperative structures and export-oriented trade—was examined in relation to changing production relations.

RESULTS AND DISCUSSIONS

Periodisation of History by Modes of Production: According to Marxian analysis, human societies evolve through six distinct modes of production over the course of their historical development: the communal, slave, feudal, Asiatic, capitalist, and communist modes. It is important to note that these

modes rarely exist in their pure form; rather, one mode tends to dominate during a particular stage of social development while elements of others may coexist alongside it.

Primitive Communal Economy: The primitive communal economy developed in two broad stages. Initially, people survived through hunting, fishing, and food gathering, later advancing to simple livestock rearing and crop cultivation with basic tools. Production was organized collectively, based on communal ownership of resources, and labour was divided naturally by age and sex. At this stage, there were no classes or exploitation. However, as production improved, surpluses began to appear. This created distinctions between necessary and surplus labour, paving the way for private ownership of resources. The rise of private property marked the beginning of social stratification and the eventual decline of the primitive communal system, giving way to class society and the slave-owning mode of production.

Slave-owning Economy: The slave-owning mode of production was defined by the absolute control of masters over both the means of production and the slaves themselves. Its rise followed the decline of primitive communal society, driven by advances in productive forces and a more complex division of labour. The growth of crafts, trade, and the use of money fostered towns and urban centres, but also deepened inequalities and created debtor–creditor relations. Within this system, slaves—deprived of any stake in production—formed the primary labour force. Their labour, however, proved unproductive and unsustainable, ultimately leading to economic decline, stagnation in agriculture and crafts, and the decay of urban life.

Feudal Mode of Production: Feudalism, the second major exploitative system after slavery, was defined by the lord's ownership of land and partial control over peasants. Unlike slaves, peasants (or serfs) retained limited freedom, working their own small plots with personal tools while paying rent, taxes, and tithes. Their labour was split between subsistence and surplus, the latter sustaining the lords. As markets and trade expanded, merchants and moneylenders emerged, gradually shifting economic power away from feudal lords. The rise of craft guilds, regional trade networks, and global commerce after the 15th century strengthened merchant capital, ultimately undermining feudalism and paving the way for capitalism.

Asiatic Mode of Production: Unlike feudalism, where land was controlled by kings and lords, the Asiatic mode of production was based on collective village ownership. Peasant families worked as production units, combining agriculture with small-scale artisan activities, often practicing self-subsistence. A key feature was the state's central role. It controlled trade, appropriated surplus, and managed redistribution. Surplus extraction was legitimized through religion and ideology, with divine authority used to justify state power and sustain the system.

Capitalist Mode of Production: Capitalism is defined by private ownership of the means of production and the division of society into two opposing classes: the bourgeoisie, who own and profit from production, and the proletariat, who must sell their labour to survive. Its core feature is the extraction of surplus value, as capitalists appropriate the wealth created by workers. Constant technological innovation and productivity improvements serve the goal of profit and capital accumulation. These dynamics reinforce structural inequality, making the relation between capital and labour the central feature of the system.

Fishing Industry: Modes of Production and Market Structure: Marxist analysis of modes of production highlights different stages in the evolution of societies, though not every society passes through them in a fixed order. Building on this perspective, the following section traces the development of Kerala's fish economy. Fishing has been one of the oldest occupations in Kerala, supported by its long coastline and rich continental shelf. Sangham literature notes fishing, hunting, cattle rearing, and agriculture as the core livelihoods of that era. Communities such as the Paravathas lived largely on subsistence fishing using simple tools, reflecting the primitive communal mode of production. Fish was mainly consumed directly, though small surpluses were exchanged locally, with distribution following an egalitarian pattern that left no scope for class divisions (Pillai, 1974). Over time, surplus catches led to the barter of fish for other goods, gradually transforming fish into a commodity (Nilakanta Sastri, 1987). Men focused on production while women transported fish to nearby areas (Pillai, 1974). This growing exchange marked the decline of the primitive communal system. A major transition occurred during the Kulasekhara period (930–1200 AD), with the introduction of China Odam and Chinese fishing nets, boosting production and trade (Sreedhara Menon, 1967). The weakening of Kulasekhara authority during Chola–Chera conflicts enabled local chiefs to assert control, paving the way for “theocratic feudalism” (Gopalakrishnan, 1974).

The Namboothiri caste gained dominance through temple lands, while fishermen faced increasing taxes and rents on nets, stakes, and fish sales. The Valiya Arayas, feudal fishing lords, enjoyed privileges sanctioned by kings, and violations of tax rules were often punished harshly (Anantha Krishna Ayyar, 1908; Ibrahim, 1992). European contact later introduced new fishing methods, including Shore Seines (Rampani, Kampavala), Odavala, Kollivala, and Chinese dip nets (Devadasa Menon, 1967).

Feudalism weakened by the 18th–19th centuries due to several factors:

- i) Strong monarchies in Travancore and Cochin and British administration in Malabar;
- ii) Expansion of craft and merchant guilds beyond feudal control;
- iii) Growth of national markets with railways and agro-processing industries;
- iv) Abolition of slavery and oppressive taxes (Day, 1989).

By the mid-19th century, feudal power had collapsed, leading to structural changes in the fisheries sector. Export activities, especially salt fish from Malabar, Travancore, and Cochin, gained importance (Francis Day, 1865).

Table 1: Export of Salt Fish from the Three Regions of Kerala

Year	Malabar (Value in rupees)	Travancore (Quantity in costs)	Cochin* (Quantity in bundle)
1854-55	1443	26982	1055
1855-56	25618	28590	1109
1856-57	49126	42251	853
1857-58	33474	30213	867
1858-59	32012	34984	1012
1859-60	32374	27730	1326
1860-61	46713	39116	1269
1862-63	34411	49655	1340
1863-64	28626	35923	3238
1864-65	48060	54166	2038

Source: Francis Day, *Fishes of Malabar*, 1865

Note: * Export from Cochin was in dried form

With diversification, fish processing grew rapidly and became highly profitable, attracting new entrepreneurs. This led to the separation of production from processing and the rise of middlemen who purchased fish from producers and sold it for profit (Ibrahim, 1992). Ownership patterns also evolved. Fishing units—comprising boats, gear, and crew—were held either individually or collectively. In collective ownership, contributions were unequal but regulated by customary rules, with obligations fixed in proportion to investment. Non-owners worked as hired labour, bound to provide services when required, while employers were expected to support them during crises or lean seasons. The Caste Panchayat ensured compliance with these agreements. Large boats like *Thanguwallom*, with crews of around nine, were commonly under joint ownership, and earnings were shared according to investment and labour contributions. This system commercialized the sector but still relied on inefficient technologies, limiting growth. By the mid-20th century, capitalism had begun to dominate production relations. A decisive change came in 1954 with the Indo-Norwegian Project at Neendakara, which introduced mechanized fishing. The program aimed to expand production and improve fishermen's livelihoods, and mechanization advanced in three stages: a) motorization of traditional crafts, b) introduction of small mechanized boats, and, c) introduction of medium and large boats (Government of Kerala, 1969). The first stage failed, but from 1956 to 1963, mechanized boats spread widely, geared toward commercial production and intensive exploitation of high-value species. This disrupted traditional joint ownership patterns, resembling the Asiatic mode, and encouraged individual ownership. A survey found that all mechanized boats under the Project were individually owned, while among traditional crafts, 77 percent were individually owned and only 23 percent jointly owned (Klausen, 1968).

Table 2: Distribution of Fishing Crafts – Traditional and Mechanized According to Ownership Pattern

	Traditional		Mechanised	
	Number	Percentage	Number	Percentage
Boat with one owner	91	77	60	100
Boat with two owners	16	23		
Boat with three owners	10			
Boat with four owners	2			
Total	119	100	60	100

Source: Anne Martine Klausen (1968), Kerala Fishermen and the Indo-Norwegian Pilot Project

The Indo-Norwegian Project encouraged single ownership of fishing crafts, marking a decisive shift toward capitalist relations in Kerala's fisheries. A major outcome was the change in labourers' status: many who were once wage workers became owners of mechanized boats, while rising profitability also drew households from outside the fishing community into trade (Thankappan, Achari & Menon, 1963). Subsidies and hire-purchase schemes lowered the cost of mechanized crafts, boosting adoption (Ibrahim, 1992). The introduction of trawling between 1953 and 1963, focused on prawn fishing, reinforced this trend. By the mid-1960s, growing demand from the U.S. and Japan transformed fisheries into an export-oriented industry, significantly increasing foreign exchange earnings. Private investment surged after 1963, far outpacing public spending. In Neendakara, capital formation rose from ₹3.43 million in 1963 to ₹12.5 million in 1968, with 92 percent contributed by the private sector (Ibrahim, 1992). Merchant capitalists dominated the processing sector, controlling over 83 percent in Neendakara during 1953–63 (Government of Kerala, 1969). Despite public investments in harbours, ice plants, and landing facilities, outside capitalists gained decisive influence in marketing and processing. As Leontiev (1975) observed, the entry of big business and multinationals tied Kerala's fisheries more deeply to global capitalist forces, reflecting features of imperialism—capital export, monopoly dominance, and the growing internationalization of production. Thus, technological change and global market integration drove the transition of Kerala's fisheries toward capitalism.

Technological Transformation in Fisheries: The modernization of fishing vessels and adoption of efficient capture techniques have been key drivers of fisheries development, benefiting both fishermen and society. Technological progress, particularly in production methods, has improved the productivity of inputs within the industry (Whitmarsh, 1990). Choices of equipment and methods were shaped by local factors such as coastline features, resource availability, climate, cultural traditions, and investment capacity. Following the Second World War, rapid advances in navigation, fish-detection, propulsion, and gear-hauling technologies introduced increasingly sophisticated equipment. While fishing crafts modernized quickly, gears evolved more gradually—from simple, locally made tools to advanced capture methods. Early practices included poisoning fish or training birds like cormorants (Gunda, 1984; Kani, 1984), while later milestones included barbed hooks in the Bronze Age (Clark, 1952) and the expansion of trawling in Europe (Hardy, 1959). With commercialization, global fisheries underwent large-scale transformation. Crafts and gears were adapted for deep-sea operations and modernized with innovations such as drift nets, purse-seining, power blocks for hauling, stronger synthetic nets, and echo-sounders. Mechanization of boats, improved gear designs, and the adoption of scientific fishing techniques further strengthened this process, leading to a substantial rise in catches (Rajasenan, 1987).

Technological Evolution of Fisheries in Kerala: Stretching across 590 kilometers of coastline (Department of Fisheries, 1990), Kerala's artisanal fishery boasts a history that spans several millennia, along with more than a century of technological advancement. The trajectory of this development can be understood by categorizing it into distinct phases based on the adoption of new technologies. Significant transformations occurred as artisanal fishermen embraced modern methods, and the process of growth in the sector may be broadly classified into three stages:

- i) the Pre-mechanization Phase,
- ii) the Mechanization Phase, and
- iii) the Motorization Phase.

Pre-mechanization phase: This phase was marked by the predominance of country crafts, with very few

mechanized boats operating in Kerala until the 1960s. During the 1950s and 1960s, the artisanal sector recorded steady growth in output, largely due to the shift from cotton nets to nylon nets (Vivekanandan, 1991). The drive to enhance fish harvest productivity highlighted the need for technological improvements, the establishment of ice plants, and the extension of credit facilities through cooperatives. Between 1956 and 1966, the State government invested around ₹400 lakhs in fishery development schemes. Of this, nearly one-third was allocated to improving traditional technology, purchasing nylon nets, and introducing small mechanized gill net boats. Approximately ₹134 lakhs were spent on these measures. In addition, ₹115 lakhs were directed toward upgrading processing facilities, particularly for modernizing fish drying and curing methods, as well as for setting up ice plants. A further ₹17 lakhs was provided as credit to fishermen for the purchase of fishing assets, while about ₹12 lakhs were utilized to train them in the use of newly introduced harvesting technologies (John Kurien, 1987).

Mechanization Phase: In the early 1950s, the fisheries sector in Kerala was primarily viewed as a source of livelihood and food security for the local population. Following independence, however, national priorities shifted toward achieving higher economic growth, and the idea of “development” gained prominence across all sectors. In fisheries, the main focus was on raising productivity, which required improvements in both fishing and processing techniques.

The mechanization process in the sector may be understood at three levels (Suresh Kumar, 1999):

- i) Craft movements (methods of propulsion)
- ii) Development of fishing gears
- iii) Tackling techniques

The government’s initial initiative involved the introduction of motors to traditional artisanal crafts. However, strong opposition from local communities forced a policy shift toward promoting mechanized boats with new designs. The failure of these modernization efforts can largely be attributed to the incompatibility of imported technologies with Kerala’s unique conditions. To address this, the Government of India appointed two FAO/EPTA experts to suggest improvements to existing boats in terms of construction, design, safety standards, and engineering. They were also tasked with advising on the mechanization of traditional boats and designing improved models suited to Kerala’s requirements. The experts conducted surveys on traditional crafts, and several attempts were made to motorize them. Modifications to hull designs also failed, and it was eventually acknowledged that mechanizing catamarans and canoes was extremely difficult, if not practically impossible (FAO, 1958). Consequently, the experts suggested that the most viable solution would be the introduction of mechanized beach landing crafts, or “surf fishing boats,” to replace catamarans and canoes (FAO, 1958).

In 1952, FAO appointed a Norwegian naval architect, Hans K. Zimmer, as a special consultant to examine the situation. He concluded that none of the European surf boat models were suitable for Indian conditions, and therefore recommended the development of new designs tailored to local needs (FAO, 1958). Although three prototypes of mechanized surf boats were tested, all proved to be financially unviable. In their 1958 report to the Government of India, FAO experts stated that it was not possible to finalize a surf boat design for Indian conditions, as further work was needed before a cost-effective and practical model could be developed (FAO, 1958). The following year, FAO, the Government of India (through the Central Institute of Fisheries Technology, Cochin), and the Indo-Norwegian Project (INP) agreed to pool their resources to design a suitable mechanized surf boat. The Indo-Norwegian Project was launched in Kerala based on an agreement between three parties: the Government of India, the Government of Norway, and the United Nations (Master Plan, Directorate of Fisheries, 1969). Its primary objective was to improve fishing methods. Two fishing villages—Shakthikulangara and Neendakara in Kollam district—were chosen for the project. Interestingly, the INP did not attempt to motorize or mechanize the traditional crafts in these areas (Master Plan, Directorate of Fisheries, 1969). Instead, mechanized boats of different sizes—22 ft, 23.5 ft, 25 ft, and 28 ft—were constructed at Neendakara, with some also imported from Norway. Table 3 provides details of the mechanized boats distributed under the project.

Table 3: Mechanized Boats Introduced by Indo-Norwegian Project (1953-1963)

Length of the boat	Horse Power
22 ft	8

23.5 ft	8
25 ft	8-16
30 ft	36
36 ft	48

Source: Bhushan (1979), Technological change in Fishing in Kerala 1953-1977, CDS, Tvm.

In the early 1960s, Kerala's fisheries sector witnessed notable changes with the arrival of mechanized gillnet boats, the introduction of nylon nets, and the establishment of ice plants (John Kurien, 1987). The government supported this transition by providing new technologies through cooperatives, along with credit and training facilities. These measures contributed to a rise in production: between 1956-59 and 1960-66, total fish output increased by 21 percent, from 237,000 to 288,000 tons, while pelagic species grew by 28 percent and demersal species by 5 percent (John Kurien, 1987). Penaeid prawns, in particular, gained importance due to rising demand from the U.S. market. However, most prawn catches continued to come from the traditional sector, with mechanized boats contributing only 4-5 percent of total production during the first fourteen years of mechanization (Ibrahim, 1992). By the mid-1960s, surging global demand for prawns led to a major push toward mechanization. Small mechanized trawlers with powerful engines and trawl nets were introduced to maximize prawn harvests and boost foreign exchange earnings (John Kurien, 1978). The Central Institute of Fisheries Technology (CIFT), Cochin, played a key role by standardizing four types of mechanized boats between 1963 and 1967: fishing boats, trawlers, drifter-trawlers, and combination vessels (Suresh Kumar, 1999). These boats, equipped with diesel engines ranging from 30-160 horsepower, were capable of deeper fishing and longer voyages. By the 1970s, trawling had become highly profitable, leading to its large-scale promotion along with the introduction of purse seiners. However, government efforts to distribute trawlers through cooperatives often failed, as they fell into the hands of absentee owners driven solely by profit. At the same time, greater attention was given to strengthening infrastructure such as freezing units and ice plants. Consequently, the share of the mechanized sector in total output rose from 0.61 percent in 1960 to 13.4 percent in 1970, and further to 48.4 percent in 1980.

Table 4: Share of the Mechanized Boats in the Total Catch (1956 -1982)

Year	Percentage	Year	Percentage
1956	0.85	1970	13.40
1957	0.90	1971	10.60
1958	0.88	1972	13.10
1959	0.88	1973	20.60
1960	0.61	1974	24.10
1961	0.41	1975	42.80
1962	0.52	1976	17.70
1963	0.42	1977	31.10
1964	0.08	1978	31.50
1965	1.47	1979	28.70
1966	2.39	1980	48.40
1967	1.23	1981	35.10
1968	0.97	1982	45.60
1969	9.60		

Source: Kalawar., Devaraj., & Parnlekar (1985), Report of the expert committee on marine fisheries in Kerala, Central Institute of Fishery Education, Bombay., Government of Kerala, Department of Fisheries (1983).

Trawlers, with their greater capacity to exploit demersal resources, significantly increased total catches without directly affecting artisanal fishermen. Between 1967 and 1980, the government invested about ₹2,840 lakhs to accelerate modernization, of which over ₹1,000 lakhs were allocated to trawlers and related infrastructure, and around ₹500 lakhs to processing facilities and the establishment of a public sector export corporation. Additional support was provided through cooperatives and other schemes to promote trawler operations (John Kurien, 1987). While trawlers primarily targeted demersal species such as prawns, purse-seiners focused on pelagic species like oil sardine and mackerel. The period from 1969

to 1975 witnessed a sharp rise in marine fish production, underscoring the significant role of mechanization in the growth of Kerala's fisheries.

Table 5: Trends in Fish Production in Kerala ('000 tonnes)(1951-55 to 1985-86)

Period	Quantity	Production Index
1951-55	131	100
1956-60	259	198
1961-65	264	202
1966-70	349	266
1971-75	406	310
1976-80	332	253
1981-84	348	266
1985-86	295	225

Source: T.R. Thankappan Achari, (1986), Marine Production in Kerala, PCO, Thiruvananthapuram

The rise of trawling led to a rapid increase in mechanized boats, which adversely affected the traditional sector. Between 1971 and 1980, traditional catches fell from around 400,000 tons to 150,000 tons, while the mechanized sector steadily expanded (PCO & SIFFS, 1991). This competition over shared fishing grounds caused conflicts and highlighted overfishing, particularly of demersal species, as trawlers damaged habitats such as coral reefs, leading to resource depletion. Traditional fishers advocated for a ban on trawling during monsoon months—the spawning period—to protect fish populations. In response, many artisanal fishermen adopted motorization, adding engines to beach-landing crafts to enhance their efficiency. Alongside motorization, fishing gears were also improved to sustain productivity. By the 1980s, about half of traditional crafts were motorized, and in some areas, full motorization had been achieved. During this period, the mechanized sector's profitability remained heavily dependent on prawn catches and rising prawn prices. Table 6 shows the share of prawns caught by mechanized boats from 1971 to 1989.

Table 6: Share of Prawns in the Landings of Mechanized Boats (1971-1989)

Year	Total Landings	Mechanised sector	
		Prawn landings	Percentage of Prawns
1971-75	92000	41000	44.57
1980-85	103000	21000	20.39
1986	130000	25000	19.23
1987	151000	48000	31.79
1988	197000	49000	24.87
1989	208000	35000	16.83

Source: V.Vivekanandan,(1991) Kerala fisheries-Growing energy inefficiency, Thiruvananthapuram, South Indian Federation of Fisherman Societies.

These changes have blurred the distinction between the traditional and modern sectors, highlighting the need for a fresh perspective on the development of capitalism within the fishing industry (Nalini Nayak, 1993).

The Motorization Phase: The decline in catches among traditional fishers in the early 1980s prompted a major shift in Kerala's artisanal fisheries, necessitating a review of earlier technological policies. Previous attempts at motorization—by the Indo-Norwegian Project in 1953 and the Indo-Belgian Project in 1968—were largely unsuccessful. A breakthrough came in 1975 with the introduction of Yamaha air-cooled outboard motors (OBMs) in Thiruvananthapuram, marking the beginning of rapid motorization in the 1980s (PCO & SIFFS, 1991). Crafts and gears were upgraded according to local sea conditions, while underperforming types were phased out and new categories created. For analytical purposes, Kerala's fisheries are divided into three zones: North (Kasargode, Kannur, Kozhikode, Malappuram), Central (Neendakara to Trichur), and South (Kollam, Thiruvananthapuram). In South Kerala, motorization progressed slowly as catamarans remained dominant. Early implementation in villages like Vizhinjam and Anjengo had limited success, but motorized crafts enabled access to species like tuna and mackerel beyond the reach of traditional boats. In Kollam, dugout canoes were replaced first by outboard motor-propelled plank-built boats and later by fiberglass-coated plywood boats, valued for better design, carrying capacity,

lighter weight, and lower maintenance. Loan availability further promoted bulk adoption of plywood boats. While motorization transformed crafts, gears such as gill nets and hook-and-line remained largely unchanged, though their use increased (Titto D’cruz, 1998). However, competition from mechanized trawlers, particularly from the Neendakara region, reduced the profitability of motorized crafts and created economic pressures among South Kerala fishermen. In Kanyakumari, considered a pioneer in adopting new technologies, catamarans continued to dominate due to rough surf conditions. Skilled fishermen relied on hooks and gill nets, and small diesel motors (5 HP) were added to catamarans and plywood boats. Motorization remained limited because traditional crafts sufficed for high-value prawn and cuttlefish catches, and mechanized trawlers were less active due to unsuitable sea bottoms (PCO & SIFFS, 1991). In Neendakara, motorization of traditional crafts was nearly complete, with only a few artisanal dinghies (small non-motorized plank canoes) remaining. The Central Zone, stretching from Neendakara to Thrissur, became the main hub for motorization in Kerala fisheries. While pioneers still relied on their primary craft, Thanguvallom, the shift from manpower to outboard motors allowed an increase in craft size. Traditional gears were modified as well; for instance, the single-boat seine, Thanguvala, evolved into the more efficient ring seine. Other gears like Malanvala and Chemmeenvala also gained prominence. However, the adoption of ring seines led to the decline of gill nets for sardine and mackerel, creating intense competition among ring seine units. Only a few survived, giving rise to monopolies, while displaced fishers formed a reserve labor category, resulting in underemployment. The introduction of mini trawl nets was another innovation that became popular along the Central and Northern Kerala coasts. In the Northern Zone (Malappuram to Kasargode), the Dugout Canoe-Kollivala combination, once dominant, became fully motorized by 1984–85. With limited scope for enlargement, this combination was gradually replaced by Thanguvallom–Ring Seine, similar to the Central Zone. In Kasargode, fishermen developed their own version of the ring seine, called Ranivala, operated by four dugouts with 8–15 HP engines (PCO & SIFFS, 1991). In Kannur and northern Calicut, Dugout–Ranivala became the standard. Plywood and plank boats were also adapted for ring seine operations. Other gears in the Northern Zone included mini trawl nets, Velurivala (sardine gill nets), and Avolivala (pomfret gill nets). A SIFFS study reported that in the Northern Zone, 383 crafts were equipped with large gill nets and 1,037 with small gill nets. Over time, motorized crafts increasingly contributed to marine fish landings, reflecting the growing impact of technological upgrades (Table 7).

Table 7: Share of Motorised Sector in the Marine Fish Landings (1981-90)

Year	Total Landings (Tonnes)	Share of Motorised Sector	
		Quantity	Percentage
1981	273978	22848	8.3
1982	325367	63050	19.38
1983	385282	99082	25.72
1984	392895	133313	33.93
1985	325729	120767	37.08
1986	382788	186540	48.73
1987	303286	112208	37.00
1988	468808	238808	50.94
1989	647526	406652	62.8
1990	662890	231547	65.1

Source: PCO & SIFFS (1991), Motorization of fishing units: Benefits and burdens, Thiruvananthapuram.

Motorization allowed artisanal crafts to increase their efficiency, driven by factors such as coastal resource depletion, competition with mechanized boats, rising fish prices, and easier access to outboard engines (V. Vivekanandan, 1991). However, studies show that the impact of motorization on production was limited during its initial phase (1981–1989), with output from motorized crafts remaining relatively modest. Table 8 presents fish production across mechanized, motorized, and non-motorized sectors.

Table 8: Share of Mechanized, Motorized and Non-Motorized Sectors in Total Catch (1981-1989)
(Quantities in tons)

Year	Total Landings	Mechanized sector		Artisan sector					
		Quantity	% share	Quantity	% share	Quantity	% share	Quantity	% share
1981	2,73,978	73,056	26.7	22,848	8.3	1,78,074	65.0	2,00,922	73.3
1982	3,25,367	85,190	26.2	63,050	19.4	1,77,127	54.4	2,40,177	73.8
1983	3,85,282	98,070	25.5	99,082	25.7	1,88,130	48.8	2,87,212	74.6
1984	3,92,895	1,29,641	33.0	1,33,313	33.9	1,29,941	33.1	2,63,254	67.0
1985	3,25,729	1,27,835	39.3	1,20,767	37.1	77,127	23.7	1,97,894	60.8
1986	3,82,788	1,29,526	53.8	1,86,540	48.7	66,722	17.4	2,53,262	66.2
1987	3,03,286	1,51,178	49.9	1,12,208	37.0	39,900	13.2	1,52,108	50.2
1988	4,68,808	1,96,780	42.0	2,38,808	50.9	33,220	7.1	2,72,028	58.0
1989	6,47,526	2,08,013	32.1	4,06,652	62.8	32,861	5.1	4,39,513	67.9

Source: PCO & SIFFS (1991), Motorization of fishing units: Benefits and burdens, Thiruvananthapuram
By 1986, the motorized sector showed notable improvement, largely due to the introduction of ring seines in late 1985. In 1988–1989, motorized crafts recorded higher catches compared to the mechanized sector, which was partly affected by monsoon trawler bans. Natural fluctuations in fish availability also contributed to these variations.

Fish Marketing in Kerala: The introduction of large-scale, capital-intensive processing methods has transformed fish marketing in Kerala, driven by increased production. Traditionally, marketing relied on wholesalers, retailers, and middlemen, with consumer demand based largely on visual inspection and personal trust in sellers. Improvements in processing, packaging, and quality assurance have expanded demand and formalized marketing structures. Fish marketing in Kerala can be divided into two main segments: collection and processing, and distribution through various channels. Since fish supply is heavily dependent on natural factors, efficient marketing channels play a critical role in meeting demand (Mahesh V. Joshi, 1996). Understanding the traditional marketing system is essential to appreciate the evolution and current functioning of fish marketing in the state.

Traditional Fish Marketing in Kerala: The traditional fish marketing system in Kerala was largely local, low-cost, and oriented toward rural and poorer communities. Marketing chains were short, with few intermediaries, and fish were usually sold immediately after landing. Earlier, catches were shared among fishermen based on boat and gear ownership. Klausen (1968) categorized fishermen before mechanization (pre-1953) into four types:

1. Poor fishermen – owned only a single casting net, yielding minimal catch for personal consumption.
2. Small canoe owners – could fish farther from shore and earn more than the first group.
3. Kochuvallo owners – four-to-six person canoes that operated longer and provided better catches.
4. Thanguvallo owners – largest vessels for nine persons, owned individually or collectively by merchants, yielding five times the income of ordinary fishers.

Employment in Kochuvallo and Thanguvallo boats was on a share basis, determined by each fisher's contribution to equipment costs (minimum 1/16th, maximum 7/8th). Small portions of the catch were given as gifts or sold by fisher-women for personal use. Once the catch reached shore, active fishers had little control, with relatives and middlemen taking over. Fish merchants strengthened their control through cooperation and ownership of equipment, ensuring larger shares of the catch (Viswanathan, 2002). Major fishing villages like Sakthikulangara and Puthenthura already had fish merchants involved in exports even before the Indo-Norwegian Project. Merchants were classified as:

- Tapanas – large-scale merchants with major influence.
- Middlemen – numerous but less powerful.
- Chotas – minor participants, assisting in auction sales for commissions.

- Visiting merchants – traded fresh fish locally or transported it for wider sale, including salted and dried fish.

Female merchants also played a role, selling fresh fish locally or in nearby areas, often as wives or daughters of fishermen. Klausen described the traditional fish marketing system in Kerala, highlighting the role of intermediaries in the sale of fresh marine fish. Transactions at the beach occurred immediately after landing, while some sales took place along roads or at merchant storage points. The consumer market included local buyers and distant customers from places like Ceylon and Burma. Klausen observed that beach sales were initially chaotic, with merchants, agents, and relatives crowding the landing boats, shouting and bidding simultaneously. Larger catches were sold in a rough auction format, based on visual estimates rather than weight. In Sakthikulangara, the Church helped formalize this process to protect fishermen from middlemen (Klausen, 1968). The Church introduced key regulations:

1. Nightly auctions to sell catches to the highest bidder.
2. A deposit system for participants, initially ₹1000, later reduced to ₹250, ensuring payment security for fishermen.
3. A small commission (initially 6%, later 3%) charged by the Church for its services, used for charitable purposes (Viswanathan, 2002).

Klausen noted that first-hand sales often involved local middlemen from the fishing community, who frequently provided loans and claimed a share of the catch as repayment. Over time, these merchants became influential in both economic and social spheres of the villages. The introduction of the Indo-Norwegian Project brought technological and organizational changes in the fisheries sector, which also affected fish marketing patterns.

Modern Fish Marketing in Kerala: The fisheries sector in Kerala has transformed from a subsistence activity for rural communities into a capital-intensive, commercialized industry contributing to foreign exchange. This shift brought changes in fish varieties, market locations, intermediaries, preservation methods, and trade practices. Mechanization, modernization of gears, and motorization of artisanal craft altered the relationships between owners and crews and reshaped traditional production and marketing systems. From the early 1960s, the expansion of fish exports led to major innovations in harvesting, processing, and transport, including trawl fishing, freezing technology, and ocean-going refrigerated cargo fleets. In Sakthikulangara and Puthenthura, the Indo-Norwegian Project facilitated direct sales of deep-frozen fish to inland markets, gradually gaining acceptance among consumers. By 1962, ice-based preservation had become widespread. Modern marketing is characterized by its capital-intensive operations, urban orientation, long supply chains with multiple intermediaries, credit-based transactions, formalized trade channels, limited involvement of women, and higher profit margins compared to traditional systems (Nalini Nayak, 2005).

High-Tech Fisheries and Changing Marketing Strategies in Kerala: Technological advancements have transformed Kerala's fishing economy, giving rise to a new class of 'mobile fishermen' (George Iype, 2002). Traditional reliance on luck and memory has been replaced by modern tools such as GPS, which guides fishers to potential fishing zones, saving time and fuel. The GPS system, connected to the Navistar Satellite Constellation, identifies fish locations via acoustic signals, enabling precise and efficient trawling. By the 1980s, trawlers formed 60% of the Indian fleet, up from just 2% in 1970, and shrimp emerged as a key export, supported by government subsidies, freezing plants, and trade links with the US (Nalini Nayak, 2005). Industrial capital, including big business houses and multinational corporations, began dominating the sector. This commercialization marginalized women fish vendors, as larger landings and centralized markets favored male merchants with transport facilities. Marketing channels lengthened as vessels grew in size and exports expanded. Deep-sea fishing gained momentum in the late 1980s, and the 1991 Deep Sea Fishing Policy allowed foreign vessels in joint ventures. Mobile phones and GPS now enable fishermen to negotiate sales at sea, reducing intermediaries and commissions, though this may limit local fish availability (George Iype, 2002).

5.CONCLUSION

The evolution of Kerala's fisheries sector reflects a long trajectory of technological advancement, changing social relations, and shifts in modes of production. From the primitive communal practices of early fisher

communities to the emergence of feudal and semi-feudal systems, fishing has been deeply intertwined with societal structures and economic organization. The introduction of mechanization under the Indo-Norwegian Project marked a decisive turn, facilitating the rise of private ownership, commercialization, and a capitalist mode of production. Technological innovations in vessels, gear, and capture methods significantly increased productivity and enabled expansion into export-oriented markets. These advancements, however, also altered traditional labour relations, displaced women's roles in marketing, and intensified competition, leading to new forms of inequality within the fishing communities. The growing influence of merchant capital and multinational interests further integrated Kerala's fisheries into global capitalist networks. Overall, the sector's historical trajectory demonstrates how productive forces, modes of production, and marketing structures interact to shape both economic growth and social transformation. The story of Kerala's fisheries illustrates the complex interplay between technology, capital, and community, highlighting the continual adaptation of traditional practices to modern economic and global contexts.

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