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## **ECONOMICS OF TRAWLING ALONG GOA COAST**

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With a coastal line of about 104 km, Goa has 47 fishing villages and almost equal number of fish landing centres. There are about 20 thousand marine fishermen in the state, of which about 30% are active fishermen. Among fishermen there is equal number of Hindus as well as Christians. Of about 2 thousand fishing craft, 20% are mechanised. The total number of fishing gears is about 5 thousand in Goa. The mechanised fishing crafts include gill netters, trawlers and purse-seiners. Monsoon fishing is not popular in Goa. Mandovi Fisheries Marketing Cooperative Society and All Goa Mechanised Fishing Boat Owners Association are operating and helping fishermen in marketing of their catch and providing fishing tackles at reasonable rate. Patto Jetty, Vascodegama, Kudbana, Chopara and Cortalim are important trawl landing centres. The number of trawlers exceeds 200 in the state. A study on socio-economics of trawl fishery in Goa has been carried out by the Central Marine Fisheries Research Institute, Cochin during 1991-'92.

### **Data collection**

The data regarding the input-output trawlers were collected during the financial year 1991-'92. On every 10 sample days in a month 10 trawl units per day were observed. Besides collection of data on catch, price, operating costs and other fixed cost details were collected from trawl owners and the fishermen cooperative society. The observations were restricted to the trawl landings at Patto Jetty which is hardly 1 km from main Panaji city.

### **General observation**

As far as the financing to the trawl owners is concerned, various banks and state fisheries departments provided the loans for acquiring trawlers. Mechanised fishing units also get subsidy on fuel. Most of the trawlers are 10-12 m in length. Some of the trawlers are about 15 m in length. Big trawlers are fitted with 6 cylinder inboard engines whereas smaller trawlers have 4

cylinder engines. The length of the gear varies from 21 to 24 m.

Generally, trawling is observed from November to May every year. Some trawlers fish in the month of August also. In rest of the months these trawlers are operating purse-seines. Patto Jetty is having limited space for berthing and so, in the peak hours of landing it looks very congested.

The office of the cooperative society is adjacent to the Jetty and the society is maintaining the Jetty. Society charges commission on the marketing of the catch. For undertaking repairs and cleaning of the jetty, the society charges the owners of tempos and lorries used for fish transportation.

The landing centre has water and power facilities and is connected with the market by pucca road. There is no dearth of wholesale and retail fish merchants at the landing centre. Fish processing plants and ice factories are available at a reasonable distance from the landing centre. Most of the quality fish and prawns are sold out in fresh condition. Cheaper fishes, young ones and miscellaneous fishes (*Kuta*) are dried or sold to fish meal plants. The mode of transport includes lorries, tempos, cycles and headloads.

The big trawlers numbering 30-40 and having fish hold observe a fishing trip of 2-3 nights whereas small trawlers go for daily trip. The concentration of trawling is within the distance of 25 km from the shore. Trawling is carried out upto 70 m depth of water.

### **Investment, cost of fishing and income**

A big trawler costs Rs. 6 lakh including hull, engines, nets and other accessories whereas a small trawler costs Rs. 4 lakhs. For the purpose of cost accounting, a medium trawler has been valued at Rs. 5 lakh in this study for the year 1991-'92. The acquisition cost of 3 nets and other accessories on an average has been taken at Rs. 30,000.

The boat and engine have been depreciated at the rate of 10% per annum whereas the nets and other accessories have been depreciated at the rate of 33.33% per annum. Interest on the initial capital has been calculated at moderate rate of 15% per annum. Total annual fixed cost comes to Rs. 1,57,000 (Table 1).

TABLE 1. Fixed cost components of trawl fishing

A. Depreciation	Rupees
a. hull	47,000
b. net & accessories	10,000
B. Interest	75,000
C. Insurance	25,000
Total	1,57,000

The components of operating costs include fuel, crew wages, food & bata, repair & maintenance, ice and auction charge. The annual fuel cost is calculated at Rs. 2,49,230 which is about 56% of operating expenses (Table 2). Labour wages, food and bata form about 18% of the annual expenses. Day to day maintenance and annual repairs total to Rs. 36,500 whereas ice costs at Rs. 38,600. The total annual operating cost of trawling during 1991-'92 has been worked out at Rs. 4,46,705.

TABLE 2. Operating expenses of a trawler in Panaji, 1991-'92

Expenditure on	Rupees
a. Fuel	2,49,230
b. Labour	62,800
c. Food & bata	17,325
d. Repair & maintenance	36,500
e. Ice	38,600
f. Auction	24,000
g. Miscellaneous items	18,250
Total	4,46,705

Quantities of all main species have been multiplied by the landing price of respective species to get the gross revenue earned by a trawl unit. The catch and revenue obtained have been classified into 4 major groups namely prawns & lobsters, quality fishes (medium and high priced fishes), cheaper fishes and miscellaneous catch. Perches, croakers, pomfret, barracuda and cephalopods have been grouped under quality fish. The main components of cheaper varieties are catfish, clupeids, lizardfish, ribbonfish, carangids, soles, crabs, stomatopods and big-jawed jumper. Rest of the species are included in miscellaneous catch.

The catch, per unit effort, of a trawler is 272 kg which is valued at Rs. 3,930 (Table 3). The catch is composed of 13.3% of quality fishes, 13.8% of prawns & lobsters, 66.4% of cheaper fishes and 6.5% of miscellaneous fishes. Of the total revenue, about 12% was earned from quality fish, 70% from prawns and 17% from cheaper fishes. Stomatopods are the main component of cheaper fishes contributing 67% of the catch and 30% of the revenue is earned by this group.

TABLE 3. Catch and value realised by a trawler per unit effort

Item	Catch (%)	Revenue (%)
a. Quality fishes	13.3	11.8
b. Prawns & lobsters	13.8	69.9
c. Cheaper fishes	66.4	17.3
d. Miscellaneous catch	6.5	1.0
Total	272 kg (100%)	Rs. 3,930 (100%)

### Profit/loss analysis

A trawler on an average earned a gross revenue of Rs. 6,28,800 during 1991-'92 (Table 4). The annual cost of trawl operation is calculated at Rs. 6,03,705. Thus, an amount of Rs. 25,095 is found to be the net profit of a trawl unit. The income over operating expenses comes to Rs. 1.82 lakh. By investing one rupee on fuel, an amount of Rs. 2.52 is earned by a trawler. It requires 6 years to recover initial investment in a trawl unit with the average production of 43,520 kg of fish per annum with a price of Rs. 14.45 per kg. The rate of return to capital is calculated at 20% which is higher by 5% than the rate of interest on which capital was made available for acquiring the trawlers. Thus the trawlers were running in profit during 1991-'92 in Goa.

TABLE 4. Measures of profitability of trawling in Goa, 1991-'92

No. of fishing efforts	160
Annual revenue	Rs. 6,28,800
Total cost	Rs. 6,03,705
Net profit	Rs. 2,50,95
Income over operating cost	Rs. 1,82,095
Value realised per kg of fish	Rs. 14.45
Value realised per rupee investment on fuel	Rs. 2.52
Profit per kg of fish production	Rs. 0.58
Pay back period	6 years
Rate of return to capital	20%