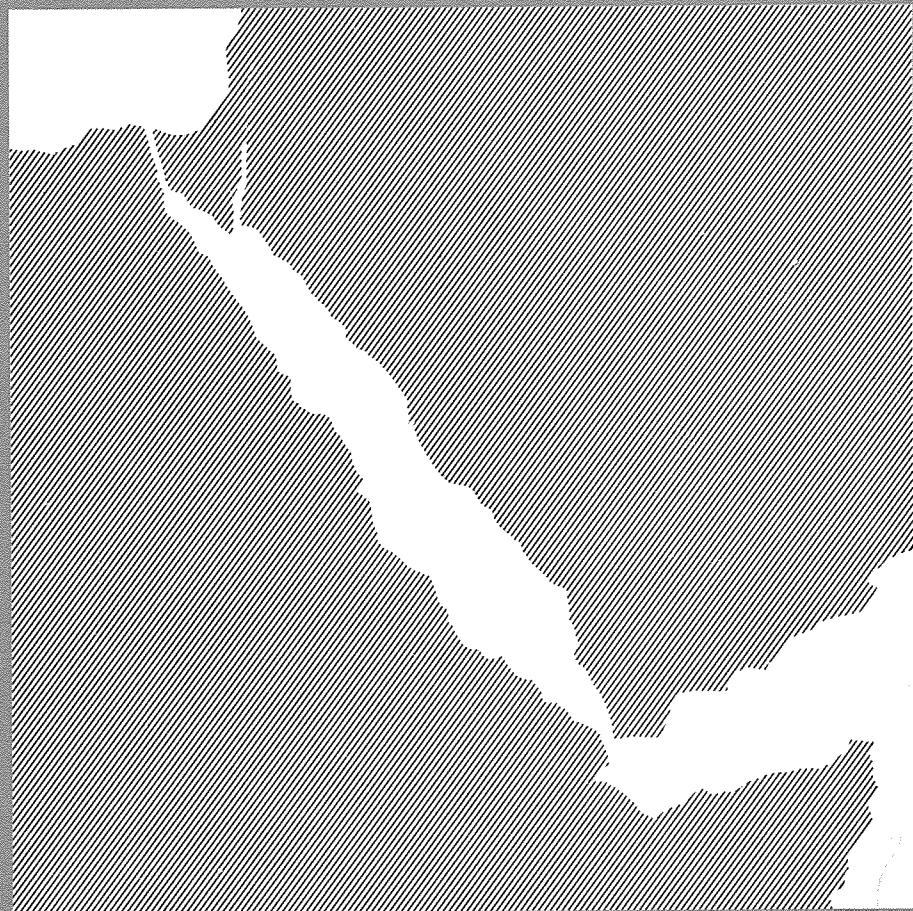


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DEVELOPMENT OF FISHERIES IN AREAS  
OF THE RED SEA AND GULF OF ADEN

STUDY ON  
COSTS, PRICES, AND MARKETING OF FRESH FISH  
IN  
AL SHA'AB DISTRICT FISH PRODUCTION COOPERATIVE  
PDRY



UNITED NATIONS DEVELOPMENT PROGRAMME  
FOOD AND AGRICULTURE ORGANIZATION  
OF THE UNITED NATIONS

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PDRY

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## Index

<u>Subject</u>	<u>No. of Page</u>
I. Introduction .....	1
II. The historical of pricing cooperative's fresh fish .....	2
III. Costs .....	8
IV. Cooperative fishermen's income as an approach of pricing Policy .....	13
V. Method of Price determination .....	19
VI. Results and Recommendation .....	25

### Tables

Table (1) Fishing Boats of Al Sha'ab Cooperative .....	34
" (2) Data on boats chosen as a sample .....	35
" (3) Administrative costs of Al Sha'ab Cooperative - 1980 prices .....	36
" (4) Estimated Operating costs for three Sanbouks in 1980, in SY Dinar .....	37
" (5) Estimated operating costs for three Houris in 1980 .....	38
" (6) Estimated cost per Kilogram of catch from three Sanbouk, 1980 = (fils).....	39
" (7) Esimated costs per Kilogram of catch from three Houris in 1980 (Fils).....	40

		<u>Page</u>
Table (8)	Historical Development of Cooperative fish prices since fixing on 20 N.V. 1973 .....	41
Table (9)	Index number for living expenses components in Aden, 1973-1979, Base year 1969.....	42
Table (10)	Average income and Annual wages of workers in Sectors of National Economy in 1973, 1978, in current prices (SYD) .....	43
Table (11)	Yearly and monthly spending components of a cooperative fishermen family in 1980 (SYD) ....	44

## I. INTRODUCTION

The fisheries sector is considered one of the major producing sectors in the Peoples' Democratic Republic of Yemen (P.D.R.Y) as it is one of the main sources for providing protein food for a great majority of the population. It is also regarded as one of the sectors which promises to increase the state's income from the export of fish products.

The fishermen cooperative societies (F.C.S.) represent a major source of fish supply which contributed about 64 percent of the total landings in 1978. In recent years some tangible features have appeared in this sector. Most important is the apparent decrease of fish production in the cooperatives due to the apparent decline in the number of cooperative fishermen.

The socio-economic survey indicates that the low income due to the pricing and marketing policies was the major constraint which led to these results. This mainly due to the unavailability of studies on the status of fisheries cooperatives especially those related to costs, the prices and fishermen income.

In view of this situation it appeared necessary to perform in a preliminary study on the costs, prices, marketing and income in one of the cooperatives in an attempt to seek a proper approach for pricing policy.

The study is divided into two major sections, firstly, the section dealing with estimating and analysing the costs. Secondly,

a section dealing with the study of prices and marketing which aims at analysing the pricing and marketing policies followed since the establishment of the cooperatives and its impact on cooperatives.

## II. The Historical Development of Pricing Cooperative's Fresh fish

By studying the historic development of pricing cooperatives' fresh fish in the last ten years, it is possible to identify the most important following features:

- 2.1. The cooperative producers' prices till the year 1972 were subject to the force of supply and demand until the formation of the Authority for Marketing the catch of Cooperative Fishermen. The Authority bought fresh fish from fishermen in Aden, Lahj and Ibeen governorates. Even after the formation of this Authority, fresh fish produced by the cooperatives continued to be sold by auction.
- 2.2 A decision was made on 20 November 1973 fixing prices by which the former General Organization For Fish Wealth would buy and market locally in the three mentioned governorates. This pricing system continued until 8 Feb. 1977. It is worth mentioning that the prices included eight pricing grades.

The fixed prices did not take into consideration the seasonality of catch. The prices were uniform for the whole year.

- 2.3 The first increase in prices was made in February 1977, Two prices were set for most of the species, one during the 'Shamal' season (1 June - end of October), when catch increases and the other, 'Al Athiab' season (1 November to end of May) which is the season of low catch. The prices for the high catch season is less than the prices for the second season. This pricing structure continued until end April 1979.
- 2.4 The prices were again reviewed and the seasonal pricing was abolished to become one unified price all the year round from 1 May 1979 until the present. Since 1 June 1979, a notable increase in prices occurred and fresh fish were divided into five groups according to their grade. This pricing continued until end February 1980.
- 2.5 The fish grades were reduced to three grades from 1 March 1980 up to the present time.
- 2.6 Price increases in the last three years were accompanied by a search for methods to encourage fishermen to increase their catch. The former United National Front decided in August 1978 to vary marketing channels for cooperative members so as to enable them to sell a part of their catch,(through the cooperative and individual channels.)

But the implementation of this decision did not commence in the fishermen cooperatives until Jan. 1980. They started to sell 20% of their catch through the cooperative and this percentage increased to 40% from March 1980. Table (8) shows the development of the prices of fresh fish of cooperatives since 20 Nov. 1973 till the present time. By analysing the main aspects of pricing and marketing policies it was possible to make the following observations:

- 2.6.1 The fish prices even after its increase still uncomparable to the notable rise in cost of living. It is observed in Table (8) that an increase in the general index of the cost of living was made from 135 to 230 during the period 1973 - 1979. Also the index number for commodities used or consumed by fishermen has risen noticeably. Such commodities include food, clothing, gat, tobacco and alcoholic beverages. Furthermore, the rise in the cost of living during this period was accompanied with increase in the cost of inputs of fishing operations. For example, the index number for wood has risen from 1972 in 1973 to 417 in 1979 and fuel from 136 to 314. 1/ It was logical as a result of such a policy that the income of cooperative fishermen would decrease considerably resulting in the fishermen drifting away in large numbers from work in cooperatives to other

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1/ No data was available for the other components of inputs.  
Source: Central Bureau of Statistics, Aden, PDRY, 1980.



employment in or outside the sector. It should be noted that setting the price and even adjusting them was not done in a scientific way i.e. based on careful study of costs and other considerations for setting the appropriate fish prices.

2.6.2. The lowering of prices was accompanied by several problems related to the State monopolizing of the fish marketing which further contributed to the deterioration of the fishermen's conditions.<sup>1/</sup> The most important of these were:

- shortage of fish receiving centres in the landing sites, sometimes causing spoilage of the catch.
- shortage in storing and transporting facilities.
- shortage in scales.
- delay in receiving catches
- delay in the payment for fishermen.

2.6.3. At a time in which fish landings clearly varies between the Shammal and Alathiab seasons, and as this situation requires taking the seasonal pricing system and not unified prices for all the year, it is noticed however, that the general intention for fish pricing is towards the unified pricing system, Seasonal pricing was only carried out for a few months in 1977.

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<sup>1/</sup> Extracted from a number of reports on the conditions of cooperative fishermen, Cooperative Department, Ministry of Fish Wealth, Aden, P D R Y.

- 2.6.4. The continuous change in the groups or price grades may cause much confusion both to the fishermen and the marketing authorities. (table 9)
- 2.6.5. The last pricing decision did not take into consideration the big rise in fuel prices (increased 100%) knowing that fuel forms up to 30% of total costs as shown in Tables (6) and (7).
- 2.6.6. In spite of the decision of the Political Bureau regarding the cooperative fish marketing, aimed at increasing cooperative fishermen's income, the application of the decision in the cooperatives faced many problems which prevented the achievement of the desired goals. The most important were:
- shortage of marketing facilities for cooperatives whether in equipment represented by transportation facilities, storing and distribution or in the staff expected to carry out the work required. The cooperatives in undertaking marketing has preoccupied its technical and administrative staff in additional work which clearly affected their interest with aspects of production.
  - The competition of the National Corporation for Fish Marketing with the cooperative, especially with the increase of catch, as the Corporation sell the same species at prices 50% less than the price of the cooperatives. This situation led the

cooperative to being incapable of marketing their fish and left the consumer with a negative attitude towards the cooperative market.

- the emergence of problems in the relations between the cooperative and the National Corporation for Fish Marketing in the implementation of the terms of agreement on marketing.

In addition to these problems which contributed to limiting the role of the cooperatives in fish marketing, the rise in the rate of deductions which is received by the cooperatives against marketing services is obvious. The fisherman receives not more than 39.2 fils for one kilogram against of 87 fils for cooperative.

### III. COSTS

#### 3.1. The treatment of costs:

Due to the absence of systematic accounts of the fishing units (fishing boats), it was difficult to estimate the cost of production on all the fishing units of the cooperative. Extracting the various items of costs require reference to the original documents which authorized spending money or purchasing materials. In order to overcome this, the sampling method was used to estimate costs related to the different fishing boats and consequently calculate the cost of the catch.

A sample of fishing boats represents specifically the existing fishing vessels belonging to the cooperative was chosen, consisting of three "sanbuks" and three "houris". The power of engines, number of fishermen, fishing gears and methods and the status of boats (new or old) were taken into consideration in the sample selection. Table 1-2.

Costs were divided into two groups:

#### First Group: Operating costs including:

- fuel and oils
- maintenance costs (boat-engine-gear)
- depreciation (boat-engine-gear)
- wages, (mechanics-carpenters) this item includes their share of overtime wages, salary compensations and pension.

- various expenses i.e.: various batteries, palm fronds, fuel barrels.

Some items of these costs were extracted from the original documents and records of the cooperative also from information obtained from the interviewed fishermen. Others were estimated, such as maintenance expenses and spare parts for engines, as it was difficult to define the share of sampled boats from the total of this items.

The Second Group: Administrative costs including:

- depreciation of buildings
- depreciation of vehicles
- depreciation of furniture and equipment
- cars running expenses
- stationary
- miscellaneous expenses
- transportation allowance
- water and electricity
- salaries compensation (administrative staff)
- overtime allowance (administrative staff)
- literacy allowance
- pension fund (administrative staff)

### 3.2. Estimate of Costs at 1980 Prices:

The cost items for 1979 were defined and were revalued according to 1980 prices. In order to arrive at costs estimated in 1980 prices, the increase in the prices was calculated at 200% for fuel, 14.3% for other articles on the basis of the index number for retail prices in June 1979, 1980 based on the Central Bureau of statistics' data.

#### 3.2.1. Administrative Costs:

From the cooperative final statement of accounts and the balance sheets, it was possible to estimate the administrative costs valued at 1980 prices as shown in Table (3).

This table shows that the employees' salaries form the highest percentage of the administrative costs followed by cars running expenses. These two items form 57.93% of the total administrative costs. The rationalization of petrol use and the obtaining of full benefits from the administrative staff in the cooperative, may represent the basis means for reducing the administrative costs or at least to limit its increase in the future.

The wages were divided into technician's wages to the value of SYD 3300 (wages for mechanics and carpenters) and administrative wages to the value of SYD 54,080,66.

The compensation of salaries, overtime allowance and pension fund were distributed over technician's wages and administrative wages according to the rate of 1.0 : 1.6.

### 3.2.2. Operating Costs

The annual operating costs for each "sanbuk" and 'houris' in 1980 prices is as shown in Tables (4) and (5).

It is clear from these tables, the notable differences in annual operating costs for the 'sanbuks' of which the highest annual operating costs reached SYD 3,958.355 and the lowest cost SYD 1,481.754 showing difference of 62.6%. As far as 'houris' are concerned, costs vary between SYD 1,656.849 and SYD 1,450.467 at 12.5%. These differences are due to several factors of which the most important is the variance in the crew efficiency of boats as well as the status of the boats (new or old).

No data was made available on fuel and oil for 'houris'. So it was estimated, to be SYD 477.3; also the 'houris' engine annual maintenance costs were estimated at SYD 60.

The wages item was estimated on the basis that the share per one kilogram from the total cooperative catch of wages is estimated at 4.5 fils. This value is multiplied by the catch of each boat to calculate the share per boat from wages item.

### 3.3. Fish catch

The cooperative fish catch in 1979 was:

1056.213 tons fresh fish and 6.115 tons dried fish.

As the rate of processing of dried fish from fresh fish is 3.5(1 kg dried fish taken from 3.5 kg fresh fish), the total production of dried fish - after being converted to fresh fish - will be 21.43 tons, that is the cooperative's total catch of fresh fish equals 1,077.606 tons. The catch composition according to fish grades is as follows:

First grade	9.6%
Second grade	74.7%
Third grade	15.7%

3.4. Costs per kilogram: different typed boats:

- the share per kilogram of administrative costs =  $\frac{17357.733}{1077.606} = 16.1$  fils, accordingly the total estimated costs per kg. produced from the boats is shown in tables (6) and (7).

From the above mentioned tables, the following was noted:

- gear depreciation comprises the highest percentage in the structure of costs. In 'sanbuks' it is estimated at 35.86% of total costs per kilogram and in 'houris' about 48.39%. This indicates that this item should be given special attention through constant maintenance and up keep. It should be noted that the cooperative pays the value of nets in addition to the maintenance of the boat and the engine as well as providing spare parts against a discount of 15% of the yield



- Fuel and oil costs follow gear depreciation. In 'sanbuks' it goes up to 15.86% and in 'houris' to 30.39%. It is clear that in 'houris' it is double that in 'sanbuks' because 'houris' depend on benzine for fuel and not on diesel as 'sanbuks'.

IV. Cooperative Fishermen's Income as an Approach of pricing Policy:

The success of the pricing policy for fish to fulfill its objectives is basically attached to the ability of the price to provide appropriate income for the fisherman. It is noticeable that the decrease in the number of cooperative fishermen and consequently the drop of fish landings is due to the decrease in the income of the cooperative's members. In spite of the lack of the detailed data about the cooperative fishermen's income, the income of the workers in the agriculture and fisheries sector - as seen in Table (10) - shows the relative decrease in the income of the workers in these two major producing sectors in comparison to the income and wages of workers in other sectors.

It appears from Table (10) that the income of those working in the agriculture and fishery sectors is considered the lowest income; in the year 1978, it formed only 40% of the average income and wages. It represents about 37% of average wages in trade restaurants and hotels sectors and only 18.7% of the average wages in construction and building sector. It is also observed from this Table the relative drop of

the income of the workers in this sector comparing with the sectors total average between 1973-78 from 45.8% to 40%.

It is clear from the above that providing a 'suitable income' for fishermen might form a basic element in improving the social and economic level of fishermen, it would possibly stop their drifting away and may also increase their catch.

4.1. The Basis for Determining a Suitable Income for Cooperative Fishermen:

Determining or recommending a suitable income which the cooperative fishermen should receive would have to be tied to a set of necessary bases. These are identified as follows:

- to consider cooperative fishermen as an important element in the production factors in the fisheries cooperatives and to consider the fishing sector as one of the most important producing sectors in the National economy and therefore, to provide a suitable income for them which should not be less than the wages of those working in other sectors.
- a suitable income should be related to providing the basic needs for the fishermen in food, clothes, housing, education, health, transportation, etc. expenditures items of family budget.

It means that a suitable income should provide the minimal level of human life for poor people. It is worth mentioning that the 'suitable income' in this sense, has become an international trend in helping underdeveloped and poverty stricken people.<sup>1/</sup>

- The determination of a suitable income in the light of the two above consideration requires a group of factors to be considered. The most important is the change in the living expenses of cooperative fishermen families and their consumption pattern.
- The fishermen's family is larger than the general average for the Republic. In spite of the non-availability of official data about the average number of members of the cooperative fisherman's family the data was gathered by sample from the Al Sha'ab Fishermen Cooperative which showed that the number of the family members was, on average, 7.85 members.<sup>2/</sup>
- To determine food requirements for (i) the individual and (ii) family, several local and international studies which were carried out on this aspect had been used. The data was modified taking into consideration the change in the expenses of food stuffs, the quantities that should have been obtained to providing the basic food stuffs - and also the rise in prices of the estimated figures between 1977 and 1980.<sup>3/</sup>

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<sup>1/</sup> The Basic-Needs Approach to Development, some issues regarding concepts and methodology, I.L.O. Geneva 1977.

<sup>2/</sup> The average number of family members was estimated from a questionnaire prepared for Al Sha'ab F.C. 27 fishermen representing 15% of the total cooperative members, were interviewed in June 1980.

<sup>3/</sup> The required food needs were calculated from the following sources:

a) Actual consumption of food stuffs was estimated on the basis of =

- Because of the absence of official data on other spending items, a preliminary survey was made to determine them by presenting a set of questions to a group of cooperative fishermen in Al Sha'ab Fishermen Cooperative. Based on this source, spending items and their values was identified as shown in Table (11)
- The spending of a family of six persons was estimated. This is less than the average number of family members of the sample considered as some of the family members may be occupied in other work. Also a portion of the expenses in the Table might not be related to some family members such as education, qat, and cigarettes.

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= calories in rural areas in 1977 (about 1969 Kg. calories/day) from 'A Review of Economic and Social Development' PDRY, a World Bank Country Study, March 1979, P. 155. The individual spending on these needs is about SYD 20.691 in 1977.

b) The necessary calories per person are estimated on the basis of providing the required needs of food at about 2252 kg/calories/day assuming the rate is kept to date. Actual consumption comprises 87.40% of the basic food needs.

Source: Food Security Policy Issues in the Yemen Sub-Region, ECWA, Feb. 1979!

c) The value of the necessary Food stuffs is adjusted on the basis of 1977 prices to become SYD 34/person/year to cover 100% of needs =

$$\frac{29.7 \times 100}{87.4} = \text{SYD } 34$$

d) The figure in item (c) has been adjusted on the basis of changing living expenses between 1977 and June 1980 as the index number of food stuffs was about 223 and in June 1980 it reached 256 or at 1.148 coefficient. Therefore, spending for food per individual/year is approximately SYD 39.

Table (11) shows that the estimated average income should be about SYD 56 per month to allow the fishermen to provide for the basic needs of his family. It should be noted that the rate for spending on qat and cigarettes is considered high compared with the other expenditure items, followed by clothing, which explains the apparent rise in the index numbers for these two items in the previous years.<sup>(\*)</sup>

The writers point out that in spite of the data considered being mainly estimated, it however, appears logical in the light of several considerations referred to previously.

#### 4.2 Suitable Income and Price Determinations:

A suitable income as a component of price, is tied up with a set of basic considerations which may complicate its inclusion within the framework of future price policies. The most important considerations are:

- The apparent variation in the productivity of the fishermen and the cost of the production, which is related in a fundamental way to the difference in the development of fishing methods on the one hand and effort exerted on the other.
- Linking this income with a set of external and internal factors affected by it. Most important is the change of the living expenditures change in the cost of the means of fish production and the change in the income of workers in other sectors.
- Variation in the production of fish as a result of the natural conditions.

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(\*) The index number for June 1980 reached about 255 in relation to the base year of 1969. The index number for clothing reached about 440 and for qat 360 and cigarettes 311. Source: Central Bureau of Statistics, Aden, PDRY.

- The variation of fish prices regarding marketing grades, areas and season.
- The apparent increase in operating costs as indicated before add to the "Suitable income" may lead to the sharp increase in the price of fish.

In spite of this difficulties the "Suitable income" it still remains the most appropriate method to motivate the fishermen and to improve their economical and social conditions. A concentrated effort must be made to face these difficulties through a more comprehensive study of the rest of the co-operatives.

#### 4.3 Consideration to be Taken on the Fish Pricing Policy

In the light of the remarks made on the pricing policy situation in the fisheries cooperatives and the insistence on ensuring a suitable income as one of the basic components of the policy, the following main consideration are recommended on a pricing policy:

- 4.3.1. The suggested pricing policy must include basic elements for forming the price i.e. the suitable income of the fishermen, the cost of production and taxes if necessary, as well as, a certain percentage of the fishermen income to realize social security and to develop fishing methods.
- 4.3.2. This policy must take into consideration the existence of more than a group or price level according to marketing grades and species.

4.3.3. This policy must take into consideration the seasonal changes in catch which varies clearly between Al Shamal and Al Athiaeb seasons. Therefore we suggest that the State should undertake the seasonal pricing policy.

4.3.4. Such a policy should consider the species composition of each marketing grades regarding preference of consumers in different governorates.

V. Method of Price Determination:

The exact determination of proper prices - in our point of view - depends upon several procedural basis which must be considered when this policy is set. These could be defined as follows:

- more specific identification of the catch composition around the year.
- The setting up of price differentials between grades and species in a set of considerations most important are consumers preferences and the views of the fishermen.
- a more accurate average costs in the cooperative.
- precise identification of suitable income of different areas.

From these definitions, it is possible to use the following equation as a base to determine a suggested price.

5.1. Determining the Average Price According to Groups or Grades

$$(i + c + z) = q_1 (p_1) + q^2 (p_1 - a) + q^3 (p_1 - b) \\ + \dots \dots \dots + q_n (p_n - w) \dots \quad (1)$$

Since  $i$  is the suitable income to the fisherman  
 $c$  is the operating costs  
 $z$  represents other additions seen by the pricing policy maker  
such as taxes, development of means of fishing, social security ... etc.  
 $q^1$  production quantity of the first grade.  
 $p^1$  the price for first grade.  
 $q^2$  the production quantity of the second grade.  
 $a$  price difference between the first grade and second grade.  
 $q^3$  the production quantity for the third grade.  
 $b$  price difference between the second and third grades.  
 $q_n$  the last grade.  
 $w$  price difference between the last grade and the grade  
before the last.

By using this method to calculate the price of grades or species, the following should be taken into consideration:

- estimating the average catch which is most representative for most of the fishermen. It is preferable that the time series are not below three years.
- determining the marginal income for most of the fishermen.
- when using more than price for one grade or one species, as it is the case with cooperative marketing, the equation could be put as follows:

$$(i + c + z) = q_{11} (p_{11}) + q_{21} (p_{21}) + \dots (2)$$



Since  $q_{11}$  is the quantity marketed by the government

$p_{11}$  is the price by the state for government marketing for quantity  $q_{11}$

$q^{21}$  is the cooperative marketing quantity or any other marketing channel

$p^{21}$  is the cooperative marketing price or incentive price for any other marketing channel.

#### 5.2. Determining Seasonal Prices for Species or Grades:

As previously mentioned, following a seasonal pricing policy that changes according to the basic seasons, the Al Shamal season (high catch) and Al Athiaeb season (low catch), will contribute to the stability in the income of fishermen.

To calculate the seasonal price on the basis of having two prices, one of them is high in the Al Athiaeb season, and the other is low in the Al Shamal season, the seasonal price would then be determined for each species or grade separately according to the following steps:

- the price of the species or grade to be calculated around the year from the equation No. 1 and symbolizes by  $p$ .
- the quantity from each group or grade to be calculated in each season and to be symbolized by  $q$ .
- the average seasonal catch to be extracted for the grade, i.e.

(  $\frac{\text{quantity produced in a year}}{\text{number of seasons}}$  ) symbolized by  $m$

The suggested price to be extracted in each season for each grade and symbolized by  $p_n$  according to the following equation:

$$\frac{1}{\text{quantity from grade during season}} \times \text{price of grade around the year} \\ \text{average seasonal catch from grade}$$

Or:

$$P_n = \frac{1}{\frac{q}{m}} \times p \dots\dots\dots (3)$$

This way we guarantee stable incomes for fishermen around the year. Raising the price in the Al Athiab season will also contribute in motivating the fishermen to increase their catch in this season.

Employing this equation requires also the collection of actual and precise data about monthly catch for several years to arrive at an accurate average for catch in the different seasons.

5.3. Test of a Method for Determining the Price Suggested in the Study:

Regarding operating costs in sampled boats and actual catch in 1979, it could be said that the first 'sanbuk' and the first 'hour'i' represents to a large degree accurate information. The daily catches of each boat of them is acceptable in the prevailing operational conditions of fishing. The low catch and consequently the rise in costs for the second and third 'sanbuk' and the second and third 'hour'is' could be explained by reasons related to - in our view - the smuggle of a large portion of their catches. Therefore, we have depended in estimating the annual operating cost on data of the first 'sanbuk' and first 'hour'i' only.

Considering the estimated "suitable income", as well as the present price differentials between marketing grades, it is possible to determine the prices as follows:

5.3.1. determining the right side of the equation which is income and costs, the two main elements in price formation.

a) suitable income: SYD 56/month X 12 months X 11.5<sup>\*</sup> = SYD 7728

b) annual costs (oprating and administrative costs for the "sanbuk" and 'hour'i' = SYD 7005.841

5.3.2. determining the left side of the equation which are catch and price,

a) the catch of the 'sanbuk' and 'hour'i' are distributed among marketing grades according to the catch composition of the cooperative in 1979. as follows:

- First grade; comprises 9.6% or about 8282 kgs.
- Second grade: comprises 74.7% or about 64522 kgs.
- Third grade: comprises 15.7% or about 13561 kgs.

5.3.3. By adopting the equation No (1)

$$(i + c) = q_1 p_1 + q_2 (p_1 - 30) + q_3 (p_1 - 120)$$

$$(7728 + 7005.841) = 8292 + p_1 + 64522 (p_1 - 30) + 13561 (p_1 - 160)$$

$$14733.841 = 8292 p_1 + 64522 p_1 - 1935.660 + 13561 p_1 - 2169.760$$

$$18839.261 = 86375 p_1$$

---

\* the number of fishermen calculated as follows:

number of permanent fishermen on 'sanbuk' and 'hour'i' 7 + 3 = 10 fishermen/  
year number of 6 seasonal fishermen for 3 months = 1.5 fishermen/year.

- ∴  $p_1$  (price of first grade = 218 fils (without tax and social security))
- $p_2$  (price of second grade = 218 - 30 = 100 fils) without taxes & social security
- $p_3$  (price of third grade = 218 - 160 = 58 fils) " " "

5.3.4. After we have determined the price according to grades by introducing the two elements, "suitable income" and costs, the policy maker may add a production tax and also provide a minimum level of social security. At present, the state collects 10% from the catch value as a tax and the cooperative deducts 5% of the catch value for social security. Therefore, we suggest including these two items in the determining prices.

Therefore, the prices for the grades after introducing taxes and social security will be as follows:

price of first grade	251 fils app.
price of second grade	216 fils app.
price of third grade	67 fils app.

these are producers prices.

We wish to point out that no data on the catch by seasons was made available, therefore, we were not able to determine seasonal prices on the basis of the suggested method.

Although the estimate being based on the suggested approach and method of determining the price in the study, is considered a logical estimate to a large degree, it would require more assurances in a further study and analysis in more than one cooperative as we have previously mentioned.

## VI. RESULTS AND RECOMMENDATIONS

This study is an attempt to point out the most important reasons that explain the drop in cooperatives catch and drifting away a number of fishermen from cooperatives. Costs, prices and marketing are the main factors led to this phenomena. Through the analytical study of these aspects in the Al Sha'ab Fish Production Cooperative in the Governorate of Aden, it was possible to reach the following results and recommendations:

### 6.1. Results and Recommendations Regarding Costs

As a result of field visits to the Cooperative, also the fishermen in their villages and from the questionnaire results, it is possible to present the following facts:

6.1.1. without an accurate counting of the costs items of each fishing boats, it is impossible to reach the real cost which is considered the corner-stone to planning of production and prices and also for controlling and follow up of activities. Therefore, we suggest the preparation of a statistical record for each boat divided into operating costs items previously

identified, under expenses and the actual landings according to the species and value, under revenues; the columns are to be collected every month. At the end of the year the administrative costs of the cooperative are to be distributed over the fishing boats (costing centres) in the same method adopted in this study, with the consideration that the direct distribution of the costs items on the costing centres wherever possible and to avoid estimations and assumptions. We suggest to start this system from 1980 as it will be possible to refer to original documents for distribution over the costing centres. By this we guarantee the availability of a statistical base to help us in extracting several facts and coefficients which are used in the planning and controlling aspects.

6.1.2. The total costs per kilogram of a medium and small 'sanbuk' and the 'hour'i' (2), (3) is very high. It is even higher than the producer price which is presently decided upon. In spite of that, the fishermen are still operating. Therefore, it is illogical that they should continue without achieving a surplus of their exerted efforts. This means that a big part of the catches of these boats is smuggled to a black market. This has a negative effect on both the cooperative's revenues (since it does not obtain the determined 25% from the value of this smuggled catch) as well as the costs per kg. estimated in this study.

The smuggling operations are confirmed by analysing fishermen debts for 1978 and 1979. It is found that the average period needed to repay the debts of the members to the cooperative is 103 days which is almost the duration of the Al Shamal season of high catch. Also the percentage of bad debts is only 6% of total debts. This indicates the ability of members to meet their obligations towards the cooperative and consequently give strength to their financial position.

6.1.3. By comparing the cost per kilogram of each of the large 'sambuk' and 'hour'i' No. (1) which we believe represent the normal conditions whether in the production or costs during 1979, we find that the operating cost in the 'hour'i' is about 1.6 more than cost in the 'sambuk'. This confirms the extent of the effects of improving fishing means on reducing the operating costs and consequently increasing the fishermen's income.

6.1.4. The administrative costs represent a percentage that vary between 5.3% - 6.3% of the total costs of the unit of product (kg). therefore, any attempt to decrease costs must be directed basically towards the operating cost items, such as to rationalize the use of fishing nets and their preservation to reduce maintenance cost and depreciation rates, as this item represent 36% - 48% of the total cost per kg.

6.1.5. Continuous checking in the rise of any cost items to be added to the price to insure the suitable income for the fishermen.

6.1.6. There is disproportion between the number of fishermen and fishing boats. This caused the boats to operate less efficiently, and accordingly the costs increased. Therefore, we suggest to re-distribute the fishermen on the fishing boats with high production capability in order to guarantee the sufficient crew to operate them with full capacities, even if it leads to stopping the rest of the boats. This will save in the operating costs of the boats with insufficient crew.

However, the following should be taken into consideration when re-forming the crews:

- to give priority to new 'sanbuks'.
- complete agreement and harmony among the crew must be achieved as much as possible. It is preferable to form the crew from relatives and friends whenever possible at this stage.

6.1.7. Connected with the above point, preventing fishermen transfer to other cooperatives. This would require taking necessary action to fix the membership of each cooperative according to the cooperative's law.

6.1.8. From the informations that were obtained from the questionnaire presented to fishermen, it was found that a high percentage of



catfish is thrown back to the sea or was not fished at all as it has low marketing value. The cooperative manager estimated this quantity around 30% of total catch. Also around 24% of the large fish production is discarded as offals and spoiled during the fish preserving operations without making any use of it. Undoubtedly thinking of utilizing the fish offals, spoiled fish and the catfish fish in an economic manner will be useful in decreasing costs.

6.1.9 It is possible to study the feasibility of providing many units for processing fish meals from these offals.

## 6.2 Prices and Marketing:

6.2.1 It was observed that one of the main factors which led to the drifting away of fishermen and the decrease in the fish marketed through the Government channel is the low income of the fishermen in comparison with the income of labour in the other sectors. The fresh fish prices remained stable since 20 November 1973 until May 1979 at a time the cost of living as well as the prices of the means of production, have increased distinctly.

- 6.2.2. The marketing actions also contributed in complicating the problems of cooperative due to several reasons of which is the delay in paying to the fishermen the amounts due for their catch, shortage in receiving centres, shortage in, or out of order, of cold stores in some of the cooperatives, and the delay in the arrival of transport vehicles.
- 6.2.3. Through the follow-up of the preliminary results of cooperative marketing from January 1980 to June 1980 it is apparent that the rise in the fish price provided a fundamental motivation for the fishermen to increase their catch. This motive has waned afterwards because of several reasons most important of which is the rise in fuel prices by 100%; the increase in fish catches in May and June so that the Cooperative was unable to market due to its limited capabilities in marketing actions; the competition of Marketing Corporation which fetched lower prices in the market, the cooperative receiving a large share of the profit margin so that the average producer surplus per kilogram which is marketed cooperatively did not go above 39 fils; in addition to other problems stemming from the cooperatives dealings with the corporation.
- 6.2.4. Fishermen see that the basic problem is the price and not in the marketing channels. They welcomed the cooperative marketing at its inception, but soon afterwards their support has dropped due to lowered returns that obtained through this channel.

6.2.5. The suitable price - in our opinion - must cover two main aspects: firstly, cost of production and secondly, the suitable income which may satisfy the basic needs of the fisherman's family and which is estimated at SYD 56 per month.

6.2.6. Considering the suitable income and the cost of production, the state tax of 10% and social security at 5% , as well as the existing differentials of prices of fish grades, it was possible to estimate prices of every grade as follows:

Prices of first grade	251	filis/kg
Prices of second grade	216	filis/kg
Prices of third grade	67	filis/kg

Accordingly we recommend raising prices to these levels to cover costs and to provide suitable income for cooperative fishermen.

6.2.7. In view of the problems that arose from the experiment of cooperative marketing of which the most important is the inability, materially or administratively to cope with we suggest that the National Fish Marketing Corporation to continue its marketing services. In order to provide incentives to fishermen, 6 - 8 excellent species should be selected to be marketed through the Corporation at cooperative marketing prices. It is possible to change these species to suit conditions in each governorate.

- 6.2.8. It is possible to repeat the cooperative marketing experiment in the Al Sha'ab Fisheries Cooperative after obtaining the facilities which will be provided by the project of Development of Fisheries in Areas of the Red Sea and Gulf of Aden which consists of a refrigerated vehicle, ice making machine and cold store. On the results of this experiment, cooperative marketing could be introduced gradually with the aim that the cooperative receives the surplus from the marketing operation and to solve the outstanding problems with the National Fish Marketing Corporation.
- 6.2.9. Seasonal prices scheme to be applied in a way which may effectively help in balancing the income of cooperative fishermen around the year. Applying the fixed pricing scheme around the year leads to a marked deterioration of income of cooperative fishermen during the Al Althiab season.
- 6.2.10. To continuously review the pricing policy taking into consideration the several factors that affect the fish prices the most important being the rise in cost of living, cost of inputs items and the income of labour in the other sectors,
- 6.2.11. In the event of a bidding by cooperative marketing after providing all facilities we suggest the following:
- a) limiting cooperative marketing to a few species, or
  - b) to establish what is called closed marketing areas to cooperative marketing only.

These two actions aim at preventing competition of the public sector with the fisheries cooperatives in marketing.

- c) re-considering the distribution of percentages of revenues from cooperative marketing among the producer and cooperative to become 70% for fishermen and 30% to cooperative to cover accumulation and marketing expenses.

TABLE (1)

FISHING BOATS  
OF  
Al Sha'ab Cooperative

Types of Boats	Engine HP	No. of Boats		Year of Manufacture	Average Number of Fishermen/boat		Fishing Methods
		Sanbuk	Houri		Full-Time	Seasonal	
Large Sanbuks	45	11	10 *	76/977	7	9	Set nets, beach seine
Medium Sanbuks	36	7	4 *	65/967	4	8	Surrounding nets
Small Sanbuks	26	12	3 *	60/965	2	5	Set nets, surrounding nets
Mechanized Houri	8-12	-	24	60/965	2	2	Set nets, surrounding nets
Sail Houri	-	-	11**	65/967	1	-	Set nets

Source: Records of Al Sha'ab Cooperative

\* (17) houri operates in association with the sanbuks. The sanbuk and houri are one productive unit.

\*\* These houris practice fishing lightly and therefore, are not included in the sample.

TABLE (2)

- 35 -

DATA ON BOATS CHOSEN AS SAMPLE

Type of Boat	No. Years of Operation	Engine HP	No. of Fishermen Full-Time+Seasonal	Production 1979 Kg.	Fishing Methods	Remarks
Large Sanbuks	2	45	7 + 6	69604	Surrounding nets, long line hooks	IDA Project
Medium Sanbuks	15	36	12 + 4	5143	Surrounding net, set nets	
Small Sanbuks	20	27	1 + 3	8051	Long line, set nets	
Houri (1)	15	8	3 + -	16771	Surrounding net	Renewed
Houri (2)	14	8	2 + -	4270	Long line, shark net	
Houri (3)	15	8	2 + -	3157	Long line, shark net	

Source: Records of Al Sha'ab Cooperative

TABLE (3)

ADMINISTRATIVE COSTS  
FOR  
AL SHA'AB COOPERATIVE-1980 PRICES

Cost Elements	1980 Prices SYD	% 1980 Prices
Annual building depreciation	600,000	3,46
Annual vehicles depreciation	135,000	7,78
Annual furniture and equipment de- preciation	440,000	2,53
Vehicles expenses	4646,660	26,77
Stationery	412,200	2,37
Transportation allowance	235,500	1,36
Water and electricity	110,296	0,64
Admin. staff salary compensation	516,000	2,97
Administrative staff salaries	5408,066	31,16
Overtime for admin. staff	1129,793	6,51
Literacy allowance	240,000	1,38
Admin. staff pension fund	910,996	5,25
Miscellaneous expenses	1358,222	7,82
TOTAL	17357,733	100,00

Source. Data collected and adjusted for the records of Al Sha'ab  
Cooperative.



ESTIMATED OPERATING COSTS  
For  
THREE SANBUKS  
In 1980, In SY Dinar

Cost Elements	Large Sanbuk	Medium Sanbuk	Small Sanbuk	Average	%
	SYD	SYD	SYD	SYD	
Fuel and oils	1156,555	368,380	267,830	600,587	22,80
Boat maintenance	121,804	88,531	28,289	79,541	3,02
Gear maintenance	88,948	205,294	35,756	110,010	4,18
Engine maintenance	300,000	300,000	300,000	300,000	11,38
Boat depreciation	300,000	125,000	1500,000	191,700	7,28
Engine depreciation	300,000	300,000	100,000	333,30 <sup>0</sup>	8,86
Gear depreciation	1323,830	989,792	509,650	941,100	35,72
Maintenance & repair labour	313,218	23,143	36,229	124,297	4,71
Wages (includes overtime + Compensation & pension)					
Fuel containers	10,000	10,000	10,000	10,000	0,38
Different batteries	24,000	24,000	24,000	24,000	0,91
Palm frond	20,000	20,000	20,000	20,000	0,67
<b>TOTAL</b>	<b>3958,355</b>	<b>2454,140</b>	<b>1481,754</b>	<b>2634,4355</b>	<b>100,7</b>

Source: Data collected and calculated from the records of Al Sha'ab Cooperative

TABLE (5)

ESTIMATED OPERATING COSTS  
FOR  
THREE HOURS IN 1980

Cost Elements	Hour 1	Hour 2	Hour 3	Average	%
	SYD	SYD	SYD	SYD	
Fuel and Oil	477,300	477,300	477,300	477,300	30,83
Boat maintenance	47,063	5,972		26,517	1,71
Gear maintenance	136,817	47,680	93,13	92,546	5,98
Engine maintenance	60,000	60,000	60,000	60,000	3,88
Boat depreciation	50,000	20,000	33,000	34,300	2,32
Engine depreciation	16,700	25,000	25,000	22,200	1,43
Gear depreciation	754,500	756,300	769,700	760,200	49,10
Maintenance and repair labour wages (including overtime + salary com- pensation + pension)	75,469	19,215	14,206	36,297	2,34
Fuel containers	5,000	5,000	5,000	5,000	0,32
Different batteries	24,000	24,000	24,000	24,000	1,55
Palm frond	10,000	10,000	10,000	10,000	0,64
TOTAL	1656,849	1450,467	1511,349	1548,360	100.0

Source: Data collected and calculated from the records of Al Sha'ab Cooperative.

TABLE (C)

ESTIMATED COST PER KILOGRAM  
OF CATCH FROM

THREE SANBUKS - 1980 - (fils)

Cost Elements	Large Sanbuk	Medium Sanbuk	Small Sanbuk	Average	%
<u>Operating Cost</u>					
1) Fuel and oils	16,6	71,6	33,2	40,5	15,86
2) Boat maintenance	1,8	17,2	3,5	7,5	2,94
3) Gear maintenance	1,3	39,9	4,4	15,2	5,96
4) Engine maintenance	4,3	58,3	37,3	33,3	13,03
5) Boat depreciation	4,3	24,3	18,6	15,7	6,15
6) Engine depreciation	4,3	58,3	12,4	25,0	9,79
7) Gear depreciation	19,1	192,5	63,3	6,0	35,86
8) Wages and other	4,5	4,5	4,5	4,5	1,76
9) Batteries	0,3	4,7	3,0	2,7	1,06
10) Palm frond	0,3	3,9	2,5	2,2	0,86
11) Fuel containers	0,1	1,9	1,2	1,1	0,43
Total Production Costs	57,1	477,1	183,9	239,4	93,70
Administrative Costs	16,1	16,1	16,1	16,1	6,30
TOTAL COSTS	73,2	493,2	200,0	255,5	100,00

Source: Calculated from in Tables (2) , (4) and divided over annual catch for these sanbuku in 1979 in Al Sha'ab Cooperative.

TABLE (7)

ESTIMATED COSTS PER KILOGRAM OF CATCH  
FROM THREE 'HOURIS' IN 1980 - (FILS)

Cost Elements	Houri (1)	Houri (2)	Houri (3)	Average	%
<u>Production Costs</u>					
1) Fuel and oils	28,5	111,8	151,2	97,2	30,39
2) Boat maintenance	2,8	-	1,9	1,6	0,50
3) Gear maintenance	8,2	21,8	15,1	15,0	4,69
4) Engine maintenance	3,6	14,1	19,0	12,2	3,81
5) Boat depreciation	3,0	7,7	6,2	5,7	1,78
6) Engine depreciation	1,0	5,9	7,9	4,9	1,53
7) Gear depreciation	45,0	18,0	239,0	15,7	48,39
8) Wages and Others	4,5	4,5	4,5	4,5	1,41
9) Batteries	1,4	5,6	7,6	4,8	1,50
10) Palm frond	0,6	2,3	3,2	3,0	0,63
11) Fuel containers	0,3	1,2	1,6	1,1	0,34
<b>Total Production Costs</b>	<b>89,9</b>	<b>354,9</b>	<b>457,3</b>	<b>303,7</b>	<b>94,97</b>
<b>Administrative costs</b>	<b>16,1</b>	<b>16,1</b>	<b>16,1</b>	<b>16,1</b>	<b>5,03</b>
<b>TOTAL COSTS</b>	<b>115,0</b>	<b>371,0</b>	<b>473,4</b>	<b>319,8</b>	<b>100,00</b>

Source: Calculated from Tables (3), (5) and divided on annual catch for this 'houris' in 1979 in the Al Sha'ab Cooperative.

TABLE (8)

HISTORICAL DEVELOPMENT  
Of  
Cooperative Fish Prices  
Since Fixing on 20 Nov. 1973

Pricing Duration	Fish Species	Price/Kg. (fils)
20 Nov-1 Feb 1977	1) Large fish 2) Small fish 3) Catfish, horse mackerel 4) Indian mackerel	70 50 25 5
2 Feb. 1977	<u>'Al Shamal' Season:</u> 1) Large fishes and sharks, 1-15/kg 2) Small fishes with big shark and Marlin 3) Horse mackerel, catfish, herring for canning 4) Herring for fish meal 5) Indian mackerel  <u>'Al Athieb' Season:</u> Large fishes Small fishes Indian mackerel	80 50 25 15 35  100 40 50
1 May 1979 - 31 May 1979	Large fishes Small fishes Horse mackerel, catfish Indian mackerel	80 50 25 35
1 June 1979 - 22 March 1980	First grade Second grade Third grade Fourth grade Fifth grade	200 170 125 40 25
23 March 1980 till now	First grade Second grade Third grade	200 170 40

Source: National Corporation for Fish marketing, Aden, PDRY,  
June, 1980.

TABLE (9)

INDEX NUMBER FOR LIVING EXPENSES COMPONENTS  
IN ADEN: 1973 - 1979  
Base Year 1969

Index Number & Components	1973	1974	1975	1976	1977	1978	1979
<u>General Index No.</u>	<u>135</u>	<u>167</u>	<u>187</u>	<u>194</u>	<u>204</u>	<u>215</u>	<u>230</u>
Food Supplies	148	182	196	201	203	214	228
Fuel, water & light.	111	156	202	207	216	223	245
Rent	75	75	75	75	75	75	75
Clothing	143	236	309	349	389	407	416
Housing preparations	134	151	177	184	208	210	212
Qat, tobacco & Alcohol beverages	146	175	201	201	209	230	302
Other expenses	111	122	127	125	147	156	153

Source:

1973 - 77 Data from annual statistics Yearbook, Vol. 1-1980,  
Central Bureau of Statistics, Ministry of Planning, Aden  
P.D.R.Y. pp. 150-151.

AVERAGE INCOME AND ANNUAL WAGES  
Of  
Workers in Sectors of National Economy  
In 1973, 1978, In Current Prices  
(SYD)

S E C T O R S	1 9 7 3	1 9 7 8	Increase (SYD)	% Increase
<u>Productive Sectors:</u>	87,825	163,531	75,706	86,2
<b>Agriculture &amp; Fisheries</b>	62,319	88,167	25,848	41,5
Industry	221,620	337,567	115,947	52,3
Building and construction	172,563	472,593	300,530	174,7
<u>Productive Services Sectors:</u>	223,865	289,086	65,221	29,1
Transport & communication	256,210	379,000	122,785	47,9
Trade, restaurants, hotels	204,174	238,654	33,088	16,6
Other services sectors	199,277	302,681	103,404	51,9
Sectors Total Average	136,021	320,523	84,502	62,1

Source:

Evaluation of First Five Year Plan, Employment and Wages  
Development, Ministry of Planning, Aden, P.D.R.Y 1979.

TABLE (11)

YEARLY AND MONTHLY SPENDING COMPONENTS  
Of  
A cooperative Fisherman Family in 1980  
(SYD)

Spending Components	Monthly	Yearly	% of Total Spending
1) Food supplies	19,5	234,0	34,8
2) Clothing	10,0	120,0	17,9
3) Housing preparation, Fuel, water & light	5,0	60,0	8,8
4) Transportation	2,0	24,0	3,6
5) Education	1,0	18,0	2,7
6) Health	2,0	24,0	3,6
7) Qat and cigarettes	14,0	168,0	25,0
8) Other	2,0	24,0	3,6
TOTAL	56,0	672,-	100,0

Source:

Spending is obtained through questioning of some cooperative members in Aden governorate, July 1980.



