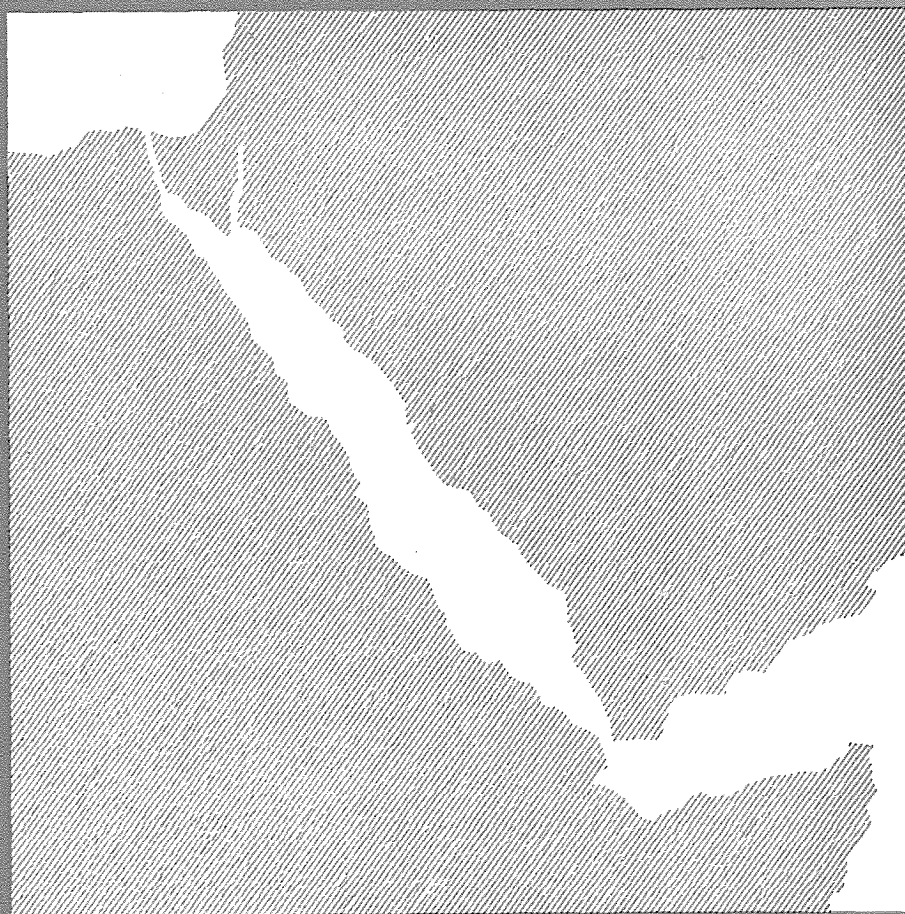


RAB/81/002/5

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

A STUDY ON  
FRESH FISH MARKETING & PRICES  
IN AL QUSEIR REGION



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

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

FAB/S1/002

A STUDY ON  
FRESH FISH MARKETING & PRICES  
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BY

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## S U M M A R Y

The low income of fishermen in Al Quseir region as a result of the prevailing pricing and marketing policies is considered the primary factor behind the decreasing number of fishermen. This study aims at proposing pricing and marketing policies that aim to lessen the gap between the fisherman's income and his counterpart in other sectors. The study analyzes the present fish marketing and pricing system to determine the shortcomings and weaknesses and to propose remedial solutions. Moreover, it studies the consumers' preferences in the area, and uses them as guidelines for drawing the proposed policies, besides using the 'opportunity cost' approach to determine the suitable income for the fishermen. Hence, the proposed policies consider the interest of both producer and consumer.

their counterparts working in other sectors. Thus, the picture would be complete, and the project would achieve its objectives regarding improving the fishermen's socio-economic standard, safeguarding and developing their communities in the region.

The study is divided into the following parts:

Part I

Deals with analyzing the historical evolution of fish marketing, and pricing policies.

Part II

Deals with consumers' preferences and uses them as guidelines in drawing pricing and marketing policies.

Part III

Is an attempt to estimate the fish supply and demand in Al Quseir region. This would help in drawing up marketing plans for implementation inside and outside the region.

Part IV

Deals with proposing a new approach for determining the appropriate prices, as well as issuing a number of recommendations which aim at improving the pricing and marketing practices.

METHODOLOGY

This study requires compilation of information and data from different sources, both from consumers' and producers' sides, by conducting a questionnaire through interviews held with a sample of producers and consumers in Al Quseir region.

It also requires collecting basic data on the cost of production under the new conditions after the operation of the newly established Cooperative Fishing Centre. These data would be compiled from the records of Wadi Al Gimal Camp number 1 during the period 15/09/1981 - 15/11/1981.

References used for conducting this study include data published in a family budget survey, reports of the Project RAB/81/002 and researches published by the Institute of National Planning.

1. Present System of Fresh Fish Pricing and Marketing in Al Quseir Area

1.1 Fish Marketing

Prior to the operation of the Project RAB/81/002, and to the establishment of the Cooperative Fishing Centre in Al Quseir, fresh fish was marketed directly from the producer to the consumer. As a result of the reduced catch and the non-availability of a market building, fish was often sold in houses to friends and relatives.

Inspite of the fact that fish prices were fixed by the Supply Directorate in the Red Sea Governorate, they were never adhered to for the following reasons:

- a. the limited supply of fish versus the demand for it. Besides, the high purchasing power of those working in the mining sector who present 70% of the total consumers led to widen the gap between supply and demand,
- b. the difficulty to exercise control on marketing operations due to the lack of organized marketing channels,
- c. the fishermen's belief that the pricing of fish is not appropriate to the cost of production and does not compensate them for the tough working conditions, and
- d. the increasing number of access roads leading to Al Quseir city, used by fish-transporting vehicles, make control on fish landings more difficult.

After the establishment of the Cooperative Fishing Centre in Al Quseir, the organization of the cooperative fishing camp in the remote southern areas, and the provision of means for the presentation and transportation fish, arrangements could be made for marketing a large percentage of the landings. All fishing boats and a number of vehicles operating in remote areas deliver their catch at the camp site. It is then moved to Al Quseir Cooperative Centre where it is kept in its cold store. Regarding fishing boats and vehicles operating in fishing areas close to Al Quseir city they deliver their catch directly to the centre.

The success of the marketing process could be traced for the following reasons:

- a. Liberating fishermen working on boats from the exploitation of vehicle owners who used to transport their catch. At present, fish is transported by the centre's vehicles for the actual transportation cost which represents 5% of the price of fish against 33% before the establishment of the Cooperative Centre. In other words, each fisherman could save 28% of the total value of his catch which used to go to the middleman for transporting his catch from fishing areas to Al Quseir.

b. Limiting the services provided by the Cooperative Centre to fishermen who deliver their catch to the Centre, particularly regarding provision of ice.

c. As a result of the activities of the Cooperative Centre and the facilities it provided, fish production was doubled and covered the needs of the area in a short period, thus, leading to a balance between supply and demand. Furthermore, this weakened the black market and even led to a surplus of fish which had to be stored in the Centre's cold store prior to its marketing outside Al Quseir region.

In order to ensure the delivery of fish to the real consumer in Al Quseir the following process was applied in the distribution of fish:

- A quota is distributed to the mining companies and different government directorates which send their representatives with certified requests stating the required fish quantities. This would ensure meeting the needs of a large percentage of the consumers in a direct manner.
- A quota is distributed to the Consumers' Cooperative Society which is the only society in Al Quseir.
- A quota is distributed to three fish-mongers who have fish shops located at different points in Al Quseir in order to make it easier to the consumers living in different areas to buy the fish. Fish surplus is marketed at a later stage in different cities within the governorate by virtue of a formal authorization issued by the supply directorate.

This last procedure was a provisional one until the establishment of a cooperative marketing centre which would undertake serving the consumers who are not covered by the first and second group, particularly as fish-mongers did not adhere to the conditions of the agreements regarding satisfying the needs of Al Quseir region first followed by other cities in the governorate. They transported the fish to Cairo where prices were high and controlled by the forces of supply and demand.

In each of these cases, fish was sold according to the fixed prices which will be discussed later in the report.

- After the establishment of the Cooperative Fish Marketing Centre, the remaining quantity of fish, after delivering the quantities allocated to companies, government offices and the consumers Cooperative Society, is sold to consumers at the Marketing Centre, provided the Centre transports the surplus to other cities in the governorate particularly Safaga and Ras Ghareb. Consequently, the Cooperative Marketing Centre, which is part of the Cooperative Fishing Centre, would get all marketing margins which were taken by the dealers. Thus, of course, is an additional revenue to the cooperative centre.

## 1.2 Current Pricing System

Prices are controlled according to a decree issued by the Governor of the Red Sea Governorate upon the proposals made by the Pricing Committee which is

set up for this purpose and composed of the following:

- Director, Supply Directorate, Red Sea Governorate
- Head, Supply Investigation, Red Sea Governorate
- Representative, Local People's Assembly in the Governorate
- A Representative of fish-monger from Hurghada
- Head, Chamber of Commerce, Red Sea Governorate

A representative from the Fishermen's Cooperative Society in Hurghada may also join the Committee provided the Committee approves his membership. This Committee is chaired by the Secretary General of the Governorate.

These prices are uniform for both Hurghada and Al Quseir since they are considered production areas. However, prices differ in Safaga and Ras Ghareb since they are located far away from the source of production.

According to the Director, Supply Directorate in Hurghada, the Pricing Committee is guided by a number of considerations when determining the price of fish as follows:

- a. fish prices in neighbouring governorates,
- b. prices prevailing in the Red Sea Governorate in the past,
- c. prices of fishing gear, bait, fuel, and other supplies,
- d. prices of meat, and
- e. consumer's welfare.

Since 1970, uniform prices are fixed for groups of fish species. The main species are distributed among different groups (about four or five). Species included in each group are determined by the Fishermen's Cooperative Society and a branch office of the Egyptian Fish Marketing Company in Hurghada. In the meantime, the components (i.e. fish species) of each group were amended several times in the light of proposals made by the Fishermen's Cooperative Society in Hurghada.

Price Control tables indicate the producer's price for delivering fish to the Cooperative Society, as well as the selling price to the Egyptian Fish Marketing Company in Hurghada, and to consumers cooperative societies and dealers. These tables also include the selling price to the consumer according to different areas, to restaurants and clubs, as well as touristic prices set for hotels.

Annex (1)-(8) indicates the evaluation of controlled fish prices in the Red Sea Governorate for the period 1977-1982 during which producer's price increase ranged between 5.3% to 9.15% for the different groups of fish. This increase is very low compared with the increase in prices of meat and



other food commodities, as well as production inputs which are more than doubled 3/.

On the basis of the previous review of the existing pricing system, we could draw the following remarks:

- a. Fishermen are not basically represented in the Committee. Their representation is optional and is left up to the Committee inspite of the importance of the representation of fishermen on the Committee, particularly that the rest of the Committee members, regardless of their official posts and what they represent, are considered consumers. It is in fact difficult not to consider them as consumers. Besides, fish-mongers are represented on the committee. Hence, one of the main parties directly concerned by the pricing of fish is not represented on the committee.
- b. In spite of the points which should be considered by the Pricing Committee when determining prices there is considerable doubt regarding the facilities it has for keeping accurate estimations. For example, data on the actual cost of production, including food, fuel, and fishing gear are not available in precise figures. Besides, the principle in taking the welfare of the consumer into consideration when fixing prices needs quantitative calculation in order to know the level of incomes and expenditures, ... etc, is not available. Similarly, prices are fixed without any correlation to those in neighbouring governorates. It is a well known fact that most of the catch is transported to Cairo where free pricing system is prevailing (according to forces of supply and demand) and prices exceed those in the remaining governorates.
- c. It is noted that all the members of the Pricing Committee are from Hurghada. Hence, prices are fixed on the basis of production and marketing conditions in Hurghada only, inspite of the different conditions prevailing in each region (Hurghada and Quseir) particularly after the establishment of Al Quseir Fishing Centre and the affiliated Cooperative Fishing camp and Cooperative Marketing Centre which requires separate pricing for each region according to its specific conditions.

From what had been said, prices were determined by the Governorate without considering adequately the fishermen's interest so as to encourage them to pro-

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3/ - Official prices of meat increased during 1970 - 1981 by more than three folds (L.E. 0.750 - L.E. 2.300 per kilogram)

- Prices of beans (free market prices) increased during 1975 - 1980 by 2 1/3 folds (L.E. 0.150 - L.E. 0.350 per kilogram)

- Price of lentils (free market prices) increased during 1975 - 1981 by more than six folds (L.E. 0.110 - L.E. 0.700 per kilogram)

- Official price of rice increased during 1975 - 1981 by three folds (L.E. 0.050 - L.E. 0.150 per kilogram)

- Official price of flour almost doubled during 1975 - 1981 (L.E. 0.035 - L.E. 0.065 per kilogram)

Source: Supply Department, Al Quseir



ceed with the production. This is reflected by the phenomenon of fishermen abandoning their profession to work in the mining and services sectors.

Undoubtedly, any acceptable pricing and marketing policy should guarantee an appropriate income to the producer in order to encourage him to continue in his profession. Meanwhile, it should fulfill the consumer's needs and interests. This explains the importance of conducting studies on consumers' preferences in Al Quseir area, of estimating the present and expected demand, and determining prices which aim at securing an appropriate income to fishermen.

## 2. Fish Consumption in Al Quseir Region

### 2.1 Introduction

Pricing and marketing policies should be drawn in the light of adequate and precise data on fish consumers, regarding their number, age, income, social status, and preferences in consumption. This latter factor is of utmost importance.

In order to obtain these data from Al Quseir region a sample survey was conducted during the period 23/06/81 - 27/06/81 on Al Quseir society. Sample was chosen by adopting the stratified random sampling unit which represent the different sectors of the society according to the different economic activities, namely mining, services, fishing, artisans, commerce sectors and others.

Data were compiled by using questionnaires through interviews with sample units which constitute 10% of the members of served community estimated at 4739 <sup>4/</sup> persons working in the different sectors, namely, 71.1 % work in the mining sector, 15.5% in the services sector, 6.2% in the fishing sector, 3.5% in the artisanal sector, 3.3% in the commerce sector and 4% in other sectors. Annex (2)-1 shows the distribution of samples units among the different sectors according to the afore-mentioned percentages.

The questionnaire form included a number of questions which were selected and drafted to provide the following informations:

- Profession
- Place of work
- Social status
- Family size
- Wage, salary, or income (per day or month)
- Consumer's preference as to meat, poultry and fish
- Weekly consumption of meat, poultry and fish by kilogram
- Present weekly consumption of fish (number of times)
- Availability of purchasing fish whenever desired
- Response to fish consumption in the event of its availability
- The preferred form of fish for consumption
- The fresh fish species consumers prefer

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<sup>4/</sup> Source: Data obtained from Al Quseir City Council.

- The desired form for purchasing fresh fish
- Seasons during which consumers prefer fish
- Optimum size desired for fish
- Actual purchasing price of different fish species and consumer's views thereon
- Acceptance of increase in fish prices
- Acceptance increase rate in fish prices according to species

These data will help to determine the general trend of the consumption pattern which could be used as a guideline when drawing marketing and pricing policies.

## 2.2 Consumers' Preferences

Analysis of data derived from the questionnaire and shown in Annex (2) indicate the general pattern of fish consumption in Al Quseir region as follows:

- Fish consumption in Al Quseir region has enlarged. As 55% of the sample units have 4-7 dependants, 15% have 8-9 dependants, 9.3% have 10-17 dependants, Annex (2)-4.

- Regarding preference of consumption as to meat, fish or poultry, meat ranked first and was given first preference by 61.4% of the sample units, followed by fish which was preferred by 31.2%, while poultry was preferred by only 4.8%, Annex (2)-5.

This phenomenon could be due to the fact that most of the staff working in the mining and services sectors have emigrated from the Nile Valley, particularly Sohag, Qena and Aswan. These are non-coastal zones whose inhabitants generally prefer meat. Furthermore, they are used to Nile fish species, whereas Red Sea species are unfamiliar to them as to size, tastes and way of cooking.

- The results of consumers' preference to fish as food shows that they could not consume it as their staple food. However, they could increase their consumption thereof by increasing their intake of fish regularly and acquiring the habit. (It is a well-known fact that food consumption habits are acquired habits).

- AL Quseir region suffers from an acute shortage in meat consumption. About 81% of the sample consume 1/2 - 2 kilograms of meat weekly, Annex (2)-7, 95% consume 1/2 - 3 kilograms of poultry per week which is a low rate of consumption, Annex (2)-9, if the family size is taken into consideration (6 persons). Hence, fish could be the main source of animal protein and could be used to satisfy the requirements and overcome the existing shortage.

- 46.2% of the sample, Annex (2)-11, consume about 1-3 kilograms of fish weekly, whereas 20% consume about 5 kilograms weekly. This relative increase in fish consumption, as compared to meat and poultry consumption is due to the availability of fish besides its low price, compared to other alternatives.

- About 48% of the sample eat fish twice a week, 26% eat fish three times a week, and 17% eat fish once a week, Annex (2)-18. In the event of the availability of fish its weekly consumption will be simultaneously increased as follows: 51% of the sample will eat fish 3-4 times a week, 23% will eat fish twice a week, and 21% will eat fish 5-7 times a week, Annex (2)-15.
- About 98% of the sample cannot procure their fish requirements, Annex (2)-16. This is due to the prevailing conditions prior to the establishment of the Fishermen Cooperative Centre, as stated previously in the report.
- Most consumers in Al Quseir (98%) prefer to consume whole ungutted fish, while 2.3% of the consumers prefer gutted fish, and 4.7% consume fish in any available form, Annex (2)-17. This means that about 7% of the production could be marketed after gutting (it will be of the big fish).
- Most consumers (46%) prefer to consume fish that weight 1-2 kilograms, 43% of the consumers prefer fish that weighs 2-3 kilograms, whereas only 10% of the consumers prefer relatively small fish weighing 1/2-1 kilograms, Annex (2)-19. This is due to the fact that most of the catch is composed of big fish and consumers are used to it.
- Most consumers prefer the following fish species: emperor, spanish mackerel, jacks, sharptooth red snapper, rabbit fish and mojarra. These are followed by needle fish, parrot fish and grouper. Sharks are the least preferred fish species and the demand for it is practically non-existent.
- Regarding fish prices, consumers tend to group different species into five price grades as follows, Annex (2)-21:
  - a. The first price grade includes spanish mackerel, sharptooth red snapper and sea breams.
  - b. The second price grade includes jacks, emperor and two spot red snapper.
  - c. The third price grade includes parrot fish, rabbit fish and needle fish.
  - d. The fourth price grade includes grouper and coral trout.
  - e. The fifth price grade includes little tuna.
- Regarding sharks, about 93% of the sample did not fix any price estimate for it due to lack of preference for it.
- 70% of the consumers consider the prices fixed for fish, at the time of the questionnaire, acceptable. 28% of the consumers, mostly working in the services sector (government employees) consider the prices to be rather high, whereas 2% mostly fishermen (full-times and part-times) demanded increasing fish prices, Annex (2)-23.

- 81.3% of the consumers in Al Quseir region favour fish consumption all year round. Only 15.4% of the consumers prefer fish consumption during the winter season, whereas 2.7% prefer fish consumption during summer. This means that there should be no problem regarding the marketing of fish throughout the year, Annex (2)-25.

According to the data provided by the Ministry of Planning 5/, the average monthly income on the Governorate's level is estimated at L.E. 48. By comparing the distribution of incomes with Al Quseir, one finds that about 56% of the consumers have an average monthly income which exceeds the above average (from L.E. 50 to more than L.E. 120). This means that there is a relative increase in the average monthly incomes in that area, Annex (2)-27. If one compares the average income in Al Quseir with counterpart incomes in Suez Governorate (L.E. 63 per month), one finds that about 50% of the consumers have monthly incomes that exceed their counterparts in this governorate.

### 3. Estimation of Fish Supply and Demand in Al Quseir Region

#### 3.1 Fish demand estimates

Fish demand estimates in the light of the weekly consumption rates derived from the sample survey data, the present demand for fish in Al Quseir area was estimated at about 44 tonnes monthly, i.e. 529 tonnes annually. In the event of increasing the weekly consumption rates, the actual demand for fish in the area will reach 66 tonnes a month approximately, which equals to 789 tonnes a year, Annex (3).

#### 3.2 Fish production estimates

According to estimates of the average catch at Wadi Al Gimal Fishing camp 6/, the average productivity per fisherman amounts to 18.868 kilogram of fresh fish daily. The total number of active fishermen in Al Quseir is estimated at 276 fishermen, of whom 234 are engaged in fishing for fresh fish (42 fishermen are engaged in salting fish). Calculated on the basis of catch rate and fishing operation indicators at Wadi Al Gimal Fishing camp, and considering the average number of working days to be 200 days a year, fish landings is projected at 883.002 tonnes a year. Hence, it is feasible to meet the projected demand and realize a surplus to be marketed in other cities within the governorate, like Safaga and Ras Ghareb. This could be achieved by the same number of fishermen without relying on part-timers or those engaged in salting or drying fish, nor on those working in small communities outside Al Quseir.

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5/ Dr. Sayed El Kilany, unpublished research on the distribution of annual income among governorates in the Arab Republic of Egypt, 1976.

6/ Source: Report No. RAB/77/008/23, Al Quseir Fishing Centre, Part II, Establishment of the Cooperative Fishing Centre and its Socio-Economic Impact, by A. A. Barrania.

#### 4. Pricing Policies and Determining a Suitable Income for Fishermen

##### 4.1 Introduction

Prices play diversified roles and cause different results in the economic order. They are considered instrument of rationalizing the use of resources, and income distribution, ... etc.

These objectives which prices aim to achieve may be contradictory in nature in most cases. Hence, roles and objectives of prices should be carefully defined. Achieving one of the objectives of the pricing policy could have a negative impact on another objective. Hence, objectives to be achieved, reasons for their achievement and timing should all be clear.

It is a well known fact that pricing reform is one of the issues that concerns national economy, and that its total or partial reform requires time. Besides, there are intricate and overlapping political, economic and social considerations, yet, these facts should not obstruct any attempt to reform the pricing system of a vital commodity such as fish with the objective of protecting the sector until the problem is solved within the overall national framework.

The pricing system should aim at providing a suitable income to fishermen to encourage them to proceed with their production. Failure of the pricing system to achieve this objective leads fishermen to abandon their profession and look for other alternatives. This means that decreased fish supply leads to an increase in prices, in the case of free market, or to the emerging of a black market in case of controlled prices.

The prevailing free fish prices in general and controlled prices in particular do not reflect the actual cost of this basic commodity. This means that decisions taken by producers regarding the pattern and way of using fish resources as well as decision taken by consumers regarding spending their consumption pattern, are often based on inaccurate indicators. This results in drawing a non-rational pattern for using these resources. It also produces a defective structure for production and demand.

It is difficult to estimate precise prices of fish based on the actual cost of production. This is caused, in turn, by the difficulty of estimating the actual cost of the different factors or production involved in fish production which reflect the scarcity of these factors. Hence, this study will seek to determine prices that would ensure a suitable income to fishermen to encourage them to remain in this profession.

##### 4.2 The suitable income for fishermen in Al Quseir region

In order to determine what is a suitable income for a fisherman, the following points should be taken into consideration:

a. Fishermen are the most important factor of production in the fisheries sector which is one of the influential sectors for achieving food security and consequently political and social security.

b. The income should be sufficient to ensure meeting basic needs for both the fisherman and his family including food, clothing, housing, education, health needs, transportation and other items of expenditures in the family budget. A suitable income should provide an acceptable standard for a decent life for the poor classes. It is noteworthy to mention that what is called 'a suitable income' that covers the basic needs of human beings is now a global approach which aims at confronting under-development and poverty of the needy 7/.

c. Determining the suitable income for fishermen on the basis of the two previous points should also take a group of factors into consideration, foremost among which is the change in the cost of living and size of the fisherman's family. The average size of a fisherman's family is six persons which exceeds the average size of the Egyptian family (5.5) 8/.

Attempts were made to obtain data on the cost of living for fishermen in Al Quseir region, however, data obtained were so contradictory to the points of obstructing drawing accurate estimates. Hence, the approach of calculating the suitable income on the basis of calculating the cost of the basic needs was disregarded, and the 'opportunity cost' approach was adopted. The latter approach means the income a fisherman would get if he abandons the fishing profession and works in the mining sector which is the most attractive sector to fishermen working in Al Quseir 9/.

On the basis of available data on the wages of ex-fishermen working in mining companies, the average wages were estimated at about L.E. 125 a month. On this assumption, this is considered a suitable income to fishermen and will be the basis for drawing the pricing structure of fish in Al Quseir region.

It is noteworthy to mention that ensuring this suitable income by proposing a pricing structure involves a number of problems and difficulties for the following reasons:

a. Difference in fishermen's productivity and in cost of production due to the difference in fishing methods used on one hand, and efforts exerted on the other.

b. Correlating this income with a number of influencing external and internal factors, foremost among which are: the change in the cost of living and in the value of fish production inputs and the change in the incomes of those working in other sectors.

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7/ The Basic-Needs Approach to Development. Some issues regarding concepts and methodology, ILO, Geneva, 1977.

8/ Asfahani, Aida, A Study on the Economics of Food and Nutrition, Memorandum No. 1289, National Planning Institute, Cairo, February 1981 (Arabic).

9/ The other 'opportunity cost' of fishermen immigrating to the neighbouring oil countries which attract fishermen.

c. The influence of climatic and physical conditions on fish production.

d. Distributing this income among different fish species according to their quantities and marketability which differ from one season to another.

In spite of these difficulties, using the suitable income as a price determinant is considered the best method to encourage fishermen and to enhance their social and economic conditions.

#### 4.3 The approach used for determining the pricing structure

In order to determine the pricing structure that would ensure the suitable income for fishermen, the following items were delineated:

a. Composition of the catch

Due to the non-availability of adequate data on catch composition in Al Quseir area, data related to binding composition of Wadi Al Gimal Fishing camp was used, Annex (4)-1.

b. Distribution of fish species into groups that reflects the consumers' preferences

On the basis of data obtained from the questionnaire, species were distributed among five groups as indicated in Annex (4)-2.

c. Determining the differences in prices of the different groups which is considered a monetary evaluation of the consumers' preferences

Present difference in prices of the different categories reflect the consumers' preferences. This was confirmed by the data obtained from the questionnaire which confirm, in return the consumers' acceptance of the present differences in fish species prices, Annex (4)-3.

d. Estimating the cost of production

The cost of production was estimated on the basis of the average cost of fishing boats 'felukas' which took part in Wadi Al Gimal Fishing camp for the following reasons:

1. The feluka is considered a marginal production unit, hence, the income of a feluka fisherman should be considered the marginal income which the suitable income should exceed.
2. Accurate figures of 'felukas' cost production are available from the camp's records.



The average cost of a feluka was estimated at about L.E. 75 a month distributed as follows: (Annex [5]-1).

Operating costs .....	L.E. 38.137
Boat costs .....	L.E. 7.007
Marketing costs .....	L.E. 29.437

e. Distribution of the catch among the different price categories

According to the data obtained from Wadi Al Gimal Fishing camp, the average daily catch of a feluka is estimated at 19 kilogram (marginal catch), which is equal to 317 kilogram a month. On the basis of the previous price groups, the catch could be distributed as follows:

- 1st. Category: 57.060 kilogram, which represents 18% of the catch
- 2nd. Category: 120.460 kilogram, which represents 38% of the catch
- 3rd. Category: 101,440 kilogram, which represents 32% of the catch
- 4th. Category: 6.340 kilogram which represents 2% of the catch
- 5th. Category: 31.700 kilogram which represents 10% of the catch

f. Uisng the following model :

$$I + E = Q_1 \times P_1 + Q_2 (P_1 - D_1) + Q_3 (P_1 - D_2) + \dots\dots Q_N (P - D_N)$$

- where I = proposed suitable income
- E = total cost
- $Q_1$  = landing from the first category
- $Q_2$  = landing from the second category
- $Q_N$  = landing from category 'N'
- $P_1$  = price of first category
- $P_2$  = price of second category
- $P_N$  = price of category 'N'
- $D_1$  = difference in price between first and second category
- $D_2$  = difference in price between first and third category
- $D_N$  = difference in price between first and 'N' category

4.4 The proposed pricing structure in Al Quseir region

By using the previous data and by applying the previous mathematical model, it is possible to draw the pricing structure that would ensure the proposed suitable income as follows, Annex (5)-1:

First Category	: LE 0.66 per kilogram
Second Category	: LE 0.56 per kilogram
Third Category	: LE 0.46 per kilogram
Fourth Category	: LE 0.40 per kilogram
Fifth Category	: LE 0.25 per kilogram

By comparing these prices with the present prices prevailing in Cairo and Suez, one finds that these prices are still much lower. Price per kilogram in Cairo ranges between L.E. 0.700 and L.E. 4.000, and in Suez between L.E. 0.500 and L.E. 3.500.

#### 4.5 Alternatives for the pricing structure

In order to give adequate flexibility to those who draw the pricing policy to meet the different social, economic, and political considerations, following are a number of pricing alternatives to choose from them within the framework of the previous variables:

a. Increasing the price of the first category and retaining the prevailing prices of other categories at 15/09/81 as follows: The first category includes the excellent species for which there is a 'special' demand. Most of these species are not consumed by consumers with a limited income. Hence, price proposed for this group are estimated at L.E. 0.87 per kilogram. Annex (5)-2-A.

b. Increasing prices in the first and fifth categories only due to the fact that consumers in Al Quseir do not favour species in the fifth category which are mostly marketed in Cairo at high prices (L.E. 0.70 per kilogram, 1981), increasing the price of species in this category and marketing them in Cairo will not effect consumers' requirements in Al Quseir.

Assuming increasing the price of species in this category to be equal to those in the fourth category (L.E. 0.35 per kilogram), prices of species in the first category will then be L.E. 0.79 per kilogram. See Annex (5)-2-B.

#### c. Other pricing alternatives:

The previous prices were calculated on the basis of the current cost of production. It is planned to build an ice plant within the Cooperative Fishing Centre in Al Quseir. Consequently, the cost of ice will be reduced and might reach L.E. 0.35 per block<sup>10/</sup>. Similarly, based on Wadi Al Gimal experiment, fish transportation cost could be reduced to L.E. 0.025 per kilogram. In the light of the proposed reduction, a number of alternative could be proposed to be used as guidelines in the event of fixing prices. Annex (5)-3.

Similarly, the cost of production varies according to the kind of fuel used (gasoline, diesel, or kerosene) as follows:

#### 1. In case of using gasoline

Price of species in the first category is ..... L.E. 0.65/kg.  
Price of species in the second category is ..... L.E. 0.55/kg.  
Price of species in the third category is ..... L.E. 0.45/kg.  
Price of species in the fourth category is ..... L.E. 0.39/kg.  
Price of species in the fifth category is ..... L.E. 0.24/kg.

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<sup>10/</sup> Source: GERCO Company, Safaga Ice Plant. Ice Block = 25 kilogram.

2. In case of using diesel

Price of species in the first category is ..... L.E. 0.62/kg.  
Price of species in the second category is ..... L.E. 0.52/kg.  
Price of species in the third category is ..... L.E. 0.42/kg.  
Price of species in the fourth category is ..... L.E. 0.36/kg.  
Price of species in the fifth category is ..... L.E. 0.21/kg.

3. In case of Using kerosene

Price of species in the first category is ..... L.E. 0.63/kg.  
Price of species in the second category is ..... L.E. 0.53/kg.  
Price of species in the third category is ..... L.E. 0.43/kg.  
Price of species in the fourth category is ..... L.E. 0.37/kg.  
Price of species in the fifth category is ..... L.E. 0.22/kg.

CONCLUSIONS AND RECOMMENDATIONS

The decreasing number of fishermen is due to the fact that they abandon the fishing sector in favour of the mining and tourism sectors which are favoured for the high wages they pay to their workers compared to the fishing sector. Socio-economic studies conducted by the Project RAB/81/002 revealed that these phenomena are caused by a number of overlapping and inter-related factors. The most important one is the absence of pricing and marketing policies that would ensure a suitable income to fishermen to encourage them to remain in the fishing profession. After studying the present situation of the fish pricing and marketing system in Al Quseir, the following conclusions and recommendations were made. These, in turn, would help the concerned authorities to draw marketing and pricing policies that would ensure an appropriate revenue to fishermen to encourage them to remain in their profession, and in the meantime take the consumers' circumstances into consideration.

a. Marketing

1. Encouraging cooperative marketing through the Cooperative Marketing Centre established by the Project RAB/81/002 within the framework of the Cooperative Fishing Centre. This would be achieved by limiting the services offered by the Centre (particularly ice supplies) to fishermen who deliver their catch to the Cooperative Marketing Centre.

2. In order to facilitate the distribution of fish, the Cooperative Marketing Centre delivers the quantities needed by Government offices and companies to an agent appointed by these authorities upon an official notification specifying the required quantities. This applies to Al Quseir and other cities in the governorates.

3. Creating direct marketing channels between Al Quseir Cooperative Marketing Centre and fish mongers in Cairo to market the surplus quantities after satisfying the needs of the Red Sea Governorate, and to benefit from the high prices in Cairo.

4. To get to know the consumers' preferences inside and outside of the Red Sea Governorate and to use them in drawing the pricing and marketing policies.

b. Fish Prices

1. Fish prices in general and enforced prices in particular do not reflect the actual cost of this basic commodity which result in a defective structure for both production and demand. It is well-known that it is difficult to estimate accurate prices of fish based on the actual cost of production. This is caused, in turn, by the difficulty of estimating the actual cost of the factors of production, which reflects their scarcity. Hence, fish prices were determined with the objective of ensuring a suitable income for fishermen to encourage them to remain in this sector. Accordingly, the suitable income for fishermen was calculated by using the 'opportunity cost' approach. This means the income a fisherman would get if he abandons the fishing profession in favour of the mining sector which is the most attractive sector for fishermen in Al Quseir region. Accordingly, the average net monthly income was estimated at 125 pounds per feluka fishermen since he is considered the marginal fisherman.

2. According to the distribution of the different fish species into five-price categories in the light of the survey results, consumers preference in the region were identified. Differences in prices between these categories were maintained since they represent the monetary evaluation of these preferences. Furthermore, on the basis of calculating the marginal fisherman's productivity on the basis of data obtained from cooperative fishing camps, the pricing structure which release the proposed suitable income would be as follows:

First category .....	L.E. 0.66/kg.
Second category .....	L.E. 0.56/kg.
Third category .....	L.E. 0.46/kg.
Fourth category .....	L.E. 0.40/kg.
Fifth category .....	L.E. 0.25/kg.

3. In order to give adequate flexibility to those who draw the pricing policy in order to meet the changing of social, economic, and political considerations, the following pricing alternatives were submitted:

a. Increasing the prices of the first category only to L.E. 0.87 per kilogram and retaining the prevailing prices in September 1982 without any amendments, since the first category includes the excellent species for which there is a special demand and which are not consumed by those with a limited income.

b. Increasing prices in the first and fifth categories only and retaining the prices of the other categories till September 1982 without any amendments. Species in the fifth category are not favoured by the local consumers and are mostly marketed in Cairo at higher prices. Accordingly, prices proposed for these two categories are:

First category ..... L.E. 0.79/kg.  
Second category ..... L.E. 0.35/kg.

4. The necessity of revising and amending the pricing policies continuously according to the changes that take place, foremost among which are:

- a. Increase in cost of living;
- b. Increase in prices of production inputs; and
- c. Increase in income earned by those working in sectors that attract fishermen.

App. No. (1) - 1  
 Prices of Fresh Fish for Quseir Region  
 1/10/1977

Species	Fisherman LE/K g	Co-operative LE/Kg	Wholesale LE / Kg	Consumer LE / Kg
Sharptooth Red snapper - Job fish- Iongspine sea bream- spanish mackerel Majarro (No.1) Red mullet- Grey mullet.	0.320	0.330	0.340	0.350
Spengled emperor - Coral trout	0.260	0.270	0.280	0.300
Grouper- Barracuda - Rabbit fish Greasy grouper-Grunt- Emperor-yellow tail emperor - Tuna fish- Two-spot Red snapper- Jack. Rosy bream (No.1)	0.240	0.250	0.260	0.280
Parrot fish-Needle fish- Forster's barracuda- Jack (10-15 kg)- Rosy bream (No.2) Mojarra (No.2)	0.210	0.220	0.230	0.250
sea chubs - shark- Little tuna Guitar fish-longe sized Greasy grouper- Guitar fish Rays	0.190	0.200	0.210	0.230

Remarks : (1) the price of Little tuna has to decrease down to  
 LE.O.170/kg in the fishing season from May-September  
 and raising the price of kg.with 30 Mms for trans-  
 portation to "Ras Ghareb.

(2) LE. = Mms 1000

Source : Red Sea Governorate - Supply Department

App. No. (1)-2

Prices of Fresh Fish for Al Quseir Region  
9/4/1979

Categories	Species	Fish prices from fishermen to Fishermen Co-operative LE/kg.	Fish price from fishermen Co-operative to Consumer-Cooper. and fish traders LE/kg	Consumer price LE/kg
1	Longspine sea bream-sharptooth Red snapper- Job Fish-spanish mackerel	0.400	0.430	0.450
2	Spengled emperor-yellow tail emperor-Mojarra-Rosy bream-Barracuda-Jack.	0.300	0.330	0.350
3	Grouper-Tuna fish-Two-spot Red snapper-Coral trout-Grunt-Greasy grouper-Rabbit fish Emperor-Parrot fish - Sea chubs-Needle fish-Little tuna Forster's barracuda	0.230	0.260	0.280
4	Shark - Rays-Guitar fish	0.180	0.210	0.230
5	Grey mullet	0.500	0.530	0.550

Source: Red Sea Governorate-Supply Department.



App. No. (1)- 3

Prices of Fresh Fish  
 From the Project of Fish Wealth  
 In Hurghada to Hotels, restaurants, and clubs  
 14/2/1981

Categories	Species	Fisher's Price to the Project	Project price to hotels - resturantes&Clubs
1	Longspine sea bream-sharptooth Red snapper-Job fish - Spanish mackerel Mojarro (No.1)	LE./Kg. 0.650	LE./Kg. 0.800
2	Spengled emperor-yellow tail emperor.- Rosy bream (No.1) - Barracuda-Coral trout.	0.550	0.700
3	Grouper-Jack-Mojarra (No.2) Two spot Red snapper- Greasy grouper-Grunt - Rabbit fish- Emperor	0.450	0.600
4	Parrot fish- sea chubs- Needle fish-Forster's barracuda	0.350	0.500
5	Shark - Rays - Guitar fish- Little Tuna	0.200	0.350

Source : Red Sea Governorate- Supply Department

Prices of Fresh Fish for Domestic  
Consumption in Hurghada  
14/2/1981

Categories	Species	Fisher price to the Project	Project's price to traders	Consumer price
First	Longspine sea bream- sharptooth Red snapper Job fish-spanish mackerel-Mojarra (No.1)	LE./Kg. 0.500	LE./Kg. 0.530	LE./Kg. 0.550
Second	Spengled emperor - yellowtail emperor - Needle fish-Rosy bream ( No.1 ) Barracuda - Coral trout	0.400	0.430	0.450
Third	Grouper - Jack - Mojarra (No.2)- Greasy grouper - Rabbit-fish Emperor	0.350	0.380	0.400
Fourth	Parrot fish - sea chubs - Needle fish- Forster's barracuda	0.300	0.330	0.350
Fifth	Shark-Rays Guitar fish- Little tuna	0.150	0.180	0.200

Source : Red sea Governorate - Supply Department.

Obligatory Prices for Fresh Fish on the beginning of September 1981  
in The Red Sea Governorate

Species	Producer's Price LE./Kg	Fish Marketing Price LE./Kg.	Consumers Price LE./Kg.					
			in Hurghada	in Quseir	in Safaga	in Ras Ghareb	Restaurants, Clubs and others	Tourist Hotels
Longspine sea bream- sharptooth red snapper- Job fish-spanish mackerel- Mojarra (No.1)	0.610	0.660	0.700	0.700	0.730	0.750	0.800	1.000
Spengled emperor-yellow tailemperor-Needle fish- Coral trout-Barracuda- Rosy bream (No.1)	0.510	0.560	0.600	0.600	0.630	0.650	0.700	0.900
Grouper-Greasy grouper- Two-spot Red snapper- Grunt Jack-Rosy bream (No.2) - Rabbit fish(No.1)	0.410	0.460	0.500	0.500	0.530	0.550	0.600	0.800
Parrot fish-Sea chubs - Needle fish-Forster's barracuda.	0.350	0.410	0.450	0.450	0.480	0.500	0.550	0.750
shark- little tuna. Guitar fish-Rabbit fish (No.2)	0.200	0.260	0.300	0.300	0.300	0.350	0.400	0.580

The Egyptian Fish Marketing Company pays EL0.001 for Fishermen's Cooperative, in Hurghada, as well as EL0.001 for Services Fund of the Governorate for every kg. This prices decreased by EL.050 in May, June, August, every year.

Source: Red Sea Governorate - Supply Department.

App. No. (1)-6

Obligatory fresh fish prices for Al Quseir

1/5/1982

Categories	Species	Price LE./ Kg.				Tourists Hotels
		from producer to the Fishermen Co-operative	from the Cooperative to the Egyptian Fish Marketing Co. Consumer Co- operatives and traders*	Consumer	Restaurants, Clubs & Others	
1	Sharptooth Red snapper- Job fish-Longspine Sea bream-spanish mackerel	0.610	0.650	0.700	0.800	1,500
2	Mojarra-spengled emperor-yellow tail emperor-Coral trout- Barracuda	0.510	0.550	0.600	0.700	1,400
3	Grouper-Rosy bream- Greasy grouper-Two- spot Red snapper- Grunt Jack.	0.410	0.450	0.500	0.600	1,300
4	Parrot fish-sea chubs Needle fish-forster's barracuda-Rabbit Fish	0.350	0.400	0.450	0.550	1,250
5	Little tuna- Guitar fish	0.200	0.250	0.300	0.400	1,110

\* P.T 2 are deducted from the prices for the local services fund and the Fishermen Cooperative Society (P.T. 1 each).

Source : Red Sea Governorate-Supply Department.

App. No.(1)- 7

Changes in obligatory fish prices  
1977 - 1982

Categories	Fisherman's price in 1/10/1977 LE .Kg	Fisherman's price in 1/5/1982 LE . Kg	Percentage of Change %
First	0.320	0.610	90.63
Second	0.260	0.510	96.15
Third	0.240	0.410	70.80
Fourth	0.210	0.350	66.70
Fifth	0.190	0.200	5.30

App. No. (1)-(3)

Changes in species included in prices categories  
through the period from 1977-1982

Species	Price Category in 1/10/77	Price Category in 9/4/1979	Price Category in 14/2/81	Price Category in 1/9/ 81	Price Category in 1/5/82
Coral trout	Second	Third	Second	Second	Second
Mojarra (No.1)	First	Second	First	First	Second
Mojarra (No.2)	Fourth	Third	Third	Third	Second
Rosy bream (No.1)	Third	Second	Second	Second	Third
Sea chubs	Fifth	Third	Fourth	Fourth	Fourth
Little tuna	Fifth	Third	Fifth	Fifth	Fifth
Needle fish	Fourth	Third	Fourth	Fourth	Fourth
Parrot fish	Fourth	Third	Fourth	Fourth	Fourth

App. No. 1-9

Development of Fish Prices in Al Quseir through the Period from 1/10/77-1/5/82

Date of pricing	Species	Producer's Price
1/10/77	Sharptooth Red snapper- Job fish- Longspine sea bream-spanish mackerel Mojarra No.1-Red mullet-Grey mullet.	LE./Kg. 0.320
8/4/ 79	Spengled emperor- Coral trout.	0.260
	Grouper-Barracuda-Rabbit fish- Greasy grouper- Grunt-Emperor- yellow tail emperor-Tuna fish- Two spot Red snapper Jack (less then 10 kg)-Rosy bream (No. 1).	0.240
	Parrot fish-Needle fish-forster's barracuda- Rosy bream (No.2)-	0.210
	Sea chubs-shark-Little tuna - Greasy grouper big Guitar fish- Rays.	0.190
9/4/79	Longspine sea bream-sharptooth Red snapper-Job fish-spanish mackerel.	0.400
	spengled emperor-yellow tail emperor-Needle fish Mojarra-Rosy bream-Barracuda-Jack.	0.300
	Grouper-Tuna fish-Two spot Red snapper-Coral trout-Grant - Greasy grouper-Rabbit fish Emperor- Parrot fish-sea chubs- Needle fish- Little tuna	0.230
	Shark- Rays- Guitar fish.	0.180
	Grey mullet	0.500

Source : Red sea Governorate supply Department of Hurghada.



App. No.1-9

Continued

Date of Pricing	Species	Producer's Price LE./Kg
14/2/81	Longspine sea bream-sharptooth Red snapper-Job fish-spanish mackerel-Mojarra No.(1)	0.500
	Spengled emperor-Yellow tail emperor-Rosy bream No.(1) Barracuda- Coral trout.	0.400
	Grouper- Jack- Mojarra No.(2)-Greasy Grouper- Two-spot Red snapper- Grunt Tuna fish-Rabbit fish.	0.350
	Parrot fish-sea chubs-Needle fish-Forster's barracuda.	0.300
	Shark- Rays- Guitar fish- Little tuna	0.150
1/9/81 <sup>(+)</sup>	Longspine sea bream- sharptooth Red snapper- Job fish- spanish mackerel-Mojarra No.(1)	0.610
	Spengled emperor- yellow tail emperor-trout - Barracuda - Rosy bream (1)	0.510
	Grouper-Greasy grouper-Two.spot Red snapper- Grunt-Emperor- Tuna fish-Jack- Mojarra No.(2)	0.410
	Parrot fish-sea chubs- Needle fish-Forster's barracuda	0.350
	Shark- Little tuna- Guitar fish - Rabbit fish (No.2)	0.200
1/5/82	sharptooth Red snapper-Job fish-Long-spine sea bream-spanish mackerel	0.610
	Mojarra,- spengled emperor-yellow tail emperor- Needle fish- Coral trout-Barracuda	0.510
	Grouper-Rosy bream-Greasy grouper-Two-spot Red snapper-Grunt-emperor-tuna fish-Jack	0.410
	Parrot fish-sea chubs- Needle fish-Forster's barracuda-Rabbit-fish.	0.350
	Little tuna- Guitar fish.	0.200

+ Prices have to decrease with EL. 0.050/kg through May, June-August every year.

App. (No.1)-10

Fish landings and their tendencies  
inside and outside the Red Sea Governorate  
in 1981  
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Month	Inside the Governorate						Outside the Governorate	Total
	Hurghada	Clubs	Restaurants	Hotels	Ras Ghareb	Safaga		
	tons	tons	tons	tons	tons	tons	tons	
January	1.800	000.000	0.000	0.000	0.000	0.000	2.450	4.250
February	2.789	000.000	1.391	0.752	1.018	0.000	1.978	7.928
March	10.136	000.000	2.102	3.309	0.000	0.000	6.232	21.779
April	7.411	2.568	4.755	3.866	0.000	0.000	14.181	32.781
May	16.806	3.281	2.000	0.900	0.000	0.000	117.900	140.887
June	13.599	2.248	2.000	1.104	0.000	0.000	74.760	93.711
July	7.433	0.000	1.000	0.245	0.000	0.000	64.570	73.248
August	3.500	0.558	0.280	0.270	0.000	0.000	5.400	10.008
September	11.000	0.800	0.500	0.000	0.000	0.000	6.900	19.200
October	14.000	0.000	3.900	0.000	5.000	0.500	6.005	29.405
November	12.631	3.000	0.000	1.000	4.000	0.000	0.000	20.631
December	17.000	3.800	0.000	0.800	1.370	0.500	1.000	24.470
Total	118.105	16.255	17.928	12.246	11.388	1.000	301.376	478.298

Total marketed fish = 176.922 tons.

Source : Red Sea Governorate supply Department.

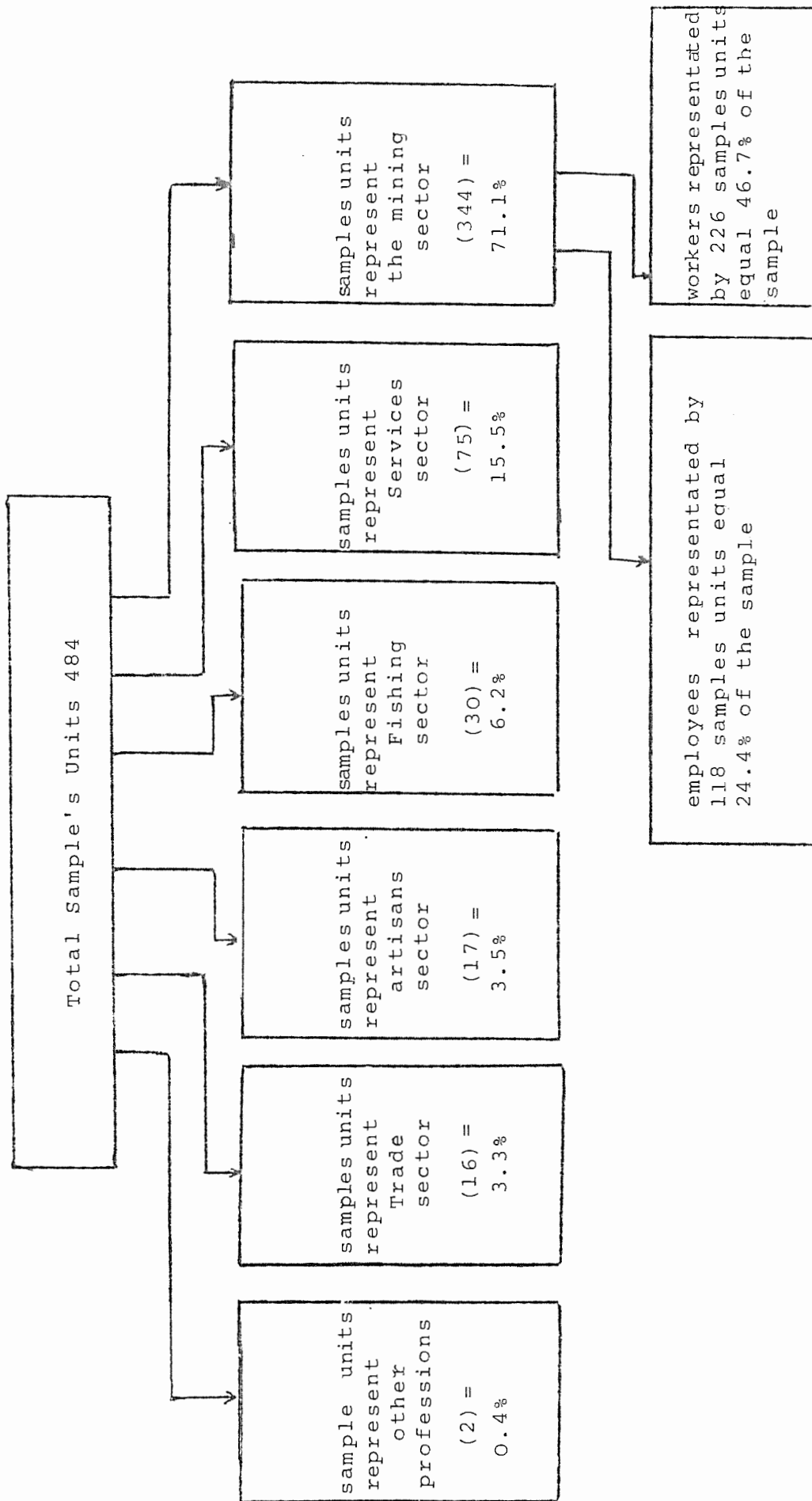


Fig.No.(1)

The distribution of the sample units among the different sectors of Al Quseir Community

App. No. (2)-2

Social Status of the Sample

Status	Married	Single	Single and family	Total
Numbers	417	51	16	484
%	86.2	10.5	3.3	100

App. No. (2)-3

Number and Percentage of Sample Units which  
stated the family size

Sample's units	stated family size	did not state size	Total
Number	433	51	484
%	89.5	10.5	100

App. No. (2)-4

Family Size of sample's units

Family size	2-3	4-5	6-7	8-9	10-11	12-17	Total
Numbers	93	127	110	63	29	11	433
	21.5	29.3	25.4	14.5	6.7	2.6	100

App. No. (2)-5

Consumers preference of Meat,  
Fish and Poultry

Item	First desire (number of sample's units)	%
Meat	297	61.4
Fish	151	31.2
Poultry	23	4.8
non-fixed	13	2.6
Total	484	100

App.No.(2)-6

Number and Percentage of the sample units determined weekly consumption of meat

Sample's units	stated their weekly consumption	did not state their weekly consumption	Total
Number	470	14	484
	97.1	2.9	100

App.No.(2)-7

Rates of meat consumption per weak for the sample units

weekly consumption/kg.	$\frac{1}{2}$ -1	>1 - 2	>2-3	>3-4	>4-5	5 >	Total
Sample's units	191	191	59	19	6	4	470
	40.6	40.6	12.6	4.0	1.3	0.9	100

App. (No. 2) -8

Numbers and Percentage of Sample's units  
which stated weekly  
Consumption of Poultry.

Sample's units	Stated consumption	did not state weekly Consumption	Total
Numbers	319	165	484
%	65.9	34.1	100

App. (No. 2) - 9

Rates of Poultry Consumption per week for  
the Sample units

Weekly Consumption/kg.	$\frac{1}{2}$ - 1	> 1 - 2	> 2 - 3	> 3 - 4	> 4-5	5 >	Total
Sample's units	90	153	60	10	5	1	319
%	28.2	48	18.8	3.1	1.6	0.3	100



App. No(2) -10

Number and Percentage of Sample Units  
which stated weekly  
Consumption of Fish  
-----

Sample's units	Stated weekly Consumption	did not state Consumption	Total
Numbers	459	25	484
%	94.8	5.2	100

App. No.(2)- 11

Rates of fish consumption per week for  
sample's units  
-----

Weekly consumption /kg.	½ -1	> 1-2	> 2-3	> 3-4	> 4-5	5 >	Total
Samples units	41	130	82	57	56	93	459
%	8.9	28.3	17.9	12.4	12.2	20.3	100

App. No. (2)- 12

Number and Percentage of samples units which stated  
the times of fish consumption  
per week  
-----

Samples units	Stated times of fish consumption	did not state weekly times of fish consumption.	Total
Number	411	73	484
	84.9	15.1	100

App. No. (2)- 13

Number of time for fish consumption per week

Number of times per week sample's units	1	2	3	4	5 - 7	Total
Sample's units	71	196	108	29	7	411
	17.3	47.7	26.3	7.1	1.6	100

App. No. (2)-14

Numbers and Percentage of the sample's units which  
stated the times of fish consumption  
per week  
in the case of fish abundance.

Sample's units	determined times of consumption	did not state times of consumption	Total
Number	473	11	484
%	97.7	2.3	100

App. No.(2) -15

Times of weekly fish consumption  
for the sample units at the case of abundance

Number of times of fish consumption per week	1	2	3	4	5	6-7	Total
sample's units	28	107	139	101	67	31	473
%	5.9	22.6	29.4	21.4	14.2	6.6	100

App. No. (2)-16

The availability of obtaining the need  
from fish

Sample's units	can not always obtain their needs from fish	can always obtain their needs from fish	Total
Number	473	11	484
%	97.7	2.3	100

App. No. (2) - 17

Desirable forms of sold fish

Forms of sold Fish	Complete ungutted	Gutted and Cutted	Complete and Gutted	Total
Sample's units	450	11	23	484
%	0.93	2.3	4.7	100

All the sample consume fish as fresh

App. No. 2 -18

Number and percentage of the sample units which stated the desirable fish size

Samples units	stated fish size	did not state fish size	Total
Number	479	5	484
%	99	1	100

App. No. (2) -19

Desirable fish size

Fish size in kg.	< ½ - 1	> 1 - 2	> 2 - 3	> 3 - 4	Total
Sample units	50	218	207	4	479
%	10.4	45.5	43.2	0.9	100

## Sample's Preferences of the different fish species

Species	First desire		Second desire		Third desire		Fourth desire		Fifth desire		Sixth desire		Seventh desire		Eighth desire		Ninth desire		Tenth desire		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Longspine sea bream	8		8		34		8		6		4		1		3		-		-		72
Sharptooth Red snapper	24		62	13.8	34		40		31		20		9		-		1		-		221
Spanish mackerel	74	16.8	44		39		31		26		8		2		-		-		-		224
Spengled emporor	120	27.2	46		49		41		22		8		4		-		1		-		291
coral trout	-		2		-		3		2		6		5		5		4		-		27
Grouper	5		9		11		4		7		12		1		7		-		1		57
Jack	56		54	14.3	60	14.5	35		33		8		4		2		-		-		262
Two-spot Red snapper	1		4		9		6		5		6		6		2		-		-		39
Rabbit-fish	30		53		48		63	17.8	39	13.9	42	22.3	21		10	19.6	1		-		307
Parrot fish	62		38		37		23		20		12		5		1		1		-		199
Needle fish	19		19		27		31		34		13		5		2		1		-		151
Shark	2		1		2		3		3		2		1		-		-		-		14
Little tuna	-		1		3		2		-		1		-		-		-		-		7
Yellow tail emperor	-		42		12		15		23		15		3		5		-		-		115
Mojarra	34		36		34		34		21		17		24	24	8		5	35.7	-		208
Red mullet	2		12		13		10		8		9		9		5		-		-		68
Grey mullet	4		7		2		4		1		4		-		1		-		-		34
Total	441		148		414		353		281		158		100		61		14		1		

Sample's suggestions of fish prices P.T/K.g.\*

Species	Sample's units determined their suggestions	Price from 55-60	%	Price from 50-55	%	Price from 45-50	%	Price from 40-45	%	Price from 35-40	%	Price from 30-35	%	Price from 25-30	%
Spanish Mackerel	242	206	85.1												
Sharptooth Red snapper	221	185	83.7												
Longspine sea bream.	83	70	84.4												
Jack	262			210	80.1										
Spengled emperor	291			251	86.3										
Two.spot Red snapper	39			15	38.5										
Parrot fish	199					87	43.7								
Rabbit fish	307					272	88.6								
Needle fish	151					88	58.4								
Grouper	87							68	78.2						
Coral trout	33							24	72.7						
Little tuna	53											38	71.7		
Shark	34													17	50

\* EL= PT 100

App. No.(2) - 22.

Number and Percentage of Sample's units which stated opinions for present fish prices

Sample's units	Stated their opinions	did not state their opinions	Total
Number	477	7	484
%	98.6	1.4	100

App. No. (2)- 23

The Opinions for the Current fish prices

Opinion	Suitable	high	low	total
Number	336	133	8	477
%	70.4	27.9	1.7	100



App. No. (2)-24

Number and Percentage of sample's units which stated consumption preferences in the different seasons of the year

Sample's units	stated desire	did not state desires	Total
Number	482	2	484
%	99.6	0.4	100

App. No. (2)-25

Season	Winter	Summer	Spring	all the year	Total
Sample's units	74	13	3	392	482
%	15.4	2.7	0.6	81.3	100

App. No.(2) -26

Number and Percentage of Sample's units which determined their income

Sample's units	stated their income	did not state their income	Total
Number	467	17	484
%	96.5	3.5	100

App. No.(2) - 27

Distribution of sample's units among income ranges (EL.)

Income ranges	20 - 30	31 - 40	41 - 50	51 - 60	61 - 70	71 - 80	81 - 90	91 - 100	101 - 110	111-120	more than 120	Total
Number	46	76	85	57	54	50	29	28	15	14	13	467
%	9.9	16.3	18.2	12.2	11.6	10.7	6.2	6	3.2	3	2.7	100

Annex (3)

Determining the Actual and Projected Demand for Fish

1. The Actual Demand

This is achieved by determining the average weekly consumption per individual by estimating the total quantities of fish consumed weekly by the samples' units. This is followed by determining the community population represented in the sample (10% of Al Quseir community) by determining the average number of each family, and the number of single persons.

A. Determining the average number of family members:

This is achieved by multiplying the average size of a family for each category x total of each category. The resultant from each group will be divided by the total number of the sample's units (Annex (2)-4).

$$= \frac{93 \times 2.5 + 127 \times 4.5 + 110 \times 6.5 + 63 \times 8.5 + 29 \times 10.5}{422}$$

average family size = 5.59 persons

B. Determining the samples' population:

Analysis of quantities of fish consumed weekly show that there were 459 units who stated their fish consumption, of which there were 324 married (families) and 135 singles\*.

$$\text{Total samples' population} = 324 \times 5.59 + 135 = 1811.160 + 135 = 1946.160$$

individuals

C. Determining the weekly consumption per capita:

$$\begin{aligned} \text{Average weekly consumption per capita} &= \\ &= \frac{\text{Weekly total consumption of the sample}^{**}}{\text{total number of the sample's population}} \\ \text{Average weekly consumption per capita} &= \\ &= \frac{1102.750}{1946.160} = 0,556 \text{ kg/week} \end{aligned}$$

$$\begin{aligned} \text{Average weekly consumption per family} &= \\ &= 0,566 \times 5.59 = 3.163 \text{ kg/week} \end{aligned}$$

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\* Data analysis show that some units of the sample were married but their families live in Sohag and other areas- hence, they were considered bachelors regarding their fish consumption.

\*\* Calculated from questionnaire forms

D. Determining the Actual Demand for Fish :

Monthly total consumption of fish per family =  
 $0.566 \times 5.59 \times 4$

Monthly total consumption per community sample =  
 $3,164 \times 4 \times 324$  (married units) +  $0.566 \times 4 \times 135$  (singles) =  
 $4100.544 + 305,640 = 6,184$  kg/month  
Monthly demand per community sample (in tons) = 4.406 ton/month

As, the sample represents 10% of the community

The actual demand of the community as a whole =

$4.406 \times 10 = 44.6$  ton/ month

Actual annual demand by ton =  $44.06 \times 12 = 528.7$  ton/year.

11. Projected Demand

In order to determine the total projected demand :

A. Determining the average number of times of fish consumption in case of abundant fish production :

Average number of times of fish consumption per week in case of abundant fish production =

$$\frac{\text{average number of times per rang} \times \text{total numbers of units per rang}}{\text{total number of sample's units}}$$

$$= \frac{28 \times 1 + 107 \times 2 + 139 \times 3 + 101 \times 4 + 67 \times 5 + 31 \times 6.5}{473} = 3.38 \text{ times}$$

B. Determining the average number of times of weekly consumption at the present situation :

Average per capita consumption per meal :  $\frac{0,566}{2.3} = 0.250$  kg

Quantities consumed monthly (in case of fish abundance) =  
 $0.250 \times 3.38 \times 324 \times 5.59 \times 4 + 0.250 \times 3.38 \times 135 \times 4 = 6121.7 + 456.3$

Therefore, quantities required for the sample per month = 6578 kg

quantities required for the sample per year = 78.936 tons

Total projected demand for Al Quseir community per year = 789.36 tons

App. (4)-1

Catch composition of Wadi El Gemal Fishing Camp.  
according to prices categories

Price categories	Species	Quantity kg.	Total kg.	Percentage	Production
First	Job Fish	546.90	7286.75	1.7	22.1
	Mojarra (No.1)	1162.20		3.5	
	Sharptooth	5182.50		15.7	
	red snapper				
	Spanish mackrel	292.50		0.9	
	Longspine sea bream	102.65		0.3	
Second	Spengled Emperor	4916.70	7367,00	14.8	22.3
	Coral trout	2140.45		6.5	
	Barracuda	219.85		0.7	
	Others	90.00		0.3	
Third	Mojarra (No.2)	668.20	13356.35	2.0	40.4
	Jack	1695.30		5.1	
	Horse mackerel	36.55		0.1	
	Grouper	8266.90		25.0	
	Two.spot Red snapper	1622.90		5.0	
	Grunt	25.30		0.1	
	Greasy grouper	997.30		3.0	
	Rabbit-fish	43.90		0.1	
Fourth	Needle fish	231.30	1833.31	0.7	5.6
	Parrot fish	1101.40		3.4	
	Sea chubs	500.61		1.5	
Fifth	Shark	2524.90	3183.05	7.7	9.6
	Rays	309.50		0.9	
	Others	348.65		10.0	
Total		33026.46	33026.46	100	100

App. No.(4)- 2

The suggested distribution of species  
among price categories.

Categories & species	Percentage	Production %
<u>First :</u> Spanish mackerel Sharptooth Red snapper Longspine sea bream Job - fish	0.9 15.7 0.3 1.7	18.0
<u>Second :</u> Mojaraa Jack Coral trout Spengled emperor Two spot Red snapper Barracuda	5.5 5.1 6.5 14.8 5.0 0.7 0.3	38.0
<u>Third :</u> Grouper  Grunt Greasy grouper Rabbit-fish Parrot fish	25.0 0.1 0.1 3.0 0.1 3.4	32.0
<u>Fourth:</u> Needle fish Sea chubs	0.7 1.5	2.0
<u>Fifth :</u> Shark Rays	7.7 0.9 0.7 0.3	10.0
Total	100.00	100.0

\* The Percentages are accounted from catch composition of Wadi El Gimal Fishing Camp.

App.No.(4)-3

Differences between price categories

Price differences among categories	First	Second	Third	Fourth	Fifth
First	-	10	20	26	41
Second	10	--	10	16	31
Third	20	10	--	6	21
Fourth	26	16	6	-	15
Fifth	41	31	21	15	--

Source : The list of obligatory prices.

Annex (5)-1

Calculation of the Proposed Pricing Structure for Al Quseir Region

Considering the average numbers of actual fishing days a year to be 200 days, and the average production per fisherman to be 19 kg/fishing day(\*), his monthly production would reach about 317 kg/month. (Total annual production 3800 kg/year).

By using the fish composition of the catch of Wadi Al Gemal Camp, and distributing the species among groups that reflect the consumers' preferences, the fisherman's monthly catch could be distributed among the different species groups as follows:

1. Production of species in the first group :

$$\frac{317 \times 18}{100} = 57.060 \text{ kg/month}$$

2. Production of species in the second group:

$$\frac{317 \times 38}{100} = 120.460 \text{ kg/month}$$

3. Production of species in the third group:

$$\frac{317 \times 32}{100} = 101.440 \text{ kg/month}$$

4. Production of species in the Fourth group:

$$\frac{317 \times 2}{100} = 6.340 \text{ kg/month}$$

5. Production of species in the fifth group:

$$\frac{317 \times 10}{100} = 31.700 \text{ kg/month}$$

Cost of Production (Feluka):

By using the data obtained from Wadi Al Gemal Fishing Camp which lasted for 45 fishing days, the items of expenditure are : (during 45 days )

A. Current expenses (type of fuel used in gasoline)	LE 102.972
B. Vessel expenses	LE 18.922
C. Marketing expenses	LE 79.483
Total expenses	LE 201.377

\*Source: Report No.RAB/77/008/23 Setting Up the Cooperative Fishing Centre and Its Socio-economic Impact, Al Quseir Fishing Centre, Part II. Prepared by A.A.Barrania.



When calculating Monthly Expenses per Feluka, these points should be taken into consideration :

1. These expenses were calculated on the basis of 45 actual fishing days, considering the average numbers of actual fishing days to be 200 days. Accordingly, the monthly expenses will be as follows :

A. Current expenses (gasoline used as fuel)	LE	38.137
B. Vessel expenses	LE	7.007
C. Marketing expenses	LE	<u>29.437</u>

Therefore, total monthly expenses per feluka = LE 74.581

2. The project will bear the wages and bonuses, not included in the previous items, in order to promote its work. After the termination of the project, the cooperative society is expected to bear part of these wages and bonuses for about LE 400 monthly. These are :

A. Four workers for handling purposes	LE	200.000
B. One mechanic	LE	100.000
C. One camp clerk	LE	50.000
D. One guard	LE	<u>50.000</u>
Total labour expenses	LE.	400.000 monthly

These are expenses for the minimum numbers of workers needed to promote the activities of the camp and centre. (They do not include salaries of Ministry of Agriculture employees which are borne by the government, as a subsidy for the cooperative society).

On the basis of calculating the average monthly catch from Wadi Al Gemal records, at 22 tons during the duration of the camp which is 45 days).

Therefore, labour cost per kg =  $\frac{400}{22} = 1.8 = \text{PT } 2/\text{kg}$ ,

Average monthly catch per fisherman = 317 kg/month,

Total labour expenses borne by the fisherman =  $317 \times 2 = \text{LE } 6.34$  monthly

Data obtained from Wadi Al Gemal camp show that there are 30 fishermen working on 12 felukas. The average daily catch per fisherman is 18.8 kg/day (19 kg/day).

Therefore, the average number of feluka/fishermen is:

$$\frac{30}{12} = 2.5 \text{ fisherman/feluka,}$$

and , the average daily catch per feluka is =  $18.8 \times 2.5 = 47 \text{ kg/day}$

Since the monthly catch per feluka is  $\frac{47 \times 200}{12} = 783.3 \text{ kg/month}$

The average cost per kg. of the previous items of expenses excluding labour =  $\frac{74.581}{783.3} = \text{PT } 9.5/\text{kg}$ .

The expenses borne by the fishermen (without labour) =  $317 \times 9.5 = \text{LE } 30.115$

Since the labour expenses borne by the fisherman monthly are LE 6.34

The total expenses borne by the fisherman monthly are =  $30.115 + 6.34 = \text{LE } 36.455$

In equation form it is :

$$I + E = Q_1 \times P_1 + Q_2 (P_1 - D_1) + Q_3 (P_1 - D_1) + \dots + Q_N (P_1 - D_N)$$

$$125 + 36.455 = 57.06 P_1 - 120.46 P_1 - 1204.6 + 101.44 P_1 - 2028.8 + 6.34 P_1 - 146.840 + 31.7 P_1 - 1299.7$$

Therefore,  $P_1 = \text{LE } 0.658/\text{kg}$ .

i.e. about = LE 0.660/kg.

Under the actual differences in prices among the different fish groups, the prices of fish groups will be as follows :

1. First group = PT 66/kg
2. Second group =  $66 - 10 = \text{PT } 56/\text{kg}$
3. Third group =  $66 - 20 = \text{PT } 46/\text{kg}$
4. Fourth group =  $66 - 26 = \text{PT } 40/\text{kg}$
5. Fifth group =  $66 - 41 = \text{PT } 25/\text{kg}$

Different alternatives for the Pricing structure

Annex (5) -2- A :

- Increasing the Prices of the First group ( and retaining the prevailing prices at 15/9/81 without any changes and at the current expenses ) :

By applying the following model

$$I + E = P_1 \times Q_1 + (P_2 \times Q_2 + P_3 \times Q_3 + P_4 \times Q_4 + P_5 \times Q_5)$$

$$125 + 36.455 = 57.060 P_1 + (0.51 \times 120.460 + 0.41 \times 101.44 + 0.35 \times 6.34 + 0.2 \times 31.7)$$

$$161.455 = 57.060 P_1 + 111.584$$

$$\text{Therefore, } P_1 = \frac{49.871}{57.06} = \text{LE. } 0.874/\text{kg}$$

$$P_1 = \text{LE. } 0.87/\text{kg approximately}$$

Annex (5) - 2 - B :

- Increasing the prices of the first group, and prices of the fifth group to the level of the fourth group:

By applying the following model

$$I + E = P_1 \times Q_1 + (P_2 \times Q_2 + P_3 \times Q_3 + P_4 \times Q_4 + P_5 \times Q_5)$$

$$125 + 36.455 = 57.060 P_1 + (0.51 \times 120.460 + 0.41 \times 101.44 + 0.35 \times 38.04)$$

$$161.455 = 57.06 P_1 + 116.3386$$

Therefore,  $P_1 = \frac{45.1164}{57.06} = \text{LE. } 0.79/\text{kg.}$

$P_1 = \text{LE. } 0.79/\text{kg}$  approximately

Annex (5) - 3

Other Pricing Alternatives

Considering the average catch per fisherman is 317 kg/month, and his average daily catch about 19 kg/day, and the average number of fishing days 200 days/year ;

Assuming lowering the price per ice block to PT 35, transportation cost per kg to be PT 2.5, and percentage of dehydration to be 5% of the value of the catch,

In order to calculate the total expenses in this case, marketing expenses, current expenses and vessel expenses should be calculated, taking this proposed reduction into consideration, in order to be able to apply the mathematical model.

1) Calculating Marketing Expenses :

Since the average daily catch per feluka is = 48.783 kg/day<sup>(\*)</sup>

Therefore, the average monthly catch per feluka =  $\frac{48.783 \times 200}{12} = 813.05\text{kg/month}$

Average monthly transportation cost per feluka =  $813.05 \times 0.025 = \text{LE } 20.326$

Dehydration cost is calculated as follows :

1. Distributing the fisherman's average monthly catch (317 kg) among the different price groups according to the percentage of each group.
2. Deducting 5% from the total value of the catch
  - A. value of monthly catch of the first group, price of kg/fisherman=  
 $317 \times 18\% \times 0.610 = \text{LE } 34.81$
  - B. value of monthly catch of species in the second group=  
 $317 \times 38\% \times 0.510 = \text{LE } 61.43$
  - C. value of monthly catch of species in the third group =  
 $317 \times 32\% \times 0.410 = \text{LE } 41.59$
  - D. value of monthly catch of species in the fourth group=  
 $317 \times 2\% \times 0.350 = \text{LE } 2.22$
  - E. value of monthly catch of species in the fifth group =  
 $317 \times 10\% \times 0.200 = \text{LE } 6.34$

Total value of the catch per month = LE. 146.39

Value of dehydration (5%) = LE 7.32

Total marketing expenses = 20.326 + 7.320 = LE 27.64

2) Calculating Current Expenses :

Before calculating the current expenses, expenses of ice spent in preserving the fisherman's monthly catch (317 kg/month) should be calculated.

Total quantity of ice required =  $317 \times 1.5^{(*)}$  = 475.5 kg of ice; number of ice blocks used =  $475.5 \div 25$  = 19 blocks approximately

Total expenses of ice (under the proposed reduction)  
 $0.35 \times 19$  = LE 6.65 per month

By using the available items of current expenses obtained from Wadi Al Gemal records, calculated on the basis of the duration of the camp (45 days); and as a result of the difference in actual and proposed expenses of ice used, if calculated on a monthly basis (considering that the number of actual fishing days are 200 days a year).

The current expenses will be as follows :

<u>Item of expenses</u>	<u>Sort of fuel</u>		
	<u>Kerosene</u>	<u>Diesel</u>	<u>Gasoline</u>
Average monthly cost of fuel	6.559	2.388	20.020
" " " " ice	6.650	6.650	6.650
" " " " foodstuff	3.915	3.915	3.915
Total	17.124	12.953	30.585

3) Vessel Expenses :

These were calculated on the basis of the duration of the camp (45 days) at LE 18.922. If calculated on monthly basis will be LE 7.007 (number of actual fishing days is 200 days/year).

Hence, total feluka expenses which differ according to the type of fuel used will be :

1. In case of using kerosene as fuel :  
 $27.64 + 17.124 + 7.007$  = LE 51.77
2. In case of using diesel, the expenses will be :  
 $27.64 + 12.953 + 7.007$  = LE 47.6
3. In case of using gasoline, the expenses will be  
 $27.64 + 30.585 + 7.007$  = 65.22

As a result of difference in costs according to the type of fuel used, the pricing will differ accordingly.

1. In case of using gasoline for fuel :

Since the average monthly catch per feluka = 783.3 kg/m

Then, the average cost per kg, calculated on the basis of the previous items of expenditure, excluding labour =  $\frac{65.22}{783.3} = \text{PT } 8.3/\text{kg}$ .

Therefore, monthly expenses to be borne by the fisherman (excluding labour) =  $317 \times 8.3 = \text{LE } 311.26$  per month.

Sinec labour expenses borne monthly by the fisherman are = LE 6.34 per month

The total expenses borne monthly by fisherman =  $26.311 + 6.34 = \text{LE } 32.651$  per month

by applying the following model :

$$I + E = Q_1 \times P_1 + Q_2 (P_1 - D_2) + Q_3 (P_1 - D_2) \dots + Q_N (P_1 - D_N)$$

$$125 + 32.651 = 57.06 P_1 + 120.46 P_1 - 1204.6 P_1 - 2028.80 + 6.34 P_1 - 164.840 + 31.7 P_1 - 1299.7$$

$$157.651 = 317 P_1 - 47.9794$$

$$P_1 = \frac{204.6304}{317} = 0.645 \text{ per kg}$$

Therefore,  $P_1 = \text{PT } 65$  per kg

2. In case of using diesel for fuel :

In this case the average cost per kg =  $\frac{47.6}{783.3} = \text{PT } 6.1$  per kg approximately

Therefore, monthly expenses borne by fisherman (without labour) =  $317 \times 6.1 = \text{LE } 19.337$  per month

Hence total expenses borne monthly by fisherman =  $19.337 + 6.34 = \text{LE } 25.677$  per month

By applying the following model :

$$I + E = Q_1 \times P_1 + Q_2 (P_1 - D_1) + Q_3 (P_1 - D_2) \dots + Q_N (P_1 - D_N) \quad 125 + 25.677 =$$

$$317 P_1 - 46.9794$$

$$150.677 = 317 P_1 - 46.9794$$

$$\text{Therefore, } P_1 = \frac{197.6564}{317} = \text{PT } 62 \text{ per kg}$$

3. In case of using kerosene as fuel :

In this case the cost per kg (without labour)

$$\frac{51.77}{783.3} = \text{PT } 6.61 \text{ per kg}$$

Monthly expenses borne by the fisherman (without labour) =  $317 \times 6.61 =$   
LE 20.9537 per month

Hence, total monthly expenses borne by the fisherman =  $20.9537 + 6.34 =$   
LE 27.2937 per month

By applying the following model :

$$I + E = Q_1 \times P_1 + Q_2 (P_1 - D_1) + Q_3 (P_1 - D_2) \dots + Q_N (P_1 - D_N)$$

$$125 + 27.2937 = 317 P_1 - 46.9794$$

$$152.2937 = 317 P_1 - 46.9794$$

$$\text{Therefore, } P_1 = \frac{199.2731}{317} = \text{LE. } 0.628/\text{kg.}$$

$P_1 = \text{PT. } 63 / \text{kg}$  approximately.

