Pre-Feasibility Study

COMMERCIAL FISHING TRAWLER

Small and Medium Enterprises Development Authority

Ministry of Industries & Production

Government of Pakistan

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1. PURPOSE OF THE DOCUMENT:

This pre-feasibility study is being prepared by SMEDA and is intended to provide general information on the opportunity for an investor in the fishery sector to construct a boat well equipped with latest and modern technological tools which can increase the total catch and profits for the investor.

2 PORJECT PROFILE

2.1 Opportunity Rationale:

Fish Boats is one of the most important and crucial element in the overall production of fish. The entire success or failure of an individual lies in the efficient utilization of its boat. Efficiency can be attributed to many factors like good quality fish, high volume of catch and shorter voyage time. All these factors can be achieved by using modern, contemporary and state of the art fishing boats, but unfortunately our fish boats are not modern and are in haphazard and poor conditions. These boats are wooden, non-mechanized and outdated and have lived their utility and therefore require frequent repair. Secondly, facility such as cold storage and chilling on board are missing, which are responsible for lot of waste. Third our boats are devoid of modern navigational equipment such as echo sounders and fish finders. Fourth, the lack of education and training among the boat builders has made the matters worse. It is because of all these reasons that there is an immense need to modify the boats so as to improve our catch per voyage which will result in increase profits.

2.2 Project Brief:

Pakistan has a total coast line of 1050 km. and has a total fishing area of approximately 300270 sq. kms. Pakistan's fishing grounds are termed as highly rich in marine life with a vast variety of species having commercial importance. Despite this huge potential, the revenues from the fishery sector are next to nothing. This is partly because of the use of obsolete fishing vessels not equipped with latest technological tools due to which large area of our sea remains unexploited and partly because of the wastage of our fish catch due to improper handling and preservation techniques.

By modifying the boat, one can eliminate both these factors and thus can improve the profitability of the individual investor in particular and overall fishery sector in general. This pre-

feasibility is created with a view that improving the existing condition of the fishing boats will definitely result in doubling of earning for the investor.

2.3 Market Entry Timing:

The fishermen observes five fishing season in a year

1) Ketti from August to October
2) Siyaro from November to January
3) Charo from February to March
4) Chetta from April to May
5) Unaro from June to July

Different species of fish are available and are caught in different seasons. Fishing within the coastal belt is conducted throughout the year except in Unaro (June and July) when the monsoon is in full swing. The mechanized gill netter and trawlers, however, conduct fishing even during monsoon period but in restricted areas not far from the shore.

The following table exhibits various varieties of fish available during the various seasons of the year

Months	Type of Fish
January – May	Mackerel, Tuna, Jew Fish
July – December	Black Pomfret
August – May	Shrimp
September/October – February	Indian Salmon, Beckti, Sole, Butter Fish
October – December	Sea Bream
December – June/July	White Pomfret, Shark, Eel
Throughout the Year	Cat Fish

Fishing season starts in the month of August and continues till May so it is preferable that the boats first voyage should start in the month of August. However one should keep in mind that it takes around 10 months to a year to build a boat so in order to start its first voyage in August, a person has to plan accordingly.

2.4 Proposed Business Legal Status:

The proposed legal structure of the business is a sole proprietorship and as such the financial feasibility is also prepared on the assumption of a sole proprietorship business

2.5 Project Capacity and Rationale:

For the purpose of this pre-feasibility the proposed boat is of 45 feet keel length and have the capacity to undertake 20 voyages in a year. The per voyage catch capacity for this boat is 5 tons.

2.6 Project Investment:

The project cost has been worked out to be 8.33 million rupees which includes a capital cost of Rs. 7.62 million for boat building and the rest is the working capital requirement. The proposed pre-feasibility is based on the assumption of 50% debt and 50% equity. However this composition of debt and equity can be changed as per the requirement of the investor

2.7 Proposed Product Mix

The proposed boat has the capacity to catch shrimps, fish and trash fish. The following are the core categories of the shrimps and fish which will be caught by this boat

Shrimps

- White Shrimps
- Brown Shrimps
- Kiddi Shrimps

Fish

- Ribbon Fish
- White Pomfret
- Black Pomfret
- India Mackral
- Sardine Fish

- Cuttle Maya
- Dimri Maya
- C.C. Maya
- Groaker Big
- Silver Grunter

2.8 Recommended Project Parameters:

Capacity	Human Resource	Technology/Machinery	Location
1) 5 tons/voyage 2) 20 voyages/year	10	Local + Imported	Karachi Fish harbour
Financial Summary			
Project Cost	**IRR**	**NPV**	**Payback Period**	**Cost of Capital(Wacc)**
Rs. 8.33 million	35%	**8,423,501**	3.12 years	16%

2.9 Proposed Location:

The proposed boat can be operated from Karachi Fish Harbour or Korangi Fish Harbour

2.10 Key Success Factors/Practical Tips for Success :

- Due to non mechanization of the boats and non availability of the navigational or electronic devices like sonar, echo sounders or other fishing aids it was observed that 50% of the total voyage time is wasted only on finding the fish. So the critical success factor is to make use of these latest tools which will result in huge quantity of fish in the shortest possible time.

- Under the current system of boat operation, crew work on profit sharing system, as a result crew keeps on changing boats which makes boat operation more problematic. Lack of permanency in crew results in inadequate maintenance of boat thus resulting in higher

operating cost. So it is advisable to higher the crew as a permanent employee which will result in proper handling of the catch and consequently reduce the post harvest losses.

- Train and educate the crew with the latest methods of fishing in order to improve the efficiency.

- Use of crates should be recommended as it will reduce the losses due to mishandling of the catch.

- Construct/modify the fish hold according to the European Union Standards so as to have the proper preservation of fish catch.

- Voyage time should be reduced so as to reduce the post harvest losses.

- Refrigerated sea water technology should be adopted for preservation of fresh fish and shrimp on board the fishing vessels.

- Adequate quantity of ice should be used for the proper preservation of fish/shrimp

3 SECTOR AND INDUSTRY ANALYSIS

3.1 Sector Characteristics

The importance of fishing in the economy of Pakistan has by no means diminished despite the rapid pace of industrialization. Pakistan is still predominantly an agricultural country. About 75 percent of population comprises of agriculturists, farmers and fishermen, who toil in producing the maximum quantity of food supply for the entire nation. With their assiduous efforts, the growth rate of agricultural production showed a marked improvement but the fishery sector has been sluggish over the recent years.

Fishing is the main source of livelihood for the people living in the coastal areas. It is estimated that around 400000 people are directly engaged in this sector and in addition another 400000 people are employed in ancillary industries. These people provide sea food to Pakistanis and foreigners.

The territorial sea water of coast of Sindh and Balochistan has the potential to provide sea food to many a times the present population of Pakistan. To add to the existing sea wealth, the importance of fisheries of sweet water cannot be ignored. The rivers of Pakistan provide livelihood to a large number of fishermen and are a source of supply of protein of high biological value to the growing population of the country.

Fishing is an important source of foreign exchange earning. According to the latest statistics of Export Promotion Bureau for 2003-2004, this sector earned foreign exchange worth USD 140 million or 1.27 percent of total export earnings during 2003-2004.

3.2 SUB SECTOR INFORMATION

3.2.1 Existing Condition of Fishing Fleets in Pakistan

Boat building, the basic input for fishery is in a haphazard and dilapidated condition. Most of the boats are wooden, non mechanized, old and outdated. They have therefore outlived their utility. They require frequent repairing and are poor in quality. Secondly, facilities such as cold storage and freezing on boat are missing, which are responsible for a lot of waste. Third, our boats are devoid of equipment such as echo sounders and fish finders and modern technology is missing which is used on aluminum or fiber glass boats.

Boats need refrigeration facilities on board, refrigerated sea water system and circulatory sea water system. There is also need for fiber glass boats and development of ancillary industries such as manufacturing of nets, hooks, floats, ropes etc.

Boats in Pakistan are traditionally wooden. As the price of the good quality wood such as Burma teak has risen over the last three decades, boat manufacturers or fisherman are switching to low quality wood resulting in making inferior boats Therefore there is a need to improve the construction methods and quality of wooden hull boats constructed at Karachi boat yard. Further to that there is also a need that our boat manufacturers switch to other construction materials such as fiber glass, aluminum and steel in order to increase the fish catch per voyage.

3.2.2 Number and Types of Fishing Crafts in Pakistan

There were altogether 34765 registered fishing crafts in Pakistan. Of this 22405 were marine boats and 12360 inland boats. The mechanized cum sail driven boats consisted of 8811 boats (25%) and non mechanized boats were 25954 (75%). In terms of area, of the total 22405 marine crafts, Karachi and Sindh coast consisted of 16409 boats (73%) and Balochistan coast 5996 (27%).

In the 12360 inland boats, Punjab consisted of 6956 boats (56%), Sindh 4607 (37%), NWFP 162 (1%), Chashma 322 (3%) and the remaining 313 (3%) in other areas.

The following table shows the number of marine and inland boats from 1998 to 2003

PROVINCE/AREA	1998	1999	2000	2001	2002	2003
TOTAL NUMBER	37,878	39,803	33,560	34,058	34,101	34,765
MARINE	20,189	20,581	20,986	21,549	22,026	22,405
Sindh coast	14,738	14,982	15,314	15,754	16,086	16,409
Balochistan coast	5,451	5,599	5,672	5,795	5,940	5,996
INLAND	17,689	19,222	12,574	12,509	12,075	12,360
Sindh	6,087	6,953	5,377	4,862	4,526	4,607
Punjab	10,355	10,397	6,439	6,947	6,830	6,956
N.W.F.P	100	148	170	165	148	162
Mangla dam	101	702	145	141	146	167
Tarbela dam	42	35	22	30	11	17
Chashma barrage	895	895	350	250	300	322
Hub dam	50	32	18	60	59	66
Khanpure	9	10	3	4	5	7
Northern Areas	50	50	50	50	50	56

3.3 Government Regulations:

In order to construct a boat at Karachi Fish Harbour, the boat owner / boat builder has to get in touch with various authorities at different stages of the boat building. The details of which are as follows

Select the boat builder (Wada) who is operating at the harbour and make an agreement with him. Provide him the specifications about the boat such as Keel length, height, width, type of boat, diesel tank size, water tank size and fish hold dimensions on the basis of which either the boat builder or the boat owner will take permission from Karachi Fish Harbour Authority

3.3.1 Permission from Karachi Fish Harbour Authority:

For taking the permission the boat builder has to give an application along with a copy of NIC to the Director operations Karachi Fish Harbour Authority (KFHA) upon which KFHA will make a formal agreement with the boat owner and will decide upon the ground rent which must be payable in advance by the boat owner.

Once the keel of the boat is laid down the boat owner has to contact the **Mercantile Marine Department (MMD)** for registration of the boat. The surveyor of MMD will survey the keel of the boat and will ascertain its length.

The fish hold of the boat should be in line with the international standards and according to the regulations of the KFHA.

3.3.2 Boat Building in Final Stages:

Once the boat is constructed the boat owner has to contact the MMD again for registration of the boat (Kole certificate). The procedure is as follows:

- Get an application form for registration from MMD.
- Get an affidavit and a declaration form from the oath commissioner outside the city court on a RS 20/- stamp paper. The subject matter of these documents should be that you have constructed a boat of ‘x’ feet keel length having ‘y’ tonnage from so and so Wada/boat builder at a cost of ‘z’ RS.
- A declaration form of the Wada/boat builder.
- Photocopies of NIC of the owner and the Wada/boat builder.
- If you have also installed a locally available engine on your boat then attach the purchase receipt’s copy of the engine and in case of imported then attach the custom bill of entry duly cleared along with original.
- MMD would verify the boat details after inspection and issue the Kole to the owner.

The boat owner also has to obtain the tax certificate from KPT for using their channel

3.3.3 Fishing License and Registration with KFHA

The boat will have to be registered with KFHA also for using the harbour channel of KFH. The following documents are required for registration

- KPT tax certificate to use KPT channel
- An application form issued by KFHA
- Kole copy
- NIC copy
- Two photographs of the owner
- A registration fee is RS. 1000/- for 5 years and 10% is renewable fee every year.
- License fee is RS. 700/- per year for upto 55 feet keel length and RS. 1000/- per year for above 55 feet keel length.

3.3.4 Registration with the Mole:

The boat owner has to select the mole from the existing moles operating at KFH. No formal agreements are required for this and even a verbal agreement can serve the purpose.

3.3.5 Fishing Permit for Tindal/Captain/Nakhuda

In order to obtain a fishing permit the boat owner has to take an application form from the mole holder and submit the same alongwith the following documents

- Kole copy
- NIC copy of the owner
- NIC copy of the Tindal
- 3 photographs of the Tindal
- Recommendation by mole/FCS to issue Tindal card.
- Fee is RS 25/- per year.

In order to get the boat registered at more than one harbour the boat owner has to contact the relevant harbour authorities.

4 MARKET INFORMATION

4.1 Market Potential:

Pakistan is rich in marine fishery resources, where catching is done in the coastal areas of Sindh and Baluchistan. According to a survey there are more than 45 species of shellfish and over 70 species of commercial finfish including Sardine, Hilsa, and Sharks are available in the Pakistani coast. The major varieties of fish include Mackerel, Butterfish, Pomfret, Indian Salmon, Beckti, Sole, Tuna, Jew fish, Sea Bream, catfish, Shark and Eel.

Following table indicates the commercial importance of various species of fish in Pakistan. For example the top two groups namely Herrings/sardines/Anchovies and Red fishes/basses/Congers consist of over 50% of total catch in Pakistan, the top five categories consist of over 81% of total catch, and top eight categories consist of over 90% of total catch.

Percentages of Fish catch in Pakistan

S. No.	F.A.O Group	Percentage
1.	Herrings, Sardines, Anchovies	33.3
2.	Red fishes, Basses, Congers	17.5
3.	Tunas, Bonitos, Bill fishes	12.0
4.	Jack mullets, Sauries	11.4
5.	Sharks, Rays, Cimaeras	6.3
6.	Shrimp, Prawns	7.0
7.	Squids, Cuttle fishes, Octopii	1.2
8.	Mackerels, Snoeks, Cutlass fishes	0.8
9.	Flounders, Halibuts, Soles	0.4
10.	Shads	0.2
11.	Lobsters, Spiny, rock Lobsters	0.1
12.	Sea Spiders, Crabs	0.1
13.	Diadromous fishes	0.1
14.	Miscellaneous marine fishes	9.6
	TOTAL	**100.0**

The total fish catch in Pakistan in 2003 was 566,203 m. tons, of which 400,500 tonnes (71%) was marine fish and 165,703 (29%) m. tons was Inland fish. Of the 400,500 marine fish 270,552 (68%) came from Sindh, 126755(31%) came from Balochistan, and 3,223 (1%) came from EEZ.

Fish Production (in tonnes)

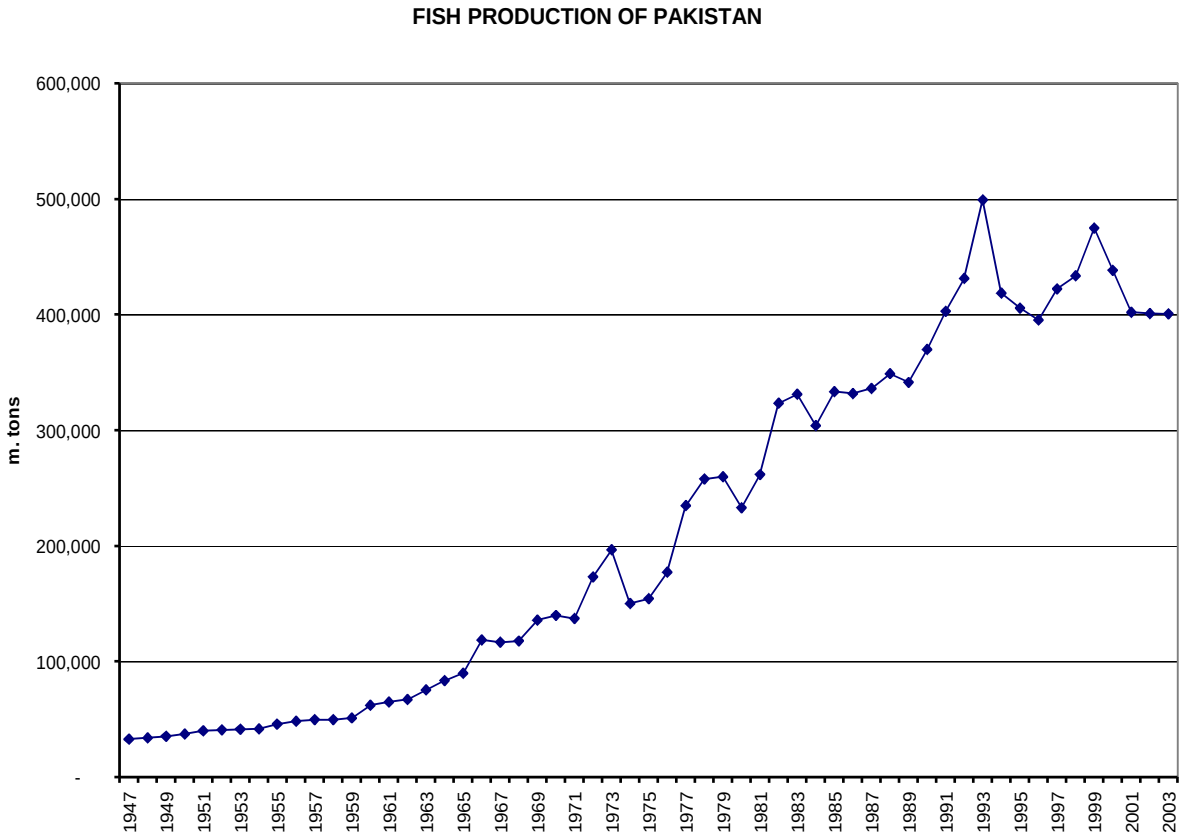
Year	Marine	Inland	Total
1998	433,456	163,524	596,980
1999	474,665	179,865	654,530
2000	438,361	176,463	614,824
2001	401,818	153,307	555,125
2002	400,928	161,084	562,012
2003	400,500	165,703	566,203

4.2 Present Status of Marine Fisheries

Considerable progress has already been achieved during last five decades resulting in increased production, fishing fleet, infrastructure facilities, export earnings as well as in the uplift of the socio-economic conditions of the fishermen. The fish production which was estimated to be about 32,000 m. tons in 1947, has increased to a level of about 400,000 m. tons in 2003. Despite this Pakistan's ranking in the world fishing nation remained to be on very low status. It is ranked as 28th in terms of production and 50th in terms of export earnings. It contributes about 0.27 % in the world export market which has a total volume of US $ 55 billion.

4.3 Production:

Production of seafood of Pakistan is increasing steadily since its creation in 1947. A quantum jump in production was seen in 1969, when shrimping became an important fisheries with establishment of seafood freezing plants in Pakistan. Another major increase was noticed in 1982, when motorization of fishing fleet had taken place and deep sea fishing was introduced. In 1993, fish production from marine sector was maximum when about 0.5 million m. tons of seafood was produced. Since then the production from marine sector has been fluctuating around 0.4 million m. tons.



Fish production from marine sector during the past years shows a decreasing trend in Sindh province whereas the production remained almost static in Balochistan.

Landings (in m. tons)

AREA	1999-00	2000-01	2001-02	2002-03	2003-04
SINDH	314,347	313,724	286,438	276,589	272,612
BALOCHISTAN	126,935	126,380	126,514	123,752	125,458
E.E.Z.	12,777	3,401	-	1,029	2,642
INLAND	171,694	178,315	164,885	157,195	163,393
TOTAL	625,753	621,820	577,837	558,565	564,105

4.4 Target Customers

4.4.1 Export Market:

Pakistan seafood industry is primarily export oriented and mainly governed by the pressure of the exporter. The performance in export sector during the past fifty year was appreciable because export earnings since have been substantially increased which is evident from the fact that Pakistan's fish and fishery products are exported to over 50 countries. At the time of partition, only salted dried products were exported from Pakistan but now high grade frozen seafood products as well as export of live marine animals is being conducted. There is no doubt in the potential for increase in seafood export, however, post harvest losses seems to be main constraint in the development of fisheries sector of the country.

Yearly export figures of fisheries are as follows

Quantity in Metric tons
Value in '000' Rs.

Year	Quantity	Value
1999	90,384	7,016,350
2000	84,693	7,877,960
2001	83,521	8,015,176
2002	80,088	6,896,601
2003	101,256	7,957,665

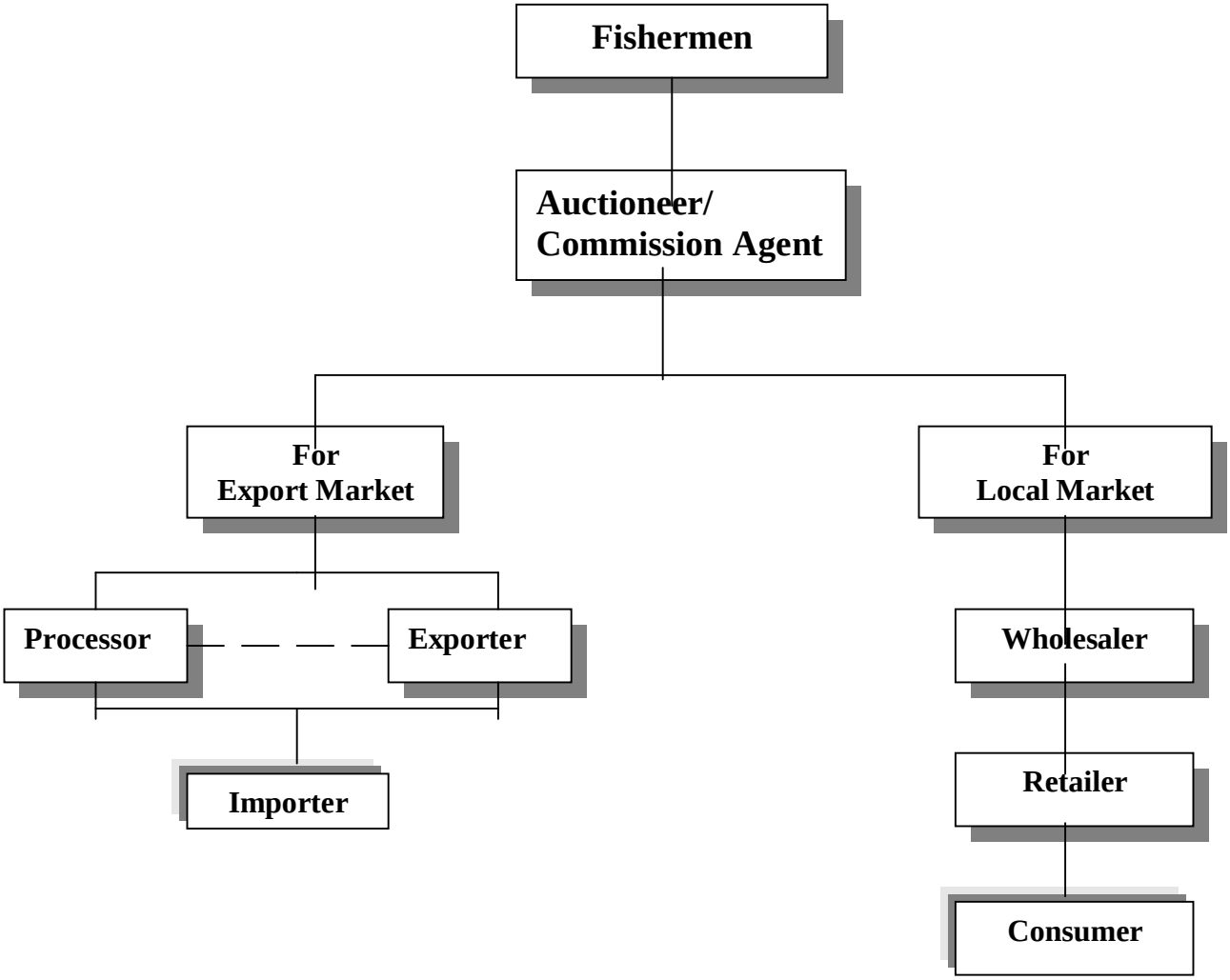
4.4.2 Local Market:

Despite huge production of fishery products, Pakistan's domestic consumption of fish is termed as lowest in the world at 0.05 kg per person/year. This consumption pattern coupled with increased inland fish production leaves little room for domestic marketing of marine fish. Therefore the focus remains to be foreign markets mainly Europe, US, Japan and Middle Eastern countries.

4.5 Marketing Channel:

The marketing channel of the fish is more or less similar to those of agricultural products, where Land lord provides a Land and the peasant grows the commodities. The produce is then sold in the market through commission agents to wholesalers and then to retailers and finally to consumers. The income after deducting the cost of direct inputs is shared by the Landlord and the peasant. Similarly, the flow of the fish is channeled from boat owner/fish catcher to commission agent, to wholesaler, to retailer, to consumer for local market. It goes from commission agent to exporter/processor to importer to consumer for export market. As described in the channel distribution chart. The owner of the vessel is usually separate from the fish catcher, known as "Na Khuda". The system is that the owner lends his boat to the "Na Khuda" on profit sharing basis, generally equally divided. Thus, if the catch is sold, let us say, for Rs.15, 000 the owner will deduct the direct cost of such items as Oil, ration to the crew, ice, and salt. No depreciation, repair, or replacement costs are included in it. If the cost for example comes to Rs. 5000 the remaining Rs. 10,000 will be divided equally, Rs.5000 each by the boat owner and fish catcher. Since the boat remains in the water for the several days, the "Na Khuda" takes a crew with him, which generally consist of his family members. But if the family members are not available, he may hire crew and pay them from his own share of earning.

Channels of Distribution for Fish and Fish Products



The fish catcher brings his catch to the auction hall, where commission agent (called mole holder) authorized by Fishermen Co-operative Society (FCS) awaits the arrival of the catch. Only the authorized commission agent can process the sale and no fishermen can sell his product directly to wholesaler, retailer, consumer, fish processor or exporter.

The commission agent arranges the auction for the catch. Purchasers assess the value of the commodity, make their bids, and the commodity goes to the highest bidder. ***The fisherman pays 6.25 percent of the gross value of the commodity, which is divided equally by the Fishermen's Cooperative Society (FCS) and auctioneer.***

The fish is passed on from the catcher via the commission agent to the processor/exporter to importer or the local wholesaler, then to retailer, and finally to consumer.

The fish is generally brought to the auction hall/market on the fish harbor where the processor/exporter or wholesaler purchase the catch. Almost all the processing units are located in Karachi. Therefore the catch meant for processing/export is either purchased at harbor, or is brought to Karachi immediately if purchased at other fish harbors. The purchase made for local sale is bought by wholesaler who delivers it to the retailer in local market, who ultimately sells to consumer.

5 PRODUCTION PROCESS

The process starts when a fishing vessel starts a voyage. Atypical fishing boat undertakes a trip of 15 to 25 days duration. The length of the voyage time depends upon how quickly the boat gets the desired level of catch which indirectly depends upon what sort of fishing technology is used on the boat. For the purpose of this pre-feasibility we assume that the boat is equipped with latest technological equipments and the average length of a voyage is 15 days.

5.1 Raw Material Requirement

During the voyage the following things are needed on the boat.

- Food (Ration) for 10 crew members for a 15 days voyage
- Fuel (Diesel) required for 15 days voyage
- Ice and salt required for proper preservation of fish during the voyage.

These are the some of the basic requirements during the voyage which are must for every boat.

5.2 Fish Handling at Sea

The second step in the process is the handling and preservation of catch on the boat. Efficient handling practices are important to reduce losses during processing and improve the market value of the product. In order for the best-quality fish to be available to the consumer, care must be taken to reduce spoilage at all stages. Spoilage begins as soon as the fish dies so it may begin before the fishermen lift the fishing gear out of the water. For instance the common practice in many countries of leaving gill nets to "soak" for long periods causes a high percentage of loss. One way of combating initial spoilage in gill nets is to haul nets more frequently. However, these suggestions can be resisted by fishermen because they require more effort, may cost more and may take them away from other activities.

Hence, the use of ice in itself is no guarantee of better product unless proper handling procedures are fully implemented before the fish are actually stowed in the hold on ice. Even when fish nets or other gear are hauled more frequently, rapid spoilage can take place, especially if catch is left lying around on deck in the heat for any length of time, thus negating any gain in quality from more frequent hauling periods.

A typical design of a Fish Hold

The spoilage processes are continuous and cannot be reversed, no amount of icing will convert poor quality fish back into a good quality product.

There are three important ways of preventing fish going bad too quickly- care, cleanliness and cooling. Care in handling is essential because unnecessary damage can provide access through cuts and wounds for the spoilage bacteria, thus hastening their effect on the flesh. Cleanliness is important in two ways

- The natural sources of bacteria can largely be removed soon after the fish is captured by taking out the guts and washing off the slime from the surface of the fish
- The chances of contamination can be kept to a minimum by ensuring the fish is always handled in a hygienic manner. But most importantly of all, the fish must be chilled quickly and kept chilled.

In summary, the time between the capture or death of the fish to when they are properly iced must be as short as possible, with minimum exposure to high temperatures. In tropical conditions, this would require that fish be kept in the shade and out of direct sunlight.

For optimal use of ice the following points should taken into account

- All ice used must be clean and of small particle size for maximum contact. Block ice must be finely crushed to prevent large particles from damaging the fish.
- The proper ratios of fish to ice must be observed. In temperate climates, one part of fish to one part ice is common. In tropical conditions, one part fish to three parts ice is not unusual.
- Areas of heat penetration into the hold, such as the engine room bulkhead and hull sides, must be given extra layers of ice to compensate for rapid ice loss in these areas, particularly if insulation is poor.
- The last layers of fish near the deckhead should have extra layers of ice to fully cover the fish and allow for any extra melting from heat penetration through the deck.
- Fish and ice must be carefully stowed to allow even distribution of both. Shelves and boxes must not be overfilled or crushing damage to the fish will result.

- Fish temperatures at the dockside when discharging should be between 0°C and 2°C and there should also be considerable amounts of ice still evenly distributed among the fish.
- Ice must be layered under, around and top of the fish

5.3 Use of Fish Crates:

Instead of keeping the fish in boxes its better to store it in Fish crates. The use of fish crates not only reduces spoilage but also maintains the quality of the fish for longer periods of time. An average boat of 45 feet keel length requires around 200 crates. However there is no rule of thumb about the number of crates but its better to have more in order to get the optimal level of product. Although it seems a bit costly as cost of one crate ranges from Rs.400 to Rs.625 but the benefits associated with it will justify this expense.

Fish catch preserved in a crate filled with Flake ice

6. BASIC REQUIREMENTS FOR CONSTRUCTING AND OPERATIING A FISHING BOAT

Following are the basic requirements for constructing a boat:

Details	Quantity	Cost/Unit	Total Cost
Cost of Wood			
Shesham	4,500 sq.ft.	400	1,800,000
Pine	1,000 sq.ft.	950	950,000
Keekar	2,000 sq.ft.	230	460,000
Bulao	400 sq.ft	950	380,000
Fish Hold			
Thermopol	400 sheet of 2 by 3 ft.	130	52,000
Steel Sheets	800 kilo	210	168,000
Engine (450 HP)	1	1,200,000	1,200,000
Diesel Tank (5500 litre)	1	300,000	300,000
Crates	200	625	125,000
Iron Material		150,000	150,000
Keel and Bold			150,000
Ground Rent (Rs. 100 per day for 10 months)			30,000
Labour Cost		500,000	500,000
Fishing Net (Separate for Shrimp & Fish)		750,000	750,000
Winch		150,000	150,000
Fish Finder & GPS		60,000	60,000
Electric Wiring		40,000	40,000
Transportation Cost		30,000	30,000
Miscellaneous Expense		150,000	150,000
Total Cost			**7,445,000**

8 LAND AND BUILDING REQUIREMENT

8.1 Office Rent Expense Details

Description	Monthly Rent (Rs)	Total Annual Rent (Rs.)
400 sq. yard office	5,000	60,000
Total		60,000

8.2 Furniture, Office Equipment and Utility Details

Description	Quantity	Cost/Unit	Total Cost
Furniture			30,000
Air Conditioner (1.5 ton window)	1	24,000	24,000
Electric Wiring and Lighting			3,000
Computer	1	15,000	15,000
Computer Printer	1	15,000	15,000
Telephone	1	500	500
Total			87,500

9. HUMAN RESOURCE REQUIREMENTS

The manpower required for operating a Fishing Boat is as follows:

Table 9-1 Human Resource Requirement Details

Description	No.	Monthly Salary (Rs.)	Total Annual Salary (Rs.)
Boat Captain	1	10,000	120,000
Assistant Captain	1	7,500	90,000
Driver	1	6,000	72,000
Labour	7	5,000	420,000
Total			702,000

10 PROJECT ECONOMICS

10.1 Project Cost Details

Description	Amount (Rs.)
Machinery and Equipment	7,445,000
Furniture and Fixtures	57,000
Office Equipment	30,500
Pre-Operating costs	94,080
Total Capital Expenditure	**7,626,580**
Upfront Building Rent	60,000
Upfront Insurance payment	148,900
Cash	500,000
Total Working Capital	**708,900**
Total Project Cost	**8,335,480**

10.2 Project Returns

Description	Equity		Project	
Net Present value (NPV)	@25%	4,642,684	@16%	8,423,501
Internal Rate of Return (IRR)		48%		35%
Payback Period (Years)		2.56		3.12

10.3 Project Financing Details

Description	Percentage	Amount (Rs.)
Equity	50%	4,167,740
Debt	50%	4,167,740
Total	100%	8,335,480

11 KEY ASSUMPTIONS

11.1 Operating Assumptions

Single Voyage duration	15 days
Days operational per year	300 days

11.2 Economy Related Assumptions

Inflation rate	10%
Sale price growth rate	10%
Operation cost growth rate	5%
Wage growth rate	10%
Rent expense growth rate	10%

11.3 Expense Assumptions

Promotional expense	0.5% of revenue
Professional fees (Legal audit etc.)	0.5% of revenue
Depreciation expense	10% straight line method
Insurance cost	2% of book value of asset
Amortization expense	20 % of pre-operating cost
Miscellaneous expense	1% of revenue

11.4 Voyages Assumptions

Month	Voyage per month
August	2
September	2
October	2
November	2
December	2
January	2
February	2
March	2
April	2
May	2
Total No. of Voyages	**20**

11.5 Financial Assumptions

Project Life	10 years
Debt : Equity	50 : 50
Interest rate	10 %
WACC	16 %
Long term debt tenure	5 years
Debt payments per year	1

12.6 Catch Profile Assumptions

Boat Data Sheet (Catch Profile Assumptions) SMEDA

Average Estimated Catch of a Trawler

Month	Grade A White Shrimp Kg	Grade B White Shrimp Kg	Grade C White Shrimp Kg	Grade A Brown Shrimp Kg	Grade B Brown Shrimp Kg	Grade C Brown Shrimp Kg	Grade A Kiddi Shrimp Kg	Grade B Kiddi Shrimp Kg	Grade A Eatable Fish Kg	Grade B Eatable Fish Kg	Grade A Trash Fish Kg	Grade B Trash Fish Kg
Aug	112	32	16	336	96	48	1260	540	1056	264	616	264
Sep	80.5	23	12	242	69	35	1260	540	1248	312	728	312
Oct	63	18	9	189	54	27	1260	540	1248	312	728	312
Nov	56	16	8	168	48	24	1260	540	1248	312	728	312
Dec	56	16	8	168	48	24	1050	450	1536	384	896	384
Jan	19.25	5.5	3	58	17	8	770	330	1536	384	896	384
Feb	19.25	5.5	3	58	17	8	630	270	1536	384	896	384
Mar	56	16	8	168	48	24	490	210	1536	384	896	384
Apr	56	16	8	168	48	24	490	210	1536	384	896	384
May	105	30	15	315	90	45	630	270	1536	384	896	384

12.7 Catch Price Assumptions

Boat (Pricing Information)												SMEDA
Prices												
Month	Grade A White Shrimp Rs	Grade B White Shrimp Rs	Grade C White Shrimp Rs	Grade A Brown Shrimp Rs	Grade B Brown Shrimp Rs	Grade C Brown Shrimp Rs	Grade A Kiddi Shrimp Rs	Grade B Kiddi Shrimp Rs	Grade A Eatable Fish Rs	Grade B Eatable Fish Rs	Grade A Trash Fish Rs	Grade B Trash Fish Rs
Aug	400	340	300	180	153	135	60	51	80	68	5	4.25
Sep	400	340	300	180	153	135	65	55	80	68	5	4.25
Oct	430	365.5	323	190	162	143	70	60	80	68	5	4.25
Nov	430	365.5	323	190	162	143	75	64	80	68	5	4.25
Dec	450	382.5	338	225	191	169	80	68	85	72.25	6	5.1
Jan	450	382.5	338	250	213	188	85	72	85	72.25	6	5.1
Feb	500	425	375	275	234	206	90	77	90	76.5	6	5.1
Mar	500	425	375	250	213	188	95	81	90	76.5	6	5.1
Apr	450	382.5	338	225	191	169	100	85	95	80.75	6	5.1
May	430	365.5	323	225	191	169	110	94	100	85	6	5.1

11 FINANCIAL ANALYSIS

11.1 Projected Income Statement

Income Statement										SMEDA
										Rs. in actuals
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	6,385,836	7,024,419	7,726,861	8,499,547	9,349,502	10,284,452	11,312,898	12,444,187	13,688,606	15,057,467
Cost of goods sold	3,671,800	3,888,638	4,119,554	4,365,569	4,627,783	4,907,384	5,205,660	5,524,001	5,863,911	6,227,020
Gross Profit	2,714,036	3,135,782	3,607,307	4,133,978	4,721,720	5,377,068	6,107,238	6,920,187	7,824,695	8,830,447
General administration & selling expenses										
Rental expense	60,000	66,000	72,600	79,860	87,846	96,631	106,294	116,923	128,615	141,477
Promotional expense	31,929	35,122	38,634	42,498	46,748	51,422	56,564	62,221	68,443	75,287
Insurance expense	148,900	134,010	119,120	104,230	89,340	74,450	59,560	44,670	29,780	14,890
Professional fees (legal, audit, etc.	31,929	35,122	38,634	42,498	46,748	51,422	56,564	62,221	68,443	75,287
Depreciation expense	753,250	753,250	753,250	753,250	753,250	753,250	753,250	753,250	753,250	753,250
Amortization expense	18,816	18,816	18,816	18,816	18,816	-	-	-	-	-
Miscellaneous expense	63,858	70,244	77,269	84,995	93,495	102,845	113,129	124,442	136,886	150,575
Subtotal	1,108,683	1,112,564	1,118,323	1,126,147	1,136,242	1,130,020	1,145,362	1,163,727	1,185,417	1,210,766
Operating Income	1,605,353	2,023,217	2,488,984	3,007,831	3,585,478	4,247,049	4,961,876	5,756,460	6,639,278	7,619,681
Other income	98,734	189,088	255,419	286,749	307,580	359,128	445,938	535,794	630,019	730,259
Earnings Before Interest & Taxes	1,704,087	2,212,305	2,744,403	3,294,581	3,893,058	4,606,177	5,407,814	6,292,254	7,269,296	8,349,940
Interest expense	411,976	338,353	257,315	174,584	91,449	-	-	-	-	-
Earnings Before Tax	1,292,111	1,873,952	2,487,088	3,119,997	3,801,609	4,606,177	5,407,814	6,292,254	7,269,296	8,349,940
Tax	326,739	530,383	744,981	966,499	1,205,063	1,486,662	1,767,235	2,076,789	2,418,754	2,796,979
NET PROFIT/(LOSS) AFTER TAX	965,372	1,343,569	1,742,107	2,153,498	2,596,546	3,119,515	3,640,579	4,215,465	4,850,543	5,552,961
Balance brought forward		482,686	913,127	1,327,617	1,740,558	2,168,552	2,644,033	3,142,306	3,678,886	4,264,714
Total profit available for appropriatic	965,372	1,826,255	2,655,234	3,481,115	4,337,103	5,288,067	6,284,613	7,357,771	8,529,428	9,817,675
Dividend	482,686	913,127	1,327,617	1,740,558	2,168,552	2,644,033	3,142,306	3,678,886	4,264,714	4,908,837
Balance carried forward	482,686	913,127	1,327,617	1,740,558	2,168,552	2,644,033	3,142,306	3,678,886	4,264,714	4,908,837

11.2 Projected Balance Sheet

Balance Sheet											SMEDA
											Rs. in actuals
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
Assets											
Current assets											
Cash & Bank	555,000	1,419,675	2,362,077	2,746,305	2,988,684	3,162,914	4,019,656	4,899,108	5,816,778	6,783,599	7,821,577
Pre-paid building rent	5,000	5,500	6,050	6,655	7,321	8,053	8,858	9,744	10,718	11,790	-
Pre-paid insurance	148,900	134,010	119,120	104,230	89,340	74,450	59,560	44,670	29,780	14,890	-
Total Current Assets	708,900	1,559,185	2,487,247	2,857,190	3,085,344	3,245,417	4,088,073	4,953,521	5,857,276	6,810,279	7,821,577
Fixed assets											
Machinery & equipment	7,445,000	6,700,500	5,956,000	5,211,500	4,467,000	3,722,500	2,978,000	2,233,500	1,489,000	744,500	-
Furniture & fixtures	57,000	51,300	45,600	39,900	34,200	28,500	22,800	17,100	11,400	5,700	-
Office equipment	30,500	27,450	24,400	21,350	18,300	15,250	12,200	9,150	6,100	3,050	-
Total Fixed Assets	7,532,500	6,779,250	6,026,000	5,272,750	4,519,500	3,766,250	3,013,000	2,259,750	1,506,500	753,250	-
Intangible assets											
Pre-operation costs	94,080	75,264	56,448	37,632	18,816	-	-	-	-	-	-
Total Intangible Assets	94,080	75,264	56,448	37,632	18,816	-	-	-	-	-	-
TOTAL ASSETS	8,335,480	8,413,699	8,569,695	8,167,572	7,623,660	7,011,667	7,101,073	7,213,271	7,363,776	7,563,529	7,821,577
Liabilities & Shareholders' Equity											
Other liabilities											
Deferred tax	-	326,739	857,122	926,375	800,875	675,375	289,300	(96,775)	(482,850)	(868,925)	(1,255,000)
Long term debt	4,167,740	3,436,535	2,631,706	1,745,840	914,488	-	-	-	-	-	-
Total Long Term Liabilities	4,167,740	3,763,273	3,488,828	2,672,215	1,715,363	675,375	289,300	(96,775)	(482,850)	(868,925)	(1,255,000)
Shareholders' equity											
Paid-up capital	4,167,740	4,167,740	4,167,740	4,167,740	4,167,740	4,167,740	4,167,740	4,167,740	4,167,740	4,167,740	4,167,740
Retained earnings	-	482,686	913,127	1,327,617	1,740,558	2,168,552	2,644,033	3,142,306	3,678,886	4,264,714	4,908,837
Total Equity	4,167,740	4,650,426	5,080,867	5,495,357	5,908,298	6,336,292	6,811,773	7,310,046	7,846,626	8,432,454	9,076,577
TOTAL CAPITAL AND LIABILITIES	8,335,480	8,413,699	8,569,695	8,167,572	7,623,660	7,011,667	7,101,073	7,213,271	7,363,776	7,563,529	7,821,577

11.3 Projected Cash Flows

Cash Flow Statement SMEDA

Rs. in actuals

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Operating activities											
Net profit	-	965,372	1,343,569	1,742,107	2,153,498	2,596,546	3,119,515	3,640,579	4,215,465	4,850,543	5,552,961
Add: depreciation expense	-	753,250	753,250	753,250	753,250	753,250	753,250	753,250	753,250	753,250	753,250
amortization expense	-	18,816	18,816	18,816	18,816	18,816	-	-	-	-	-
Deferred income tax	-	326,739	530,383	69,253	(125,500)	(125,500)	(386,075)	(386,075)	(386,075)	(386,075)	(386,075)
Pre-paid building rent	(5,000)	(500)	(550)	(605)	(666)	(732)	(805)	(886)	(974)	(1,072)	11,790
Advance insurance premium	(148,900)	14,890	14,890	14,890	14,890	14,890	14,890	14,890	14,890	14,890	14,890
Cash provided by operations	(153,900)	2,078,567	2,660,358	2,597,711	2,814,288	3,257,270	3,500,775	4,021,758	4,596,556	5,231,536	5,946,815
Financing activities											
Change in long term debt	4,167,740	(731,205)	(804,828)	(885,866)	(831,352)	(914,488)	-	-	-	-	-
Issuance of shares	4,167,740	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	8,335,480	(731,205)	(804,828)	(885,866)	(831,352)	(914,488)	-	-	-	-	-
Investing activities											
Capital expenditure	(7,626,580)	-	-	-	-	-	-	-	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by investing activities	(7,626,580)	-	-	-	-	-	-	-	-	-	-
NET CASH	555,000	1,347,361	1,855,529	1,711,845	1,982,936	2,342,782	3,500,775	4,021,758	4,596,556	5,231,536	5,946,815
Cash balance brought forward		555,000	1,419,675	2,362,077	2,746,305	2,988,684	3,162,914	4,019,656	4,899,108	5,816,778	6,783,599
Cash available for appropriation	555,000	1,902,361	3,275,205	4,073,922	4,729,241	5,331,466	6,663,689	8,041,414	9,495,663	11,048,314	12,730,415
Dividend	-	482,686	913,127	1,327,617	1,740,558	2,168,552	2,644,033	3,142,306	3,678,886	4,264,714	4,908,837
Cash carried forward	555,000	1,419,675	2,362,077	2,746,305	2,988,684	3,162,914	4,019,656	4,899,108	5,816,778	6,783,599	7,821,577