

NO. 6

**BASIC DESIGN REPORT  
ON  
THE COASTAL FISHERIES DEVELOPMENT PROJECT  
IN  
THE ISLAMIC REPUBLIC OF PAKISTAN**

**March, 1980**

**Japan International Cooperation Agency  
(JICA)**

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FOREWORD

For the purpose of expediting the Coastal Fisheries Development Project in the Provinces of Baluchistan and Sind formulated as part of its Fifth 5-Year Economic Development plan, the Government of Islamic Republic of Pakistan has requested the Government of Japan to supply such equipment and materials as engines, fishing gear and nets required for the Project.

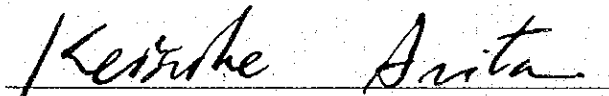
In response to this request, the Government of Japan, acting through the Japan International Cooperation Agency, sent to Pakistan a survey team headed by Dr. Chikamasa Hamuro to conduct a preliminary survey from November 30 to December 20, 1979.

During its stay in Pakistan, the team has duly conducted the survey with the fullest cooperation of the Pakistani authorities.

I hope that this report, which contains the findings of the survey, will be found useful in promoting the project and in contributing to the enhancement of the friendly relations between our two countries.

I wish to express my deep appreciation to the Pakistani authorities and officials concerned for their close cooperation extended to the survey team.

March 1980



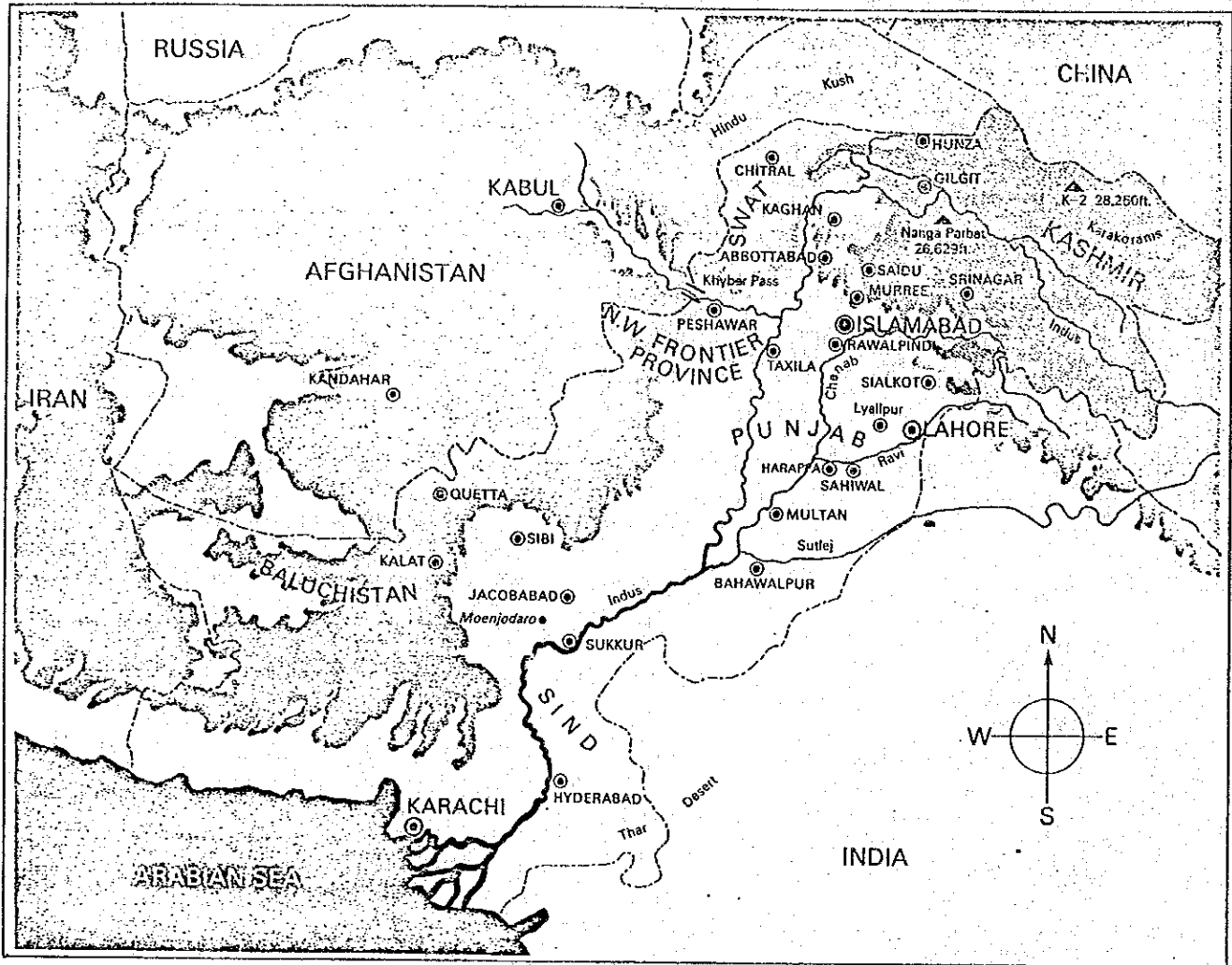
Keisuke Arita

President

Japan International Cooperation Agency



# Pakistan







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## 1. Objectives of the Survey

The prime objective of the present survey was to study the adequacy of the quantities, performance and specifications as well as the desirable measures for distribution, storage and management of the equipment and materials to be supplied on a grant basis for the Coast Fisheries Development Project in compliance with the request of the Pakistani Government transmitted to the Japanese Government by the Japanese Ambassador to Pakistan in Note No.521 of July 17, 1979. Another important objective was to discuss with the competent Pakistani Authorities to reach an agreement in respect of the said quantities, performance, etc. of the equipment and materials on the strength of the findings of the survey, and exchange the minutes of discussions signed by both parties.

For the purpose of smooth and successful implementation of the Project, it was planned that the optimum specifications, quantities, etc. would be determined in detail within the appropriated budget, and cost calculation including the transportation cost to Pakistan would also be worked out for inclusion in the budget. Hence, the survey comprised the joint discussions and studies with the pertinent Pakistani government offices and the Team's field survey in fishing bases and fishing villages in Pakistan.

Since the above optimization of the specifications, quantities, etc. must be based on a careful examination of their physical necessity and justifiability, the economic as well as technical aspects of fisheries in the project areas, Provinces of Baluchistan and Sind, and in Karachi Port area were studied and analysed. This infrastructural survey and analysis also constituted an important part of the survey.

## 2. Background of the Survey

Facing the Arabian Sea, Pakistan has a coastline of about 1,000 km and is blessed with an abundance of marine resources and a great many fishing grounds. However, due to the shortage of modern fishing gear and delayed motorization of fishing boats, fishing operations are conducted only in coastal waters, so that the greater part of rich marine resources are still left intact. The motorization rate, though showing a steady upward trend in recent years, is only 16% in Baluchistan Province in the

southwestern part of the country. Even in Sind Province located in the southeastern part which is fairly advanced in motorization, the rate is no higher than 35%.

In Pakistan the fisheries production accounts for only 0.3% of GDP, while the per capita income as reported in the 1975 statistics of the World Bank is \$140 which suggests an extreme shortage of nation's protein intake. Noting that fisheries are not only an important source of animal protein much needed by the nation but also a promising future export industry (only 3% of total export value is now accounted for by marine products), the Pakistani Government has been exerting special effort for fisheries development in the recent past.

Baluchistan is the largest province in Pakistan, but its development is far behind the level achieved in the eastern provinces such as Sind and Punjab, and its population density is only several fractions of the national average. To rectify these marked regional differences for balanced overall development of the country, the Government has attached great importance to the development of the province, listing it as one of top priority policies to be enforced under the Fifth 5-Year Economic Development Plan started in July 1978. Since the province faces the Arabian Sea, has a long coastline, and is favoured with rich marine resources exploitable by both coastal and offshore fishing operations, fisheries promotion is given special weight as one of the key routes to the province's development.

Against the background mentioned above, the Pakistani Government requested Japan's assistance in providing equipment and materials on a grant basis for the Coastal Fisheries Development Project.

### 3. Basic Survey Plan

This report contains the findings of the basic design survey conducted to optimise the specifications, types, quantities, etc. of the equipment and materials to be supplied for the Project.

In most cases, a request from an advancing country for the supply of equipment and materials is preceded by a preliminary survey conducted in that country with counterpart experts on a free and uncommitted footing to evaluate the request itself in terms of the adequacy of the specifications, types, quantities, etc. of the equipment and materials to the planned development, and to present recommendations based on such evaluation to the recipient country. This is usually followed by a feasibility study carried out on the strength of such recommendations to determine the details of assistance, and then by actual supply of the equipment and materials.

In the case of the Pakistani request, it was noted that the equipment and materials specified therein were not necessarily comprised only of those essential to the development of Pakistani fisheries. Essentially, this drawback should have been removed, as mentioned above, by a preliminary survey and subsequent presentation of a report containing recommendations on the request. However, since the Team was organized not for a basic preliminary survey alone but for a more detailed feasibility study as well, it made endeavours to optimise the specifications, quantities, etc. within the appropriated budget in order to mitigate the said drawback to a maximum. This naturally called for an analysis of the existing state and background data of Pakistani fisheries, and the results of this analysis are presented in this report to afford better understanding of the Team's activities.

The quantities of each kind of equipment and materials were so determined that they can be adjusted, within 10% of the budget, according to the changes in Japanese and global economic conditions and in the exchange rate. This 10% earmarking was also intended, as is clear in the report for easier increase of the quantities in case no such changes in commodity price or exchange rate take place in the future.

As regards the materials for fishing gear, the types, specifications and quantities were determined not simply by the predetermined priority order but according to the Team's own design of fishing gear intended to correct the defects of the currently used gear, so that the materials supplied

would serve not only for augmented availability of fishing gear but for improvement of fishing efficiency.

In order to make the report useful in coping with the problems in Pakistani fisheries in the future, maximum effort was made to introduce literatures and data on Pakistani fisheries, with an analysis of its existing state and environmental factors.

#### 4. Formation and Itinerary of the Team

##### 4-1 Formation

The Team was composed of the following experts.

Name	Assignment	Affiliation
Chikamasa HAMURO, D. Agr.	Leader, Overall control	Advisor, Furuno Electric Co.
Katsuji HONDA, D. Agr.	Member, Fishing gear and fishing method	Professor, Tokyo University of Fisheries
Kiyomatsu KUSAMA, Consulting Engineer	Member, Fishing boats and engines	Representative Director, Tokyo Fisheries Technical Consultant Co.
Hiroshi SAITO	Member, Liaison and coordination	Forestry Development Cooperation Department, Japan International Cooperation Agency

##### 4-2 Itinerary

The survey was conducted for a period of 21 days from November 30 to December 20, 1979. The Team's itinerary in this 21-day period is as outlined below.

Table 1. Itinerary of Survey Team

Date and Day	Particulars	Officials Interviewed/Met for Joint Discussion, Etc.
Nov. 30, Fri.	Departure from Narita Airport in the evening.	
Dec. 1, Sat. (Holiday in Pakistan)	Arrival at Karachi Airport in the early morning; Intra-team discussion on survey schedule and items; 17:00 hrs - Dinner banquetted by Japanese Consulate in Karachi.	Dinner attended by Senior Consul Mr. Imagawa and all Team members.
Dec. 2, Sun.	09:00 hrs - Arrangement for survey schedule and items with Senior Consul Mr. Imagawa at Japanese Consulate; 09:30 hrs - Courtesy call on Fisheries Department, Pakistani Government; Joint discussion on survey schedule, method and items at Fisheries Department with participation of Fisheries Directors of Sind and Baluchistan Provinces, with request made for data collection;	Mr. S. A. Jaleel, Director of Marine Fisheries stationed in Karachi, Mr. I. U. Khan, Deputy Director of Marine Fisheries stationed in Karachi. Mr. Moinuddin Ahmed, Director of Fisheries Department, Provincial Government of Sind,

Date and Day	Particulars	Officials Interviewed/Met for Joint Discussion, Etc.
	<p>14:30 hrs - Courtesy call on Fisheries Department, Provincial Government of Sind, and discussion on survey schedule and collection of information at the department;</p> <p>16:00 hrs - Courtesy call on Fisheries Department, Provincial Government of Baluchistan, and discussion on survey schedule and collection of information at the department.</p>	<p>Mr. Mohamuad Yoonas, Deputy Director of the same department, Mr. Hamid Ali, Assistant Director of the same department, Mr. Masood A. Burney, Director of Fisheries Department, Provincial Government of Baluchistan, Mr. Mork Bokhsh, Assistant Director of the same department.</p>
Dec. 3, Mon.	09:30 hrs - Departure from hotel for Ibrahim Hydero, Sind Province, for interviews with fishermen and survey of fishing boats and fishing gear, luncheon held by Chief of Ibrahim Hydero,	Team accompanied by Deputy Fisheries Director, Provincial Government of Sind.



Date and Day	Particulars	Officials Interviewed/Met for Joint Discussion, Etc.
	departure from Ibrahim Hydero for Rehri for similar interviews and survey.	
Dec. 4, Tue.	<p>09:00 hrs - Observation of fish landing operation, fish auction sale at fish market, and inspection of freezing and canning plants in Karachi Port area.</p> <p>11:00 hrs - Departure from Karachi Fishing Port for Baba Bhit island for inspection of fishing village, fishing boats and fishing gear.</p>	
Dec. 5, Wed.	09:00 hrs - Inspection of inland waters fishery in the neighbourhood of Lake Kinjher. and luncheon at Haiji Inland Waters Fisheries Station.	
Dec. 6, Thu.	<p>08:00 hrs - Inspection of fishing villages in Baluchistan Province (Gadani and Sonmiani);</p> <p>Luncheon held by Chief of Sonmiani village.</p>	Team accompanied by Director and Deputy Director of Fisheries, Provincial Government of Baluchistan, and Mr. Imagawa of Japanese Consulate.
Dec. 7, Fri.	07:45 hrs - Departure from Karachi Airport and arrival at Gwadar Airport at 12:20 hrs.;	Team accompanied by Director of Fisheries, Provincial Government of Baluchistan.

Date and Day	Particulars	Officials Interviewed/Met for Joint Discussion, Etc.
	p.m. - Luncheon banquetted by Chief of Gwadar municipality, courtesy call on Gwadar Municipal Office, and inspection Gwadar and salted and dried fish plant.	Luncheon attended by leaders of Gwadar municipality.
Dec. 8, Sat.	<p>a.m. - Survey of fishing boats and fishing gear on Gwadar Coast, courtesy call on Coast Guard Office, luncheon held by Chief of Sur village, and survey in Sur village;</p> <p>14:20 hrs - Departure from Gwadar Airport;</p> <p>15:10 hrs - Arrival at Pasni Airport, inspection of Chur fishing village, departure for Shumal Bon Bar by jeep for survey, return to Chur, and dinner held by Chief of Chur village;</p> <p>22:30 hrs - Return to Pasni for overnight stay.</p>	Team accompanied by Director of Fisheries, Provincial Government of Baluchistan.
Dec. 9, Sun.	a.m. - Survey of fishing boats and landing operation on Pasni coast, inspection of ice-plant, and visit to FAO office for inspection of its shipbuilding techniques guidance activities;	<p>- do -</p> <p>Information provided by two FAO experts (1 Australian shipbuilding engineer and 1 British master fisherman).</p>

Date and Day	Particulars	Officials Interviewed/Met for Joint Discussion, Etc.
	<p>12:40 hrs - Departure from Pasni Airport by PIK Flight 522;</p> <p>13:50 hrs - Arrival at Karachi Airport, consolidation of survey results at the hotel.</p>	
Dec. 10, Mon.	<p>08:40 hrs - Briefing of survey results for Mr. Imagawa, Senior Consul, at Japanese Consulate-General, Karachi;</p> <p>09:15 hrs - Visit to Marine Fisheries Department of Pakistani Government for presentation of survey results to its Director and to Directors of Fisheries Department, Provincial Governments of Sind and Baluchistan, and for discussion and presentation of a draft minutes of discussions;</p> <p>16:20 hrs - Departure from Karachi Airport;</p> <p>18:15 hrs - Arrival at Rawalpindi Airport;</p> <p>19:10 hrs - Consultation with Mr. Matsumoto at the hotel.</p>	<p>Director of Marine Fisheries, Pakistani Government, Directors of Fisheries, Provincial Governments of Sind and Baluchistan,</p> <p>Team received by Mr. Matsumoto, First Secretary, Japanese Embassy in Islamabad.</p>

Date and Day	Particulars	Officials Interviewed/Met for Joint Discussion, Etc.
Dec. 11, Tue.	<p>11:00 hrs - Courtesy call on Ambassador Nemoto at Japanese Embassy, and presentation of survey results;</p> <p>12:00 hrs - Courtesy call on Pakistan Ministry of Finance, Planning and Provincial Coordination, and arrangement with Japanese Embassy for the minutes of discussions;</p> <p>19:30 hrs - Dinner at official residence of Ambassador Nemoto.</p>	Mr. Matsumoto, First Secretary, present at the meeting.
Dec. 12, Wed.	<p>09:30 hrs - Prior arrangement with Mr. Matsumoto for the minutes of discussions at Japanese Embassy;</p> <p>10:00 hrs - Courtesy call on Joint Secretary of Livestock Division, Ministry of Food and Agriculture Cooperatives, and discussion with Deputy Director of Livestock Division concerning the minutes of discussions;</p> <p>p.m. - Signing and exchange of the minutes of discussions.</p>	

Date and Day	Particulars	Officials Interviewed/Met for Joint Discussion, Etc.
Dec. 13, Thu.	a.m. - Consolidation of survey data and preparations for drafting the survey report; p.m. - - do -	
Dec. 14, Fri.	- do -	
Dec. 15, Sat.	Exposition of survey results and consultation for supplementary survey data at Japanese Embassy; 21:45 hrs - Departure from Rawalpindi Airport; 23:30 hrs - Arrival at Karachi Airport.	
Dec. 16, Sun.	Final consultation with Director of Fisheries, Provincial Government of Sind.	
Dec. 17, Mon.	Final consultation with Director of Fisheries, Provincial Government of Baluchistan.	
Dec. 18, Tue.	a.m. - Final consultation and exposition at Japanese Consulate-General, Karachi; p.m. - Data collection.	
Dec. 19, Wed.	a.m. - Consolidation of data, and preparations for drafting the survey report, departure from Karachi Airport.	
Dec. 20, Thu.	p.m. - Arrival at Narita Airport.	

List of Officials Interviewed for Survey and Discussion

Japanese Embassy:

Ambassador H. E. Mr. Hiroshi Nemoto  
First Secretary Mr. Ritaro Matsumoto

Japanese Consulate-General, Karachi:

Senior Consul Mr. Yoshinori Imagawa

Pakistani Government Offices:

Livestock Division Ministry of Food and Agriculture Cooperatives

Joint Secretary Dr. Abdus Salam Akhtar

Deputy Secretary Mr. M. S. Bhatti

Section Chief Mr. M. I. Dar

Economic Affairs Division, Ministry of Finance, Planning and Provincial  
Coordination

Deputy Chief in Charge

of Equipment and Materials

Supply for Coast Fisheries

Development Project Mr. Abaluddin Ahmad

Directorate of Marine Fisheries, Government of Pakistan

Director Mr. S. A. Jaleel

Deputy Director Mr. Inayat Ullah Khan

Fisheries Department, Provincial Government of Sind

Director Mr. Moinuddin Ahmed

Deputy Director Mr. Muhamud Yoonas

Assistant Director Mr. Hamid Ali

Fisheries Department, Provincial Government of Baluchistan

Director Mr. Masood A. Burney

Assistant Director Mr. Morkbecksh Ibrahim

Hyderi Village

Director of Fisheries

Cooperative Mr. Jomotwali

Assistant Marketing Mr. Abdel Habtb

Officer Mr. Haji

Bhit Island Fisheries Cooperative

Directoe Mr. Haji Omer Mek

Gwadar Municipal Office

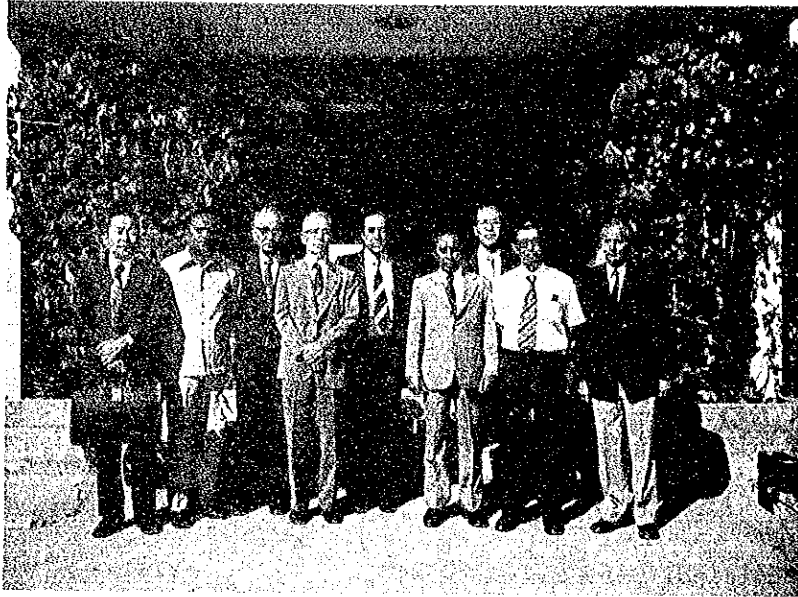
Mr. Wazir Zoda Mohdzaman

Mr. S. Mengal

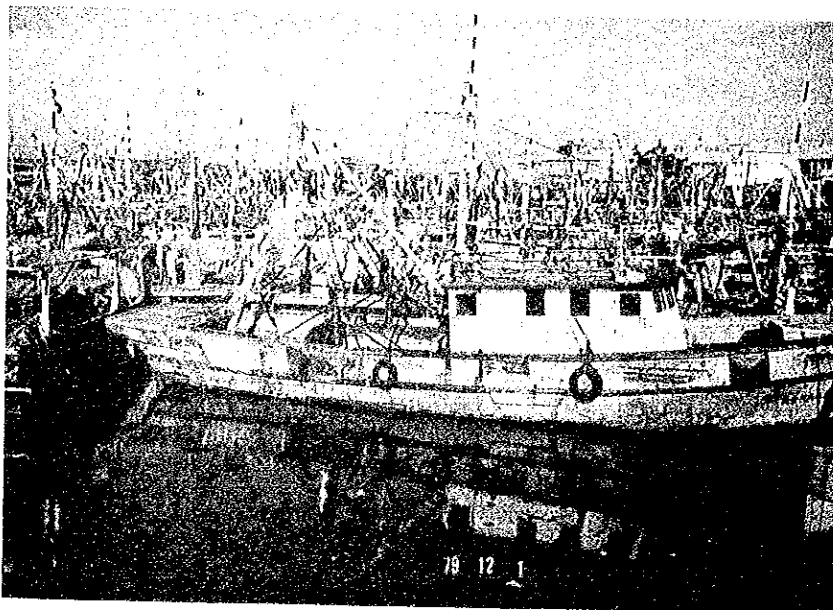
Deputy Director Mr. Muhamuad Yoonas

Assistant Director Mr. Hamid Ali

5. Photographs Taken during the Survey



Japanese and Pakistani officials and Team members in front of Department of Marine Fisheries (Senior Japanese Consul Mr. Imagawa, Director of Fisheries of Baluchistan Provincial Government, Team member Honda, Team Leader Hamuro, Director of Marine Fisheries of Pakistan Government, Director of Fisheries of Sind Provincial Government, Team members Kusama and Saito, and Deputy Director of Marine Fisheries of Pakistani Government -L-G -)

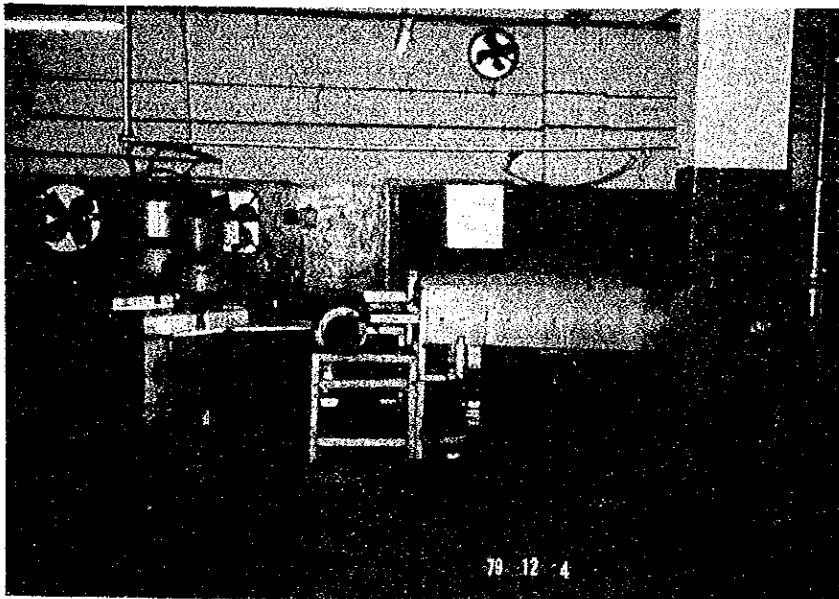


Trawler anchored in Karachi Fishing Port.

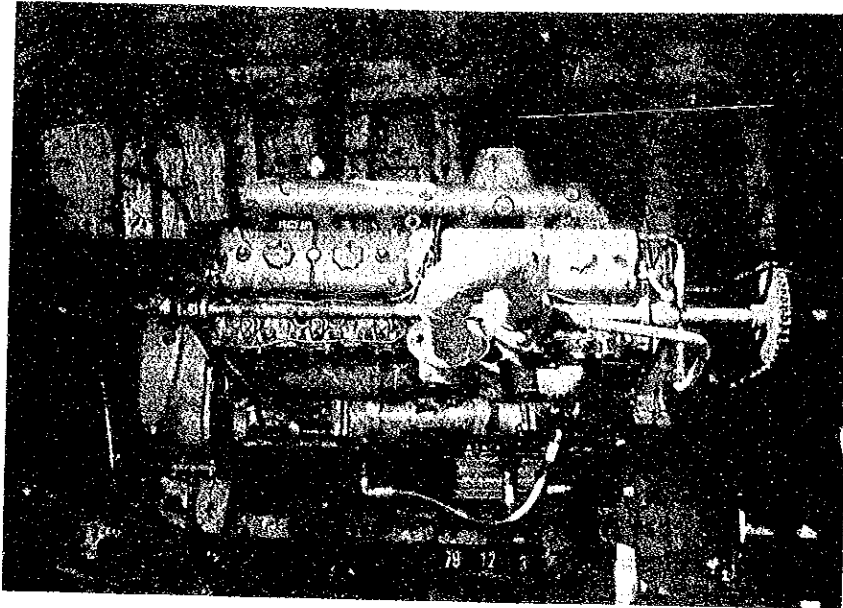




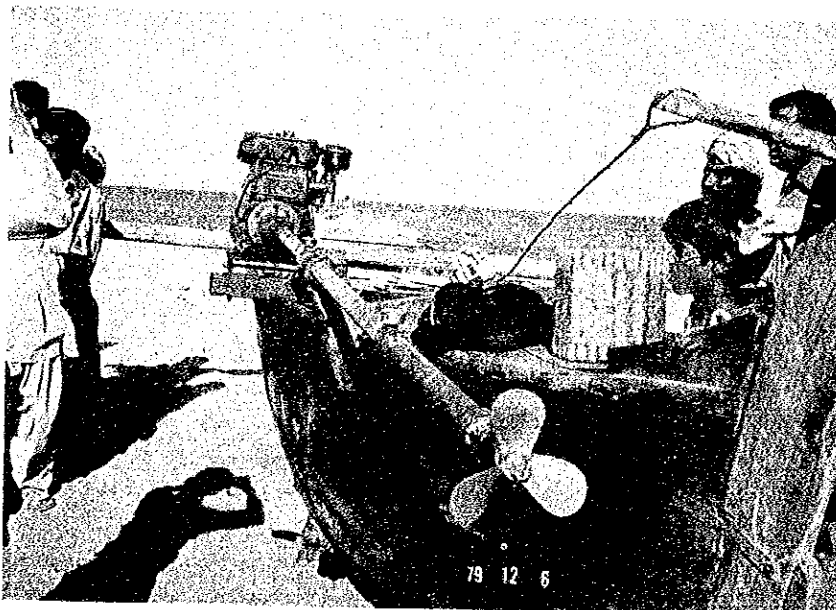
Shrimp selection at freezing plant in Karachi.



Canning plant in Karachi.



Engine loading on trawler.



Outboard engine with long-tail shaft.



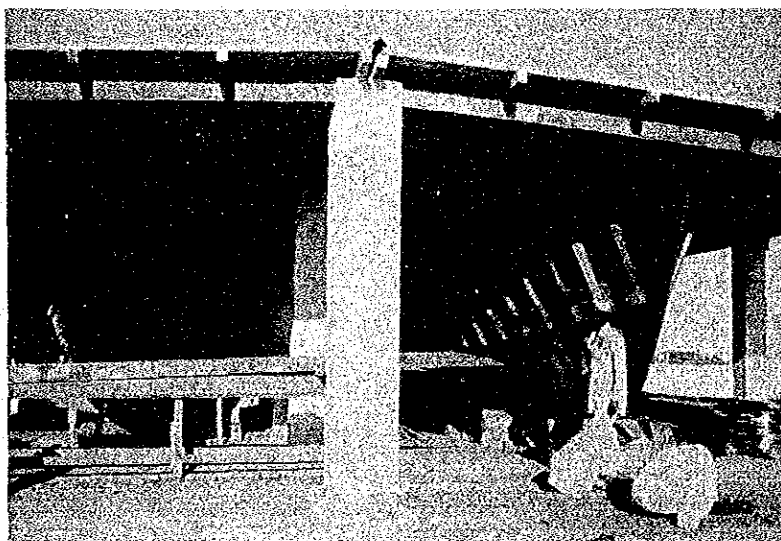
Fishermen in preparation of gillnet in Gadani area.



Catch by gillnet



Workshop in Ibrahim Hydero area.



Construction of improved small fishing boat in Pasni area under guidance of FAO experts.

## 6. Outline of Survey Results

As shown in Tables 41 and 42, the Team earmarked 10% (¥40 million) from the budget (¥400 million) to provide against the possible future rises in commodity price, and appropriated the remaining ¥360 million to the supply of the equipment and materials.

Regarding the outboard engines, the Team had no knowledge at all, before its departure from Japan, about the size and type of fishing boats equipped with the long-tail shaft type engines currently in use. On arriving in Pakistan, the Team noticed that this type of engine was installed to the side of boat at a point about 1/3 of boat length away from the stern, and further discovered that the use of this particular type of engine was necessitated by the projecting stern of Pakistan fishing boats which made it impossible to mount an engine in the stern.

After its return to Japan, the Team learned that the said type of engine was no longer in production and consequently found it necessary to replace it with an integrated type engine with directly coupled shaft and propeller. The newly selected engine is designed for spark ignition and kerosene just as the long-tail shaft type engine.

As for output, the propeller performance of the long-tail shaft type was found to be extremely poor, so that it was considered that two output ratings, 7 p.s. and 12 p.s., would suffice for the newly selected integrated type engine.

As for the inboard engines, the following measures were taken for Baluchistan Province. The number of inboard engines was reduced to a minimum because it was found that virtually none of the existing fishing vessels had a design and shape suited to their installation, and the resultant remainder in the budget was appropriated to the supply of outboard engines which were more effective than inboard engines as well as to the supply of machinery and tools for seven workshops. In Sind Province, it was noted that inboard engines could be installed only on trawlers in Karachi Fishing Port.

The Provincial Government of Baluchistan requested strongly to delete all materials for fishing gear from the left of supply and replace them with outboard engines. This request was accepted with the necessary budgetary arrangements made for the supply of outboard engines.

The greater part of the materials for fishing gear requested to be supplied by the Pakistani Government were for gillnets which were found to be in great need of structural improvement. Accordingly, the Team selected the specifications of these materials on the basis of its own design of rational gillnets intended for the said structural improvement as well as for higher fishing efficiency. The Team's new specifications were adopted with the consent of both provincial governments.

The twines for small mesh fishing nets were replaced with nettings at the request of the Director of Fisheries, Provincial Government of Sind.

In addition to the technical aspect briefed above, the Team found the necessity of coordinating the two provinces which was rather difficult. In view of the fact that the Pakistani request was made for supply of equipment and materials for the Project as a whole, not for divided supply to the two provinces, the Team adopted a distribution ratio of 45% for Baluchistan and 55% for Sind on the basis of analysis of available data and survey results. It is to be noted that these ratios were used only in calculation and the official request of the Pakistani Government specified a distribution of 50% for each province.

Within the budgetary appropriation set by the above distribution ratios, the distribution ratio of each kind of equipment and materials was determined in direct conformity with the request of each provincial government and then used in calculations.

The Team wishes to add that the greater part of both technical aspect and distribution ratios of the equipment and materials were determined after a series discussions with the two provincial governments.

The supply of the above-mentioned equipment and materials will undoubtedly contribute towards development of the Pakistani coast fisheries, and it is quite likely that further fisheries development can be ensured if freezing carriers are supplied in the future. The expected development effect of such future assistance is therefore presented in this report.

6-1 Minutes of Discussions on the Basic Design Survey for the Coast Fisheries  
Development Project in Islamic Republic of Pakistan

At the request of the Government of Islamic Republic of Pakistan for assistance in providing the equipment and materials for the purpose of promoting coast fisheries development project (hereinafter referred to as 'The Project') in Pakistan, the Government of Japan, acting through Japan International Cooperation Agency (JICA), has sent a survey team (hereinafter referred to as "The Team") headed by Dr. Chikamasa Hamuro to conduct the basis design survey on the Project for 21 days from November 30, 1979.

The Team held a series of discussions and exchanged views with Pakistani authorities concerned in respect of the desirable measures to be taken for the successful implementation of the Project.

As a result of the survey and discussions, the Team and Paksitan authorities concerned have agreed to recommend to their respective Governments to take necessary measures towards the accomplishment of the Project as stated in the Minutes attached herewith.

December 12, 1979  
Islamabad, Pakistan

(Signed)  
Dr. Chikamasa HAMURO  
Head of the Japanese  
Basic Design Survey Team

(Signed)  
M. S. Bhatti  
Deputy Secretary,  
Government of Pakistan,  
Ministry of Food & Agri.  
Cooperative (Livestock Division)  
ISLAMABAD.

MINUTES

1. The Project comprises the following two projects
  - (1) Baluchistan coast Fisheries Development Project
  - (2) Sind Fisheries Development Project.
2. The objectives of the Projects are to develop coast fisheries on the Baluchistan and the Sind Coasts by coordinating the following activities.
  - (1) Motorisation of the existing country crafts.
  - (2) Materials of nylon nets etc.
3. The Government of Islamic Republic of Pakistan expects to receive an assistance from the Government of Japan especially on the fields (1) and (2) above.
4. The Fisheries Department of Provincial Government of Baluchistan and Sind, in consultation with Livestock Division, will be responsible for the administration of the Project and will be the executing agency of the Project.
5. The Team agreed to provide the equipment and materials for the Project as shown on Annex I.
6. The Government of Islamic Republic of Pakistan will take necessary measures:
  - (1) To ensure that the equipment and materials be maintained and used properly and effectively for the execution of the Project.
  - (2) To ensure that an appropriate budgetary measures will be taken by the Provincial Government to implement the Project.
  - (3) To select fishermen as the recipient of the equipment and materials among the applicants who engage exclusively in actual fishing operations.

- Cont'd -



- (4) To establish training programme for the fishermen to give basic knowldege of handling, operation and maintenance of engine and fishing gear.
  - (5) To exert its best efforts in the storage and maintenance of the equipment and materials.
  - (6) To ensure prompt unloading and customs clearance at the port of entry and internal transportation of the equipment and materials.
7. After completion of the survey, 25 copies of the report on basic design will be transmitted to the Government of Islamic Republic of Pakistan.

Annex I

List of Equipment and Materials

Equipment and Materials for the Baluchistan and Sind coastal fisheries development projects to be provided by the Government of Japan.

- (1) Outboard engines with their spare parts for small fishing boats.
- (2) Inboard engines with their spare parts for fishing boats.
- (3) Materials for fishing gears
  - a. Synthetic twines for fishing nets
  - b. Synthetic ropes for fishing gears
  - c. Synthetic floats.
- (4) Workshop machinery and tools for above mentioned (1) and (2).

## 7. Pakistani Fisheries --- Present Status and Future Prospects

### 7-1 Catch by Fishing Area and Fishing Method

As shown in Fig. A, Pakistan has a coastline of 1,120 km facing the Arabian Sea, which can be divided into two sections for the purpose of fisheries. One is the Baluchistan (or Makran) coast extending for a distance of 772 km to the northwest of Pakistan, and the other is the Sind coast stretching for a distance of 348 km to the southeast of Karachi. Both coasts have an estuarine fishery area, coastal fishery area and offshore fishery area, and embrace inland waters fishing areas.

The Baluchistan coast has many large bays but no rivers emptying constantly into the sea. It descends into the sea with a sharp slope, and its continental shelf has a width of only 15 - 30 km. The Sind coast, on the other hand, is like a meshwork of creeks covering an area of about 7,680 km<sup>2</sup>, and its continental shelf is extremely shallow, having a width of as large as 95 - 125 from the coastline. The bottom materials along this coast is muddy. The organic materials discharged by the Indus during the monsoon season near Ketti-Bunder give rise to propagation of abundant planktons on which many kinds of oceanic lives feed.

By virtue of these natural conditions, Pakistan is favoured with rich marine resources including some 400 different fish species as reported in 1972.

Table 2. Annual Changes in Fish Catch

Year	Sea Fishery			Inland Waters Fishery	Total
	Karachi and Sind Coast	Baluchistan Coast	Total		
1946	23,910	8,983	32,873	7,050	39,943
48	24,400	9,364	33,764	8,350	42,114
49	25,062	10,118	35,180	9,850	45,030
50	26,360	10,889	37,249	10,400	47,649
51	28,129	11,796	39,925	12,300	52,225
52	28,810	12,023	40,833	15,000	55,833
53	28,855	12,431	41,286	15,500	56,786
54	29,037	12,704	41,741	16,000	57,741
55	32,349	13,611	45,960	16,330	62,290
56	34,309	13,838	48,147	16,750	64,897
57	35,007	14,518	49,525	17,000	66,525
58	35,116	14,636	49,752	17,180	66,932
59	35,561	15,707	51,268	18,000	69,268
60	45,824	16,333	62,157	18,500	80,657
61	48,410	16,469	64,879	19,000	83,879
62	50,179	16,787	66,966	19,800	86,766
63	58,074	17,150	75,224	20,100	95,324
64	66,104	17,331	83,435	21,000	104,475
65	72,138	17,694	89,832	22,000	111,832
66	100,494	18,148	118,642	22,500	141,192
67	97,945	18,711	116,656	23,290	139,946
68	98,417	19,173	117,590	28,000	145,590
69	100,667	35,151	135,818	28,220	164,038
70	102,418	37,385	139,803	18,740	158,543
71	101,955	35,316	137,271	18,028	155,299
72	131,741	41,481	173,222	18,022	191,244
73	158,892	37,722	196,614	17,617	214,231
74	110,220	39,790	150,010	19,092	169,102
75	113,000	41,124	154,124	20,015	174,139
76*	127,795	49,373	177,168	28,491	205,659
77*	165,968	68,848	234,816	33,138	267,954
78*	189,460	68,346	257,806	35,223	293,029

\* Inclusive of subsistence catch (1976 ~ 1978).

Source: Handbook of "Fisheries Statistics of Pakistan." 1978, Vol. 7 ---  
 A publication of Survey & Statistics Section, Marine Fisheries  
 Department of Pakistan, Karachi.

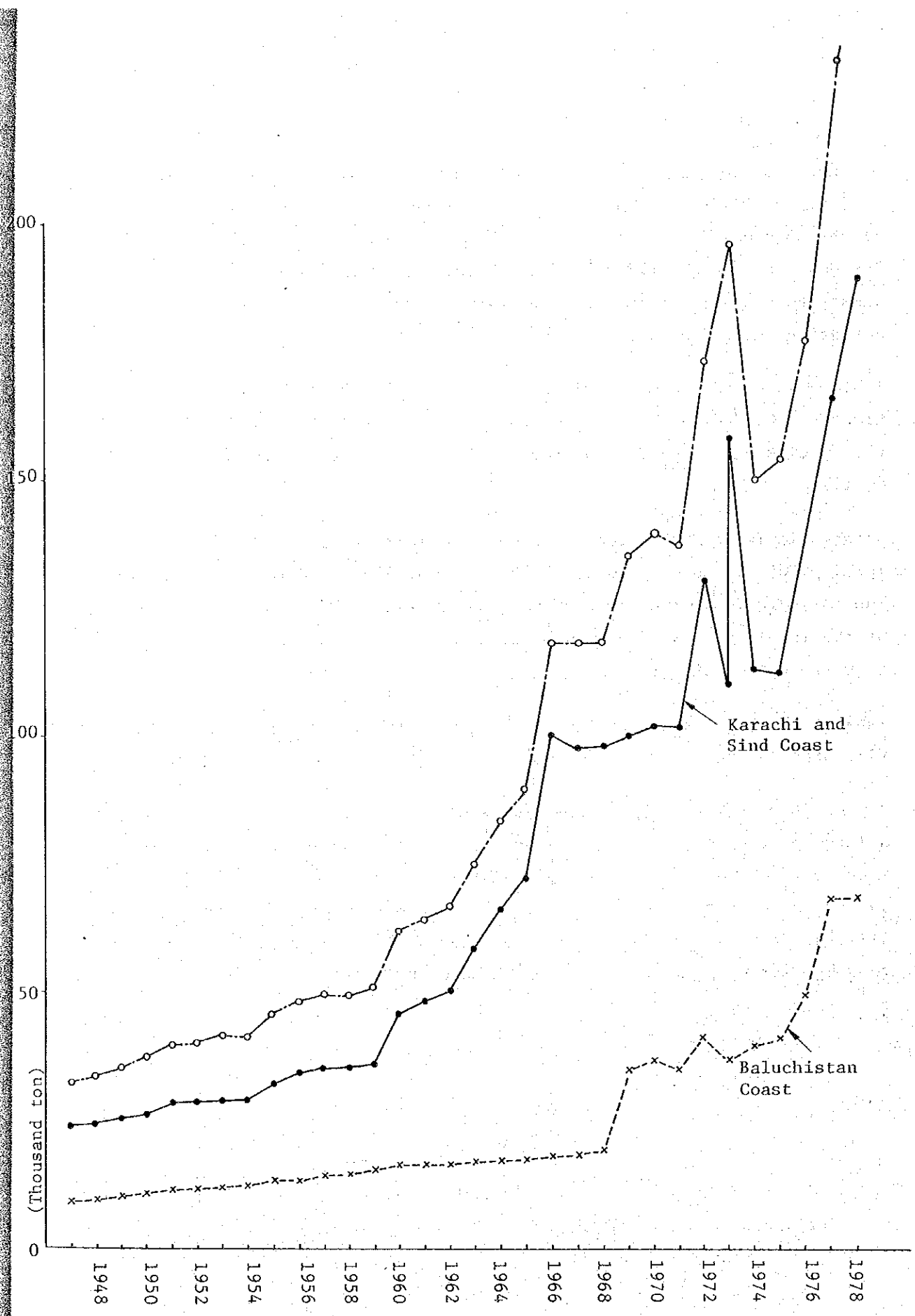


Fig. Changes in Catch of Sea Fishery by Fishing Area - 27 -

Of the said 400 fish species, about 40 have been selected and developed as "species of commercial and economic importance." The 400 fish species include 21 shrimp species, of which 12 have been developed for commercial purposes. Besides these, crabs and mollusks have also been caught by trawlers. Shrimps and oysters are found in large quantities especially in the deltaic area extending in the estuary of the Indus.

Table 2 shows the annual changes in the total catch of sea and inland waters fishery recorded in the last 30-year period up to 1978, and Table 3 shows the species-wise breakdown of the total catch in the 3-year period from 1976 to 1978.

As seen in Table 2, the total catch has been increasing year after year, marking 205,659 tons in 1976, 276,954 tons in 1977, and 293,029 tons in 1978. The catch ratio of sea fishery to inland waters fishery is 7.3 : 1. 10 - 11% of the total catch is consumed by fishermen themselves, and the remaining 90% is marketed for distribution.

Table 4 shows a quantitative distribution of the catch divided into ordinary fish species and shrimps. In sea fishery, the two are in the ratio of 7.3 : 1.

Shrimp is one of the high-class fish species caught in Pakistan, but quite a large portion of the catch is used for non-food purposes. Specially, as much as 2,000 tons are classified as offal shrimps and processed into fish meal. One of the main reasons for this is the poor maintenance of freshness. It will therefore be possible to increase the utilization rate of shrimps for food by improving the freshness maintenance technology.

Table 3. Main Fish Species Caught and Their Catches

(Unit: Metric ton)

Local Name	English Name	Ichthyological Name	Catch		
			1976	1977	1978
MANGRA	SHARK	<i>SCOLIODON spp</i>	22,347	34,317	30,913
OTHER FISHERIES	N.E.S.		25,153	32,769	
PITTAN	RAYS (STING RAYS)	<i>HIMANTURA spp</i>	17,993	29,812	41,035
KHAGGA	CAT FISH	<i>ARIUS THALASSINUS</i>	16,616	28,642	24,099
JHINGA	PRAWN (SHRIMP)	<i>PENAEUS spp</i>	21,995	19,896	19,177
DAWAN	TUNAY	<i>EUTHNNUS AFFINIS</i>	13,575	12,129	7,066
TARLI	SARDINE	<i>SARDINELLA LONGICEPS</i>	5,739	13,729	71,365
SUA	JEW FISH	<i>JOHNIUS COIBOR</i>	9,115	7,240	9,367
PALLA	INDIAN SHAD	<i>HILSA ILISHA</i>	9,545	9,129	4,813
AAL	LEATHER JACKET	<i>CHORINEMUS LYSAN</i>	6,083	7,598	5,477
BOI	MULLETES	<i>MUGIL spp</i>	4,931	8,768	7,647
POPLET	POM FRET	<i>PAMPUS ARGENTEUS</i>	4,405	6,053	3,910
KERLI	SILVER-BAR-FISH	<i>CHIROCENTRUS DORAB</i>	3,390	5,625	2,318
SURMAI	MARKEREL	<i>CYBIUM COMMERSONI</i>	3,731	5,512	6,003
DOTHAR	GRUNTER	<i>POMADASYST HASTA</i>	3,960	3,669	2,479
HIRA	RED SNAPPER	<i>LUTIANUS ARGENTIMACUL- ATUS</i>	2,048	2,385	2,241
DANDIA	BLACK BREAM	<i>ACANTHOPAGRUS BERDA</i>	2,478	2,215	2,416
SOLE	FLAT FISH	<i>CYNOGLOSSUS spp</i>	917	910	1,015
SANGRO	BUTTER FISH	<i>RACHYCENTRON CANADUS</i>	965	890	1,282
GISSER	ROCK-COD	<i>EPINEPHELUS DIACANTHUS</i>	354	792	1,183
DANGRI	BECKTI	<i>LATES CALCARIFER</i>	583	680	644
KIKAT	LOBSTERS	<i>PAULURUS spp</i>	279	227	222
RAWAS	THREAD FIN	<i>POLYNEMUS SEXTARTUS</i>	645	489	248
BHAMBOR	THREAD FIN	<i>SILLAGO SIHAMA</i>	321	580	568
TOTAL			177,168	234,056	245,488

Table 4. Catch Comparison between Shrimps and Other Fish Species (1976 ~ 1978)

Fishing Area	Species other than Shrimps		Shrimps		Total	
	1976	1977	1976	1977	1976	1977
Total	183,385	247,439	22,274	20,515	205,659	267,954
Sea fishery	154,894	214,301	22,274	20,515	177,168	234,816
i) KARACHI & SIND COAST	107,585	147,920	20,210	18,048	127,795	165,968
ii) BALUCHISTAN COAST	47,309	66,381	2,064	2,467	49,373	68,848
Inland waters	28,491	33,138	-	-	28,491	33,138
i) SIND	19,500	22,926	-	-	19,500	22,926
ii) PUNJAB	7,710	8,841	-	-	7,710	8,841
iii) N.W.F.P.	577	639	-	-	577	639
iv) MANGLA DAM RESERVOIR	704	732	-	-	704	732
v) NORTHERN AREA	-	-	-	-	-	-
						7



Table 5 shows the area-wise distribution of catch and Fig. 2 illustrates the changes in total catch by sea fishery and inland waters fishery.

A comparison between the Sind coast and the Baluchistan coast based on Table 5 indicates that the Sind coast accounted for 73.5% of the total catch of sea fishery in 1978. For clarification of the data of Table 5, a breakdown of subsistence catch is shown in Table 6. The figure given to the Sind Coast in Table 5 includes the catch by trawlers registered with Karachi Port. If this portion is excluded, it is probable that the two coasts will have just about the same ratio in terms of catch per fishing boat.

The catches mentioned above are recorded by otter trawlers (mostly registered with Karachi Port), gillnetters, and cast netters. Since no data were obtained regarding the catch by these different kinds of fishing method, the number and catch of each type of fishing boat are shown in substitution (Table 7).

Table 5. Catch by Fishing Area (1976 ~ 1978) ((Metric tons)

Fishing Area	Sea Fishery		Inland Waters Fishery			Total			
	1976	1977	1978	1976	1977	1978	1976	1977	1978
PAKISTAN	177,168	234,816	257,806	28,491	33,138	35,223	205,659	267,954	293,029
i) SIND	127,795	165,968	189,460	19,500	22,926	23,404	147,295	188,894	212,864
ii) BALCHISTAN	49,373	68,848	68,346	-	-	-	49,373	68,848	68,346
iii) PUNJAB	-	-	-	7,710	8,841	10,286	7,710	8,841	10,286
IV) N.W.F.P.	-	-	-	577	639	776	577	639	776
V) MANGLA DAM	-	-	-	704	732	750	704	732	750
VI) NORTHERN AREA	-	-	-	-	-	7	-	-	7

Table 6. Catch by Fishing Area and Purpose (1976 ~ 1978) (Metric tons)

Fishing Area	Commercial & Industrial Catch		Subsistence Catch *(2)		Total	
	1976	1977	1976	1977	1976	1977
Total catch	184,559	245,074	21,100	22,880	205,659 (100%)	267,954
Sea fishery	(88.5%) 163,368	219,516	13,800	15,300	177,168	234,816
i) KARACHI & SIND	117,795	155,168	10,000	10,800	127,795	165,968
ii) BALUCHISTAN	45,573	64,348	3,800	4,500	49,373	68,848
Inland water fishery	(11.5%) 21,191	25,558	7,300	7,580	28,491	33,138
i) SIND	14,000	17,226	5,500	5,700	19,500	22,926
ii) PUNJAB	6,310	7,341	1,400	1,500	7,710	8,841
*(1) iii) N.W.F.P.	277	329	300	310	577	639
iv) MANGLA DAM	604	662	100	70	704	734
v) NORTHERN AREA	-	-	-	-	-	-
						2
						7

Notes: \*(1) N.W.F.P. denotes northwestern far provinces.

\*(2) Subsistence catch indicates the fish quantity caught and consumed by the crew of fishing boats and their families.

Source: Same as Table 2.

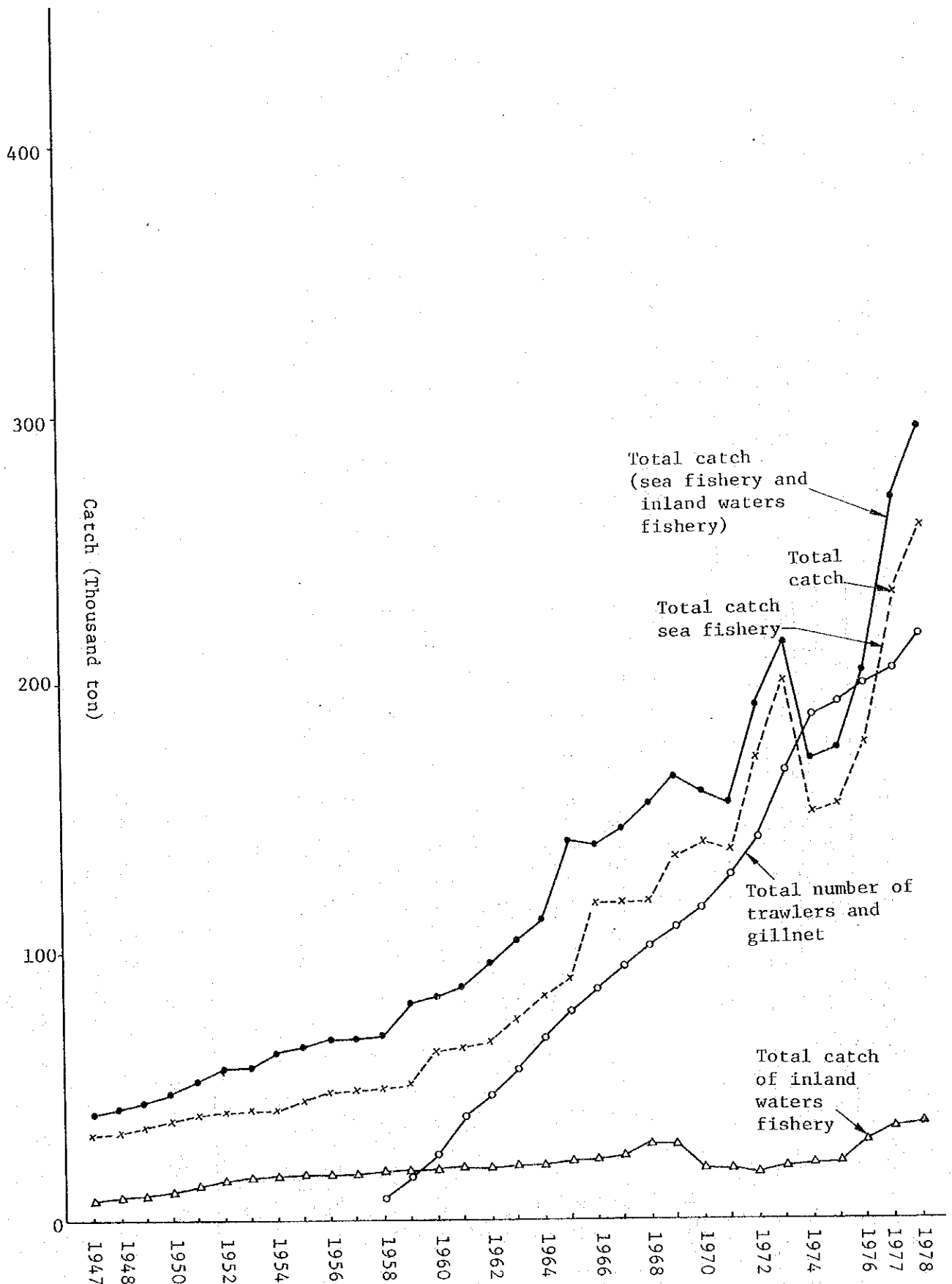


Fig. 2 Changes in Annual Catch of Sea Fishery and Inland Waters Fishery

## 7-2 Types and Numbers of Fishing Boats

All Pakistani fishing boats are wooden vessels totalling 17,526 in number (1978), of which 8,487 are used in inland water fishery and 9,039 in sea fishery.

Tables 7 and 8 show the annual number of fishing boats by type and fishing area in the 24-year period from 1955 to 1978, and Table 9 shows the same for the 3-year period from 1976 to 1978 with a more detailed division of fishing area.

As seen in Table 8, non-motorised fishing boats number 5,864 for sea fishery and none of the boats for inland waters fishery are motorised, so that there a total of 14,351 non-motorised fishing boats at present. In the Baluchistan coast area, non-motorised fishing boats number 1,673 or 70% of all fishing boats. In the Sind coast area, on the other hand, they number 4,191 or 63% of all fishing boats.

Table 10 shows the number of registered fishing boats vs. the number of boats engaged in actual fishing operations. Although the reasons for the considerable gap between the two are not clearly known, it is likely that the gap was invited by the difficulty in raising the necessary construction fund or the deficiency of shipbuilding facilities.

The data given above, which indicate that there still are a large number of non-motorised fishing boats in Pakistan, are convincing enough for anyone to understand the keen enthusiasm for motorisation evinced by the Pakistani Government, the fisheries authorities of the two provincial governments, and fishermen in all localities of Pakistan.

Figs. 3 and 4 show the annual changes in the number of fishing boats by type in the two provinces for a more detailed illustration of the data of Table 8.

Table 7. Annual Total Numbers and Catches of Trawlers and Gillnetters

Year	Number of Trawlers	Number of Gillnetters	Total Number of Trawlers and Gillnetters	Total Catch (Metric tons)
1958	3	80	83	66,932
1959	33	137	170	69,268
1960	86	160	246	80,657
1961	113	267	380	83,879
1962	143	318	461	86,766
1963	178	375	553	95,324
1964	226	438	664	104,435
1965	260	510	770	111,832
1966	296	560	856	141,192
1967	320	613	933	139,946
1968	363	654	1,017	145,590
1969	395	688	1,083	164,038
1970	443	707	1,150	158,543
1971	668	607	1,275	155,299
1972	745	666	1,411	191,244
1973	922	751	1,673	214,231
1974	1,076	791	1,867	169,102
1975	1,098	815	1,913	174,139
1976	1,130	865	1,995	205,659
1977	1,151	882	2,033	267,954
1978	1,270	901	2,171	293,029

Catch of inland waters fishery inclusive.

Table 8. Annual Number of Fishing Boats by Type, Kind of Fishery, and Fishing Area

Year	Sea Fishery										Inland Waters Fishery		Total
	Karachi and Sind Coast					Baluchistan Coast					Sailing boats	Total	
	Trawlers	Gillnet	Motor-powered Sailing Boats	Sailing boats	Total	Trawler	Gill-netters	Motor-powered sailing	Sailing boats	Total			
1955	2	52	-	955	1,009	-	-	-	1,400	1,400	1,000	3,409	
1956	3	70	-	1,000	1,073	-	-	-	1,485	1,485	1,500	4,058	
1957	3	70	-	1,030	1,103	-	-	-	1,515	1,515	1,550	4,168	
1958	3	80	-	1,030	1,113	-	-	-	1,520	1,520	1,600	4,233	
1959	33	135	-	1,085	1,233	-	2	-	1,552	1,552	1,670	4,455	
1960	86	146	-	1,100	1,332	-	14	-	1,961	1,975	1,700	5,007	
1961	113	253	-	1,100	1,466	-	14	-	2,000	2,014	2,000	5,480	
1962	141	301	-	1,198	1,640	2	17	-	2,005	2,024	2,500	6,164	
1963	176	359	-	1,367	1,902	2	16	-	1,915	1,933	2,500	6,335	
1964	224	422	-	2,644	3,290	2	16	-	1,915	1,933	2,500	7,723	
1965	258	490	-	2,794	3,542	2	20	-	1,933	1,955	2,500	7,997	
1966	292	506	-	2,891	3,689	4	54	-	2,475	2,533	2,500	8,722	
1967	316	559	-	3,029	3,904	4	54	-	2,475	2,533	2,500	8,937	
1968	356	593	-	3,127	4,076	7	61	-	2,500	2,568	8,699	15,343	
1969	388	627	-	3,206	4,221	7	61	-	2,500	2,568	8,707	15,496	
1970	443	659	-	3,339	4,441	-	48	-	2,004	2,052	4,933	11,426	
1971	668	559	-	3,389	4,616	-	48	-	2,004	2,052	5,012	11,680	
1972	745	618	-	3,567	4,930	-	48	-	2,004	2,052	5,863	12,845	
1973	922	691	-	3,967	5,580	-	60	-	2,200	2,260	6,431	14,271	
1974	1,076	731	-	4,130	5,937	-	60	-	2,200	2,260	7,164	15,361	
1975	1,098	752	230	3,978	6,058	-	63	-	2,249	2,310	7,431	15,801	
1976	1,130	825	250	4,000	6,205	-	40	158	2,070	2,268	7,972	16,445	
1977	1,151	840	267	4,152	6,410	-	42	331	2,014	2,386	18,107	16,403	
1978	1,270	859	327	4,191	6,647	-	42	677	1,673	2,392	8,487	17,526	

Table 9. Annual Number of Fishing Boats by Type, Kind of Fishery, and Fishing Area (1976 ~ 1978)

Type of Fishing Boat Fishing Area	Trawlers			Gillnet			Motor-powered Sailing Boats			Sailing Boats				Total	
	1976	1977	1978	1976	1979	1978	1976	1977	1978	1976	1977	1978	1976	1977	1978
	Total	1,130	1,151	1,270	865	882	901	408	597	1,004	14,042	14,273	14,351	16,445	16,903
Sea fishery	1,130	1,151	1,270	865	882	901	408	597	1,004	6,070	6,166	5,864	8,473	8,796	9,039
i) KARACHI & SIND COAST	1,130	1,151	1,270	825	840	859	250	267	327	4,000	4,152	4,191	6,205	6,410	6,647
ii) BALUCHI-S TAN COAST	-	-	-	40	42	42	158	330	677	2,070	2,014	1,673	2,268	2,386	2,392
Inland waters fishery	-	-	-	-	-	-	-	-	-	7,972	8,107	8,487	7,972	8,107	8,487
i) SIND	-	-	-	-	-	-	-	-	-	3,850	3,700	3,705	3,850	3,700	3,705
ii) PUNJAB	-	-	-	-	-	-	-	-	-	3,942	4,187	4,402	3,942	4,187	4,402
iii) N.W.F.P.	-	-	-	-	-	-	-	-	-	60	100	250	60	100	250
iv) MANGLA DAM RESER-VOIR	-	-	-	-	-	-	-	-	-	120	120	130	120	120	130
v) NORTHERN AREA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



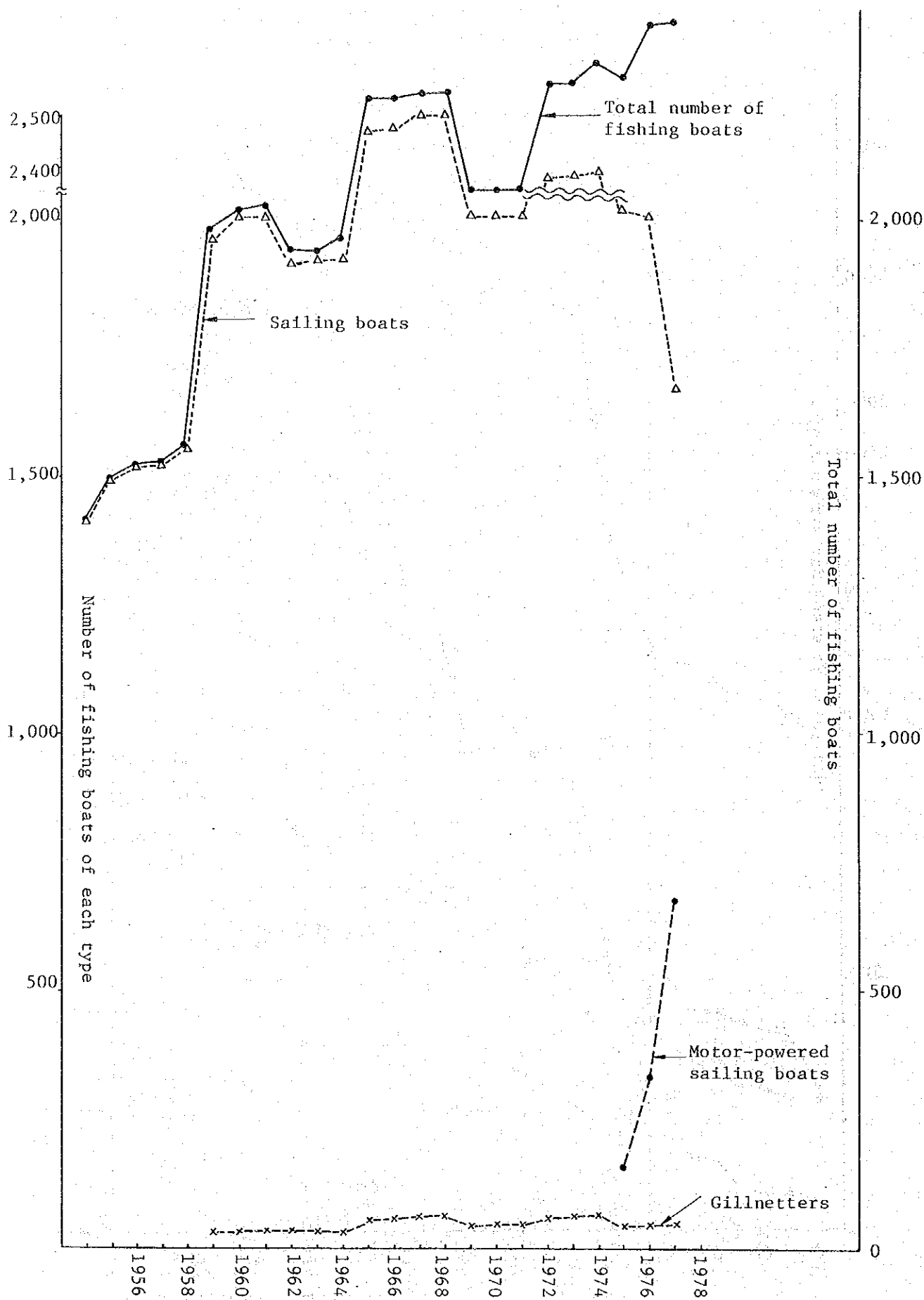


Fig. 3 Annual Number of Fishing Boats in Baluchistan Province by Type

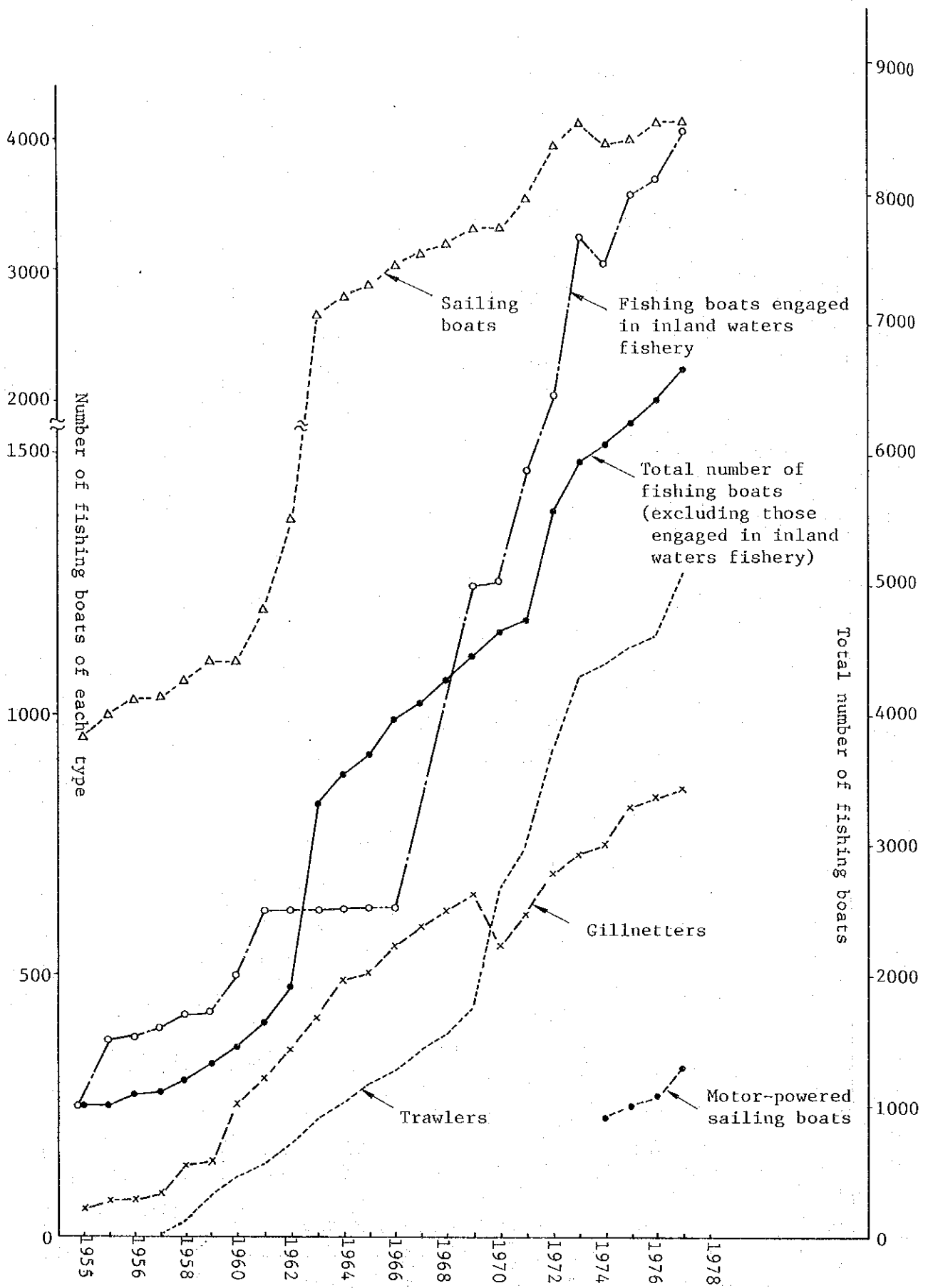


Fig. 4 Annual Number of Fishing Boats in Sind Province (incl. Karachi) by Type

Table 10. Number of Registered Fishing Boats vs. Number of Fishing Boats  
in Actual Fishing Operation

Type of Fishing Boat	Sea Fishery			Inland Waters Fishery			Total		
	1976	1977	1978	1976	1977	1978	1976	1977	1978
Total	8,473 (7,698)	8,796	9,039	7,972	8,107	8,487	16,445	16,903	17,526
Motorised fishing boats	1,995 (1,220)	2,033 (1,255)	2,171 (1,448)	-	-	-	1,995	2,033	2,171
i) Trawlers	1,130 (730)	1,151 (750)	1,270 (918)	-	-	-	1,130	1,151	1,270
ii) Gillnet	865 (490)	882 (505)	901 (530)	-	-	-	865	882	901
Motor-powered sailing boats	408 (408)	505 (597)	679 (679)	-	-	-	408 (408)	597	1,004
Sailing boats	6,070 (6,070)	6,166	5,864	7,972	8,107	8,487	14,042	14,273	14,351

### 7-3 Specifications of Fishing Boats by Size

All fishing boats operating in the two fishing areas (Baluchistan and Sind coast areas) are identical in shape irrespective of the size which consists of the 5 kinds shown in Table 11.

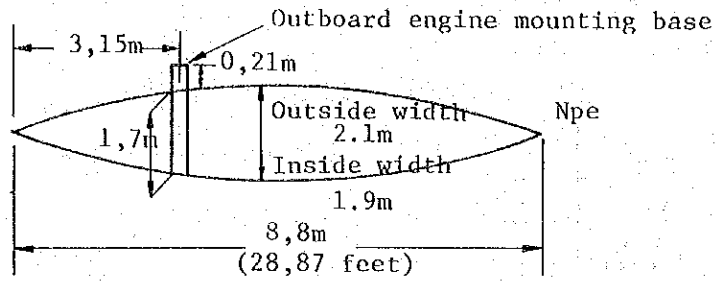
Table 11. Size and Fishing Gear of Pakistani Fishing Boats

Material	Length of Boat	Fishing Gear and Quantity	Size of Crew
1. Wooden boat	12 ~ 20' (6.4 ~ 6.096 m)	Cast net and long line	1 ~ 3
2. "	21 ~ 30' (6.4 ~ 9.14 m)	Gillnet (4 - 8 pieces)	*2 ~ 5
3. "	31 ~ 38' (9.45 ~ 11.6 m)	Gillnet	*5 ~ 10
4. "	40 ~ 45' (12.2 ~ 13.7 m)	Gillnet	*10 ~ 15
5. "	45' ~ (13.7 m ~ )	Gillet (15 pieces)	15 ~ 20

Note: \* indicates estimated size of crew.

Figs. 5 and 6 show the main dimensions of the boats of class 2 and 3 listed in Table 11.

Fishing boat observed  
at Gadani on December  
6, 1979



Depth to deck : 0.9 m  
 Depth to bulwark top : 1.02 m  
 Draft (est.) : 0.52 m (=1.02 - 0.1 - 0.4)  
 Freeboard : 0.4 m  
 (Between water level  
 and engine mounting  
 base)

Fishing  
boat observed  
at Sonmiani  
on December  
6, 1979

Casting Net  
 L: 7.4 m    B: 1.60 m    D: 0.75 m  
 Propeller shaft length : 2.5 m  
 Propeller : Double blade with a diameter  
 of 170 mm  
 Engine : Honda G80 8H

Fig. 5 Specifications of Fishing Boats of Class 2

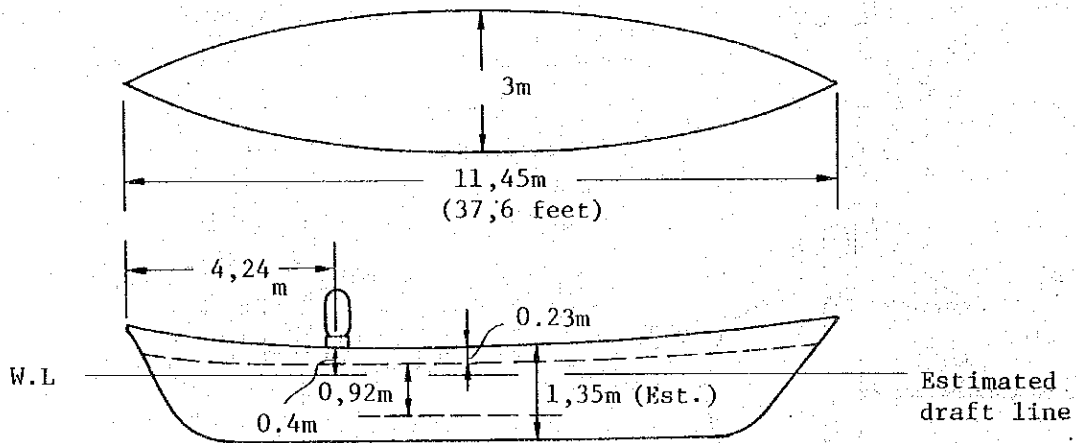
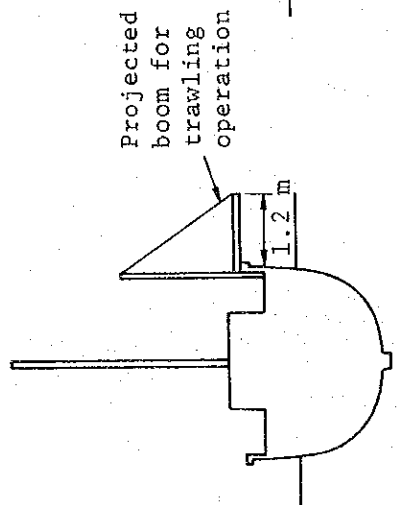
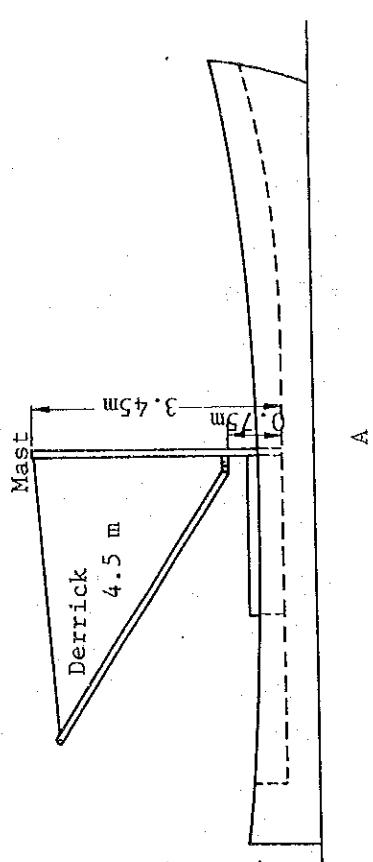
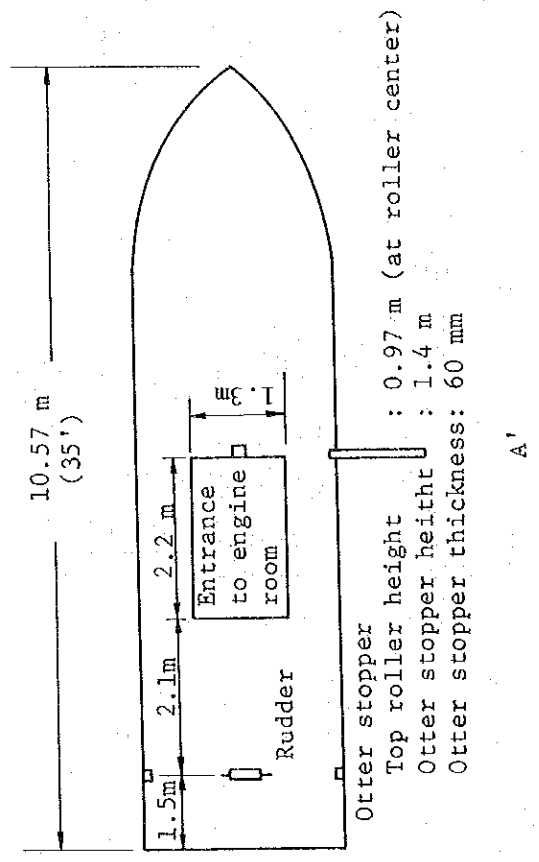


Fig. 6 Specifications of Fishing Boats of Class 3



A - A'



Otter board  
 Length : 1.3 m  
 Height : 0.7 m  
 Thickness : 40 mm  
 Material : Iron and wood  
 Slit : 55 mm x 2

Otter stopper  
 Top roller height : 0.97 m (at roller center)  
 Otter stopper height : 1.4 m  
 Otter stopper thickness: 60 mm

A'

Fig. 7 Specifications of 35 ft. (10.67 m) Trawler Observed at Karachi Port on December 4, 1979

All motorised fishing boats excepting trawlers have a plank projecting near the stern as shown in Fig. 5 to mount the long-tail shaft type engine. Most of non-motorised fishing boats are of class 1 and 2, and the greater part of fishing boats of class 4 and 5 are not motorised.

The presently used outboard engines are installed as shown in Fig. 5, and they are mostly Italian-made and include some Chinese-made ones. The output rating inscribed on the name plate of these engines is 4 p.s. ~ 16 p.s. However, judging from the specification and actual rotational frequency of the propeller fitted to the end of the long-tail shaft, it is probable that the actual effective output is considerably than the inscribed rating.

With the exception of trawlers, all Pakistani fishing boats have a projecting bow and stern, which makes it impossible to mount an inboard engine. Since the use of inboard engines calls for construction of new fishing boats designed for that specific purpose, it is likely that outboard engines will be introduced for some time to come for motorisation of fishing boats. The rudder is of vertical type, long and narrow in shape, and fitted to the stern.

The long-tail shaft, put in water at a certain angle, is used only for the purpose of propulsion, not for dual purpose of propulsion and manoeuvring as seen in Thailand. The boat is stopped or backed not by stopping or reversing the engine, but by raising the shaft and propeller above the water level with the engine kept in operation.

Table 12 shows the specifications of the presently used outboard engines including Italian-made ones.

Table 12. Specifications of Presently Used Outboard Engines \* Indicates estimated value

Manufacturer	Model No.	Output	Rotational Frequency	Fuel	Cooling System	Shaft Length	Propeller	Weight
Acme Motori, Italy	AL550	16 HP	3,200 rpm	KEROSENE	Air-cooled	3.0 m	3-blade D=220 mm	42 kg
"	AL290P	7.5 HP	3,600 rpm	"	"	2.5 m	3-blade D=176 mm	Approx. 35 kg *
China		4 HP	3,000 rpm	"	"			Approx. 90 kg *
Intermotors, Italy	LAP490	12 HP	3,000 rpm	"	"	2.7 m	2-blade D=210 mm	
TECOMSEH, U.S.A.		6 HP		"	"	2.5 m	3-blade D=200 mm	
Honda, Japan	G150	3.5 HP		Gasoline	"	2.0 m	2-blade D=160 mm	
"	G80	8 HP		"	"	2.5 m	2-blade D=200 mm	Approx. 13 kg
Long shaft	2.5 m long 3.0 m long							Approx. 15 kg



It takes about 3 to 6 months to build a new fishing boat with a length of about 20 feet. The Team learned that about 50 new boats were constructed each year in Baluchistan Province. The construction cost per boat with a length of about 15 feet amounts to R.S.4,000 - 5,000 (¥800 - 100 thousand) excluding the costs of engine and fishing gear. Construction of a new fishing boat is hard to afford for ordinary Pakistani fishermen because the minimum monthly income per fisherman is no larger than R.S.500 - 600 (¥12,500 - 15,000).

#### 7-4 Fishing Method and Fishing Gear

The main fishing methods applied in Pakistan are trawl fishing operated for catching shrimps by trawlers registered with Karachi Port, gillnet fishing, beach seine fishing, and cast net fishing. Besides these, long line fishing and trolling line fishing are also employed. The period of a single fishing operation ranges from 1 to 10 days, becoming longer with the increase of boat size. A great majority of fishing boats excluding large-sized ones operate in fishing grounds not very far from the coastline.

##### 1) Shrimp Trawl Fishing and Trawl Net

Nearly 100% of trawlers have their base in Karachi Port, numbering 1,270 in total. These trawlers engage in fishing operations only in Karachi and near-by Sind coast areas because shrimp fishing grounds are concentrated in the offing of the estuary of the Indus. Otter trawling operation is not conducted in Baluchistan coast area because it is prohibited by the Provincial Government for protection of marine resources. Fig. 8 shows the dimensions of a trawl net measured by the Team.

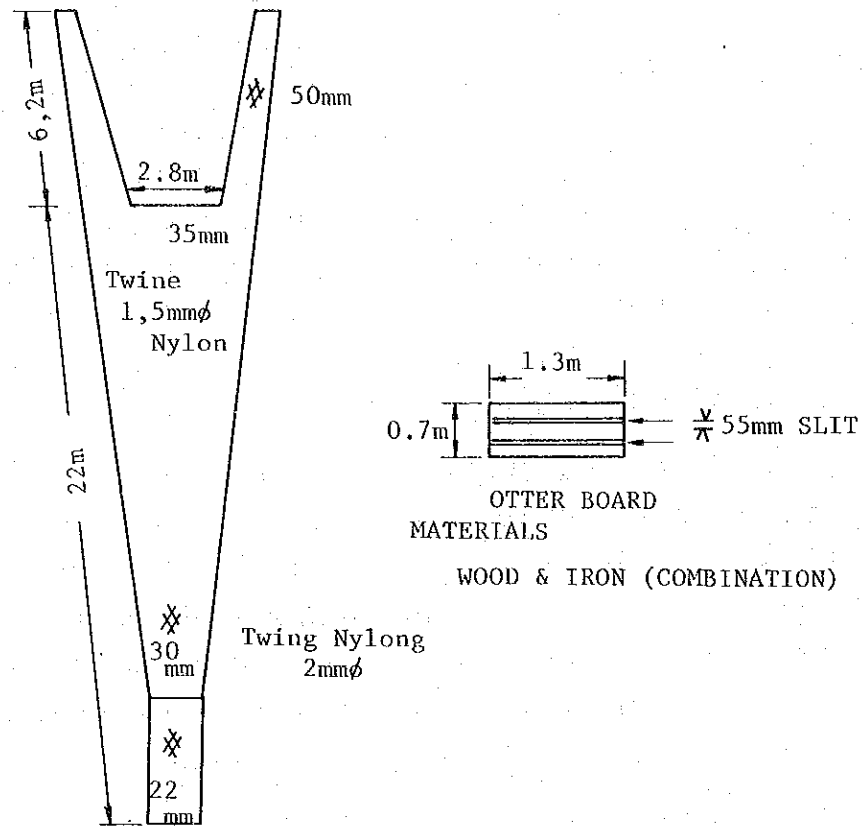


Fig. 8. Specifications of Shrimp Trawl Net

## 2) Gillnet Fishing and Gillnet

Figs. 9 and 10 show an outline of gillnets used in the two provinces. The dimensions shown in the two figures are not accurate because the measurement was conducted on sand beaches and no drawings were available.

These gillnets comprise four kinds, the large, middle and small size gillnets and what is commonly called beach seine. The so-called beach seine is a kind of gillnet which is used for surrounding a fish school when it is detected. Other gillnets are used in the ordinary way, suspending them horizontally below the sea surface. The bottom gill net suspended on the seabed is called set net in Pakistan, but it is called gillnet in this report.

When the beach seine is used as a floating gill net, slings each having a length of 92 cm with a float fitted to their end are connected to the float line at intervals of about 2.4 m so as to stretch down the net from a depth of 92 cm below the sea surface as shown in the lower right corner of Fig. 9. It seems that most gillnets are used as bottom gillnet in Pakistan.

As for floats, the Team noted that polystyrene foam floats (L 135 mm x D 90 mm x HD 27 mm), some cut in round slices and some others not, were attached in a rather disorderly manner together with Japanese-made PVC float tops (L 70/140 mm x D 80/100 mm x HD 20 mm). This arrangement is extremely irrational because it gives the net excessive buoyancy and consequently reduces the fishing efficiency. In addition, it appeared that the Pakistani fishermen were not aware that polystyrene foam floats are prone to be smashed by water pressure when attached and reduce the overall net buoyancy. To correct this defect and improve the fishing efficiency, the Team designed new gillnets, and selected the specifications of materials for these gear including twines, floats and ropes according to the new design.

Figs 9 and 10 show the structure and materials of gillnets and beach seines used in the two provinces as disclosed by the survey. The twines are Japanese- and Korean-made products made of nylon, whereas the ropes are local products made by untwisting the ropes of used parachutes of the U.S. Air Forces and stranding them by a special method. The number of pieces of gillnets used by different classes of boats could not be clarified because the Pakistani fishermen express the quantity of gillnets in weight, not in pieces, and in addition the unit length of gillnet is not fixed. By asking the interviewed fishermen rather persistently on this question, the Team obtained the data shown in Table 11.

The presently used gillnet does not exhibit its function to the full because of its structure which is extremely irrational especially for creating adequate buoyancy. It seems that the fishermen mount a gill net using whatever twines and floats available without regard to their thickness, shape or buoyancy. As described above, therefore, the Team selected the specifications of the materials on the basis of its new design of gillnets shown in Fig. 15.

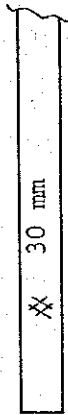
BEACH SEINE  
(60 FATHOMS)



FLOAT LINE 12 mmφ  
SHORTING  
FOOT LINE 10 mmφ  
TWINE (NYLON) 210 D/3/45  
MESH SIZE 180 mm

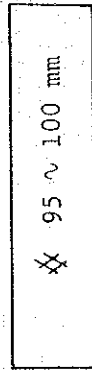
6 FATHOMS  
50 MESH

SHRIMP GILL NET



FLOAT LINE 4 mmφ  
SHORTING  
FOOT LINE 4 mmφ  
TWINE (NYLON) 210 D/3/6  
MESH SIZE 30 mm

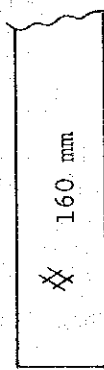
MIDDLE SIZE GILL NET  
(50 FATHOM)



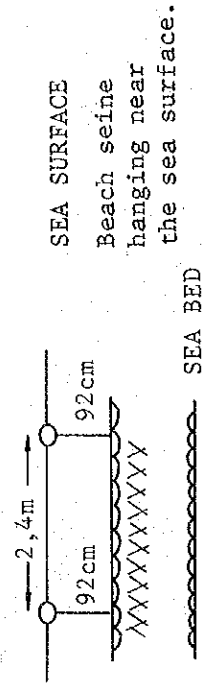
FLOAT LINE 4 mmφ  
SHORTING  
FOOT LINE 4 mmφ  
TWINE  
MESH SIZE 95 - 100 mm

12 FATHOM

LARGE SIZE GILL NET



FLOAT LINE 10 mmφ  
SHORTING  
FOOT LINE 10 mmφ  
TWINE 210 D/3/45  
MESH SIZE 160 mm

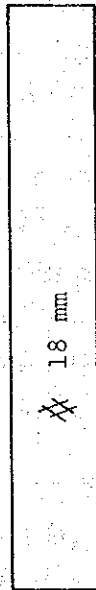


SEA SURFACE  
Beach seine hanging near the sea surface.  
SEA BED

Fig. 9 Gill nets Used in Baluchistan Province

BEACH SEINE

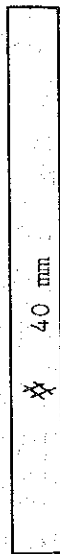
(75 - 80 FATHOMS)



FLOAT LINE 10 mm $\phi$   
 SHORTING 40%  
 FOOT LINE 10 mm $\phi$   
 TWINE 210 D/3/6  
 MESH SIZE 18 mm

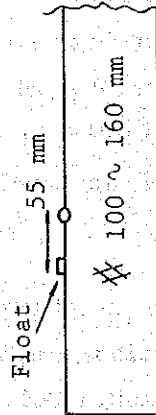
SHRIMP GILL NET

(75 FATHOMS)



FLOAT LINE 8 mm $\phi$   
 SHORTING ?  
 FOOT LINE 8 mm $\phi$   
 TWINE (NYLON) 210 D/3/4  
 MESH SIZE 40 mm

LARGE SIZE GILL NET



FLOAT LINE 8 mm $\phi$   
 SHORTING  
 FOOT LINE 8 mm $\phi$   
 TWINE (NYLON) 210 D/3/45  
 MESH SIZE 100 - 160 mm  
 NUMBER OF FLOAT 45 PIECES

Fig. 10. Gillnets Used in Sind Province

### 3) Cast Net Fishing and Cast Net

In sea fishery, cast nets are used by lowest class boats with a length of about 12 ft. In inland waters fishery, however, they are widely used as main fishing gear.

In each casting operation, the net is cast to a depth of 0.5 - 2 fathoms (0.9 - 3.66 m). It has a length of as large as 5.5 m and a considerably long closing string attached to its end. Each net has a dry weight of about 5 kg excluding sinkers, and its cost is about RS 120 (¥3,000).

In Baluchistan Province, cast nets are used for catching shrimps and prawns. They are also used widely in lake fishery.

### 4) Long Line Fishing, and Long Line

In the long line fishing, bottom long lines are used to catch medium and large size fish. The hooks seemed to be in short supply as most of them, including foreign products, were found to have been used beyond their life span and local products were extremely poor in quality.

### 7-5 Inboard Handling of Fish Catch

Inboard handling of fish catch is extremely rough. In single-day fishing operations, fish are usually left on the boat without any care, although ice is used occasionally in fishing villages where it is available. If the operation lasts for several days, the fish are salted after evisceration. As a result of such poor inboard handling practices, high-class fish are marketed only as salted or dried fish and sardines and other small fish are dried on the beach in the sun and then sent to Karachi as materials of fish meal.

The prevailing inboard handling method, though inevitable due to the lack of traffic facilities, needs to be improved as it works only to lower the market price of fish. Fully aware of this fact, the fisheries authorities of both Provincial Governments are hoping to instal heat-insulating boxes on fishing boats and increase ice-plants and heat-insulated trucks in the future. It is not likely, however, that these measures will produce any appreciable remedial effect because of the long distance severing fishing villages from consuming areas.

Considering the geographical conditions of fishing villages, it seems that the quickest way to remove all restraints on the development of the Pakistani coast fisheries is to distribute a suitable number of freezing carriers of appropriate class (e.g., used Japanese squid fishing boats of 99-ton class) mentioned in Section 11.

#### 7-6 Fishermen

Pakistani fishermen working aboard fishing boats registered a total of 228,410 persons in 1979. The annual number of these fishermen recorded from 1975 up to 1978 is shown in Table 13. Table 14 shows their number by fishing area, and Table 15 presents the numbers of full-time fishermen, part-timers, and temporary workers. In 1978, full-time fishermen numbered 128,264 or about a half of all fishermen inclusive of part-timers and temporary workers.

Those engaged in sea fishery number 50,100 for Sind coast area and 13,828 for Baluchistan coast area. The former figure includes the fishermen in Karachi area, so that the actual number of fishermen in fishing villages is smaller. Specifically, if each of the 1,270 trawlers in Karachi has a crew of 10 men, the total size of crew turns out to be 12,700, which means that the number of fishermen in the fishing villages in Sind Province can be estimated at 37,400.

Table 16 shows the population, number of fishermen, number of fishing boats and catches in different fishing villages of Baluchistan Province as well as the average annual catch per boat and the average daily catch per boat. A calculation worked out on the basis of the data of this table indicates that the average daily catch per fishing boat attainable by 250 days of operations is about 100 kg in each of the fishing villages.

The survey disclosed that the minimum monthly income per fishermen in these villages is RS.500 - 600 (¥12,500 - 15,000) which is just about the same as observed in other parts of the province.

Table 13. Annual Number of Fishermen by Area

Year	Sea Fishery			Inland Waters Fishery	Total
	Karachi and Sind Coast Area	Baluchistan Coast Area	Total		
1957	32,938	12,588	45,526	34,000	79,526
58	35,264	13,262	48,526	36,000	84,526
59	37,590	13,936	51,526	38,000	89,526
60	44,438	15,785	60,223	40,000	100,223
61	49,000	17,000	66,000	44,000	110,000
62	49,900	17,655	67,555	44,000	111,555
63	50,898	17,800	68,698	44,000	112,698
64	51,957	17,961	69,918	44,000	113,918
65	52,153	17,961	70,114	44,000	114,114
66	53,455	18,720	72,175	44,000	116,175
67	55,166	19,486	74,652	44,000	118,652
68	56,820	24,726	81,546	48,292	129,838
69	58,240	43,772	102,012	53,772	155,784
70	61,000	28,600	89,600	73,180	162,780
71	62,520	28,600	91,120	72,878	163,998
72	65,005	28,600	93,825	82,895	176,720
73	70,770	25,200	95,970	87,237	183,207
74	72,000	25,200	97,200	100,984	198,184
75	73,500	25,200	98,700	108,597	207,297
76	74,100	17,868	91,968	113,903	205,871
77	75,200	17,636	92,836	124,337	217,713
78	80,800	17,427	98,227	130,183	228,410



Table 14. Number of Fishermen by Type of Fishery and Area

Area	Sea Fishery			Inland Water Fishery			Total		
	1976	1977	1978	1976	1977	1978	1976	1977	1978
Total	91,968	92,836	98,227	113,903	124,337	130,183	205,871	217,173	228,410
i) Sind (incl. Karachi)	74,100	75,200	80,000	50,928	53,985	53,985	125,028	129,185	134,785
ii) Balchistan	17,868	17,636	17,427	-	-	-	17,868	17,636	17,427
iii) Punjab	-	-	-	56,675	64,702	70,333	56,675	64,702	70,333
iv) N.W.F.P.	-	-	-	5,300	4,650	4,765	5,300	4,650	4,765
V) Mangla dam resevoir	-	-	-	1,000	1,000	1,100	1,000	1,000	1,100

Table 15. Number of Fishermen by Area and Type of Engagement

Area	Full time Fishermen			Part-timers			Temporary Employees			Total		
	1976	1977	1978	1976	1977	1978	1976	1977	1978	1976	1977	1978
National Total	100,691	122,522	128,264	58,975	65,781	67,951	46,205	28,870	32,195	205,871	217,173	228,410
Sea fishery	58,114	59,795	63,928	27,585	28,214	28,463	6,269	4,827	5,836	91,968	92,836	98,227
i) Karachi and Sind coast	45,600	46,200	50,100	25,650	26,000	26,600	2,850	3,000	4,100	74,100	75,200	80,800
ii) Baluchistan coast	12,514	13,595	13,828	1,935	2,214	1,863	3,419	1,827	1,736	17,868	17,636	17,427
Inland waters fishery	42,577	62,727	64,336	31,390	37,567	39,488	39,936	24,043	26,359	113,903	124,377	130,183
i) Sind	19,949	37,863	37,863	11,974	15,455	15,455	19,005	667	667	50,928	53,985	53,985
ii) Punjab	21,128	23,214	24,723	18,116	21,112	23,018	17,431	20,376	22,592	56,675	64,702	70,333
iii) N.W.F.P.	500	650	650	1,300	1,000	1,015	3,500	3,000	3,100	5,300	9,650	4,765
iv) Mangla dam reservoir	1,000	1,000	1,100	-	-	-	-	-	-	1,000	1,000	1,100

The number of fishermen in each fishing village of Baluchistan Province is as shown below.

Table 16. Population and Number of Fishermen in Fishing Villages of Baluchistan Province

Fishing Village Item	JIWANI AREA	GWADAR AREA	PASNI AREA	ORMARA AREA	SONMIANI AREA	TOTAL
Population	8,400 person	22,320 person	17,200 person	9,320 person	21,200 person	78,440 person
Number of fishermen	1,710 person	6,351 person	4,097 person	1,675 person	3,594 person	17,427 person
Catch	5,623 ton	22,460 ton	13,550 ton	9,963 ton	13,500 ton	65,096 ton
Number of fishing boats	179 ton	807 ton	517 ton	391 ton	498 ton	2,392
Average annual catch per fishing boat	31.4 ton	27.8 ton	26.2 ton	25.5 ton	27.11 ton	27.21 ton
Average daily catch per fishing boat	0.126 ton	0.11 ton	0.105 ton	0.102 ton	0.108 ton	0.11 ton

(Annual number of operational days assumed at 250)

#### 7-7 Fishing Port and Slipway

Karachi is the only well-equipped fishing port in Pakistan. It has wharfs and a fish market as well as a hinterland area where various facilities such as freezing plants and canning plants are located. However, as there are a large number of trawlers operating with Karachi as base, the port is already saturated.

On the other hand, none of the fishing villages in the two provinces have a fishing port. In Baluchistan Province, fishing boats are pulled up to the sand beach by fishermen themselves. On the Sind coast which extends far into the sea, fishing boats are left on the tidal flat. If the boat is large in size (about 45 ft. or more in length), it must cast anchor in the offing,

so that the catch, mostly salted fish, must be carried by fishermen themselves to the coast. This inevitably results in further freshness decline of the catch.

In Gwadar area, a basic design survey for constructing a fishing port is being conducted by a Japanese survey mission to bring remedy for the said situation. It is planned that if the survey produces favourable data, a new fishing port equipped with all necessary facilities will be constructed in this area with fund secured from ADB and other sources.

Construction of fishing ports is essential to the fisheries development in the two provinces as it will certainly serve for freshness maintenance of catches. Considering the coastline configuration of the two provinces, however, its realisation will entail great financial and technical difficulties. The Team is therefore of the opinion that the best solution for the problem is to supply, as mentioned already, a suitable number of freezing carrier of appropriate class to each fishing village, and hopes that such solution will be brought about in the near future.

#### 7-8 Domestic Consumption and Export of Fish Catch

As shown in Table 17 and 18, domestic consumption accounts for 60% of the total fish catch (sea fishery and inland water fishery combined) and export for 40% or 116,187 tons. If the said domestic consumption, which amounts to 176,842 tons, is distributed equally among all Pakistani people (total population by the 1972 statistics - 65 million), then the annual per capita consumption turns out to be 2.72 kg. However, since this figure includes consumption for non-food purposes, the actual per capita consumption must be considerably smaller. Domestic fish consumption as indicated in the aforementioned Handbook of Fisheries Statistics of Pakistan (1978) is 1.60 kg/person/year which is about half the value calculated above.

As can be seen in Table 19 showing the breakdown of domestic fish consumption in 1978, consumption for food recorded 142,029 tons and that for non-food purposes registered 151,000 tons. Thus, the latter's ratio (51.5%) is slighter higher than the former's (48.5%)

Production of fish meal, holding the top place among different non-food purposes, is the only way to make use of catches of certain fish species, but it seems that quite a large quantity of edible fish is processed to fish meal due to the low degree of freshness. Drying and salting of fish is often necessitated by the difficulty in maintaining the freshness, thus reducing the market value of fish catch.

Table 20 affords better understanding of the above fact. Among the different fish processing methods shown in the table, frozen fish account for only 2.6% of the total catch, and the percentage of canning which calls for the supply of fresh raw fish is no larger than 2.53%. While the total of fresh fish, frozen fish and canned fish is only 28.42%, the total of fish meal and dried fish is as high as 61.55%. This is a clear evidence to show the need for improving the freshness of fish catch.

Table 21 shows domestic fish consumption by area.

Fish export has pursued a steady upward trend in both volume and value as shown in Table 22, and Japan is the largest importing country far outstripping West Germany which is in the second place. In terms of value, export to Japan accounts for 52% of all marine products supplied to the world markets.

If the freshness of fish catch is improved by the method proposed in the foregoing pages, the resultant upgrading of quality will contribute largely towards increased export of marine products.

Table 17. Domestic Consumption and Export of Fish Catch by Area

Fishing Area	Commercial Industrial and Substance Catch			Domestic Consumption			Export		
	1976	1977	1978	1976	1977	1978	1976	1977	1978
Total	205,659	267,954	293,029	91,243	141,416	176,842	114,416	126,538	116,187
Sea fishery	177,168	234,816	257,806	62,752	108,278	141,619	114,416	126,538	116,187
i) Karachi and Sind coast	127,795	165,968	189,460	*53,600	*80,188	*82,928	74,195	85,780	106,532
ii) Baluchistan coast	49,373	68,848	68,346	9,152	28,090	58,691	40,221	40,758	9,655
Inland waters fishery	28,491	33,138	35,223	28,491	33,138	35,223	-	-	-
i) Sind	19,500	22,926	23,404	19,500	22,926	23,404	-	-	-
ii) PUNJAB	7,710	8,841	10,286	7,710	8,841	10,286	-	-	-
iii) N.W.F.P.	577	639	776	577	639	776	-	-	-
iv) MANGLA DAM	704	732	750	704	732	750	-	-	-
v) NORTHERN AREA	-	-	7	-	-	7	-	-	-

Note: \* Inclusive of fresh fish, and offal fish and shrimps for feed of poultry.

Table 18. Ratio of Domestic Consumption to Export of Fish Catch (%)

Fishing Area	Domestic Consumption			Export			Total		
	1976	1977	1978	1976	1977	1978	1976	1977	1978
Total	44.37	52.77	60.34	55.63	47.23	39.66	100	100	100
Sea fishery	35.42	46.11	49.08	64.58	53.89	50.92	100	100	100
i) Karachi and Sind coast	41.94	48.31	45.28	58.06	51.69	54.72	100	100	100
ii) Baluchistan coast	18.54	40.80	59.63	81.46	59.20	40.37	100	100	100
Inland waters fishery	100	100	100	-	-	-	100	100	100
i) SIND	100	100	100	-	-	-	100	100	100
ii) PUNJAB	100	100	100	-	-	-	100	100	100
iii) N.W.F.P.	100	100	100	-	-	-	100	100	100
iv) MANGLA DAM RESERVOIR	100	100	100	-	-	-	100	100	100

Table 19. Fish Utilization by Purpose in 1976 - 1978 Period  
(Metric tons)

Purpose of Utilization	1976	1977	1978
Total	205,659	267,954	293,029
i) For food	127,056	151,309	142,029
a. Ordinary fish	106,382	132,844	124,630
b. Shrimps	20,674	18,465	17,399
ii) For non-food (industrial) purposes	78,603	116,645	151,000
a. Offal fish	77,003	114,595	149,000
b. Offal shrimps	1,600	2,050	2,000



Table 20. Fish Utilization by Processing Method (Metric tons)

Item	Sea Fishery								Inland Water Fishery			Total		Ratio in 1978			
	Karachi and Sind Coast			Baluchistan Coast					1976	1977	1978	1976	1977		1978		
	1976	1977	1978	1976	1977	1978	1976	1977								1978	
Processing Method	1976	1977	1978	1976	1977	1978	1976	1977	1978	1976	1977	1978	1976	1977	1978	Ratio in 1978	
Total	127,795	165,968	189,460	49,373	64,848	68,346	28,491	33,138	35,223	205,659	267,954	293,029					
Fresh fish marketing (for consumption in local areas)	22,300	23,900	25,009	5,352	15,542	16,120	21,191	25,538	27,126	48,843	65,000	68,255				23.29%	
Freezing	8,530	7,520	5,586	4,051	5,530	2,037	-	-	-	12,581	13,050	7,623				2.60	
Canning	8,055	6,715	7,415	-	-	-	-	-	-	8,055	6,715	7,435				2.53	
Drying	7,960	6,810	4,550	28,517	31,807	24,818	-	-	-	36,477	38,617	29,368				10.02	
Fish meal production	70,950	110,223	136,003	7,653	6,422	15,000	-	-	-	78,603	116,645	151,000				51.53	
Other methods	-	-	-	-	5,047	7,111	-	-	-	-	-	5,047	7,121				2.43
Subsistence catch	10,000	10,800	10,900	3,800	4,500	3,250	7,300	7,580	8,097	21,100	22,880	22,247				7.60	
Total																100%	

Table 21. Breakdown of Domestic Fish Consumption (Metric tons)

Fishing Area	Commercial and Industrial Catch		Subsistence Catch		Total				
	1976	1977	1978	1976	1977	1978			
Total	70,143	118,536	154,595	21,100	22,880	22,247	91,243	141,416	176,842
Sea fishery	48,952	92,978	127,469	13,800	15,300	14,150	62,752	108,278	141,619
i) Karachi & Sind coast	43,600	69,388	72,028	10,000	10,800	10,900	53,600	80,188	82,928
ii) Baluchistan coast	5,352	23,590	55,441	3,800	4,500	3,250	9,152	28,090	58,691
Inland waters fishery	21,191	25,558	27,126	7,300	7,580	8,097	28,491	33,138	35,223
i) SIND	14,000	17,226	17,604	5,500	5,700	5,800	19,500	22,926	23,404
ii) PUNJAB	6,310	7,341	8,486	1,400	1,500	1,800	7,710	8,841	10,286
iii) N.W.F.P.	277	329	426	300	310	350	577	639	776
iv) MANGLA DAM RESERVOIR	604	662	605	100	70	145	704	732	750
v) NORTHERN AREA	-	-	5	-	-	2	-	-	7

Table 22. Annual Export of Marine Products

Year	Export Volume (Metric tons)	Export Volume (RS.1,000)
1947	2,140	2,866
48	9,394	7,999
49	9,062	6,912
50	8,679	5,122
51	11,527	5,659
52	6,947	4,092
53	11,160	5,391
54	8,016	3,977
55	12,220	6,860
56	8,893	5,759
57	15,229	10,182
58	15,882	11,374
59	14,987	17,763
60	16,765	24,561
61	14,664	21,515
62	21,074	36,644
63	20,444	32,369
64	27,909	46,811
65	30,080	62,577
66	36,233	71,926
67	35,554	69,611
68	38,538	82,723
69	42,883	84,649
70	33,837	89,274
71	31,823	84,626
72	39,485	201,625
73	44,276	350,186
74	30,998	225,514
75	29,070	254,348
76	26,308	390,735
77	30,051	409,110
78	29,186	416,350

Note: RS.1 = Approx. ¥25

Table 23. Export of Marine Products in Volume and Value and Main Importing Countries (Unit: M.T., RS.1,000)

Ranking	Importing Country	1976			1977		
		Volume	Value	Ratio in Value	Volume	Value	Ratio in Value
1.	Japan	4,050	233,785	59.83%	3,714	212,533	51.95%
2.	West Germany	6,102	21,232	5.43	14,477	50,647	12.38
3.	Sri Lanka	7,731	31,158	7.97	5,790	33,334	8.15
4.	France	895	29,883	7.65	768	27,351	6.69
5.	U.S.A	603	24,236	6.20	561	23,803	5.82
6.	U. K.	462	16,280	4.17	474	18,256	4.46
7.	Hongkong	252	2,550	0.65	302	8,111	1.98
8.	Netherlands	134	4,539	1.16	124	5,130	1.25
9.	Italy	4	139	0.03	11,216	4,877	1.19
10.	Singapore	41	1,247	0.32	145	4,801	1.17
11.	Iran	5,318	13,417	3.43	1,820	4,637	1.13
12.	Belgium	37	1,433	0.39	90	3,885	0.95
13.	Kuwait	163	2,299	0.59	314	3,455	0.85
14.	New Zealand	27	1,252	0.32	41	2,048	0.50
15.	Dobai	133	768	0.20	70	1,476	0.36
16.	U.A.E.	126	3,350	0.86	19	1,294	0.32
17.	Africa	19	507	0.13	31	1,032	0.25
18.	Greece	9	358	0.09	13	549	0.13
19.	Lebanon	-	-	-	4	335	0.08
20.	Spain	37	476	0.12	5	254	0.06
21.	Syria	6	81	0.02	10	247	0.06
22.	Oman	3	45	0.01	11	222	0.05
23.	Lesotho	6	123	0.03	7	151	0.04
24.	Jordan	7	106	0.03	8	117	0.03
25.	Lybia	-	-	-	5	115	0.03
26.	Others	143	1,471	0.37	32	450	0.12
	Total	26,308	390,735	100%	30,051	409,110	100%

Ranking	Importing Country	1978		
		Volume	Value	Ratio in Value
1.	Japan	3,598	231,204	55.531%
2.	West Germany	14,091	48,678	11.691
3.	Sri Lanka	4,596	25,721	6.178
4.	France	802	25,801	6.197
5.	America	214	9,119	2.190
6.	U. K.	387	16,086	3.863
7.	Hongkong	243	10,495	2.521
8.	Netherlands	363	14,546	3.493
9.	Italy	2,975	9,229	2.217
10.	Singapore	218	9,119	2.190
11.	Iran	1,059	2,889	0.693
12.	Belgium	43	1,832	0.440
13.	Kuwait	335	2,400	0.578
14.	New Zealand	24	1,150	0.276
15.	Dobai	-	-	-
16.	U.A.E.	106	4,647	1.116
17.	Africa	17	532	0.127
18.	Greece	5	218	0.052
19.	Lebanon	5	196	0.047
20.	Spain	-	-	-
21.	Syria	-	-	-
22.	Oman	-	-	-
23.	Lesotho	1	51	0.912
24.	Jordan	3	133	0.032
25.	Lybia	-	-	-
26.	Others			
	Total	29,186	416,350	100%