

INDIAN OCEAN PROGRAMME

IRAN

FORMATION OF A FISHERIES DEVELOPMENT
BRANCH WITHIN THE ADBI



UNITED NATIONS DEVELOPMENT PROGRAMME



FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS

REPORT TO THE AGRICULTURAL DEVELOPMENT BANK OF IRAN
ON THE ESTABLISHMENT OF A FISHERIES DEVELOPMENT BRANCH

by

Dr. Arkadiusz Labon

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SUMMARY

The Agricultural Development Bank of Iran is becoming more and more involved in financing fishery industry development in the country. This involvement is either through joint ventures with Government organizations or with private capital and with the ADBI having equity participation in them, or providing credit to the fishery industry. In 1974 the World Bank approved a substantial loan for Iran for fishery development. This loan will also be channelled through the ADBI either to the end-borrowers or to the Southern Fisheries Company for re-distribution to the traditional fishermen. Both the present involvement of the ADBI in financing fishery industries development and the channelling of the World Bank's loan are new activities for the Bank.

In order to perform its new functions, the ADBI wants to establish a fisheries development branch within its structure. The report analyses the new functions of the ADBI and defines the functions of the fisheries development branch to be formed.

At the same time, due to a lack of adequately experienced personnel, the Bank is thinking of employing a fisheries development adviser who would assist also in the formation and operation of the branch during its first period of activity. The terms of reference of the consultant are also given in the report.

One of the important problems to be resolved in the overall fisheries development of Iran is the balance between investment at sea and investment ashore. Therefore, the report contains a brief analysis of the fish processing capacities with particular reference to freezing and cold storing of fish ashore. Details regarding the investment, either existing or projected in the near future are given in the Annex to the report.

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INTRODUCTION

The Agricultural Development Bank of Iran (ADBI) requested the Food and Agriculture Organization of the United Nations and specifically the International Indian Ocean Fishery Survey and Development Programme (Indian Ocean Programme) to provide a consultant who would advise the Bank on specific aspects of its work related to fisheries. The Indian Ocean Programme sent a consultant for a period of three weeks, beginning 26 October 1974, with the following terms of reference:

To advise the Agricultural Development Bank of Iran, at its request, on the following:

1. setting up a fisheries development branch within the ADBI;
2. type of qualifications needed for a longer term consultant to be recruited by the ADBI;
3. investment needs for fish processing plants.

During his stay in Iran the consultant worked closely with the ADBI. The Bank also arranged a tour for the consultant to the three most important places in the Gulf area from the fisheries viewpoint. Abadan-Khorramshahr, Boushehr and Bandar Abbas. The consultant's observations from the tour are given in Appendix 1 to this report.

FORMATION OF A FISHERIES DEVELOPMENT BRANCH WITHIN THE ADBI

The Agricultural Development Bank of Iran, which only recently has been formed through the reorganization of the former Agricultural Development Fund, is becoming more and more involved in financing fishery industries development of the country. This involvement is either through joint ventures with government organizations or with private capital and with the ADBI having equity participation in them or providing credits to the fisheries industry. The Bank extends loans either from its own resources or serves as a channel for funds provided by the Government.

In July/August 1974 a World Bank Mission prepared a report, under which the World Bank will lend to the Government of Iran substantial funds for fisheries development. A part of the funds will be made available directly to the industry for acquisition of boats, gear and equipment, while the remainder will be used for technical assistance (management services), research facilities and training. The total amount of the World Bank loan will be channelled through the ADBI, either to the end-borrowers or the the Shilat Jonoub (The Southern Fisheries Company) for redistribution to the traditional fishermen.

Both the present involvement of the ADBI in financing fishery industries development and the channelling of the World Bank's loan are new activities for the Bank.

The Bank is fully aware of its new responsibilities and complexity of the problems and therefore wishes to establish a new unit within its structure to take care of the fishery development financing.

New Responsibilities of the ADBI

The fishery industries development activities are generally new to the traditional functions of the ADBI. In broad terms these will include feasibility studies for individual projects, control over implementation of the projects, evaluation of projects' activities in addition to the more regular functions of a bank as far as credit facilities are concerned. In the specific situation of channelling the World Bank loan, the ADBI will act as the Government's trustee and executing agency. This will be provided for in the agreement between the Government of Iran and the World Bank, as one of the important institutional arrangements.

The ADBI functions will start with the arrangements for acquisition of equipment under the World Bank loan. Borrowers will procure vessels, trucks and engines under close supervision of ADBI. Procurement of major investment items financed by the loan would be made through international competition. Prior to issue of invitations to bid, the borrowers would be required to submit to ADBI for review and approval a justification of the proposed advertisement for invitations to bid, and the bidding documents. Before orders are placed, the borrowers would submit their recommendations for awards to ADBI for review and approval. For contracts exceeding a certain amount of money, as will be provided for in the terms of loan, the ADBI would be obliged to seek World Bank approval of proposed tender documents, bid analyses and proposals for awards.

Should the purchase of second-hand vessels be considered, ADBI would ensure that the vessels will not be older than an agreed number of years, will be classified by an international shipping society and will be inspected by an authorized surveyor.

In the case of the Shilat Jonoub, procurement of fishing gear and equipment for traditional fishermen through bulk purchases locally or abroad would be made under the supervision of ADBI. The Bank will also carry out general supervision of Shilat's sales and credit operations and coordinate and submit progress reports on the project to the World Bank.

Loans to commercial fishermen, mainly for the purchase of fishing vessels, will be made available according to the ADBI normal lending policies and procedures. These loans will be approved on the basis of a full appraisal of the economic, technical and financial aspects of the projects. The borrowers would be required to insure the vessels.

ADBI would be responsible for evaluating the benefits realized by projects financed by it. It would monitor the loans made to commercial, as well as to traditional fishermen, to make periodic evaluation of the economic impact of the credit programme. It will also evaluate the training extended to fishermen.

The activities discussed above will require a staff with appropriate qualifications and specialized in fishery industry economics, as well as in technical disciplines related to fisheries. For organizational purposes, it would be advisable to form a fisheries development branch within the Agro-Industrial Projects Department, which has the overall responsibility for evaluation and supervision of loans.

Functions of the Fisheries Development Branch

Under overall supervision of the Director of the Agro-Industries Projects Department, the Fisheries Development Branch will have the responsibility for the preparation, control and evaluation of all projects financed by the ADBI in the fisheries sector.

In particular the Branch will be responsible for:

1. Analysis of investment opportunities of potential interest to the Bank in the fisheries sector.
2. Preparation of feasibility studies for investments to be financed by the Bank. This will include fishing boats, landing facilities, processing plants, infrastructure and marketing.
3. Comprehensive appraisal of the economic, technical and financial aspects of the projected investment.
4. Supervision of procurement by borrowers of vessels, trucks, engines, fishing gear and equipment, and processing facilities, through:
 - (a) evaluation of the borrower's own economic viability studies;
 - (b) analysis and approval of the borrower's bidding documents;

- (o) review and approval of borrower's proposal for awards;
 - (d) preparation of documentation for review and approval of the World Bank for purchases reserved for its approval;
 - (e) ascertaining that vessels and/or equipment to be purchased are of required standards and, wherever needed, the certificate of an international shipping society or surveyor is obtained;
 - (f) ensuring that the vessels purchased are insured by the borrowers.
5. Supervision of bulk purchases of fishing gear and equipment by the Shilat Jonoub for traditional fishermen. General supervision of the Shilat's sales and credit operations.
 6. Evaluation of benefits from investment realized by borrowers, including monitoring the loans made available both to commercial and traditional fishermen. For this purpose the Branch will have to:
 - (a) establish reporting procedures from the borrowers to the Bank;
 - (b) ensure that the required data be submitted;
 - (c) carry out surveys on-the-spot as to the assessment of maintenance practices, technical standards etc. regarding assets purchased under the Bank's loan.
 7. Evaluation of training extended to fishermen.
 8. Periodic evaluation of the economic impact of the credit programme on the fisheries development.
 9. Preparation of periodic techno-economic reports for the Bank's governing bodies, as well as for the World Bank, according to the credit agreement.

Staffing of the Fisheries Development Branch

The staff of the branch to be formed should be composed of four persons. With the increase of work, and should the needs warrant, it could be further increased. The branch would comprise the following experts:

- 1 Economist-Investment Analyst (Branch Chief)
- 1 Economist
- 1 Fish Processing Expert
- 1 Fishing Expert

A description of the respective assignments of the experts is given below.

1. Economist-Investment Analyst -- should be a person of broad experience in economics and business administration in fisheries with at least eight years experience in the fisheries industry and ample experience in running fishing operations and fish processing plants. He should be a graduate of a recognized university in economics or business management. He shall coordinate and supervise the team's work, maintain close and direct contacts with the department's director, as well as with other branches of the Bank, in matters regarding the activities of that branch. His duties shall include the following:

- (a) coordination and supervision of work of the subordinate staff members;
- (b) analysis of investment opportunities in the fisheries sector of potential interest to the Bank;
- (c) preparation of feasibility studies for investment to be financed by the Bank. This would include infrastructure, landing facilities, marketing, processing plants and fishing boats;
- (d) evaluation of borrower's feasibility studies;

- (e) preparation of documentation for review and approval of the World Bank for purchases reserved for its approval;
- (f) periodic evaluation of the economic impact of the credit programme on the fisheries development;
- (g) preparation of periodic techno-economic reports for the Bank's governing bodies as well as for the World Bank, according to the credit agreement.

2. Economist - should have a university degree in economics or business management and at least four years experience in business administration, preferably in fisheries.

Under the direct supervision of the branch chief he would:

- (a) analyse and prepare for approval the borrower's bidding documents;
- (b) assist the branch chief in evaluation of the borrower's own economic viability studies;
- (c) participate, in collaboration with the processing and fishing experts, in the review and approval of the borrower's proposals for awards;
- (d) evaluate benefits from investment realized by borrowers through monitoring the loans made available both to commercial and traditional fishermen;
- (e) establish and control reporting procedures from the borrowers to the Bank;
- (f) establish a system of collecting data of interest to the Bank in connection with credits and establish a system of storing these data for easy reference;
- (g) evaluate training extended to fishermen in collaboration with the processing and fishing experts.

3. Fish Processing Expert - should have a university degree in food technology, have ample experience in fish processing with particular reference to freezing, canning, filleting. It is desirable to have at least five years practical experience in the fish processing industry. His duties shall include the following:

- (a) preparation of technical sections of feasibility studies within his sphere of specialization;
- (b) assistance in the analysis of investment opportunities in the fisheries sector;
- (c) supervision of procurement of processing facilities by borrowers;
- (d) analysis and preparation for approval of the borrower's bidding documents and proposals for awards;
- (e) preparation of technical sections of documentation to be submitted for the World Bank approval wherever required;
- (f) participation in the evaluation of benefits from investment realized by borrowers;
- (g) carry out on-the-spot surveys to assess maintenance practices, technical standards, etc. regarding processing equipment purchased under the Bank's loan;
- (h) evaluation of training extended to fishermen.

4. Fishing Expert - should have a university degree in a technical field related to fisheries (e.g. boatbuilding, mechanical engineering etc.) or specifically in fisheries. Should have an ample knowledge of fishing techniques, vessel maintenance problems, fishing gear. Should have at least eight years practical experience in the fishing industry. His duties shall include the following:

- (a) preparation of technical sections of feasibility studies within his sphere of specialization;

- (b) assistance in the analysis of investment opportunities in the fisheries sector;
- (c) supervision of procurement by borrowers of vessels, fishing gear, equipment;
- (d) analysis and preparation for approval of the borrower's bidding documents and proposals for awards;
- (e) preparation of technical sections of documentation to be submitted for World Bank approval;
- (f) ascertaining that vessels and/or equipment to be purchased are of required standards certified by internationally recognized surveyors;
- (g) ensuring that the vessels purchased are insured by the borrowers;
- (h) supervision of the bulk purchases of fishing gear and equipment by Shilat for traditional fishermen;
- (i) participation in the evaluation of benefits from investment realized by borrowers;
- (j) carrying out surveys on the spot and assessment of maintenance practices, technical standards etc. regarding vessels and equipment purchased under the Bank's loan;
- (k) evaluation of training extended to the fishermen.

TYPE OF QUALIFICATIONS NEEDED FOR A LONGER TERM
CONSULTANT TO THE ADBI

The implementation of the projected credit schemes will start soon and it is essential that, for the transitional period, before the Fisheries Development Branch becomes firmly established and gains the minimum of experience required, a consultant be appointed to assist the Bank in the formation of the new branch and also in carrying out its mandatory functions. It should also be emphasized that the proper selection of a consultant will have its positive training impact on the Bank's personnel assigned to the new duties.

The Bank has requested a consultant for a three month period but, taking into consideration the amount of work to be done, the complexity of problems and the fact that these activities are new to the Bank, it would be advisable that the consultant be employed for a period of one year. The qualifications he should have are given below.

The consultant should be a graduate of a recognized university in economics or business management. He should have at least ten years experience in the fisheries industry with at least five years in senior posts. He should have broad experience in evaluation of investment in fisheries, with particular reference to boats and processing plants. He should have an intimate knowledge of fishing operations and processing technology, with some experience in fish marketing. He should have the ability to work with people of different backgrounds, preferably in an international environment and should have the ability to impart his knowledge to others and to act as a team leader. Also essential is fluent English.

The duties of the consultant would be:

1. to assist the ADBI in the formation of the Fisheries Development Branch;
2. to advise the ADBI on establishing appropriate controls for the implementation of the credit scheme;
3. to act as an adviser to the chief of the newly created branch in performing his duties;
4. to provide on-the-spot training to the personnel of the newly created branch.

INVESTMENT NEEDS FOR FISH PROCESSING PLANTS

Assessment of investment needs for fish processing plants is a manifold problem, under which at least the following elements have to be considered:

1. Fishery resources
2. Present and future fish landings in the country
3. Present processing capacities and production
4. Desired development in fish processing.

The essential background information on the above aspects is given in Appendix 1 of this report. It is necessary here to summarize the findings and conclusions to create a basis for recommendations.

As far as fishery resources are concerned, the main interest of commercial private operators, as well as the Shilat Jonoub has been in the exploitation of shrimp. The shrimp resources of the country seem to be already fully exploited and there are already clear indications of the need for management of the resources to protect them from over-exploitation. No research has been made to assess the shrimp resources and define their maximum productivity. It is recommended that such research be undertaken without undue delay and subsequently management measures should be taken in order to obtain the maximum benefits for the country from exploitation of the resources.

In respect of finfish resources, both demersal and pelagic, even less is known as to their abundance, productivity and the most economic methods of their exploitation.

FAO has prepared the Gulf Fishery Survey and Development Project to become operational in mid-1975. This project is to give a full assessment of the fishery resources in the Gulf, on which the development activities of the bordering countries could be based. The objectives of the project are also to provide the participating countries with technical assistance in all fields related to development of their national fisheries. By the end of October 1974, six out of the eight countries bordering the Gulf had declared their participation in, and support of, the project. A significant portion of the project's costs will be financed by the UNDP but the participating countries are also expected to contribute to it either in cash or in kind through making available their research vessels for the survey. The project would provide a comprehensive and sound basis on which the fisheries development activities could be founded. It is strongly emphasized that the resources survey is the essential pre-requisite for planning any development.

The present marine fish landings in the country total some 18 000 t of finfish from the Gulf and from 1 000 to 6 000 t of shrimp (tail weight). It is expected that, with the development programme already planned, the landings of finfish from the Gulf would be doubled.

The majority of the finfish is frozen (whole fish) and distributed through the main marketing channels. Shrimp is entirely frozen, mainly for exports. The shrimp freezing capacities of the country are already too high for the actual and immediate future needs. As discussed in Appendix 1, the shore-based freezing facilities constructed by the Shilat Jonoub already exceed the present and immediate future needs. In addition to Shilat, the private sector and the Jask Fishing Co., a newly created firm, are also investing in freezing capacities, mainly for shrimp. The development in this respect is a very un-coordinated one and will result in the capacities being unutilized or under-utilized for many years to come. One conclusion is apparent in this context. Every single plant to be constructed has a detailed feasibility study showing its profitability. What is lacking the industry as a whole, is a general coordination and balance of capacities to serve the fish landings in the country. It may be that each of the investors hopes to get fish from outside sources, i.e. either the existing commercial or traditional operators, not having made advance contractual arrangements with the prospective suppliers. This way, the same source of fish may be covered several times in feasibility studies for processing

or freezing facilities.

It is strongly recommended that a comprehensive indicative fisheries development plan be prepared for the whole Gulf area for at least 10-15 years. This plan would then serve as a basis for licensing both fishing boats and processing plants. It is in the immediate interest of the ADBI, which will finance the majority of fisheries development activities, that coordination of investment in this sector of the national economy be introduced without undue delay.

As far as cold storage facilities are concerned, the existing capacities on the south coast are in the order of 7 400 t and another 2 900 t are under construction. The country as a whole has some 50 000 t of cold storage capacity. At the present time the situation seems to be satisfactory but this aspect should also be examined under the general fisheries development plan.

Shrimp sorting is mainly mechanized. The capacities of the existing shore facilities are too high for the present production and it is doubtful whether they will be fully utilized in the foreseeable future.

The country is completely lacking in fishmeal plants. The primitive fishmeal production device in Bandar Abbas can be disregarded as being of no commercial importance in this respect. A study should be made and it must be based on a thorough assessment of the available fishery resources and raw material supply with the aim of constructing suitable fishmeal plants in the country.

The fish canning plant in Bandar Abbas has a nominal capacity of 3 million cans a year but is producing an average of only 2,5 million cans a year. About 75 percent of the capacity is used for tuna canning, while the remainder is used for sardines. The average annual production is about 500 t of canned fish. Reportedly, the market for the canned fish produced in Bandar Abbas is very good and it is difficult for the consumer to get these products because of the low production. This is an area worth further studies, aimed at a construction of a new canning plant or modernization of the existing one. It is therefore recommended to carry out the necessary feasibility studies. However, since the critical factor for a canning plant is the supply of raw material -- not to speak of marketing -- the study will have to be based on a very thorough examination of the fishery resources available and the fishing potential to catch them in order to ensure steady supplies. The fisheries resources survey planned to be carried out by FAO would be extremely valuable in this respect.

Should the authorities responsible for fisheries development so wish, FAO's assistance could be sought both in the preparation of the long term indicative fisheries development plan and in the specific studies.

Another important element of fisheries development should be mentioned. Iran has virtually no fishing harbour in the Gulf area. It is generally the Government's responsibility to the local fishermen to provide the necessary infrastructure, including harbours. There are several sites along the south coast very suitable for a fishing harbour, with all the essential facilities, such as ship repair yards. Some sites already have good road connections to Tehran and other major cities and others will receive such connections soon. A study towards this end would be also recommended.

INSTITUTIONAL ASPECTS OF FISHERIES DEVELOPMENT

The organization responsible for all matters related to fisheries in the Gulf is the Shilat Jonoub (The Southern Fisheries Company). Both commercial and regulatory functions are vested in this organization. The country does not have a separate fisheries administration to take care of the regulatory functions, administrative matters, licensing, research, training and assistance to the traditional fishermen. While undoubtedly Shilat is performing its functions to the best of its capability, the dual functions of the organization certainly

pose additional problems. It is, therefore, proposed for consideration that a separate fisheries directorate be formed within the Government to take care of the general fisheries administration, while Shilat would concentrate on performing its commercial functions.

The functions of the directorate of fisheries would include:

1. Fisheries research
2. Licencing of fishing boats and processing plants
3. Quality standards and controls
4. Training for fishermen
5. Overall fisheries development planning and coordination
6. Collection of statistics
7. Control over fishing effort
8. International cooperation in the fisheries sector.

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The deep interest of the senior officials of the Agricultural Development Bank of Iran has greatly assisted in the compilation and formulation of this document. The assistance of all the Bank's staff with whom the consultant had the real pleasure to collaborate was invaluable for the completion of the report and is greatly appreciated.

ANNEX

OBSERVATIONS ON FISHERIES ACTIVITIES IN
ABADAN, BOUSHEHR AND BANDAR ABBAS

ABADAN -- KHORRAMSHAHR

The following facilities were visited:

1. Branch office and cold storage of the Shilat Jonoub
2. The m/v ARVAND
3. Shilat's repair shop

The branch office in Khorramshahr is in charge of the ARVAND, and ex-Japanese factory trawler, and Shilat's own 15 shrimp trawlers. It also has a cold storage of approximately 200 t capacity. The shrimp caught by Shilat trawlers and bought from private fishermen on a contractual basis are sorted, headed and frozen by the ARVAND. Part of the production is unloaded from the ARVAND directly into carriers for exportation, the rest into refrigerated trucks and transported to Tehran -- the main domestic market.

The cold storage serves as a sort of retention warehouse for completion of loads to be mainly forwarded to Tehran but also due for export. The ARVAND returned on 3 November from her last fishing trip in the 1974 season.

The capacities of the ARVAND are as follows:

1. Refrigerated holds -- 1 200 metric tons
2. 60 t/day freezing (plate freezers)
3. 60 t/day ice production
4. Water tanks -- 900 tons

The vessel is 12 years old. Her trips in the Gulf are of 25 days duration. The 25-days trips are determined by the water tank capacity. She does not have a fishmeal plant, so the offal is discarded in the sea and no finfish are taken on board.

The vessel's standard crew consists of 40 persons, plus 140 persons employed in her processing plant. The processing workers are often unskilled in the type of work they are supposed to carry out. They work eight hours shifts and are paid fixed wages.

The 15 Shilat shrimp trawlers are meant to deliver their catch to the ARVAND. They are 120 GRT and 380 HP, with four members of the standard crew plus 16 workers.

During 1974 for the first time 14 out of the Shilat-owned trawlers were operational. One was disassembled for spares and is reported as being re-assembled and should have been ready for operation by the end of November 1974.

The engineer in charge of the repair shop reported that it takes approximately six months to get spares from the engine's manufacturer.

The shrimp trawlers take virtually no finfish, unless it is for the crew's own consumption, even if it is caught together with shrimp, the reason being that the ARVAND is not suited for freezing finfish.

The Shilat Jonoub has its own jetty (rented) in Abadan, and it is the only place where the trawlers can be repaired. For major repairs, periodical overhauls and hull repairs, the boats are sent to the Navy shipyards. This, on the one hand has the advantage of skillful repair, but on the other hand the fishing vessels receive no priority because of the Navy needs.

The repair services, besides the Navy yards, are considered to be the best in Abadan, where skilled workers of the oil companies can be obtained on a casual basis. Shilat does not have any jetty in Bandar Abbas.

Fishing Results

The ARVAND returned from her last trip in 1974 after 20 days at sea with 20 t of frozen shrimp (tails only) in her holds. The total for the 1974 production of the vessel ARVAND is approximately 320 t of shrimp (tail weight). The 1974 season lasted from 27 July until 3 November.

Normally the season would last until March, i.e. until the closure of shrimp fishing for three months during spawning.

The 1974 season was extremely poor and, therefore, a decision has been taken to discontinue the operation of the ARVAND due to her extremely high running costs.

The Fleet Manager, Mr. A. Aminelahti, a very knowledgeable person and very well acquainted with the fishing operation, estimates the minimum production of shrimp (tail weight) for the ARVAND and the 15 trawlers at 700 t in order to break even. This means almost 50 t of shrimp (tail weight) per boat. The break even production for the trawlers alone is estimated at 30 t/vessel.

Poor fishing results of the 1974 season are attributed to the following reasons:

- (a) The water temperature in the Gulf was 6-7°C lower than the average.
- (b) Heavy rains in the Gulf area resulted in a higher than average influx of fresh water from the rivers, which, in connection with an excessive volume of sand brought by the rivers, adversely affected the shrimp breeding grounds.
- (c) Too many vessels operate in the area, which results in overfishing of the shrimp.

Some of the people involved in shrimp fishing also think that shrimp in the Gulf has a five year cycle of abundance. The peak catch was taken in 1973 and 1974 has been the "lean" season. The situation should improve in 1975 with another peak possibly in 1978. This view seems to be based on experience of the fishermen but there is no evidence, for instance in the statistics, that this is true.

Fishing Grounds

As far as shrimp is concerned, there is a consensus that the best fishing grounds in the Gulf are the following, in order of priority:

1. Around Bushehr and Dayyer
2. Around Bandar Abbas
3. Between Bushehr and Abadan

As far as finfish is concerned, there is little information of meaningful commercial fishing. Some of the private fishermen catch demersal fish with traps and gillnets but the majority of operators have their prime interest in shrimp fishing.

Shilat's vessels did some experimental fishing for finfish in the Gulf of Oman, which is considered to be the best area from this viewpoint.

The tuna and mackerel processed in Bandar Abbas are reported to come also from the Gulf of Oman. There is a substantial discrepancy in information on the results of the test fishing in the Gulf of Oman. One source gives a total catch of as much as 800 t obtained by four Shilat shrimp trawlers in 40 days. This would give an average catch of 5 t per boat per day. Another source quoted 1.5 t of premium grade finfish per boat per day. The operators of fishing vessels tend to think that in the Gulf there is little finfish at all.

BUSHEHR

The local facilities of the Shilat Jonoub were visited. The facilities are at present under construction and were supposed to be completed by approximately 20 November 1974. Although the construction was well advanced, the timing seemed to be too optimistic.

The facilities consist of the following:

- Cold storage - 200 t
- Blast freezing - 10 t/day
- Plate freezing - 30 t/day
- Flake ice - 5 t/day
- Shrimp sorting machine - 1.5 t/hour.

The ice production capacity is going to be increased to 40 t/day in approximately six months time.

The main problem in the operation of the facilities under construction will be the supply of fresh potable water. There is a shortage of fresh water in Bushehr. Two reservoirs of 100 t total capacity (75 t and 25 t) have been constructed and new wells drilled but it is uncertain whether this will suffice for the needs of the plant. It is thought that seawater will be used for washing fish, although nothing is known about the quality of the water. The shortage of water may reduce the capacity of the plant and bad water will definitely adversely affect the quality of the product and in the end, the profitability of the plant.

It would be advisable to immediately examine the demand for, and supply of, fresh water, as well as its quality. The suitability of the seawater for washing fish should be examined.

The basic function of this facility will be to buy fish from local fishermen, freeze and ship it to Tehran by refrigerated truck. The activities will be developed in two phases: collecting fish from local fishermen, and catching fish with its own boats.

It is planned that three of the 15 shrimp trawlers owned by Shilat will be deployed to Bushehr. Initially, these boats will serve as collectors but in the future they should also engage in fishing. One reservation should be made at this point. The trawlers are designed as shrimpers and their use as fish trawlers may have unfavourable effects on the engines, which may not be powerful enough for fish trawling. It would be advisable to carefully examine the suitability of the shrimpers for fish trawling in order to avoid possible damages to engines and costly repairs.

Shilat now rents 200 t of cold storage in Borazjoh, 70 km from Bushehr, from the Meat Organization. With the completion of its own facilities in Bushehr, this rental will be terminated.

The Shilat Jonoub has established a fishermen's cooperative in the Bushehr area. The cooperative will supply its members with nets, ice, engines and other items and will sell the fish to Shilat. It is a new development and new activity for Shilat but it is expected that, through the formation of cooperatives, fish production can be increased and the standard of living of the local fishermen improved.

The problem of increasing pollution in the Gulf has been pointed out. The main source of pollution is oil, mainly dumped by tankers from their bilges, but also from leakages in transshipment facilities.

Mr. Kissak Sarajian, a Shilat staff member was met in Bushehr. He was supervising the construction of cold storage facilities. He is conversant with both technical and business aspects of fisheries in the Gulf and his information and assistance have been most valuable.

BANDAR ABBAS

The Bandar Abbas branch of the Shilat Jonoub is involved mainly in collecting fish from local fishermen on the basis of contractual agreements. The branch operates nine collecting boats, three of which are also suitable for shrimp fishing.

The existing facilities of the branch include:

- Cold storage - 300 t (of which 200 were constructed 3 years ago)
- Blast freezing - 15 t/day
- Ice production - 5 t/day
- Canning plant (36 years old) with a maximum capacity of 3 million cans/year. Actual production is in the order of 2.5 million cans/year, of which 75 percent is used for tuna, the rest for sardine.

In addition to its own cold storage capacity, the branch rents 500 t from the Meat Organization. The cold storage is used inter alia for keeping enough raw material for the canning plant for 45 days of production.

In addition to canning and freezing, some fish steaks are produced. However, due to traditional eating habits, the population is somewhat hesitant to buy the fish steaks and prefers whole fish.

As a matter of fact, this is the only marketing problem which is encountered by the producers at the present time. In general, the market could easily absorb much more fish than is produced. The branch collects an average of some 4 000 t of fish a year, plus shrimp. The shrimp production in 1973 was approximately 1 400 t. The 1974 season was extremely poor.

In addition to the existing capacities, new facilities are being installed. These include:

- sorting of shrimp - 36 t/day
- plate freezing - 36 t/day
- ice production - 10 t/day

The construction of new facilities was due to be completed before the end of 1974 and was at a well advanced stage at the time of the consultant's visit.

Owners of two other fisheries enterprises were interviewed in Bandar Abbas. Mr. Bazargan operates a fish freezing plant and cold storage in Bandar Abbas and Mr. Kamangar operates his own shrimp trawlers and a freezing plant west of Bandar Abbas.

The fish production of Mr. Bazargan's plant averages 5 000 t/annum and is sent to Shilat Jonoub. The company charters 29 collecting vessels, has contracts with 300 fishermen and collects fish from approximately 1 000 km of the coastline, ranging from the Pakistan border up to Bushehr. It has been pointed out that the catch of approximately 80 percent of the fishermen selling fish to Mr. Bazargan is slowly but steadily decreasing. Resource surveys and introduction of resource management is, therefore, urgently needed. Pollution is also posing a serious danger to fisheries activities.

CONCLUSIONS

From the very general survey of the Gulf fisheries, certain conclusions arise in a very precise way. Several aspects of fishery activities in the Gulf are common to the operations of both Shilat Jonoub as well as the private sector. Furthermore, there are at least two extremely important elements calling for the international cooperation of all countries bordering the Gulf. These elements are resource surveys and management, and pollution control. Because of the characteristics of the Gulf, i.e., the fact that it is

an isolated water body averaging only 100 km wide, any action with respect to resource management and pollution control has to be a joint action. Efforts of individual countries in the two fields would be of limited value and to a large extent meaningless.

1. Fishery Resources - As far as shrimp is concerned, the most productive fishing grounds in the territorial waters of Iran are well known and heavily exploited. Annual fluctuations in the total volume of catch are significant but, so far, nothing has been done to analyze their reasons. Explanations of the fleet operators as to reasons for the fluctuations may be justified but, nevertheless, urgent action is required to analyze the situation in a scientific way so as to obtain a firm basis for regulatory measures. The present closed fishing season from March until July is strictly observed by the fishermen. However, it is reported that spawning of shrimp varies in time from one fishing ground to another. As a matter of fact, spawning takes place in some areas even after the end of July, when the catching season is already in full swing. The present regulations regarding the closed season do not seem to be adequate as compared with the actual spawning time and thus do not fully meet the purpose they were meant for i.e. protection of the shrimp during the spawning period.

One of the reasons for the declining shrimp catch rates may be overfishing or simply too great a fishing effort applied to catch the limited resource. It is impossible at the present time to judge whether this is really the case because of insufficient information in this respect. It is, therefore, strongly recommended that steps be taken to evaluate the situation, carry out a survey of the existing shrimp resources and, on such a basis, introduce regulatory measures aimed at the protection of the interests of native fishermen and the profitability of operations.

With regard to finfish, the prevalent opinion is that the resources in the Gulf are extremely poor and thus do not warrant profitable commercial operations. It has to be pointed out, however, that the main interest of fleet operators in the Gulf has been directed towards shrimp. Finfish is being caught mainly by small subsistence-type fishermen who deliver it to middlemen operating freezing and cold storage facilities. Some mackerel is caught west of Hormuz and tuna in the Sea of Oman. A survey of both demersal and pelagic fishery resources in the Gulf is essential for developing the respective fishery. Meaningful results of such a survey, particularly with regard to pelagic resources, can be obtained only by covering the whole Gulf. The migratory nature of fishery resources in the Gulf makes a joint action of all bordering countries imperative. In this respect the Food and Agriculture Organization of the United Nations has prepared a Cooperative Fishery Survey and Development Project for the Gulf. The working phase of the survey is due to start in June 1975. The objectives of the survey are: "To develop all sectors of the fishery industries of the participating countries to a level of efficiency which will allow them effectively and rationally to exploit and utilize the demersal and pelagic resources of the Gulf and adjacent waters so as to provide additional needed supplies of animal protein for domestic markets and, where possible, to create export markets for fish and fish products. By so doing, create new industries and meet the express wishes of the countries for better balanced and more diversified economies and increased employment opportunities." The immediate objectives of the project are aimed at identification of resources, determining the abundance of the stocks, their distribution and seasonal variations and to estimate their potential annual yield; to give early assistance to the participating governments on measures required for the management of the shrimp resources; to advise on the rational development of the fisheries of the area so as to ensure that the capacity of the fleets and scale of industry development remains in balance with the resources and the dangers of overcapitalization are avoided. The project will be financed mainly by the United Nations Development Programme but it is expected that the participating governments will support it both in kind and in cash.

As a matter of fact, the fishery resources survey is an essential pre-requisite to any development activities. At the present time several Iranian organizations are already investing significant funds in the fishery industry. However, the background data on resources abundance are still missing and there is an imminent danger of overcapitalization in the fisheries sector.

2. Pollution - So far pollution has not been a major problem in the Gulf, despite huge tankers coming in for oil and with loading facilities often installed far from shore in the deeper water area. The situation, however, seems to be changing rapidly at the present time. Huge spots of spilled oil are visible on the water surface from planes flying at high altitudes. Fishermen are more and more frequently complaining about oil pollution observed on the fishing grounds. Opinions have been expressed (and the consultant experienced it too) that pollution affects the taste of the fish. One of the reasons quoted by the fleet operators for very poor shrimp catches in 1974 is pollution.

No accurate information seems to be available on the extent of pollution in the Gulf and its effect on the living resources of the sea. It is therefore, strongly recommended that immediate action be taken to identify the extent of pollution and take essential steps to reduce or eliminate it. In this respect, it should be emphasized that unilateral action by anyone of the countries bordering the Gulf, as far as anti-pollution measures are concerned, would be of extremely limited value because of the characteristics of the Gulf. It would be necessary to arrange for international cooperative action of all countries bordering the Gulf with respect to pollution abatement.

3. Production Capacities - The existing capacities and those at present under construction and at a very advanced stage, which the consultant had an opportunity to visit are given in Table 1. The facilities at present under construction were due to be finished in a few weeks time and, even if this timing is too optimistic, they should have been finished before the end of 1974 and be available in 1975 in full. For practical purposes it can therefore be assumed that these are existing capacities.

The total freezing capacity is 157 t/day including 60 t/day of the mother vessel ARVAND. Out of the remaining 97 t/day, only 25 t/day are tunnel freezers (blast freezers), the rest being plate freezers.

The main problem seems to be the full utilization of the capacities represented by the ARVAND. It should first be noted that there is an imbalance in the capacity of shrimp sorting machines of 36 t/day and plate freezers 60 t/day. Of course the remaining 24 t of shrimp tails could be produced by manual labour, and presumably this is the reason for the extraordinary high employment in the processing plant. The trips of the ARVAND are limited to 25 days because of the capacity of her water tanks. Also the conditions of the Gulf do not necessitate longer cruises of any mother vessel. The 1974 production of the vessel is estimated at 320 t and it is reported that the 1973 figure was approximately 700 t over a period of 6 months. Assuming the production per annum at as high a level as 1 500 t of shrimp over three months only, the capacity of the ship would never be fully utilized. The vessel is too large for the purposes she is meant to serve and this is the main reason for her bringing considerable losses to the Shilat Jonoub. The situation has been thoroughly analyzed in several other reports and does not need further comments. It is also reported that the disposal or an alternative use of the vessel is under consideration. These seem to be the only practicable solutions under the existing circumstances.

Plate freezers at the present time have their use limited to freezing shrimp only. Finfish is frozen whole because of the market preference and the insignificant production of fish steaks is frozen in blast freezers, but could eventually be also frozen in plate freezers. Apparently there are some difficulties in marketing filleted fish or fish steaks (this name is being used for large fish fillets cut into portions) because of the consumer eating habits.

The 72 t of daily freezing capacity of the plate freezers in the near future will be for shrimp only. It has to be noted that the total freezing capacity of private operators in the Gulf amounts to 99 t/day. Reportedly, a newly created fisheries company (the Jask Fishing Co.), is also working on a substantial investment programme, including freezing plants. It has not been possible for the consultant, because of the very short assignment, to analyse fully the situation in respect to freezing capacities. However, on the basis of documentation available and observations made during the trip to the Gulf area, it can

TABLE 1

PRODUCTION CAPACITIES
OF THE SHILAT JONCUB IN ABADAN, BUSHEHR
AND BANDAR ABBAS

	Unit	M/V ARVAND	Shore Facilities			
			Total	Abadan	Bushehr	Bandar Abbas
1. Cold storage	Tons					
- existing		1 200	500	200	--	300
- under construction		--	200	--	200	--
TOTAL		1 200	700	200	200	300
2. Blast freezing	t/day					
- existing		--	15	--	--	15
- under construction		--	10	--	10	--
TOTAL		--	25	--	10	15
3. Plate freezing	t/day					
- existing		60	--	--	--	--
- under construction		--	72	--	36	36
TOTAL		60	72	--	36	36
4. Ice plants	t/day					
- existing		60	5	--	--	5
- under construction		--	15	--	5 ^{1/}	10
TOTAL		60	20	--	5	15
5. Shrimp sorting machines	t/day					
- existing		36	--	--	--	--
- under construction		--	72	--	36	36
TOTAL		36	72	--	36	36

^{1/} Another 40 t/day plant is to be installed in 6 months' time.

be concluded that:

- a) The 72 t of plate freezing capacity installed by the Shilat Jonoub, working over a period of three months only and 25 days/month, would produce 5 400 t of frozen shrimp, provided the raw material is available. The total shrimp production was growing from 1 028 t in 1968 up to 6 100 t (tailweight) in the fiscal year March 1973-March 1974. The 1974 season was extremely poor and, although data are not available, the total production was well below the previous year.
- b) The private sector's freezing capacity is to a large extent used for shrimp.
- c) In addition to the shore-based freezing facilities, the private sector operates some mother vessels or their shrimp trawlers are equipped with freezing facilities. This reduces substantially the need for freezing capacity ashore.
- d) The Shilat's blast freezing capacity of 25 t/day could also be used in the peak shrimp season for freezing shrimp.
- e) The Jask Fisheries Co. is going to create new freezing capacities.
- f) It will be very difficult to increase the annual shrimp production over the actual level due to the resources being apparently fully exploited.
- g) Summing up, it should be said that there is already an over-capitalization as far as shore-based shrimp freezing capacity is concerned. Due to technological problems, the plate freezers installed will remain largely unutilized as long as the finfish processing technology will remain unchanged. This, however, will have to be studied very carefully in connection with the market acceptability of new fish products.

The investment in the fisheries sector is uncoordinated. Besides the private sector constructing capacities for its needs, the public or semi-public sector is also making considerable investment. It is, therefore, strongly recommended that immediate steps be taken to: a) analyse the present freezing and shrimp processing capacities, as compared with the annual production, and b) take steps towards coordinating investment in these facilities in order to avoid wasteful over-capitalization. It is of particular interest to the Agricultural Development Bank of Iran to obtain clear and unequivocal information on the developments in order to allocate the limited financial resources available for the fisheries sector in the best way, both from the point of view of production and economic returns. It seems that the institution best suited for the coordination of development activities in the fisheries sector, within its present organizational structure, is the Shilat Jonoub.

As far as the shrimp sorting machines are concerned, the situation is very much the same as in the freezing sector.

The Gulf coast is lacking fishmeal plants. At present the Shilat Jonoub's branch in Bandar Abbas has a very primitive fishmeal production device of a negligible capacity. The quality of fishmeal produced there is unknown but, judging by the technological process, it has to be very poor. There is already a certain volume of offal from fish processing (shrimp heads, cannery in Bandar Abbas) which is either reduced in the primitive plant to fishmeal or discarded. As mentioned elsewhere, the majority of fish marketed in Iran is in the whole form, thus the volume of offal is relatively small. In theoretical terms one could say that with the present volume of catch of finfish in the order of 18 000 t which is to be doubled in the next few years to give say, 40 000 t, if the fish were processed approximately 50 percent of the fish would constitute offal for fishmeal, giving about 1 000 t of ready product. This is already a significant volume worth constructing small reduction plants for on an industrial scale. A thorough economic viability study would be

needed to examine the problem.

The cold storage facilities owned by Shilat have a capacity of 700 t. The Meat Organization makes available to the fishing industry 2 300 t and the private sector operates some 3 400 t, which altogether gives a total of 6 400 t, along the coastline alone. Iran as a whole has some 50 000 t of cold storage capacity. The present capacities have to be considered sufficient for the present fish production. Furthermore, another 2 900 t of cold storage capacity are already under construction or at an advanced stage of planning.

4. Fishing Ports and Shipyards - There are numerous fishing villages along the southern coastline, none of which has well developed port facilities. Bandar Abbas is the most modern Iranian port, located near the important shrimp, tuna, and sardine fishing grounds, and it is developing rapidly. Reportedly the harbour is already too small for the volume of cargo being transshipped there and the operating agency pays heavy demurrage for delays. This port is regarded as a temporary arrangement for fish off-loading. The authorities do not permit the use or installation of permanent winches. The fish is therefore unloaded by a human chain.

The traditional fishing boats are constructed at scattered centres in the Gulf and the Gulf of Oman by the fishermen themselves, with wood imported from East Africa through Pakistan, India, and Dubai. Engines, spare parts and other equipment are procured mainly from Kuwait, Saudi Arabia and Dubai. They are also procured, at higher prices, from a number of firms in Tehran, Abadan, Ahwaz and Bandar Abbas.

The Shilat's shrimp trawlers are repaired at Navy shipyards but have to wait frequently for the completion of the work because of Navy priorities. The commercial operators have their boats repaired in Kuwait, Bahrain and other neighbouring places.

It seems essential that a real fishing harbour be constructed, with the necessary facilities for unloading fish, ship repairs etc. both for the Shilat and for private operators. Consideration to this effect should be given in the near future, together with the coordination of investment in processing facilities. The present uncoordinated investment may adversely affect the future development of fisheries, with particular regard to harbours and shipyards.

