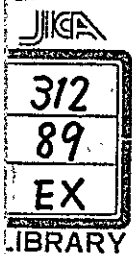


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REPORT OF PRELIMINARY SURVEY  
ON  
THE FEASIBILITY OF ESTABLISHING A FISHERY SCHOOL  
AND  
DEVELOPING SHRIMP CULTURE  
IN THE KINGDOM OF SAUDI ARABIA

BY  
PRELIMINARY SURVEY MISSION



JANUARY 1975  
JAPAN INTERNATIONAL COOPERATION AGENCY

国際協力事業団		
受入 月日	'84. 3. 23	312
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## I. Background and Purpose of the Preliminary Survey

The Government of the Kingdom of Saudi Arabia desired to establish a fisheries and canning school with a view to contributing to the development of the fishing industry. The Government also had an intention to develop shrimp culture. The Government requested, in this connection, the cooperation of the Government of Japan.

Upon the request as mentioned above, the Government of Japan sent a mission to Saudi Arabia for the purpose of conducting a preliminary survey on the feasibility of establishing the school as well as of developing shrimp culture.

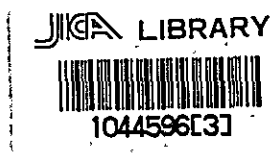
The Mission wishes to express its sincere gratitude to the Government Authorities of the Kingdom of Saudi Arabia, particularly the Ministry of Education and the Coast Guard of the Ministry of the Interior, for the assistance given to the Mission during its stay in the country, which made it possible for the Mission to complete the survey. Special thanks are due to Dr. Mutabagani, General Director of the Department of Technical Education, Ministry of Education, who made all the arrangements possible, and Dr. A. Simbow, Director of Commercial Education, who kindly accompanied and assisted the Mission throughout the survey in the country.

## II. Members of the Mission

Head of the Mission : Mr. Yasumatsu Miyake,  
Overseas Fishery Cooperation Foundation

Members : Dr. Hiroshi Maeda,  
Professor, Shimonoseki Fisheries University  
Mr. Yasumasa Oba, Assistant Professor,  
Shimonoseki Fisheries University

Mr. Jiro Kawabe,  
Chief, Fish Culture Section, Nichiro Fishing  
Company



### III. Itinerary

Date	Places visited	Persons seen	Remarks
Sat. 23 Nov.	Left Tokyo		
Sun. 24 Nov.	Beirut	Mr. Otake, Nichiro Fishing Co.	Discussion on experimental trawling in Red Sea being conducted by Hokusen Fishing Co.
Mon. 25 Nov.	A.M.: Japanese Embassy, Jeddah	Mr. Okada, Second Secretary	Consultation on survey schedule
	Evening: Japanese Embassy	Mr. Suzuki, Ambassador and others	Invited to dinner
Tues. 26 Nov.	Riyadh	Dr. Amin Sinbow, Director, Commercial Education Dr. Abdul Aziz Zaini, Director, Agr. Educa- tion	Consultation on schedule Evening, visit to fish market, Riyadh, accompanied by Dr. Shinbow
Wed. 27 Nov.	A.M. Industrial Studies and Development Centre (ISDC)	Mr. Omer, Dr. Hamadamin, Extension, Service Dept.	Discussion on fisheries in Saudi Arabia
	Ministry of Education	Dr. Mutabagani, General Director, Dept. of Technical Education	Discussion on purpose of the Mission
	Royal Technical Institute		Observation and discussions
	P.M. Ministry of Education	Prince Khalid, Vice-minister	Courtesy visit and discussion
Thurs. 28 Nov.	A.M. Ministry of Agr. and Water Resources	Dr. Muhamid, Director of Animal Resources Dept. Dr. Sadi, Director, Research and Development Dept.	Discussion of fisheries of Saudi Arabia

Date	Places visited	Persons seen	Remarks
Fri. 29 Nov.	Vocational Training Centre, Ministry of Labour		Observation and discussions
	Yamama Hotel	Dr. Mutabagani and others	Invited to lunch by Dr. Mutabagani
	Evening: Fish market, Riyadh		Study of the arrival of shipments
	Left Riyadh Arrived Jeddah	Mr. Mohamed Abu Saud, District Education Officer	
	Evening: At the hotel	Capt. Talal Capt. Tawik Coast Guards	Discussion on survey schedule, Jeddah Yambu area, by hover craft
Sat. 30 Nov.	A.M. District Education Office	Dr. Hossein, Director	Discussion on general education in S. Arabia
	Research boat FRV 1 of Marine Research Centre, Jeddah, and Jeddah Harbour		Inspection and discussion with Captain Williams
	P.M. Secondary Technical School, Jeddah	Principal	Observation of the facilities
Sun. 1 Dec.	Left Jeddah 6.30 a.m. by hover craft northward for Yambu		
	Ras Khurma Rabigh		Observation of fishing villages
Mon. 2 Dec.	From Rabigh to Yambu by hover craft		
	Governor's Office, Yambu	Governor	Discussion on fisheries in the area Invited to lunch stayed at Governor's guest house
	Harbour of Yambu		
Tues. 3 Dec.	Fish Market, Yambu		Observation of landing and auction
	Left Yambu Arrived Jeddah		

Date	Places visited	Persons seen	Remarks
Wed. 4 Dec.	King Abdul Aziz University	Vice-president, Directors of Science Dept. & Oceanographic Dept.	Discussions
	Marine Research Centre, Min. of Agr.	Director, Dr. Fauad A. Deghistani, Dr. Ahmed A. Bayyami	Discussion on activities of the Centre
Thurs. 5 Dec.	Marine Research Centre	Ditto	Discussion and collection of publications
	Shopping centre, Jeddah		Observation of consumption of canned fish, meat and chicken
Fri. 6 Dec.	A.M. Fish Market, Jeddah		Observation
	P.M. Observation of food shops in the city		
Sat. 7 Dec.	Left Jeddah Arrived Jizan		
	District Education Office	Director	Discussion
	Fish market Foods retail market		Observation of landings landings & sale
	An island off Jizan by Coast Guard boat		Interview with fishermen
Sun. 8 Dec.	Wadi Jizan Water Development Project (Jizan Dam) of UNDP	Dr. Selam, Director and others	Discussion on fishes in the dam
	Evening: Left Jizan Arrived Jeddah		
Mon. 9 Dec.	Cara Co. (looks after fishery matters on behalf of Prince Mutib)	Director	Discussion on prospects of fisheries
	Old office and bldg. of Saudi Fishing Co.		Observation
	Laboratory of Marine Research Centre	Dr. Daghistani and others	Inspection of facilities

Date	Places visited	Persons seen	Remarks
Tues. 10 Dec.	Left Jeddah Arrived Dammam Khalifa Al Gosaibi Fishing Co.	Dr. Al Gosaibi	Inspection of freezing plant, etc.
Wed. 11 Dec.	Driven from Dammam to Manifa Shrimp trawlers base of Al Gosaibi Co. Evening:	Dr. Al Gosaibi	Test fishing by a shrimp trawler  Invited to tea
Thurs. 12 Dec.	Fish market, Qatif Fishing village, Tarut Island Dammam harbour Evening: Left Dammam Arrived Riyadh		Observation and interview with fishermen
Fri. 13 Dec.	Internal discussion and rest		
Sat. 14 Dec.	A.M.  P.M. Ministry of Education	Mr. Sasaki, JICA expert assigned to ISDC  Dr. Mutabagani (Mr. Okada also present)	General discussions  Reporting on Mission's findings
Sun. 15 Dec.	Ministry of Education  Evening: Left Riyadh Arrived Jeddah	Dr. Mutabagani	Further discussions on Mission's findings
Mon. 16 Dec.	Japanese Embassy	Mr. Suzuki, Ambassador, and others	Reporting of Mission's findings Invited to dinner
Tues. 17 Dec.	Left Jeddah Arrived Cairo Japanese Embassy  Left Cairo Arrived Alexandria	Mr. Wada, Ambassador Mr. Kojima, First secretary	Courtesy visit

Date	Places visited	Persons seen	Remarks
Wed. 18 Dec.	Anfushy Fishery School	School master and other staff	Observation of facilities
	Arab Maritime Transport Academy, UNDP	Dep. Manager, Dr. A.H. Sadek	Discussions
Thurs. 19 Dec.	Left Alexandria for Tokyo via Cairo		
Fri. 20 Dec.	Arrived Tokyo		



#### IV. Findings

The Mission, during the survey, paid a special attention to whether there is a sufficient basis to justify the proposal to establish a school concerned with fishery and fish processing and whether there are, or will be, adequate employment opportunities for the graduates from such a school.

Regarding the possibility of undertaking shrimp culture, only a general study was made during the Mission's visits to main fishing centres to find out whether there are any physical conditions which could be considered favourable factors for shrimp culture operations.

The time the Mission had at its disposal at each fishing centre was too short to make detailed studies. However, on the basis of the observations at the centres as well as of the limited amount of literature arising from several surveys conducted so far by FAO and other organizations, the Mission was able to reach the conclusions as presented below.

##### 1. Fisheries and related industries

###### (1) Fishing industry

Fishing in Saudi Arabia is carried out both in Red Sea and in the Arabian Gulf. Total landings are estimated at about 30,000 metric tons, although no reliable statistics are available. All the fishing is conducted by small scale coastal fishermen, except for the Algosaibi Fishing Co. on the coast of Arabian Gulf which is the only industrial fishing enterprise in the country catching shrimp with 16 trawlers.

Fishing boats range from small-sized boats called "hourri" to larger "sambuk", the length of which reaches 15 to 20 metres. Mechanization of the boats has been progressing.

Most of the fishing are one day to a few days operation, but some "sambuk" stay at sea as long as 2 weeks and ice is used to preserve the

catch during the operations. In the Red Sea where the abundance of coral reefs renders trawling operation extremely difficult the main fishing method is angling with gill-netting partly employed. On the other hand, trawling, gill-netting, traps, etc. are the main fishing methods used in the Arabian Gulf area. Species of fish caught are various and some of them are fairly large-sized. It could be said that, considering the gears and methods employed at present, the fishing is being carried out quite efficiently.

Based on the oceanographic conditions known and the findings by the limited amount of surveys so far made, there is a doubt, at least at present, about the possibility of developing further the large-scale and industrial fishing, either in Red Sea or the Arabian Gulf. However, there appears to be a sufficient possibility to improve and expand the present coastal fishery chiefly through introducing new fishing techniques and methods. The past surveys also suggest the existence in the both sea areas of a fair amount of pelagic fish resources which are now hardly exploited. These resources would become accessible if the fishing grounds are located and adequate fishing gears and methods are introduced. Considering the above, it is generally believed that there is a possibility of increasing the catch by 100 to 200 percent of the present landings. Such an expansion of fishing activities would also improve greatly the living of the coastal fishermen, the number of which is estimated at about 3,000.

## (2) Fish processing

Fish landed are mainly iced for further shipment to consumption centres, except for shrimps which are largely frozen for export. Demand for fresh fish at cities appears fairly strong, judging from the retail fish prices observed by the Mission. Imported fish products include partly frozen fish and mostly canned fish, consisting mainly of mackerel and tuna. Although statistics were not made available, amount of import of canned fish appears substantial, as far as the Mission observed in the cities, towns

and villages which were visited. Canned fish, particularly mackerel, was found at almost all food shops, even very small ones, and even in remote villages, side by side with other imported canned foods of agricultural and dairy products. (The Mission was told incidentally that there was at present only one canning plant in Riyadh, which produces canned tomatoes).

Under the circumstances, the Mission had the impression that, as far as the demand is concerned, there seems to be a good basis for developing canning industry, provided that the raw material becomes available either through increased domestic production or through import, though further study on economic feasibility ought to be conducted. It should also be taken into account that the present Government programme for agricultural development may also eventually provide the canning industry with raw materials such as meat, fruits and vegetables, thus making the full operation of the plants possible.

Considerable amount of frozen foods including meat and chicken is also imported. For proper operation and control of freezing and cold storage facilities as well as for sanitary and quality control, a substantial number of personnel with the knowledge of food technology would be required. It is expected that the requirements would further increase with the rapid economic development and the increase of the population.

The possible exploitation of the pelagic fish resources, together with the use of otherwise discarded parts of fish, might lead to the establishment of fish meal plants to provide feedstuffs to the developing livestock industry. (In this connection the Mission observed, at the fish market in Dammam, dried sardines allegedly imported from Oman and being sold as feed for cattle).

### (3) Related industries

Construction of new harbours and port facilities has been rapidly progressing in order to meet the requirements for exportation of petroleum, importation of large amount of production goods and materials needed for the quick industrial development and increasing imports of consumption goods. Consequently, it is expected that there will be an increased demand for port administrators and other related personnel to be engaged in the administration and control of port and harbour facilities.

The Mission was also given to understand that the country has an intention to develop its won marchant marine fleet. In this connection, the attention of the Mission was called to the Arab Mritime Transport Academy, Alexandria, Egypt, a regional training institute assisted by the UNDP. However, any fishery school, if established, would also contribute, though indirectly, to strengthening the facilities to train the personnel who may be engaged in the field of merchant marine industry.

## 2. Shrimp culture

Regarding the feasibility of shrimp culture, it was not possible to draw any definite conclusions, due to the small number of places surveyed and the very brief stay in each place. However, some observations were made in each area on the topography, water temperatures, salinity, etc., and interviews were also made with local fishermen in order to investigate the catch of shrimps in the areas. Based on the observations as mentioned above, the views of the Mission are summarized as follows:

(1) In the Red Sea, few shrimps are caught at present; there are a few rivers draining there; salinity of the water is very high. All the above factors seem to suggest little possibility of establishing shrimp culture operations.

(2) In the Arabian Gulf, there have been a considerable catch of shrimps; it was noted that in the Dammam area there are quite a few fresh-water springs which drain into the Gulf. The above facts appear to be some favourable conditions suggesting the possibility of shrimp culture in the Dammam area. However, it is premature to draw any conclusions and further detailed studies for much longer period will be required, if something more definite is to be said. Such studies should include not only physical and biological studies but also economic feasibility surveys.

#### V. Justifications for the Establishment of a Fishery School

Apart from the possibility of deep sea fishery in the Gulf of Oman or the Indian Ocean, and as far as the fishery in the Red Sea and the Arabian Gulf is concerned, there seems to be little prospect of developing, in the near future, of large scale industrial fishery. It is also generally thought that the shrimp resources in the Arabian Gulf are fully exploited by the fleets not only of Soudi Arabia but from other countries boardering the Gulf.

Therefore, the fishery school, if it is to be established, sould not aim primarily to train skippers and ship's engineers, as is normally the case with most of the fishery schools which have been set up elsewhere. In the development of fishery in Saudi Arabia, an emphasis, at least for the small scale coastal fisheries and improvement of the living of the coastal fishermen. In order to achieve this, considerable number of fishery officers including extension workers are required in the government service. It was observed that, in the main fishing centres such as Yambu, Jizan and Dammam which the Mission visited, there were Branch Offices of the Ministry of Agriculture and Water Resources. The Officers there were concerned with farmers and agricultural activities but no fishery officers were stationed to look after fishermen's interests and fishery development, although the fishery comes under the jurisdiction of the same Ministry. Even the number of the fishing boats is estimated based on the registration of the boats conducted by the

Coast Guard. It appears that at present the main activities of the Ministry are research activities of the Marine Research Centre in Jeddha which has been in operation for the last few years with the cooperation of the University College of North Wales, U.K. (The Mission was informed that 5 scientists, a skipper and a chief engineer of the Research boat have been working).

Graduates of the fishery school may also be employed by the above-mentioned Research Centre as well as at Universities as technical assistants to research scientists. (Oceanographic Department has recently been established at the King Abdul Aziz University, Jeddah, and the Mission was told that there was a plan to open courses on fisheries).

As mentioned earlier, an increased demand for technical personnel in the field of fish processing and food technology, i.e. canning, cold storage, fish meal production, freezing, etc., is expected. It should also be considered that these personnel will increasingly be needed not only in the fisheries field but other fields such as agriculture and livestock products. The progressing expansion of harbours will demand personnel to be engaged in harbour administration and related businesses.

With all the factors in view, and also considering the fact that the Kingdom has already number of general secondary schools as well as secondary schools specialized in agriculture, commerce or industry, the Mission considers that the proposal to establish a secondary school concerned with fishery and food technology has a sufficient justification. At the same time, the Mission feels that the secondary school to be established should be designed, with respect to its facilities and personnel, in such a way that it functions also as a demonstration and extension centre, which would be useful in view of the present early stage of development of the industry.

## VI. Conclusions and Recommendations

### 1. Establishment of a school

(1) It is considered appropriate that the Government of the Kingdom of Saudi Arabia establish a secondary school for fishery and food technology.

(2) The course of the school will be for 3 years and accommodate graduates of intermediate schools. The curriculum will include both general and specialized subjects. Details of the specialized subjects should be determined with due consideration to the present status and future prospects of the fishery, fish processing industry and related industries in Saudi Arabia, so that the education and training will meet the requirements of the country.

(3) The school may accept every year 60 new entrants, consisting of 20 for fishery course and 40 for food technology course, total number of the students accommodated in the school being 180. However, in view of the present Government policy of rapid industrialization, possibility of eventual revision or expansion to meet changed or increased demand for the technical personnel should also be borne in mind.

(4) As a part of the activities of the school, the facilities of the school should also be used to train a small number of dropouts of intermediate schools at a shorter course, e.g. one and half year course, specially designed for them. Such a course will be useful in producing practical technicians to be needed in fishery and other related industries.

(5) The facilities of the school should include, in addition to class rooms and offices, workshops and laboratories for fishery as well as food technology, library, store house, dormitory for students, various plants for the purpose of training and demonstration (canning, freezing, cold storage, fish meal, drying, smoking, etc.), small boats for training and demonstration, etc. It will be also necessary amply to prepare varieties of teaching aids such as models and illustrations. In this connection, the Mission observed,

during its visits to industrial schools, they were very well equipped with these teaching aids, apparently making the instruction effective.

(6) Various fishing centres were considered as a possible site for the school. However, Jeddah, among them, seems to be the most suitable place for the school, particularly from the viewpoint of the existing various industrial facilities which may be of importance to support and maintain the plants of the school.

(7) The timetable for the construction of the school, as explained by Dr. Mutabagani to the Mission, appears reasonable. The timetable is illustrated below :

	1975		1976		1977		1978		1979		1980
	June/July		June/July		June/July		June/July		June/July		
Study											
Agreement & design											
Construction											
Starting course											
Training of instructors											



(8) Pattern and details of the cooperation between the Japanese Government and the Government of the Kingdom of Saudi Arabia regarding the establishment of the school will further have to be discussed by the both Governments. It may be that some countries other than Japan are also prepared to participate in the project. At any rate, however, assistance should be rendered in the following matters:

a) Advising on facilities, equipments and curriculum of the school, including also preparation of textbooks, teaching materials and aids.

b) Training of instructors prior to the opening of the school, including training of 2 graduates (one specialized in biology and one in physics) for the fisher course, and 2 graduates (one specialized in chemistry and one in mechanical engineering) for the food technology course. These people will be trained in Japan or some other suitable countries, in fishery universities or canning plants, as appropriate, for about one and half a year.

c) Assistance by experts to be stationed at the school: assignment of experts is envisaged mainly at the time of the opening of the school; the experts may include, at least, one fishery expert, 2 master-fishermen, one food technologist, and 2 fish-processing technicians who will assist in the operation and maintenance of the various plants of the school.

## 2. Survey of the Possibility of Shrimp Culture

Should the Government of Saudi Arabia wish to pursue the matter, and wish to obtain some conclusions regarding the possibility of developing shrimp culture, next step would be for a shrimp expert to make more detailed studies in a limited area for a longer time. It is suggested that the studies should be concentrated on the Dammam area at least for 3 months, preferably from April to June.

