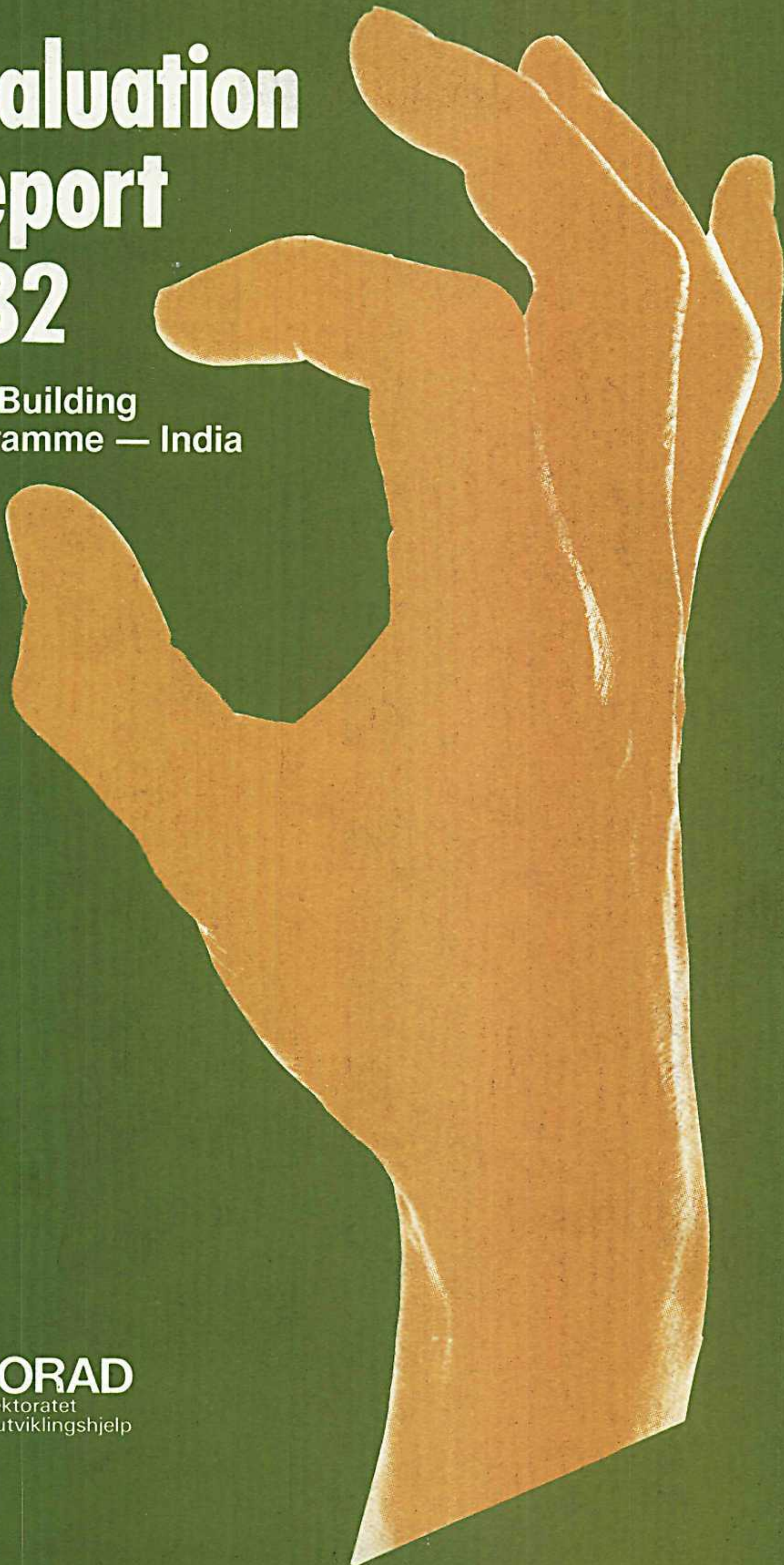


# Evaluation Report 1.82

Boat Building  
Programme — India





IND 010 BOAT BUILDING PROGRAMME

REPORT OF EVALUATION  
NOVEMBER 1981

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## 1. SUMMARY OF MAIN CONCLUSIONS AND RECOMMENDATIONS

### 1.1. Main conclusions.

- 1) Completion of the Boat Building Programme is for a number of reasons much behind schedule, and it has consequently not by far fulfilled its objectives. Neither is it possible, - or indeed fair-, at this stage to make firm conclusions with regard to if and to what extent the Programme will eventually meet the overall objective, i.e. to further the development of deep sea fishing in India.

Nevertheless, in spite of all the delays, defects and setbacks outlined below, the Evaluation Team is unanimous in the conclusion that the Programme has made major achievements which may ultimately contribute to the desired results.

- 2) Aims and objectives of the Programme were at no stage well defined and described in detail, and this has adversely affected the Programme's planning and conduct. So has also the organizational set-up, which was not designed with clearly separated functions of execution and control.
- 3) Through the Boat Building Programme, Goa Shipyard Ltd. has been developed and equipped so that the yard is now capable of providing designs and drawings of modern fishing vessels and to construct and fit out such vessels in a satisfactory manner. This aim of the Programme has thus been reached.
- 4) The know-how and competency of the yard, however, is likely to vanish, if building of fishing vessels is not continued. Presently the fishing industry is not prepared to place orders for commercial fishing vessels at Goa. (Rec. 1).
- 5) The two first vessels constructed cannot be successfully used without substantial modifications, probably lengthening, and an expert team should visit Goa as soon as possible to investigate and give detailed advice on actions to be taken. (Rec. 2). The remaining 4 vessels, presently under construction, will probably be suitable for their purposes of exploration and training, but none of the vessels will meet the objective of serving as prototype for India's future deep-sea fishing vessels. (Rec. 1).

- 6) With the addition of the three vessels under construction, EFP's fleet of large vessels will be quite adequate for the organization's planned exploratory programme, as well as providing vessels for testing commercial potentials and demonstrations in promising fishing areas and/or seasons. (Rec. 3).

Similarly, with the "Skipper I" in operating condition as a purse seiner, CIFNET will be very adequately equipped with vessels for their training and demonstration needs.

Current and planned vessel requirements by CIFE will not provide full utilization of the vessel built for this organization under the Boat Building Programme.

- 7) EFP and CIFNET have some experience, basic organizational set-up, infrastructure and staff for operating large vessels, but will need expertise from abroad for an initial period, as well as general strengthening and updating of their staff and better infrastructure to make full and efficient use of their vessels. CIFE is at the time practically lacking in all these respects.

All three GOI institutions have requested technical assistance from NORAD (skippers and engineers) for initial operation of the vessels. The team fully endorses these requests. (Rec. 4).

- 8) EFP is also in need of expert assistance to develop an efficient system for operational planning, data acquisition and analysis. This might well be arranged as a joint effort on a recurrent basis between EFP and a relevant Norwegian institution. (Rec. 5).

- 9) Efficient and timely operation of GOI vessels is presently much hampered because of disputes with the crew about working time and sea service remuneration/compensation.

Experience from elsewhere shows that this is a general problem which may be solved by suitable incentives for sea-going operations. (Rec. 6).

- 10) Drydocking facilities for the fleet of 15 large vessels soon to be operated by GOI fishery institutions are few and often not readily available.

Service and maintenance facilities are presently also inadequate

and cannot be fully developed within short distances of all operational bases.

These problems are most efficiently tackled by establishing an independent, central maintenance base at Cochin to serve all large GOI fisheries vessels. (Rec. 7).

### 1.2 Recommendations.

- 1) To preserve the know-how and competency built up at Goa Shipyard Ltd., and to develop designs suited as prototypes for building commercial deep sea fishing vessels, it is recommended that GOI and/or NORAD support the construction at GSL of more fishing vessels, which may subsequently be chartered out for commercial operations. Accordingly, these should be designed as commercial fishing boats, with due regard to the experience gained from the Boat Building Programme, and in cooperation with the fishing industry.
- 2) To obtain detailed advise on actions to be taken for modifying "Matsya Harini" and "Skipper I" it is recommended that an expert team visit Goa as soon as possible to:
  1. Investigate the stability of the two vessels.
  2. Look into the feasibility of lengthening the vessels and improving catch handling systems.
  3. Recommend alterations that would facilitate maintenance.
  4. Provide specifications and drawings for such undertakings.
  5. Assist NORAD in preparing tender documents and call for tender, and advise NORAD on the best yard for carrying out the modifications.

The group should include people experienced in lengthening and conversion work, stability experts and experts on refrigeration and bulk fish handling.

- 3) To venture into deep sea fishing operations the industry will require demonstrations and information about potential catch rates etc. derived by commercial type test fishing. It is recommended that such operations should supplement the exploratory fishing programme of EFP as and when promising findings are made.

Commercial type test fishing might be conducted with relevant EFP vessels, but to simulate true commercial operations as realistically as possible, the vessels should then be operated on charter by commercial fishing companies.

- 4) The team fully endorses the requests already made by the three GOI institutions concerned, for NORAD technical assistance to operate the vessels and recommends that special care is taken with regard to proper timing of recruitments, and adequate duration of the assignments to assure maximum counterpart training.
- 5) To develop an efficient system for operational planning, data acquisition and analysis, and thereby facilitate timely feedback of useful information to the industry, it is recommended that EFP is provided with equipment, expert services and other assistance required. This might well be organized as a joint effort between EFP and a relevant Norwegian institution.
- 6) Recent and past experience in India and elsewhere clearly show that it is most difficult to maximise sea-time operations of government run fishing vessels. In order to make full use of the GOI vessels it is therefore strongly recommended that an effective system of incentives for sea-going operations is introduced.
- 7) It is recommended that a central maintenance base for all vessels concerned is established as an independent organization.

This base would have the necessary equipment for sophisticated machinery and instrument repair and maintenance, drydocking facilities, and a number of experts in the fields of Diesel engines, electrics, electronics, refrigeration and hydraulics. Additional requirements are deep water piers, storage and repair facilities for fishing gear and accessories.

The base would provide advice on planning, supervision and execution of preventive maintenance at the sub-bases, provide expert personell for "flying squads" for emergency trouble-shooting and repairs, and give specialist training for the maintenance crews at the sub-bases and for sea-going engineers.

The base would also have adequate facilities and personell for procurement, storage and management of replacement and spare parts.

Drydocking would be provided if local drydocking is not available for major repairs and for periodic surveys required by classification societies.

The base should be located in an already established industrial area, with a reasonable technological basis, adequate transport and communication facilities, and where trained personnel is available.

Of the two alternatives available, Cochin and Goa, Cochin is preferred because of its central location, existing fisheries establishments and experience, suitable Government owned land for a base etc.

Preliminary plans and funds are available for expansion on an adjacent lot, of the IFP workshop, slipway and service pier. A study should therefore be carried out as soon as possible to survey the site at Cochin, and plans for slipways and workshops should be completed.

A specialist firm in the vessel maintenance field should be engaged to work out maintenance programmes and procedures for all 15 vessels, to plan training, to assist in planning the maintenance facilities, and to implement the maintenance and spare part management routines.

It is imperative, in order to get full use of the vessels, that this work is undertaken immediately.

## 2. PREAMBLE

### 2.1. Appointment of the evaluation team

In accordance with the agreement reached in the Economic Cooperation Consultations between India and Norway in October 1980, that a joint review and evaluation of the Boat Building Programme should be carried out during the second half of 1981, NORAD in October 1981 appointed an evaluation team with the following members:

- Mr. Steinar Olsen, Director of Research, Fishing Gear and Methods Division, Institute of Fishery Technology Research, Bergen, Norway. (Head of delegation).
- Mr. Anders Endal, Director of Research, Vessel and Marine Engineering Division, Institute of Fishery Technology Research, Trondheim, Norway.
- Mr. Magne Bjørnerem, Director of Fisheries, Hordaland County, Bergen, Norway.

The Government of India appointed as their member of the team:

- Mr. S.K. Das, Asst. Commissioner (Foreign Aid), Fisheries Division, Ministry of Agriculture and Cooperation, New Dehli, India.

Mr. John Williams, Senior Officer, Fisheries Division, NORAD, Oslo, Norway, acted as secretary of the evaluation team.

### 2.2 Terms of reference

Terms of Reference were drafted by NORAD and sent the Indian Authorities for comments. The final Terms of Reference approved by both parties are enclosed. (Appendix I). The salient points of these are as follows:

- (1.1) The main thrust of the evaluation shall be directed towards the various aspects of the future utilization of the vessels.
- (1.2) The Boat Building Programme shall be looked into from a fishery-political and fishery-economic angle.

- (2.1) Assess to what extent technical solutions on the vessels are in accordance with the objectives of the Boat Building Programme and are adapted to the needs of the Indian fishing industry.
- (2.2) Assess to what extent harbour facilities are available and can be used to cater for repair and maintenance, landing of catches and purchase of necessary goods.
- (3.1) Comment on the technical assistance provided and how it has met the national objective of strengthening the indigenous basis for the construction of modern fishing vessels in India.
- (3.2) Assess the potentials and plans of the user-organizations for utilization of the vessels in terms of training, exploratory fishing and other research activities, staffing and facilities for maintenance and repair.
- (3.3) Assess how the results from the activities carried out with the vessels may be applicable to the Indian fisheries and fish processing industry.
- (3.4) Assess if the vessels may serve as models for commercial fishing vessels.

Finally, the Team may submit recommendations as to possible steps to be taken in order to secure the optimal future use of the vessels.

Although not covered in the Terms of Reference, the Team has found it necessary also to unravel the organizational set up of the Boat Building Programme when analysing the causes of problems that have occurred, without, however, in any way attempting to identify scape-goats.

The Boat Building Programme evidently aims at contributing to the development of deep sea fishing in India. As such it fits directly into the fishery development policy of the GOI, which in the Sixth Five Year Plan have clearly specified it as an aim to develop the deep sea fishing industry. Accordingly, it is assumed desirable to develop a Deep Sea Fishing Industry of India, and that this development should preferably be achieved by a suitable Indian national fishing fleet.

Similarly, the GOI organizations: Exploratory Fisheries Project, Central Institute of Fisheries Nautical and Engineering Training and Central Insitutte of Fisheries Education are all assumed to have an important role to play in this development.

The Team has chosen to evaluate the Programme in this context and concluded that it would be entirely outside its scope and competency to attempt any socio-economic evaluation of this stated national objective, or discuss whether NORAD funds used for the Programme might have been better allocated to other activities benefitting different target groups.

Also, to assess whether and how the results from the activites carried out with the vessels may be applicable to the industry is a task which goes far beyond the limits of the utilization of the vessels of the Boat Building Programme. A proper answer to these questions will require an evaluation of all the activites carried out by the organizations which are receiving vessels through the Boat Building Programme, as well as an assessment of the structure and future need of the Indian fishing industry as such. To fulfill this in a proper way is a major evaluation exercise in itself, and the Team has only found it possible to consider these aspects very briefly.

### 2.3 Method of evaluation, programme and approach.

The framework within which the Team was to work was given by the terms of reference.

The Team conducted the field part of the evaluation from 12th to 23rd of November 1981. The field programme, given below, was completed in detail according to plan.

12th November:

Arriving Cochin, meeting representatives of Exploratory Fisheries Project, Central Institute of Fisheries Nautical and Engineering Training, Integrated Fisheries Project to detail the programme for the stay in Cochin.

13th November:

Test trip with "Skipper I", meeting at Integrated Fisheries Project.



14th November:

Meeting with CIFNET, EFP and IFP.

15th November:

Sunday, travel from Cochin to Bombay.

16th November: Arriving Goa, meeting at the Goa Shipyard Ltd.

17th, 18th and 19th November:

Discussions at the Goa Shipyard Ltd., inspection of yard facilities and the boats of the Programme being fitted out at the yard, roll-test of "Matsya Harini", meetings with GOI representatives, NORAD-people and the NORMARITIM Consultant present at the ongoing Project Review Meeting.

19th November:

Arriving Bombay.

20th, 21st, 22nd and 23rd November:

Meetings at Exploratory Fisheries Project HQ, Central Institute of Fisheries Education, and with the President of the Indian Fisheries Association.

A detailed list of people met is enclosed as Appendix II.

The Team discussed and agreed on main findings and conclusions before the members separated at Bombay 23rd November. It was concluded that for timely completion and ensuring an agreed joint Indo-Norwegian formulation of the evaluation report, it would be necessary that all members of the Team met again for some days. This was approved by NORAD, and the Team assembled at Voss, Norway 21st through 23rd January 1982 for finalizing the report.

### 3. BACKGROUND

#### 3.1. Brief review of GOI institutions and activities relevant to the Boat Building Programme. (Excerpted from Appendix III).

India's annual marine fish production is about 1.5 mill. tonnes. The estimated potential within the Indian EEZ is 4.5 mill. In 1978 37% of the 1.4 mill tonnes marine fish landed were taken by machanized fleet, which over the past 30 years have developed to number nearly 17000.

Deep sea fishing accounts for less than one per cent of the total marine landings. Presently only 57 deep sea fishing vessels are being operated on an ownership basis and letters of interest have recently been issued for the charter of 23 such vessels.

However, almost all vessels operating in Indian waters are fishing only for shrimp fairly close to the shore, and GOI is therefore in different ways trying to stimulate development of deep sea fishing for varieties other than shrimp.

These efforts fall under several GOI ministries and departments, and are partly conducted as regular activites by established institutions, and partly organized as special programmes, e.g. loan schemes etc.

#### 1. Ministry of Agriculture & Cooperation

##### Exploratory Fisheries Project (EFP).

The Exploratory Fisheries Project, formerly known as the Deep Sea Fishing Station, was established as a pilot Project in 1964 with headquarters at Bombay for the following objectives:

To carry out exploratory work for

- charting fishing grounds
- determination of best fishing seasons
- examination of the types of fishes available
- assessment of the suitability of different types of fishing vessels, and
- assessment of suitability of fishing gear and equipments.

To train personnel for manning modern fishing vessels.

To test the commercial possibilities of deep sea fishing and make available the requisite data and information to those concerned so as to help and guide the expansion of the fishing industry.

During the last 3 decades the project has explored the continental shelf up to 40 metre depth with its fleet of small and medium sized vessels, and it has progressively developed over the plan periods into the present structure consisting of 10 operational bases all along the east and west coasts of India.

With the declaration of Exclusive Economic Zone (EEZ) by GOI in 1977, programmes were drawn up for the acquisition of larger vessels for the survey of the demersal and pelagic resources of EEZ, with a view to provide information to the fishing industry for commercial exploitation. As a result, the project has acquired six large vessels under Danish, Dutch, Japanese and Norwegian aid programmes. Three more vessels under Norwegian aid programme are being constructed by Goa Shipyard and will be added to the fleet in 1982.

The project, through the operation of vessels, functions as the main agency for imparting "in-vessel" training and has made the major contribution to building up a sizeable technical man-power of skippers, fishing second-hands, engine drivers and engineers in the country for manning modern vessels owned by the industry. Similarly, fishing technocrats who gained their experience through this organization are manning a number of public and private sector undertakings.

The amount allocated for the project in the Sixth Five Year Plan (1980-85) is Rs. 480 millions.

Central Institute of Fisheries Nautical and Engineering Training (CIFNET), Cochin.

The institute conducts training courses for fishing second hands, engine drivers, boat building foremen, shore mechanics, gear technicians, radio telephone operators and teachers. The courses involve mainly institutional instructions except in the case of fishing second hand and engine driver courses, which are required to

be followed up by in-vessel training specified by the Mercantile Marine Department so as to enable the candidates to appear for the respective competency certificate examination. The necessary facilities for post-institutional training are arranged by the institute either in the vessels owned by CIFNET or in vessels owned by the sister organisation, EFP. The institute with the headquarters at Cochin has two more units located at Madras and Visakhapatnam.

An amount of Rs. 70 millions has been allocated for the institute in the Sixth Plan.

### Integrated Fisheries Project, (IFP).

The Integrated Fisheries Project (erstwhile Indo-Norwegian Project) at Cochin consists of a modern fisheries complex with various sections dealing with fishing, gear, processing, marketing, ship repair, scientific data processing and training.

The project's objectives are to demonstrate successful fishing methods, simulated diversified commercial fishing, fish processing, introduction and popularisation of diversified fishing products for urban and rural markets, to study consumer reaction to the newly introduced produces and to create an awareness on the part of the processors and consumers to utilize un-conventional fishes.

The project's Workshop and Slipway have servicing facilities for all the vessels of the Project, sister organisations and private entrepreneurs around Cochin. The Workshop is provided with modern equipment, machineries and tools to take up repairs of wooden and steel fishing vessels up to 250 tonnes displacement.

Repairs and maintenance of sophisticated electronic equipment fitted on board the vessels are carried out through a modern electronic workshop forming part of the servicing facilities maintained for fishing vessel repairs. The electronic workshop is provided with modern equipment like oscilloscope, oscillators, automatic coil winding machine etc.

The project conducts training courses for Refrigeration Technicians and Master Fishermen for purse-seining for 10 months each and for processing Technicians for 6 months and for Fishing Second Hands and Engine Drivers to acquire necessary qualifying sea service.

The present workshop facilities are planned to be expanded with an additional slipway to haul up vessels up to 600 tonnes. An amount of Rs. 60 millions has been provided for IFP in the Sixth Plan.

#### Pelagic Fisheries Project.

The pelagic Fisheries Project was a joint venture of GOI, UNDP and FAO which was operated at Cochin for 8 years from 1970 in two phases. The first phase was sub-contracted to NORAD and the second phase, 1976-1979 was directly handled by FAO. The main objective of the project was assessment and development of the major pelagic resources of the South West Coast of India from Ratnagiri (17 degrees lat.N) downwards extending into the Gulf of Mannar.

The second phase of the project laid emphasis on the methods of exploitation, utilization and marketing of the resources. Experiments with the project's vessels have proved that purse-seining is ideally suited for mackerel, oil sardine, white bait and horse mackerel, while midwater trawling and high opening bottom trawling are suitable for white bait, catfish, ribbon fish and horse mackerel.

The operation of the project resulted in a fair understanding of the biology and stock strength of sardine, mackerel, and other pelagic fish in the area, identification of suitable crafts and gear, as well as methods of exploitation, besides extensive environmental data covering a time series of several years.

#### Introduction of deep sea vessels.

The programme of deep sea fishing has not made rapid progress due to various reasons, like lack of suitable soft loaning scheme, delayed finalization of the charter policy and import of vessels, partly due to the inability of the Indian parties to raise the necessary capital and provide the necessary security for the loans granted.

Till the import of large deep sea vessels and construction of indigenous vessels pick up, charter and joint ventures would be encouraged as a short-term measure so that exploitation of EEZ will be faster.

The Government have introduced a soft financing arrangement through the Shipping Development Fund Committee (SDFC). In case of import,

90% of the total cost, and in case of indigenous construction, 95% of the total cost is provided by the Government to the intending parties. The interest rate for this loan is 4.5% and the amount is repayable in 7-10 years. An amount of Rs. 1300 millions has been kept in the Sixth Plan to provide loans to the entrepreneurs. The policy, however, does not enable the large business houses to receive loan at loaning terms from SDFC.

Development of fishing harbours.

Self contained fishing harbours are being developed at both major and minor ports, in addition to limited landing facilities at a large number of sites.

At present there are 5 major fishing harbours and about 87 minor harbours. The beneficiaries from major harbours are mainly deep sea vessels. The important fishing harbours having draft of more than 4 metres and main facilities available are indicated in the table below.

Main features of major fishing harbours in India.

NAME	DRAFT	MAIN FEATURES
1. Yeraval	4.5 m	Brackwaters, quays and jetties, slipway, auction hall and ancillary shore facilities
2. Malpe	4.5 m	Wharf, jetty, slipway, auction hall etc.
3. Karwar	4.0 m	Wharf, auction hall, etc.
4. Cochin stage	6.0 m	Quay, auction hall, jetty, slipway, office building, fishing gear and net repair sheds.
5. Madras	6.0 m	B.S, quay, slipway, auction hall, office buildings and shore facilities.
6. Tuticorin	4.0 m	B.S, wharf, slipway, auction hall, etc.
7. Visakhapatnam	4.5 m	Wharf, slipway, auction hall, office Bldg.
8. Roychowk	4.3 m	Jetty, auction hall and shore complex.
9. Port Blair (A&N Islands)	6.5 m	Jetty and other shore facilities.

The Pre-Investment Survey of Fishing Harbours with their headquarters at Bangalore conducts surveys for the perspective location of harbours in various states. On the basis of investigations and recommendations made by the project, fishing harbours are constructed in consultation with maritime State Governments. During the Sixth Plan period (1980-1985) it is proposed to develop major fishing harbours at Paradeep, Sassoon Dock (Bombay), Cochin, Stage II, Madras and Viskhapatnam Stage II under the Central Sector Scheme with an expenditure of Rs. 190 million.

2. Department of Heavy Industry. Indigenous construction of deep sea fishing vessels.

The indigenous construction of deep sea fishing vessels is dealt with by the Department of Heavy Industry under the Ministry of Industry. The Department has taken keen interest in the construction of deep sea fishing vessels in a bid to utilize the national ship building capacity.

A study conducted for the Department by M/S White Fish Authority and M/S A.P. Appledore International Co. Ltd. of U.K. suggests that over the next ten years the requirement of vessels will be as follows:

1. 14.8 metre vessels	500
2. 20.0 metre vessels	25
3. 26.0 metre vessels	50
4. 30.5 metre vessels	5

Total 530

The Department of Heavy Industry has also announced a subsidy of 33% on indigenously constructed fishing vessels with provision for import of equipment out of an approved list up to the value of 20% of the aggregate cost of the vessel.

3. Ministry of Commerce. Marine Products Export Development Authority (MPEDA).

The Marine Products Export Development Authority was established in 1972 under the Ministry of Commerce as a national organisation for the control, regulation and development of the Indian marine products industry.

The Authority with their headquarters at Cochin and regional offices in Bombay, Bhubaneswar, Calcutta, Madras and New Dehli, provides services to the deep sea fishing industry. MPEDA also operates a trade promotion office in Tokyo, Japan. It is proposed to establish similiary offices in other countries also.

To provide effective, prompt and professional service to the fishing industry, MPEDA organizes its operation through specialised divisions like marketing, statistics and market research, research and product development, development of new equipments, quality control publicity and public relations.

To keep the domestic industry informed of the expert market trends and prospects, MPEDA publishes market and resource potential surveys and regularly communicates with the industry on every aspect of sea food marketing and production.

MPEDA sponsors delegations to over-seas markets for sale and market study assignments and publishes their reports for the benfit of the industry.

### 3.2 The history of the Boat Building Programme

In May 1971 the Indian Government requested NORAD assistance for several development projects, including a fisheries project as the largest one. This comprised the provision of 11 exploratory/experimental fishing vessels to be built in Norway, and key personell for two years.

To investigate the basis of this request a three-man delegation, (the so-called Jørgensen Delegation), appointed by NORAD in March 1972, visited India and gave their report in July 1972. (APPENDIX IV).

The delegation recommended six boats to be built, of which four were to be given to the Deep Sea Fishing Station, (now Exploratory Fisheries Project, EFP). The size of these boats was to be approximately 75 feet and not more than 85 feet. Further, the delegation suggested that one research vessel of 120/170 feet be given to the Central Marine Fisheries Research Institute (CMFRI), and the last vessel, of about 80 feet, to the Central Institute of Fisheries Operatives (now Central Institute of Fisheries Nautical and Engineering Training (CIFNET)).



The Evaluation Team has found no evidence that the conclusions and recommendations of the Jørgensen Delegation were utilized by NORAD and GOI as basis for planning subsequent actions. However, in the discussions that followed, the vessel project was agreed in principle, and in response to expressed GOI wishes it was decided in December 1972 that the boats should be built in India at two yards, one in Goa and one in Calcutta.

In September 1973 the consultant company NORMARITIM A/S, on NORAD's request, conducted a study to "investigate and evaluate the need for larger fishing vessels in India the next five to ten years, with a view to assist the Indian Authorities in determining the main specifications and the types of vessels to be selected". (Appendix V).

The ensuing report gave no assessment whatsoever of the future needs for larger fishing vessels in India, but based on discussions with Indian Authorities regarding the latter part of the terms of reference, the report presented in detail a project for building 8 exploratory fishing cum training vessels,

In February 1974 the Board of NORAD decided to allocate NOK 34 millions to a Boat Building Programme, and in December same year NORMARITIM A/S was engaged, on the basis of their 1973 report, to work out preliminary drawings for two types of vessels: purse seiner cum longliner, and purse seiner cum trawler. These drawings were forwarded to the Indian Authorities in July 1975.

In September 1975 a NORAD delegation visited New Dehli to negotiate an agreement between the Government of India and the Government of Norway concerning the Boat Building Programme and this was signed on the 22nd of November 1975. (Appendix VI).

In December that year NORMARITIM A/S was given a contract for consultative services related to the Boat Building Programme. As a first step type and size of the two first boats were decided upon, and the order was placed at Goa Shipyard Ltd. which at that time, in 1976, had been chosen as the only yard to build the vessels.

The keels of the first two vessels were laid in December 1977, i.e. two years after the decision and specifications for building of the first two vessels were made in November 1975.

The Ministry of Agriculture and Cooperation (GOI), in December 1977, sent a letter of intent to Goa Shipyard regarding the building of four more vessels.

Early 1978, however, no firm decision had been taken upon the building of more vessels. In January 1978 the Indian Authorities raised the question of building two vessels of 180 feet, a request which was not accepted by NORAD.

At the 5th Progress Review Meeting at Goa Shipyard the 20th of April 1978, the Consultant presented new drawings for the general arrangements of four new vessels. The drawings were accepted by the users, GOI and NORAD.

In spite of this, the keels for the four new vessels had already been laid in February 1978. However, subsequent constructions of the boats did not continue until after the launching of the first two boats, "Matsya Harini", launched the 14th of November, and "Skipper I" the 2nd of December 1978.

Due to the delays and consequently increased costs, the Board of NORAD in May 1978 increased the allocations to the Boat Building Programme by NOK 10 millions.

At the Economic Cooperation Consultations between India and Norway in 1978 it was agreed to build two more vessels, no. 7 and 8, and that these also should be built at Goa Shipyard Ltd.

Consequently, more funds were needed, and in May 1979 additional NOK 22 millions were set aside for the Boat Building Programme. Thereby the total Norwegian contribution to the Programme reached NOK 66 millions. The Indian allocation of funds for the building of the boats is estimated to exceed 100 million Rupies, but the figure cannot be verified from any documents available to the Team.

When the two first vessels were being fitted out it became apparent that to obtain the required stability the vessels needed so much ballast that freeboard would become very low.

To avoid this problem in subsequent vessels it was decided to lengthen the four new boats under construction, and vessel no. 3 "Matsya Jeevan", launched in April 1980, appeared to have the freeboard required.

Vessel no. 1 "Matsya Harini" was taken over by the EFP in March 1980. Vessel no. 2 "Skipper I" was ready to be taken over in May 1980, but because of the very low freeboard, much less than specified in the building contract, the user-organization, CIFNET, refused to take over the boat.

An independent consultant, HIFAB International A/S, and the Consultant, NORMARITIM A/S, were asked to conduct a technical investigation and to suggest solutions which would improve the freebord. This was done and during late 1980 some modifications were carried out on both vessels which increased the freeboard. Vessels no. 4, 5 and 6 were all launched and fitting was started in late 1980 and early 1981.

In the Agreed Minutes from the Economic Cooperation Consultations between India and Norway in Dehli, dated 31st October 1980, it was stated that a joint review and evaluation of the Boat Building Programme should be carried out during the second half of 1981.

No final decision has for the time being, been taken as to whether the last two vessels in the Programme, vessel no. 7 and 8 are to be built. Neither has any decisions been taken regarding the type and size of these vessels.

In the Agreed Minutes from the Economic Cooperation Consultations in October 1981 agreement was reached that the remaining funds within the Programme should be set aside for technical assistance and future utilization of vessels 1 to 6.

#### 4. PROJECT CONCEPT AND ORGANIZATION

##### 4.1. Goals and aims of the Boat Building Programme.

The formal origin of the Programme goes back to the request from GOI in 1971 for aid/assistance to further development of the Indian fisheries. The request included development of fisheries stations and a program for building exploratory/research vessels. NORAD responded positively to this request and it is clear that the overall objective for the aid-programme at that stage was its expected contribution to the development of the Indian fisheries. NORAD paid a lot of attention to questions like what kind of boats India really needed, effective end-use of the boats, and to investigate these matters a delegation (JØRGENSEN Delegation) was sent to India in April 1972.

The idea was at that time to build the boats in Norway. Later however, it was agreed that the boats should be built by Indian yards. With this decision it seems as if the focus of the Programme changed from being a fisheries development project to a boat building programme with emphasis on technical assistance. In documents from a board meeting in NORAD, February 1974, the objectives are expressed as followed:

"The objectives of the boatbuilding program are to enable two governmental yards to build large fishing vessels, which shall be used for evaluation of fishing gears and methods and to explore fish resources. The boats will be run by the Central Fisheries Institutions. In the long run the boats may serve as models in the development of the Indian deep sea fishing fleet".

In spite of this change in emphasis it is clear that it always remained a fisheries aid programme, with the primary, overall objective to contribute to the development of the Indian fisheries. The technical assistance given to the yard was not to develop the yard in general, but to strengthen its basis for construction of modern fishing vessels and thereby contribute to the development of the Indian deep sea fisheries. The same argument applies to the User-organizations and their needs for and use of the boats.

In the Agreement between the Government of India and the Government of Norway signed the 22nd of November 1975, Appendix VI, the objectives of the Programme are expressed as follows:

- "(i) Goa Shipyard and Rajabugan Dockyard, Calcutta, have been selected to build a series of larger fishing vessels to be used for exploratory fishing, charting of fishing grounds, evaluation of fishing methods and gear as well as training of personell.
- (ii) These vessels will be delivered to the Ministry, who will arrange that the vessels are operated by Central Fisheries Institutions.
- (iii) To investigate the possibilities that the vessels may serve as models for the future fleet of deep sea fishing vessels to be developed in India."

Para (i) just declares that two yards have been selected to build certain kinds of vessels and specifies the future use of these vessels.

Para (ii) states who is going to receive and operate these vessels.

Para (iii) does not clearly state whether the vessels actually should be designed as models for the future fleet of commercial deep sea fishing vessels, or whether this aspect is a secondary objective.

The Team is of the opinion that these statements in the Agreement do not give adequate specifications of objectives and aims. The questions of what to achive by the Programme and how to achieve it, as well as the relative priorities of each sub-goals should have been defined and clearly spelled out in detail.

Based on available documents and interviews with people concerned the Team has interpreted the objectives for the Boat Building Programme as follows:

To further the development of Indian deep sea fishing through:

- 1) strengthening the capability and capacity for deep sea fishery resource explorations and for related developments and subsequent demonstrations of suitable harvesting technology, by providing GOI institutions with a number of exploratory fishing vessels, adequately designed and equipped for efficient execution of these

tasks;

- 2) improving the capacity for sea-going training of officers to man the future fleet of large fishing vessels in India;
- 3) strengthening the indigenous basis for construction of complex, modern fishing vessels, by assisting the development of technical know-how in an Indian shipyard and by supplementing the yard with equipment and machinery required;
- 4) developing vessels which may serve as models for future commercial deep sea fishing vessels.

#### 4.2 Organization

The Programme involved 5 major parties, NORAD, the Ministry, the Consultant, the Yard and the User-organizations. The formal documents which outlines the contributions, obligations and responsibility of the different parties are the Agreement between India and Norway, (signed 23.11.75), and the different terms of reference for the Consultant. (Appendix VII and VIII). The agreement states that:

"Norway and India shall cooperate fully to ensure that the Programme will be implemented in an efficient manner. NORAD and the Ministry shall agree on the following main points in the Programme:

- (i) Preliminary project design drawings prepared by the Consultant for the vessels.
- (ii) Final design drawings, building specifications and list of shopdrawings prepared by the Consultant
- (iii) Time schedule for the construction of the vessels.

The Consultant will be contractually responsible to NORAD for the conduct, execution and quality of their services".

Both the Agreement, and the Consultant's TOR states that the technical services of the Consultant were allocated to the yard

only, so that his obligations to the other parties were strongly limited. Furthermore, it is not clear to what extent the Consultant should execute continuous monitoring and inspections of the yard's performance, and if so, who's interests he should care for in these matters.

It is, however, clear that the real responsibility to direct and control the Programme according to its overall objectives, and to control the technical performance and solutions was held solely by NORAD and the Indian Authorities.

The idea seems to have been that this control could be achieved through reports to NORAD from the Consultant and through the "Progress Review Meetings". Accordingly, not much concern appears to have been paid to any need for independent technical advice in order to separate the executive and controlling functions.

The organizational set-up might have worked if NORAD and the Ministry, or the User-organizations, really had had their own technical experts so that they independently could have evaluated and vetted the technical solutions and information provided.

As it happened they did not have or did not use their own technical experts, with the consequence that both execution and control was left in the hands of the Consultant.

The absence of clearly spelled out objectives and operational goals probably contributed to this deficiency in the organizational set-up.

## 5. THE ROLE OF THE INVOLVED PARTIES.

### 5.1 The role of NORAD

NORAD's role in the Boat Building Programme may be divided into 3 phases: preliminary studies, project planning and project execution and management.

#### Preliminary studies

Following the decision to terminate any further direct Norwegian participation in the Indo-Norwegian Project the Government of India, acting on a Norwegian initiative, in 1971 proposed a new fisheries project, which would utilize a major part of the country programme for 1971-1974. In contrast to the wide scope and direct fishery production orientation of INP, the new project was intended to strengthen the governmental activities in the fisheries field, by providing vessels and expertise to institutions of research and education.

The Evaluation Team is unable to determine whether this change in emphasis was due to a deliberate change in policy on NORAD's behalf, or if the change came about due to Indian preferences.

The Indian proposal included no supporting documentation of the User-organization's estimated vessel needs and their future requirements to be able to properly utilize the vessels.

Accordingly, NORAD sent an expert mission, the so-called Jørgensen Delegation, to India in 1972 to look into and evaluate the request from GOI.

This delegation represented wide experience from fisheries research and development in general and Indian conditions in particular.

It seems quite clear from the terms of reference, that NORAD at this stage considered the proposed project in a wide fisheries development perspective.

NORAD also seems to have been of the opinion that a number of the assumptions made by GOI with regard to the requirements, and possibilities for efficient use of the requested vessels, warranted



further scrutiny.

The report of the Jørgensen Delegation is quite thorough, although not exhaustive in a technical sense, and it is evident that the delegation also worked with the overriding assumption that development of commercial fisheries was the ultimate aim of the Norwegian assistance.

To the Evaluation Team, this report seems to be a most important basic document for the project, and in retrospect it would appear wiser if NORAD had paid more heed to its contents and recommendations.

There is, however, little evidence indicating that in fact the conclusions and recommendations of the Jørgensen delegation were utilized by NORAD as the basis for subsequent decisions. This is all the more remarkable, since the delegation was sent out on NORAD's own initiative, it consisted of very knowledgeable people, and it reached seemingly well founded conclusions that differed substantially from the Indian proposal.

At least one might have expected that further justifications to the GOI proposal would have been requested. No such request is on record, but during the Country Programme discussions in December 1972 agreement was reached about the establishment of a programme for the construction of a number of exploratory fishery vessels built in India with Norwegian assistance.

#### Project planning.

At this stage NORAD was asked by GOI to assist in planning and developing the Boat Building Programme, and for this purpose NORAD engaged Mr. Roar Ramde of NORMARITIM A/S to travel to India.

As referred in chapter 3.2, his terms of reference were sweepingly wide and it is unlikely that his task could ever have been carried out by any single person, and certainly not in the one to two weeks allotted for the work.

The Consultant came back from India with what amounted to "a shopping list" from the Indian Authorities, around which two types of combination vessels were to be designed, and his report was in essence a technical report. In spite of the fact that the terms of reference were not fulfilled, NORAD did not react and played a

rather passive role at this stage. There is thus no evidence that the outline specifications given by the users were questioned and judged against what must be assumed to be the overriding objective of the Norwegian assistance - development of the Indian fisheries.

We are now for the first time faced with a basic defect in NORAD's management of the Programme:

the lack of separation of the executive functions and those of control and evaluation.

NORMARITIM A/S went to India with the dual role of serving the interests of both the User-organizations and NORAD, everybody assuming erroneously that their objectives were identical.

Intentionally or not, at this stage a change in NORAD's concept of the Programme seems to have taken place, the emphasis being shifted from general development of deep sea fisheries to the more limited aims of:

- providing vessels to assigned User-organizations as per their requests.
- supplying know-how and equipment to selected shipyards.

Even though nowhere stated explicitly, the major emphasis was from now on providing assistance to the shipyards, i.e. it became a "Boat Building Programme" not a fisheries development programme in the wider sense.

NORAD engaged NORMARITIM A/S in April -75 to carry out a preliminary design study. The resulting two designs (100 and 110 feet) incorporated the Indian requirements for machinery, equipment and crew accomodation.

There is little evidence that the Indian requirements underwent further scrutiny from NORAD's side, as a matter of fact; when India requested both vessels to be of 110 feet this was accepted, and a decision was made to build two vessels of this size, one for training and one for survey work.

In the planning stage there seems to have been an ever stronger tendency towards an unquestioning accept of Indian requests and

proposals. The Consultant's role was limited to transforming the Indian requests into practical designs, while NORAD played a passive role.

NORAD's Advisory Panel on Fishery Matters did, however, deal with the proposal in August 1975. At this time only minor changes were suggested, but the economic consequences of the increase in vessel size were questioned.

It is regrettable that a competent advisory group was not established and attached to the Programme, to assist the NORAD administration in evaluating management procedures, design, construction drawings, progress report etc. during the Programme.

#### Execution of the programme.

The agreement between Norway and India of November 1975 was in some ways a vague document. What is quite evident, however, from the agreement, is that NORAD is charged with the responsibility for approval of the design and working drawings, approval of equipment to be selected, formulation of the terms of reference for the consultants and the technical experts they were to provide, and for approval of the construction schedule.

NORAD is clearly provided with the powers for exerting detailed control over the project, but these have been used very sparingly.

This might have been due to a deliberate "hands off" policy towards the Indian Authorities, but it is also most likely due to the fact that NORAD's general administrative set-up is not suited for project management.

Thus, it cannot be expected that the NORAD staff with general administrative training and background shall be able to exert the necessary control and evaluation functions in a technically complex project like the Boat Building Programme.

In spite of this, the administrative routines of the Programme were not arranged in such a way that competent people outside NORAD were provided with insight into the Programme, neither in a technical nor an administrative sense.

In the case of a normal shipbuilding contract, it is found prudent, if a design is supplied by the owner or his consultant, that the

design is whetted technically by the shipyard's design department, before a firm contract is entered into.

Similarly, if the design is provided by the yard, the owner and/or his technical representatives scrutinize the design technically, before signing the contract.

The owner's technical inspector furthermore approves design and detail drawings, approves of equipment and machinery selection, approves purchase orders, to ensure that the owner's best interests are taken care of.

Throughout the construction period, the owner's inspector(s) ensures that the vessel is built in accordance with approved drawings and specifications, resolves practical, unforeseen problems arising, on a day to day base, and reports periodically back to the owner.

Such a procedure furthers a continuous dialogue on technical matters, between technically competent people, with clearly defined objectives, obligations and loyalties.

No such safety device were built into the administrative system of the Boat Building Programme. The Team is of the opinion that in this programme where so many parties were involved, it was of utmost importance to have the obligations and rights of the various parties clearly defined.

The formal relations between the various parties were usually of bilateral nature, and the various agreements were not designed to cover the multilateral conflicts that arose during the programme. It is conceivable, therefore, that the consultant's position must have been particularly difficult.

The only instrument available for resolving problems arising out of the lack of clearly stated aims, responsibilities, rights and obligations, were the progress review meetings.

Such meetings are certainly necessary, but they are not very suitable for resolving technical problems or problems of planning and scheduling, and evidently cannot replace a proper management system.

This is for instance borne out by the difficulties that development between the resident technical expert and the Consultant. In this case NORAD seemed more intent on smoothing things over than to

resolve any underlying technical problems.

## 5.2. The role of GOI and the User Organizations.

The Boat Building Programme proposal was launched without:

- clearly defined objectives
- specified needs for survey and training vessels
- analysis of the users organizations' abilities to absorb and utilize the vessels
- detailed assessments of the needs for infrastructure and personal to operate and maintain the vessels

A well documented proposal may have assisted in evaluating the possibilities for an efficient execution of the project. Looking back, which is always easy, it appears that GOI was overambitious both with regard to the rate of progress of Indian fisheries development in general, and with regard to the abilities of the various agencies that were to be involved in the Programme.

It should be noted, however, that these points were clearly brought out in the Jørgensen report, without any subsequent response, neither from NORAD nor GOI.

It appears to the Evaluation Team that the ideas and requirements, conveyed to Mr. Ramde on his first visit to India in connection with this Programme, were probably representing the views of the central fisheries administration rather than those of key management and operating personell in the User-organizations. Consequently, the insight and competency possessed by the User-organizations were not fully utilized, and these organizations had only a modest influence on the formulation of the Programme, the design planning and construction processes. When the Programme started, GOI certainly had a need for larger survey and training vessels. However, no documents are available that relate the Boat Building Programme to the relevant five year plan, to the actual areas or resources to be surveyed, and to the number of people to be trained. There is no reference to the possible supply of similar vessels through other agencies, e.g. the vessels later supplied by the

Danes, the Dutch and the Japanese.

Although it might be considered an internal Indian matter, one might question the appropriateness and timeliness of the considerations given by the central authorities to the financial and budgetary impact the acquisition of these vessels would have on the User-organizations, and to their needs for strengthening management and maintenance facilities.

The "objectives" of such organizations are usually not identical to those of central governments. They are often engaged in "empirebuilding" and may have ambitions for growth that far exceeds their budgetary limits. In this case their objectives would most likely be to get the biggest and best equipped vessels possible, and then leave it to GOI to provide necessary funds for operating them in the future.

It is difficult to assess to what extent the User-organizations were restrained or participated in the "expansion" of the vessel procurement programme.

In the 1975 agreement between India and Norway, the two countries were made jointly responsible for the execution of the Programme, NORAD and the Ministries were to cooperate fully to ensure that the intentions of the Programme were properly fulfilled.

The Team is of the opinion that the main decisions governing the direction and destiny of the Programme were made by the Indian Authorities, and that NORAD in this respect did not participate actively.

This applies to:

- choice of users,
- use and purpose of individual vessels,
- size of vessels (through the selection of equipment, requirements to endurance, accommodation and crew size),
- selection of yard.

Due to the apparently passive role of NORAD, (and the Consultant) in scrutinizing and evaluating the proposals and subsequent decisions, and the lack of independent technical expertise or advice available to the Ministry, decisions were made without the benefit of a complete understanding of their technical and financial

implications.

Because of lack of expert knowledge the Department was harmstrung during the building process, with no competent inspector present, of a stature equal to that of Mr. Ramde and the technical people in the Yard, with authority to challenge the massive technical competency facing them across the table.

It is the opinion of the Team that no adequate facilities were set up to look after the interests of the owner and the User-organization, with a proper reporting and follow-up system.

The content of the contracts between the Yard and the Ministry is not known in detail to the Team, and we are therefore unable to comment further on this matter.

### 5.3 The role of the Consultant.

The task of a consultant is, as the term implies, to counsel, to give advise. Consultants are often used in project work when a person or firm ventures into a field where he has little knowledge himself.

The consultant may be employed to: provide knowhow, to survey a site, to collect background information, to provide design proposals, to plan a project, to evaluate project proposals and so on.

In the construction stage of a project the consultant may take on the role of the inspector, ensuring that the work is of adequate quality, and is carried out in accordance in agreed plans and specifications.

Some consultants also engage in execution of projects, managing contracts on behalf of owners or builders.

#### The consultant.

NORMARITIM A/S is a well reputed firm of consultants in the fields of Naval Architecture and Marine Engineering. The company has considerable experience in fishing vessel design and maintenance management, and has produced a substantial number of fishing vessel

designs for Norwegian and foreign owners.

The company was engaged in the design of the vessel SAMUDRADEVI for the Indo Norwegian project.

#### Preliminary work.

In August 1973, NORAD engaged the services of Mr. Roar Ramde of Normaritim A/S, to carry out the before mentioned assignment of assisting in determining the main specifications for the vessels to be constructed.

These terms of reference were extremely, even impossibly wide, but reflected NORAD's still prevailing view that the Boat Building Programme should be seen in an overall fisheries perspective.

He was

"on the basis of available reports and other information to investigate and evaluate the need for larger fishing vessels in India in the next five to ten years, with a view to assisting the Indian authorities in determining the main specifications of the types of vessels ... etc."

Mr. Ramde selfevidently could not tackle this overpowering task in the time allotted, and may in the first place be criticized for not pointing out to NORAD that these terms of reference could not be fulfilled.

His report of October 1973, is in no way dealing with the future needs of India for commercial fishing vessels, for which the proposed vessels were to serve as prototypes, and no mention is made of his omission to deal with this important point.

His report emphasized the importance of the technical aspects of the enterprise as a boat building project, thus moving away from the primary objective of fisheries development. NORAD did not react to his report in this respect, as previously mentioned. It is difficult to ascertain to what extent Mr. Ramde had tried to dissuade the Indian authorities from building too large and complex vessels, which would seem a logical thing to do, taking into account the available infrastructure and the technical abilities and standards of user organizations and shipyards. Such actions would have been in line with the Jørgensen Delegation's views, certainly known to Ramde at that time.



There is no evidence in the report that the assistance rendered to the Indian Authorities, comprised of anything but to establish what their wishes were, as far as the vessels are concerned. Reinforcing the impression that the Programme was losing its importance as an instrument of fisheries development is the fact that Mr. Ramde's report to a large extent is devoted to the questions of yard selection, yard capabilities and facilities, which was not specifically mentioned in this terms of reference.

The report, also dealt with the Indian requests in detail; they wanted 8 - 10 vessels for survey and training, with long endurance and accommodation for a large crew.

In December 1974 Normaritim A/S was engaged by NORAD to carry out preliminary design drawings for two types of vessels, and these were examined by a member of NORAD's Advisory Panel on Fishery Matters, leading to minor modifications.

There was, however, no evaluation of the vessels in relation to the overall objectives of the Programme and the proposals were at no stage scrutinized by independent naval architectural expertise.

Mr. Ramde participated in September 1975 as a technical expert in the negotiations with the Indian Authorities for the agreement on the Boat Building Programme.

At the same time discussions were conducted on the proposals for the first 2 vessels, and on equipment and materials to be supplied. Revised drawings were made and sent to the parties involved, and in November 1975 Mr. Ramde went to India to finalize the plans through discussions with the Yard and the User-organizations. At this stage no contract existed between the Yard (Mazagon Docks) and the Ministry of Agriculture and Cooperation, and one reason mentioned was the lack of a building specification. Already at this stage Mr. Ramde commented that the project was behind schedule.

The proposed terms of reference for Normaritim A/S were discussed and accepted by the Yard, and for the first time the important issue of the flow of technical information between the Yard and the Consultant was raised. Agreement was reached on the number of drawings to be supplied.

Consultant work during the construction period.

In December 1975 NORAD engaged Normaritim A/S to start work on construction drawings, building specification etc.

The formal contract between NORAD and the Consultant was signed much later, in September 1976, this may be reflecting the uncertainties of what role was intended for the Consultant.

At the time when NORAD had decided to go ahead with the project, the Board made the decision to "farm out the whole project" to a Norwegian firm, and an invitation to tender was set out to a number of Norwegian companies.

The Job description may be summed up like this:

- Work out detailed plans for a project to be approved by Indian and Norwegian authorities.
- Prepare design drawings for fishing vessels, working drawings for shipyard.
- Supply production manager and inspector to the yard.
- Plan and execute procurement of equipment and materials.
- Plan, coordinate and monitor the progress of the building programme.

The intentions implied in the Job description of keeping tight reign on the project were not adhered to. First of all, a proper project document was never prepared; of course not the consultant's fault.

Such a document, clarifying the objectives of the project, the basic philosophy in its broadest sense, its economic and social impact and consequences, the responsibilities of the parties involved, and the expected progress with important milestones defined, is an important tool for the guidance or management of a complex project.

While the Team recognizes the very great difficulties encountered with regard to organizations, bureaucracy, difficult communications slow transportation etc, it is of the opinion that the numerous delays in the progress of the Programme to a certain degree are due to the lack from the outset of a comprehensive, overall project schedule. In fact such a basic document never existed.

Nobody would expect that such plans could be adhered to without deviations, but the educational value of planning is well known, and would have created a sense of unity in the project, forcing people to seriously consider lack of progress.

What is ment here is not detailed planning in terms of delivery of equipment and drawings, but overall plans with time targets to which everybody was committed, including GOI and NORAD. In spite of these intentions the role subsequently specified for the Consultant, as laid down in his contract, was a far cry from that reflected in the Job Description mentioned above, and the role the Board of NORAD had in mind.

The duties of the Consultant as laid down in his contract and terms of reference may be summed up as follows:

- Carry out detailed drawings and necessary specifications, get the necessary approval from the classification society (DNV), and present the drawings to the yard.
- Assist the Yard with lists of machinery and equipment. and help with evaluation of bids and purchases.
- Be available for consultations regarding design problems, and provide expert services for rigging the vessels for fishing and processing on board.

It seem quite clear from the contract that the Consultant's responsibilities is to the shipyard. On the other hand, outside the specific tasks it is left to the shipyard to decide to what extent they wish to seek advice.

It is equally clear from the contract that the Cconsultant is not hired to carry out regular monitoring and inspection work. This important task should have been carried out by a technical expert representing the owners, and reporting to the users and NORAD.

It would probably have been a far better and more prudent arrangment, to have let the Consultant carry on the role from his first assignment in 1973, with responsibilites for advice to the User-organizations and the owners, inspection and follow up work, monitoring and reporting on the construction progress.

A separate consultant for the shipyard, solely responsible for

working drawings and transfer of knowhow, including production techniques and management would have separated the functions of execution and control and led to a far less complicated situation.

As it happened, neither NORAD nor the Ministry did have the proper facilities for exerting control with the project. Even though NORAD engaged the Consultant, his services were for the Yard, and his only contractual obligation to NORAD was to keep NORAD informed. If NORAD needed unbiased expert advice, in evaluating designs and equipment selected, such advice could not be expected forthcoming from Normaritim A/S.

NORAD never exercised its options to approve or disapprove of design and technical details. This is probably due to the lack of technical expertise within NORAD's staff, and failure to recognize the need for outside assistance, until the freeboard and stability problems emerged in 1980.

The communication between the shipyard and the Consultant took place at Progress Review meetings and through correspondence.

The resident technical expert provided by Normaritim, but hired by NORAD and working as a member of the shipyard's staff, had an independent role similar to that of the Consultant. His job description does not imply that he was to be a production manager or inspector. He was subordinate to the Yard management, and was to "advise and assist" the Yard with the construction work and, in particular, the installation of machinery and equipment.

The basic fault with the arrangement between Yard and advisors is the fact that it is up to the Yard to seek advice, and that means that the management of the Yard is to recognize when advice is needed. This seems not always to have been the case.

If a competent inspection service had been provided for the owners, the Team believes that the need for advice on matters like weight increases and stability had been made abundantly clear for the management of the Yard and that thereby many of the subsequent problems that emerged in 1980 would have been avoided.

#### 5.4 The role of the shipyard.

Goa Shipyard Ltd. was one of the two yards proposed by GOI for the Boat Building Programme, and the one selected when it was decided that all the boatbuilding activities were to be concentrated in one yard.

The shipyard, is, as the name implies, located in Goa, in the town of Vasco da Gama. It was a subsidiary of Mazagon Docks Ltd. of Bombay, belonging to the Ministry of Defence Production.

Goa Shipyard Ltd. was fairly well equipped and organized at the outset, although production pr. manhour was low, estimated to one tenth of European productivity for this type of a yard.

One of the objectives of the Boat Building Programme was to strengthen the base for indigenous fishing vessel construction. This was to be achieved, partly through transfer of knowhow through the Consultant and resident expert, and partly by supplying necessary equipment.

It is difficult to ascertain to what extent the shipyard drew on the services of the Consultant. It is most likely that the communication problem was a great hindrance to the much needed communication between the design and production personell found in a well established shipyard.

A large number of departures from the drawings provided by the Consultant had to be made, practical problems due to the nonavailability of parts, materials of specified dimensions and quality, and lack of space for pushing in the equipment where intended.

Such departures are not uncommon and happen in all prototype vessel construction. In this case the number of modifications seems to be excessive, leading to the conclusion that communication problems existed.

It is well known that producing working drawing for a country with a different industrial standard is difficult and these problems are compounded in a developing country. The Team realize that considerable effort was spent by Normaritim A/S to ensure that information on Indian standards was available in Norway, but nevertheless numerous difficulties arose because the Norwegian

draftsmen were not acquainted with Indian standards and the availability of different materials needed.

We find it relevant, therefore, to pose the following question:

Would it have been a more efficient method for transfer of knowhow, and more efficient for the Boat Building Programme as a whole, if the Consultant had established a design and drafting office at Goa, provided contract draftsmen and produced most of the working drawings at the shipyard?

We realize that the initial problems for drawing production might have been greater, and the communication with Norwegian suppliers and equipment makers might have been hampered.

However, it would have been easier to communicate with Indian suppliers and subcontractors, and communications with the production department and the technical expert advising on production procedures would have been greatly enhanced.

Such a procedure would also have helped to prevent the conflicts and animosity that developed between the various parties involved, paved the way for a smoother production process, specially for the installation and outfitting work.

Establishing a drafting/design office in GOA at an early stage would also have been conducive to the transfer of know-how and speeded up the competency of the Yard. This is supported by the success of placing one of Normaritime's piping draftsmen in India for a limited period of time in 1977.

The difficulties in communication probably accounts for much of the growing dissatisfaction with the Consultant's performance from the yard and the User-organizations.

Thus claims were made that proposals for various changes and modifications to the designs, presumed to be improvements, were never listened to or acted on by the Consultant.

As a result of this, the shipyard, assisted by the resident technical expert, instigated sweeping design-changes for hull no. 3 and the subsequent ones, received the approval of the owners, and started construction of 4 more vessels without seeking approval for the drawings.

This action led to a flurry of activities, with the Yard taking the lead and the Consultant playing a restraining role.

This action by the shipyard may be significant in the way that the Yard now felt it had acquired enough competence and confidence to venture out on its own.

It also reflects the reduced ambitions from the User-organizations when it comes to the number of tasks to be undertaken by each single ship.

The Programme has been beset with severe delays. This is partly due to lack of overall planning by the involved parties and commitments to such plans from all of them, which would have prevented such delays as those produced by GOI dragging its feet before signing the contract and providing funds.

It is also probably due to the inexperience in production planning for complex vessels on part of the shipyard, an issue where perhaps advice could have been given by the Consultant.

The labour problems were manifold, strikes and "go slow"-actions, lack of certified and skilled labour, and obstructions by unions in various ways.

A perennial cause for delays in India is difficulties in customs clearances and the extreme bureaucracy prevailing throughout.

During the course of the Programme the shipyard seems to have progressed steadily, with a dedicated management facing a manifold of problems, from the status as a subsidiary of Mazagon Docks until its present status as a fully integrated, selfsufficient shipyard.

## 6. ASSESSMENT OF PRESENT STATUS AND RESULTS OF THE PROGRAMME

### 6.1 Shipyard competency and facilities.

One of the Programme goals was to strengthen Indian shipyards to make India selfsufficient in the field of fishing vessel construction.

This objective was to be met by improving production facilities, and by providing know-how and training in fishing vessel design and construction at two selected Indian shipyards.

Later, a decision was made to concentrate all the programme effort in one yard, Goa Shipyard Ltd.

Looking back, this now seems to be a wise decision, as the original course could have diluted the effort and left India with two yards only partly competent for constructing modern fishing vessels.

As a result of this programme, Goa Shipyard Ltd. have substantially increased their ability to design and construct modern deep sea fishing vessels.

While the Yard still may need some assistance in conceptual design of fishing vessels, their staff is now capable of providing design and working drawings of modern fishing vessels.

While the productivity in terms of manhours pr. ton of steel still is far below European standards, a marked improvement has taken place.

From our short inspection of the vessels it appears that the workmanship is of a reasonable standard.

Judging from the extensive delays, it is reasonable to believe that the Yard's planning and coordination abilities need further strengthening.

The Yard also suffers from another serious handicap, they do not have dry-docking facilities for vessels of this size. To make the Yard fully self-sufficient as a fishing vessel yard, such facilities are necessary.



In order to preserve the newly acquired know-how and competency of the shipyard, it is imperative that fishing vessel construction continue. At present the Yard's future in this respect is uncertain. The fishing industry is not yet ready to place orders for commercial vessels at the shipyard. There are numerous reasons for this:

- uncertainties regarding the extent and composition of the deep-sea resources.
- uncertainties regarding the viability of deep-sea fishing.
- skepticism due to extensive delays in vessel construction at the shipyard and subsequent doubts regarding the Yard's ability to compete on prices and delivery time.

The fishing industry seems to need more time to make up its mind, watching closely the results of a number of chartered foreign vessels. To provide more time for decisionmaking, while maintaining the shipyard competency, additional vessels should be constructed at GSL with GOI and/or NORAD support.

These should be designed as commercial vessels, with due regard to the experience gained from the present programme.

The design should be carried out in India, in cooperation with the fishing industry, and the vessels should subsequently be chartered to commercial companies.

Such a procedure may strengthen the relations between yard and industry and provide vessels that might serve as models or proto-types for future commercial vessels.

It is the view of the evaluation team that the programme has to a large extent fulfilled its aims in the shipbuilding fields, and that the Consultant has done a good job in transferring design and construction know-how to the shipyard.

## 6.2 Assessment of vessels

### Design

Fishing vessels for developing countries should be made as simple,

robust and straight-forward as possible.

Since the vessels of the Boat Building Programme are also to serve as instruments of education and research, some concessions will have to be made, but in general we find the vessels too complex, too large and too expensive for the intended use.

This is partly due to over-ambitious user-organizations, wanting the latest and most sophisticated equipment and arrangements, without seriously judging the implications of their decisions on future operations, and partly due to the apparent lack of advice from the Consultant of such implications.

Bearing in mind that a substantial number of vessels were planned, it appears feasible to have had designed each vessel for one single or two closely related types of fishing, thus having reduced the complexity of machinery, gear-handling systems and arrangements for handling and storage of the catch.

It would also have reduced the problem of manning the vessels, as skippers and crew only would need to know one method of fishing. This would shorten the time needed for expert assistance when commissioning the vessels.

Problems of freeboard and stability and wishes of changed general arrangements later forced redesigns and modifications of all the vessels, leaving them largely with one major method of fishing. They still, however, retained much of the complexity and heavy equipment from the original designs.

While it may be justified to state that the Consultant allowed too small weight margins in his weight calculations, his original weight estimates seem reasonable and well within the range of current Norwegian practice.

It is unreasonable to expect the consultant to foresee the excessive use of heavy materials and oversize dimensions, and discrepancies in hull dimensions.

It is likely that a better organization of the Programme would have produced better designs, better construction supervision, and thus prevented most of the subsequent calamities.

Vessel 1 & 2 "Matsya Harini" & "Skipper I".

The two vessels are presently not meeting any of the objectives of the Programme except may be serving the purpose of technology transfer to the shipyard.

The reasons for this are:

- congested enginerooms make future maintenance extremely difficult;
- low freeboard in all operating conditions makes operation difficult even in moderate weather conditions;
- marginal or possibly insufficient stability limits efficient use of the vessels, skippers and crew are uneasy, due to slow motions and heavy rolling;
- in spite of the fact that the vessels are equipped with very powerful gearhandling equipment and heavy purse seines, no proper arrangements are made for handling bulk catches of pelagic fish.

Congested enginerooms.

Although it is quite common in Norway to design compact enginerooms, this is questionable practice under difficult conditions such as found in India.

Even compared to Norwegian practice, we find the enginerooms in hulls 1 and 2 extremely congested, it is indeed a remarkable feat of the shipyard to be able to "stuff" in all the equipment.

The result, inn all probability, will in future transform even minor maintenance tasks into major undertakings.

Serious maintenance problems are already developing. On our visit to "Skipper I" in November, we found several inaccessible valves in the sea water cooling system inoperable. Pipes in the system were already corroded through, in spite of the Consultant's claim that corrosion resistant materials were used ("Yocalbro").

The problems facing the operating and maintenance crews are formidable, and it seems inevitable that these vessels will be out of service for extended periods of time.

It is the opinion of the evaluation team, that substantial modifications should be made to make the machinery systems suitable for Indian conditions.

#### Lack of freebord.

Norwegian purse seiners of similar size may be allowed to sail with zero freeboard in loaded condition, and the shipyard and the Consultant are using this fact to justify the low freeboard in "Matsya Harini" and "Skipper I".

Norwegian vessels of this size, however, have a vastly greater load capacity, leaving them with substantial freeboards and dry decks during most of their time at sea.

Time spent with small freeboards in loaded condition is usually very limited. Whenever this is done, it is with due regard to the weather, and the vessel returns to port immediately. "Matsya Harini" and "Skipper I" can carry very small loads for their size, therefore, the differences in freeboard between "leaving port" and "loaded" conditions are quite small.

Whereas the freeboard in "loaded" conditions may be acceptable compared to modern Norwegian seiners of similar size, the "leaving port" freeboard is not.

The working deck of a "normal" purse seiner would be dry in moderate weather and most operating conditions, while the decks of "Matsya Harini" and "Skipper I" are continuously awash while at sea, rendering purse seining operations difficult even under favourable working conditions.

#### Stability.

An examination of the stability information of hulls 1 & 2, reveals marginal stability, just meeting the requirements of IMCO and the Indian MMD. The safety aspects could therefore be considered in order.

However, these vessels are equipped with very powerful winches and powerblocks for their size, able to introduce substantial heeling

moments on the vessel. In addition there is always the chance of such a vessel making large catches of fish in one set, and such a catch of say dead mackerel is also a potential hazard.

We also find it prudent to question the stability information provided. The Indian skippers and the Norwegian purse seine expert have voiced doubts about the stability and seaworthiness of the vessels. Although the Team's trip on the "Skipper I" was conducted in calm weather, we also have some doubts.

There exist certain relations between the rolling period of a vessel and the initial stability. The rolling period is occasionally used as the basis for rough estimates of a vessels stability.

One of the skippers we interviewed indicated that the rolling period at sea for the "Skipper I" (hull 2) were about 12 seconds. We considered this excessive, and therefore conducted rolling tests on the "Matsya Harini" at Goa Shipyard, finding a rolling period of about 12,5 seconds.

Stability estimates based on this rolling period was carried out, using two different approximation methods.

A comparison with the shipyards stability calculations for the same operating condition revealed discrepancies large enough to warrant further investigations.

A thorough independent investigation should therefore be carried out to check the existing stability information, which, if affirmative, may stop further doubts and discussions among skippers and crews about the safety and sea-keeping abilities of these vessels.

#### Fish-handling and storage

Although the vessels are supposed to store the fish iced in boxes, no boxes were supplied with the vessels, and no other arrangements provided for handling ice and bulk catches of pelagic fish. This in effect prevents the vessel's use as purse seiners.

We question the decision to store fish from purse seine operations in boxes. Even though the hold capacity is extremely limited, and an efficient system for handling fish and ice could be devised, the time required to ice and box a full load of fish might be excessive.

Experience from tropical waters shows that fish such as mackerel must be chilled within a very short time, to prevent spoilage. This does not seem possible with the arrangement on these two vessels.

Investigations should be made to establish the feasibility of introducing different methods for catch cooling and storage, such as RSW or CSW systems, allowing bulk handling of the catch.

### 6.3 Present status regarding utilization of the vessels.

Only two of the vessels have so far been completed and commissioned, the EFP's "Matsya Harini" and the CIFNET's "Skipper I".

Both of these had to undergo time-consuming modifications before starting operations. In the case of "Matsya Harini" the resulting lay-ups had the effect that when the vessel was finally ready to operate the contract time of the Norwegian skipper and engineer had expired. The vessel could therefore not start purse seine operations until August 1981, - 17 months after commissioning. In the meantime the vessel was rigged for tuna longlining, but for various, partly technical reasons, the number of days in operation at sea was by March 1981 only 15. Subsequently, disputes with the crew developed about working hours and sea-service during week-ends without compensation or extra remuneration.

Similar labour problems were also experienced by CIFNET when they started to operate the "Skipper I", also as a tuna long liner.

Purse seine operations with the "Matsya Harini" were quickly terminated in August 1981 when a mishap causing the death of 3 casual labourers occurred onboard. The vessel was subsequently transferred to GOA shipyard where it has since remained.

While the limited operation of these two vessels so far can not form the basis of any valid assessment of the results or performance of the Programme, it does give insight into how the User-organizations are provided with personell, infrastructure and organizational set-up required for utilizing and maintaining such vessels.

EFP with its 12 bases and headquarters in Bombay has long experience in operating medium sized vessels. The organization has, however, not yet developed the required personell, both with regard to

capacity and competency, to make full and efficient use of the 7 large vessels recently aquired. The necessary infrastructure and organizational set-up for timely and efficient servicing and maintenance of large vessels is similarly not adequate.

The shortcomings with regard to personell are partly a matter of inadequate training and experience in operating the new large vessels, and of general understaffing at the bases.

In certain types of fishing, e.g. purse seining, expert assistance from abroad is required to operate the vessels in a transition period until some of EFP's skippers are suitably trained.

The capacity, diversity and range of operation of the large vessels also put entirely different requirements than before to operational planning, data aquisition and subsequent analysis. The Project needs immediate assistance to develop an efficient operational system for these purposes, and in the future possibly also for periodic updating.

EFP's present system and facilities for servicing and maintaining the vessels, originally developed for the medium sized boats, are clearly inadequate for the greatly increased demands of the present fleet. Accordingly, the Project has requested NORAD assistance for designing and organizing a better vessel maintenance system. The Team fully support this request and further recommends that a central maintenance base for all GOI fisheries vessels should be established at Cochin.

CIFNET is reasonably well staffed to operate their vessels for the institutional training and demonstration requirements, with the exception of purse seining, for which a period of expert assistance is required. The institute is poorly equipped for servicing and maintenance of their vessels and is to some degree utilizing the resources of sister organizations (e.g. IFP).

CIFE has no previous experience in operation and maintenance of a vessel of the class and kind the institute is now getting, and it is not staffed or equipped for this task. Accordingly, the institute has requested NORAD personell assistance (skipper and engineer) for the first 1-2 years' operation and is also contemplating to sub-contract the running of the vessel to another agency.

All three organizations are thus suffering from inadequate infrastructure. This is particularly so with regard to berthing and

docking facilities. Presently drydocking facilities for the large vessels exist only at Calcutta, Visakapatnam, Madras, Cochin and Bombay. These are, however, mainly commercial drydocks, catering for the merchant fleet. They are very expensive and may not be readily available when mostly needed, certainly not for emergency repairs.

With drafts of 3.25 to 4.5 m the large vessels can presently be serviced from a jetty only at two or three places on each coasts of India and at Port Blair (A & N Islands). The available facilities for unloading and disposal of fish are presently not designed for the quantities and forms of fish to be expected from deep sea fishing, and, particularly, when unloading has to be carried out from the vessels at anchor midstream, vessel servicing becomes very cumbersome and time consuming.

These problems will diminish as and when the planned fishing harbours are constructed (chapter 2.1, Appendix III), but in the meantime they are hampering efficient operation of the exploratory vessels and limiting the options for commercial deep sea fishing.

EFP has planned an exploratory fishing programme covering the entire Indian Exclusive Economic Zone (EEZ) beyond 40 m depth. The implementation of this programme will require efficient, full time operation of 7 large vessels. To provide information needed by the industry to venture into deep sea operations it will, however, also be necessary to conduct extensive commercial type test fishing and demonstration in promising fishing areas and/or seasons detected through the exploratory work.

With the additional 3 vessels to be delivered from Goa Shipyard Ltd., EFP will have ample vessel capacity also for the commercial type operations. To be fully realistic these should be conducted by a commercial fishing company and the required vessels should therefore be chartered to such companies as and when required.

In addition to providing practical instructions and demonstrations at sea in connection with the institutional training of fishing hands and engineers CIFNET is presently also operating their vessels to provide in-vessel training required by their candidates to obtain MMD certificates of competency. While this might presently be necessary, the projected increased fleet of larger vessels will in future be able to provide most of the required sea-time experience, - which is normal practice in most other fishing nations.



Two of CIFNET's vessels are 15 years old and ripe for decommissioning. The remaining fleet of 4 large vessels will be very adequate for their needs when the burden of in-vessel training is gradually diminished. The fleet can provide training and demonstration of all relevant methods of fishing. The "Skipper I", being their only purse seiner, will in this context fill a particular need of the Institute.

The requirements of CIFE for deep sea vessel time has in the past been very limited. Their graduates have mainly been fishing officers who do not require in depth practical knowledge and experience of fishing operations, and the research conducted at the institute has largely been related to freshwater problems and aquaculture.

CIFE is now proposing that the institute is to be expanded and developed into an Apex Organization at national level for fisheries education in India. As such the vessel requirements for instruction and research are expected to greatly increase in future.

Current plans for utilization of the vessel are, however, very vague and are unlikely to provide full time occupation of the vessel.

## 7. CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Aims and objectives.

While the Boat Building Programme has in general been assumed established for the purpose of contributing towards the development of the Indian deep sea fishery, the aims and objectives of the Programme have not been clearly spelt out in any document, not even in the agreement between India and Norway, signed in November 1975.

Accordingly, some confusion and ambiguity have existed with regard to priorities, and over the years changes in emphasis have developed.

Based on available documents and on interviews with people concerned, the Team has established that the Programme's contributions towards the overall objective fall within four different, but partly interrelated fields which may be specified as follows:

- 1) strengthening the capability and capacity of deep sea fishery resources explorations and subsequent demonstrations of suitable harvesting technology, by providing relevant GOI institutions with a number of exploratory fishing vessels, designed and equipped for efficient operations;
- 2) improving and strengthening the capacity for seagoing training of officers to man the future fleet of larger fishing vessels;
- 3) strengthening the indigenous basis for constructing complex, modern fishing vessels by assisting the development of technical know-how in an Indian boat-building yard, and by supplementing the yard with equipment and machinery required;
- 4) developing vessels which may serve as prototypes for future commercial deep-sea fishing vessels.

## 7.2 Programme planning, execution and control.

The absence of clearly spelled out objectives and priorities has hampered Programme planning, and given rise to some confusion and controversions in the execution of the Programme. Similarly, the organizational set up for Programme execution did not include adequate measures for routine control and impartial, competent evaluation of Programme progress and performance. In particular, the owners did not have the benefit of independant technical competency to scrutinize vessel designs and specifications, and the subsequent modifications thereof.

On the NORAD side qualified assessments of the Consultant's technical performance were not instigated, and as a consequence, both execution and control in this respect were left in the hands of the Consultant.

In general, the Team is of the opinion that many problems which the Programme has encountered could have been reduced or avoided, if more concern had been paid in the preparatory stages to clarify the objectives and priorities of the Programme and the organizational set up, especially with respect to execution and control.

## 7.3 Vessel design.

The Team is convinced that the first two vessels constructed never will meet any of the objectives, unless substantial modifications are carried out. The causes for this are:

- congested engineroom,
- lack of freeboard with moderate catches makes operation difficult even in normal weather conditions,
- inadequate stability,
- no facilities for bulk handling of pelagic fish.

The remaining 4 vessels presently under construction will probably be quite suitable as exploratory and training vessels, although modifications may well be needed in the future, when experience has been gained with the present catch-handling arrangement.

The objective to serve as prototypes for Indias future deep-sea vessels, will not be met by the vessels built under this programme.

We find them:

- too complex,
- too expensive,
- improperly laid out for Indian conditions,
- possibly too large.

Experience with commercial vessels over the last few years has shown that within a length of 25 metres it is possible to provide vessels with the sea-worthiness, power, accommodation and endurance required for carrying out deep sea fishing operations in Indian waters on a year-round schedule.

Above this size, the dimensions and outfit of fishing vessels should be determined from economic considerations only.

#### 7.4 Vessel construction

While Goa Shipyard may still need some assistance in conceptual design of fishing vessels, they are now capable of providing design and working drawings of modern fishing vessels, and to construct and fit out such vessels in a satisfactory manner. Therefore, the objectives have in this respect largely been met. However, the Yard still need to improve their planning and coordination abilities, and they suffer from the serious handicap of not having facilities for drydocking vessels of this size.

To preserve the know-how and competency of the Yard, building of fishing vessels should continue.

The fishing industry is not yet prepared to place orders for commercial vessels at the shipyard. This is due to uncertainties regarding the viability of deep-sea fishing and the excessive delivery period for new vessels at the Goa Shipyard. The industry seems also to doubt the competitiveness of the shipyard.

To provide more time for the industry's decisionmaking process, while maintaining the Yard's know-how, more vessels should be constructed, and for this GOI and/or NORAD support seems to be required. Any further vessels should be designed for commercial operations only, with due regard to the experience gained from the Boat Building Programme, and in cooperation with the fishing industry.

### 7.5 Vessel modification

As stated previously, the first two vessels must be substantially altered to meet Programme objectives.

The vessels might be lengthened, providing more space in the engineroom for an improved machinery and piping arrangement. This would also improve free-board and stability. To be able to function as purse seiners, a suitable catch-handling system need to be constructed to allow proper handling and storage of the catch.

It is necessary, therefore, that an expert team visit Goa as soon as possible to:

- 1) Investigate the stability of the two vessels.
- 2) Look into the feasibility of lengthening the vessels and improving the catch handling systems.
- 3) Recommend alterations that would facilitate maintenance.
- 4) Provide specifications and drawings for such an undertaking.
- 5) Assist NORAD in preparing a tender document and call for tender, and advise NORAD on the best yard for carrying out the modifications.

The group should include people experienced in lengthening and conversion work, stability experts and experts on refrigeration and bulk fish handling.

### 7.6 Vessel utilization, needs and objectives

#### EFP

EFP requires vessels capable of exploring all fishery resources within India's extended economic zone (EEZ), and for carrying out experimental and demonstration fishing. The organization's vessels are also providing in-vessel training to candidates having completed their institutional training at CIFNET. When the project takes delivery of the 3 vessels presently under construction at GOA it will in total have 10 large vessels providing facilities for all types of trawling, for purse seining, long lining and squid jigging.

In addition EFP is operating 21 medium-sized stern trawlers and the total fleet will be quite adequate for the organization's planned exploratory programme. The capacity would also suffice to provide vessels for testing and demonstrating commercial potentials in promising fishing locations and/or seasons. However, the Project will need substantial strengthening of infrastructure facilities as well as increasing and updating of personnel for efficient operation, servicing and maintenance of the fleet.

### CIFNET

CIFNET requires vessels for practical instruction and demonstrations at sea during the institutional part of their courses for fishing hands and engineers. With the recent addition of the CIFNET establishment in Visakhapatnam a minimum of 3 large vessels is required for this purpose.

The CIFNET vessels also provide statutory in-vessel training for the institution's graduates. When in future the commercial fleet of larger vessels expands, the main in-vessel training might gradually be shifted over to the commercial fleet, as is normal in most fishing nations.

CIFNET is presently very adequately equipped with vessels, but two of these are 15 years old and are ripe for decommissioning. "Skipper I", the vessel provided by the Boat Building Programme, is filling a particular need, being the only CIFNET vessel designed for purse seine operation.

CIFNET is also lacking infrastructure facilities for efficient vessel operation and maintenance, as well as qualified personnel for certain types of fishing.

### CIFE

CIFE is planning to use their new, large vessel for training and demonstrations and for various research activities. It appears, however, that the Institute has so far not drawn up any outline programme for full time operation of the vessel. Although the Institute is aiming at greatly expanded operations, it seems unlikely that CIFE's current and near-foreseeable seatime requirements will provide round-the-year utilization of the vessel.

CIFE is also quite inadequately staffed and equipped for operating such a vessel and is therefore suggesting to subcontract its running and maintenance to another agency.

All three GOI institutions receiving vessels under the Boat Building Programme have requested technical assistance from NORAD (skippers and engineers) for initial operation of the vessels. The Team fully endorse these requests and stresses the importance of proper timing of recruitment and adequate duration of the assignments to facilitate maximum counterpart training.

EFP is also in need of expert assistance to develop an efficient system for operational planning, data acquisition and analysis. This might well be arranged as a joint effort on a recurrent basis between EFP and a relevant Norwegian institution.

Efficient and timely operation of GOI vessels is presently much hampered because of disputes with the crew about working time and sea service remuneration/compensation. Experience from elsewhere shows that without some form of incentive scheme for sea-going this is a general problem. It is therefore strongly recommended that a system of incentive for sea-going operations of the vessels is introduced.

### 7.7 Maintenance

The number of modern, complex fishing vessels operated by various Government agencies, will soon reach a total of 15.

At present few maintenance facilities are available. Drydocking facilities exist at Calcutta, Vizag, Madras, Cochin and Bombay. Most of these are commercial drydocks which may not be readily available, certainly not for emergency repairs.

It is realized that local repair and maintenance workshops are needed at the various operational bases on both coasts. To provide complete sparepart and expert backing at all bases does not seem feasible. A central maintenance base for all vessels concerned may therefore be developed as an independent organization. This base would have the necessary equipment for sophisticated machinery and instrument repair and maintenance, drydocking facilities, and a number of experts in the fields of Diesel engines, electrics,

electronics, refrigeration and hydraulics. Further, deep water piers, storage and repair facilities for fishing gear and nets.

The base would also provide advise on planning, supervision and execution of preventive maintenance at the sub-bases, provide expert personell for "flying squads" for emergency trouble-shooting and repairs, and provide specialist training for the maintenance crews at the sub-bases and for seagoing engineers.

It would have adequate facilities and personel for procurement, storage and management of replacement and spare parts.

Drydocking would be provided if local drydocking were not available for major repairs and for periodic surveys required by classification societies.

The base should be located in an already established industrial area, with a reasonable technological basis, adequate transport and communication facilities, and where trained personell is available.

In our opinion only two alternatives are available - Goa and Cochin.

#### GOA

Goa Shipyard has an intimate knowledge of the vessels constructed there and trained workers are available.

However, to our knowledge the yard possesses no experts in the maintenance of vessels in the fields of electronics, electrics, hydraulics and refrigeration. They lack experience in the administration of maintenance and sparepart stock-keeping, and an intimate knowledge of fishing operations. There is no expertise in fishing gear storage and no facilities for storing such gear. No facilities exist for drydocking of the vessels, although such installations are planned.

Goa Shipyard has no firsthand knowledge of the reminder of the larger GOI vessels.



## COCHIN

At Cochin the IFP has a well equipped workshop and considerable experience in vessel maintenance, a number of skilled workers in various disciplines, experience and facilities for spare part storage and management, net repair and storage facilities, and knowledge of fishing vessel operations. They do not, however, possess experience in maintenance of complex vessels, heavy steelwork etc. There is also a lack of deep water piers and adequate slipways for this size of vessels. Space is, however, available on an adjacent lot, for further expansion of workshops, slipways and piers. Preliminary plans and funds for such expansion are available.

It is therefore quite feasible with the existing facilities at IFP as a nucleus, to establish an independent integrated maintenance base at Cochin.

The team recommends that a study is carried out to survey the site at Cochin and that plans for slipways and workshops are completed as soon as possible.

A specialist firm in the vessel maintenance field should be engaged to work out maintenance programme and procedures for all 15 vessels, to plan training, to assist in planning the maintenance facilities and to implement the maintenance and spare part management routines.

It is imperative, in order to get full use of the vessels, that this work is undertaken immediately.



TERMS OF REFERENCE

for the evaluation of the Boat Building Programme - IND 010 - under the Indo-Norwegian Development Cooperation.

I Background

The agreement between India and Norway on the Boat Building Programme was signed in November 1975. The aim of the Programme was to construct a series of large fishing vessels and deliver modern exploratory fishing vessels for resource investigations and for trials of gear and catch-methods. A further objective was to investigate the possibility of having the boats used as models for the future expansion of the Indian deep-water fishing fleet.

According to the agreement Norway through NORAD finance i.a. equipment produced outside India, and provide technical assistance. India shall finance Indian-produced equipment and cover all other cost incurred with the building of the Boats at Goa Shipyard which was the only yard of the two yards originally selected, who came to be involved in the construction programme.

In 1976 NORAD in agreement with the Indian authorities went into a contract with the consultant A/S Normaritim. The consultants assignment is to design the boats including specification of all equipment, assisting the shipyard during the construction and give needed technical assistance on request.

Under the present agreement with additions, provisions are made for the construction of 6 vessels, of which two are completed and have been taken over by the Government of India as represented by Exploratory Fisheries Project and CIFNET,

where as the remaining four vessels are still under equipping and/or construction.

In the Agreed Minutes from the Economic Cooperation Consultations between India and Norway in New Delhi dated October 31st 1980, it is stated that a joint review and evaluation of the Programme shall be carried out during the second half of 1981.

## II Participants, mode of work

To carry out the evaluation NORAD has appointed the following delegation:

Mr. Steinar Olsen, Director of Research, Fishing Gear and Methods Division, Institute of Fishery Technology Research (Head of delegation)

Mr. Anders Endal, Director of Research, Vessel and Marine Engineering Division, Institute of Fishery Technology Research.

Mr. Magne Bjørnerem, Director of Fisheries, Hordaland county.

The Government of India through the Ministry of Agriculture has appointed:

Assistant Commissioner (Foreign Aid) S.K. Das, Fisheries Division, Ministry of Agriculture, New Delhi.

The evaluation will take place from 11th to 24th November 1981. The team will work in close cooperation with the relevant Indian Authorities and NORAD's Resident Representative, New Delhi.

The work of the team will include interviews with the Programme staff, such as shipyards personell and representatives of the user-institutions.

### III Tasks of the evaluation team

#### 1. General Frame of the Assignment

The main objective within this sector of the Indo-Norwegian Cooperation is to contribute towards the development of fisheries in India.

The main thrust of the evaluation shall be directed towards the various aspects of future utilization of the boats.

The Programme should be looked into in a fishery-political and fishery-economic perspective, bearing in mind the Government policy for development of the fishery sector, the available information on fish resources, and the existing situation and future plans for development of the commercial fishing fleet.

#### 2. Technical solutions/aspects regarding boats and equipment

- 2.1 The team shall assess to what extent technical solutions regarding design and size of the boats, fishing gear and technical equipment, are in accordance with the objectives of the Programme and adapted to the needs of the Indian fishing industry.
- 2.2 The team shall assess to what extent slip-setting, repair and harbour facilities are available and may be utilized to cater for:
  - a) repair and maintenance of boats, gear and technical equipment
  - b) landing of catches
  - c) purchase of necessary goods

### 3. Utilization of Programme results

The evaluation team shall:

- 3.1 Comment on the technical assistance provided and how this has met the national objective of strengthening the indigenous basis for constructing modern fishing vessels.
- 3.2 Assess the potential of the user-organizations and their plans for utilization of the vessels in terms of
  - training
  - exploratory fishing and other research activities
  - staffing
  - maintenance and repair
- 3.3 Assess how the results from the research and training activities to be carried out with the vessels may be applicable to the Indian fisheries and the fish processing industry.
- 3.4 Assess if and how the exploratory fisheries vessels may serve as possible models for commercial fishing vessels, this seen both from a technical and economical point of view.

### Recommendations

On the basis of the above review and evaluation the team may submit recommendations as to possible steps to be taken in order to secure the optimal use of the vessels.

### IV Reporting

A preliminary report, containing main conclusions, shall be worked out before the Norwegian team members leave India. A final report is to be submitted to NORAD within February 1st 1982.

Oslo, October 15th 1981.

  
Nils Vogt  
Deputy Director General

## APPENDIX II

### People met

#### Cochin

Mr. Sathiarajan, Director, Integrated Fisheries Project  
Mr. M. Swaminath, Director, CIFNET  
Mr. P. Sulochanan, Deputy Director, Exploratory Fisheries Project, Cochin  
Mr. R. Rajendran, Officer on Charge of Vessel "Skipper I", CIFNET  
Mr. V.A. Puthran, Chief Instructor (S&N), CIFNET  
Mr. M.T. Joseph, Chief Engineer, "Matsya Harini", EFP  
Mr. A.M. Goorha, Executive Engineer, EFP  
Mr. H. Padmakar, "Skipper I", CIFNET  
Mr. C. Ramasamy, Chief Engineer, "Skipper I", CIFNET  
Mr. P. Sadanandan, Ex-skipper "Skipper I".

#### Goa

Capt. P.S. Chanhan, Director General, Goa Shipyard Ltd.  
Capt. S.K. Kanur, Design Manager, Goa Shipyard Ltd.  
Mr. M.A.K. Tayab, Joint Secretary, Fisheries, Ministry of Agriculture and Cooperation, New Delhi  
Mr. R. Ramde, Naval Architect and Consultant, NORMARITIM A/S, Horten, Norway.

#### Bombay

Mr. K.M. Joseph, Director, Exploratory Fisheries Project, Bombay  
Mr. T.E. Sivaprakasam, Joint Director, EFP, Bombay  
Mr. K.N.V. Nair, Senior Technical Asst. EFP, Bombay  
Mr. C.C. George, Superintendent, EFP, Bombay  
Dr. S.N. Dwivedi, Director, Central Institute of Fisheries Education, Bombay  
Dr. Y. Shrikrishna, Professor, CIFE, Bombay  
Mr. N.P. Singh, President, Indian Fisheries Association, Bombay

If someone forgotten, it is not by ill will.





## APPENDIX III

### PROGRAMME AND RESULTS RELATED TO NATIONAL OBJECTIVES ON THE DEVELOPMENT OF THE INDIAN FISHING INDUSTRY.\*

India has a coast line of 6100 KM, and a continental shelf of 0,61 million sq.KM and an Exclusive Economic zone of 2.02 million sq.KM, the latter being almost two-thirds of the land surface of the country. The present marine fish production is approximately 1.5 million tonnes per annum as against a potential of 4.5 million tonnes from the Exclusive Economic Zone. Over the last 30 years, as many as 16, 853 mechanised boats have been introduced and according to a survey, 62.16% of the 1978 marine fish production of 1.4 million tonnes was contributed by the unmechanised sector, while the mechanised sector contributed 37%, of which the contribution of the deep sea fishing was less than 1%. India has a fishing population of 1.4 million persons in the marine sector.

So far as deep sea fishing is concerned, there are about 57 deep sea fishing vessels on an ownership basis operating in India. Moreover, letter of intent has been issued recently for the charter of 23 vessels. The total number of deep sea vessels now in operation in Indian waters will be about 57. This is an extremely low figure, considering the 2.02 million sq. KM of EEZ available for exploitation. Moreover, almost all the vessels are fishing for shrimp only, located fairly close to the shore. The lack of investment in real deep sea fishing for varieties other than shrimp is due to a number of reasons. However, Government of India have a number of projects/schemes for development of deep sea fishing and to help the industry to grow. The role of Government Departments for development of Indian fishing industry is indicated below:

1. Ministry of Agriculture & Cooperation.
- 1.1 Exploratory Fisheries Project, (EFP), Bombay.

EFP carries out systematic exploratory survey of the fishery resources of Indian seas, with the objective of determining the qualitative and quantitative aspects, the best fishing seasons, the best crafts and gears suited for different types of fishing, training of personnel to qualify as fishing masters and engineers, and providing basic information required for development of deep sea

\* Prepared by Fisheries Division, Ministry of Agriculture and Cooperation.

fishing industry. The project started functioning with the establishment of Deep Sea Fishing Station, now renamed as Exploratory Fisheries Project, Bombay, by Government of India in 1946. During the last 3 decades the project has explored an area of 0.2 million sq.KM which nearly covers the continental shelf up to 40 metre depth with rather inadequate fleet of small and medium sized vessels. During the period, the project has progressively developed over the plan periods into a present structure consisting of 10 operational bases all along the east and west coast of India. With the declaration of Exclusive Economic Zone (EEZ) by the Government of India in 1977, programmes were drawn up for the acquisition of larger vessels for the survey of the demersal and pelagic resources of EEZ with a view to provide information to the fishing industry for commercial exploitation. As a result, the project has acquired six large vessels under Danish, Dutch, Japanese and Norwegian aid programmes. Three more vessels under Norwegian aid programme are being constructed by Goa Shipyard and will be added to the fleet in 1982.

The pioneering work done by the project, has benefited the Indian fishing industry in various ways. The main contributions of the project to the industry are as follows:

- 1) The important industrial fishing methods of bottom trawling which was nearly unknown to the country was introduced by the project in the 1950-ies. The introduction of bottom trawling paved the way for successful growth of shrimp industry in the country.
- 2) The project located extensive shrimp ground off Orissa and in sand head area, which is considered a break-through in location of unexploited shrimp resources.
- 3) In order to establish the feasibility of operating large sized factory trawlers in Indian waters and to step up national capability in fishing technology, government of India conducted an industrial survey with a chartered Polish vessel, M.T. Murena (69 metre OAL, 1005 G.R.T. and 1620 BHP) for a period of one year in 1977. The information thus collected was released in a series of six reports to the industry.
- 4) Since the introduction of larger vessels in 1977, the information of fishery resources in EEZ has been made available to the project through various publications.
- 5) The project through the operation of vessels, functions as the

main agency for imparting "in-vessel" training and has made the major contribution to building up a sizeable technical man-power such as skippers, fishing second-hands, engine drivers and engineers in the country for manning modern vessels owned by the industry.

- 6) The scientific data collected by the project are processed by the Extension Wing and are disseminated to the industry in the form of various bulletins, technical reports, newsletters and scientific papers.
- 7) The experience gained by the project in the management of fishing fleet over the years has benefited our fishing industry immensely. The management personell and fishing technocrats who gained their experience through this organization are manning a number of public sector and private sector undertakings.

With the acquisition of three more vessels under Norwegian aided Boat Building Programme and vessels acquired from other sources, the project would be in a position to accomplish the task of providing data on fishery resources in the EEZ to the entrepreneurs for investment. The amount allocated for the project in the Sixth Five Years Plan (1980-1985) is Rs. 480 millions.

#### 1.2 Central Institute of Fisheries Nautical and Engineering Training (CIFNET), Cochin - training of man-power.

The Institute under Ministry of Agriculture conducts training course for fishing second hands, engine drivers, boat building foremen, shore mechanics, gear technicians, radio telephone operator's and teacher's training. The training courses involve mainly institutional instructions except in case of fishing second hand and engine driver course which are required to be followed up by requisite qualifying sea/workshop experience to meet the requirement of the Mercantile Marine Department so as to enable them to appear for the respective competency certificate examinations. The necessary facilities for post-institutional training are arranged by the Institute either in the vessels owned by them or vessels owned by sister organisation, EFP. The Institute with the headquarters at Cochin has two more units located at Madras and Visakhapatnam.

The contribution of this Institute for development of fishing industry is remarkable. Numbers of personnel trained in this

Institute since its inception in various disciplines is given in Appendix I. The majority of certificated personnel employed in the Indian fishing industry (both deck side and engine side) in the public and private sector have availed of the training facilities at the Institute. In order to cater to the increasing need of the industry in the context of introduction of commercial vessels, the Institute have introduced integrated training programme synchronizing the institutional and post-institutional training. An amount of Rs. 70 millions has been allocated for the Project in Sixth Plan.

### 1.3 Integrated Fisheries Project, Cochin.

Integrated Fisheries project (Erstwhile Indo-Norwegian Project) have objectives to demonstrate successfully fishing methods, simulating diversified commercial fishing, fish processing, introduction and popularisation of diversified fishing products for urban and rural market and to study consumer reaction to the newly introduced produces and to create an awareness on the part of the processors and consumers to utilize unconventional fishes. The works done by the Project have catalytic effect on the growth of Indian fishing industry. The main contribution of the project for the benefit of Indian fishing industry are as follows:

- 1) Location of rich fishing ground and new potential resources like deep sea fishing lobsters, prawns, rockcods, pink perch, crabs and squids etc. as a result of extensive exploratory and experimental fishing operations.
- 2) Development of different types of fishing gear like trawls, purse-seines, handlines and traps for different types of vessels.
- 3) Introduce diversified fishing techniques like single and two-boat midwater trawling, purse-seining, hand-lining, light attracted purse-seining and trap fishing.
- 4) Conduct practical workshop in the States to help the fishermen to take up the diversified fishing methods.
- 5) Imparted training to deck and engine side apprentices of fishing vessels, service mechanics, master fishermen in purse-seining, fishing boats designers, refrigeration technicians and processing technicians.

- 6) Development of methodologies in fish handling, freezing, canning and drying, some of which have already been adopted by the industry.

During the Sixth Five Year Plan, the activities of the project will be extended to various maritime States which are still to get benefit from the Project. The Project aims at conducting various experimental fishing methods for demonstration to the industry. The Project will organize a consultancy cell for assisting and advising entrepreneurs for establishing fishing industry and will undertake pre-investment studies, planning of projects, preparation of project reports in marine fish processing, fish marketing etc. Project intends also to opening design and development cell for fishing operation, fish processing and handling with indigenous replacement. Moreover, the present workshop facilities will be expanded and additional slipway will be set up to haul up vessels up to 600 tonnes. An amount of Rs. 60 millions has been provided for the project in Sixth Plan.

#### 1.4 Pelagic Fisheries Project.

The Pelagic Fisheries Project was a joint venture of Govt. of India, UNDP and FAO and was operated at Cochin for 8 years from 19.11.79 in two phases. The project functioned in two stages the first phase was sub contracted to Norwegian Agency for International Development (NORAD) and the second phase 1976-1979 March was directly handled by FAO. The main objective of the project was the stock assessment and the development of major pelagic fisheries of the South West Coast of India namely, the oil sardine and mackerel.

The project headquarters was at Cochin and its area of operation was mainly the shelf waters off the South West Coast of India from Ratnagiri (17 degrees lat.N) downwards and extended to the South East Coast up to the Gulf of Mannar. Two research vessels namely R.V. Rastrelliger (152 feet steel stern trawler/purse-seiner, 1320 HP) and R.V. Sardinella (54 feet fibreglass trawler/purse-seiner 153 HP) were utilized for the resource survey. Both acoustic and aerial surveys were conducted to estimate the abundance of oil sardine and mackerel.

The estimated average standing stock of mackerel and oil sardine resources were of the order of 300.000 and 400.00 tonnes

respectively. Even though the primary objective was to assess the abundance of oil sardine and mackerel resources, existence of considerable magnitude of white bait, cat fish, ribbon fish, horse mackerel and shallow water mix comprising of silver bellies, golden scad, butter fish etc. were also revealed during the course of investigations, of these the white bait was the most dominating. The present level of exploitation was found to be far below the average stock position in the case of mackerel, oil sardine and white bait.

The second phase of the project laid emphasis on the methods of exploitation, utilization and marketing of the resources. Experiments with the projects vessels have proved that purse-seining is ideally suited for mackerel, oil sardine, white bait and horse mackerel while midwater trawling and high opening bottom trawling are suitable for white bait, catfish, ribbon fish and horse mackerel.

The utilization aspect of the important fishes was also studied during this phase. Different types of canned products such as sardine in soyabean oil, sardine in tomato sauce, mackerel fillets/flakes in soyabean oil, tuna fillets/flakes in soyabean oil, sardine paste, anchoviella paste etc. were prepared for experimental purpose. Aluminium canning of sardine, mackerel and tuna in various media were also evolved.

The operation of the project resulted in a fair understanding of the biology of sardine and mackerel, identification of suitable crafts and gear as well as methods of exploitation, besides the valuable environmental data thrown up by the project.

### 1.5 Introduction of deep sea vessels.

The programme of deep sea fishing did not register a more rapid progress due to some reasons like lack of suitable soft loaning scheme, finalization in the charter policy and delay in the import of vessels, partly due to the inability of the Indian parties to raise the necessary capital and provide the necessary security for the loans granted. These difficulties have been largely overcome now. Steps have recently been taken for introduction of deep sea commercial fishing vessels consequent to the establishment of the EEZ.

There are 57 deep sea fishing vessels in operation now in Indian waters. Sanctions have been issued for import of 75 deep sea fishing vessels from various resources under a scheme in 1977. Although it was programmed that 200 deep sea fishing vessels would be introduced by 1977, the target could not be achieved in view of the reasons indicated above. By the end of Sixth Plan (1980-1985) there could be 350 deep sea fishing vessels through import, indigenous construction and charter. Till the import of large deep sea vessels and construction of indigenous vessels pick up, charter and joint ventures would be encouraged as a short-term measure so that exploitation of EEZ will be faster.

As a step towards the direction, Government have introduced a soft financing arrangement through Shipping Development Fund Committee (SDFC). In case of import, 90% of the total cost and in case of indigenous construction, 95% of the total cost is provided by the Government to the intending parties for the purpose. The interest rate for this loan is 4.5% and the amount is repayable in 7-10 years. An amount of Rs. 1300 millions has been kept in Sixth Plan to provide loans to the entrepreneurs. The policy, however, does not enable the large business houses to receive loan at loaning terms from SDFC.

The charter policy has also been revised incorporating provision for giving permission for charter initially for three years extendable up to five years with built-in provision for purchase of vessels in a faster manner over a period of 5 years, this condition is proposed to be enforced through a bank guarantee. The number of vessels permitted for charter for each party for each type of fishing is now fixed at five. All these measures, it is presumed, would attract investment by the fishing industry who are genuinely interested in entering deep sea fishing. It would also at the same time help to keep out such parties who had only the margin between the charter fee and the sale proceeds as their only interest in applying for charter.

## 2. Department of Heavy Industry

### Indigenous construction of deep sea fishing vessels.

The indigenous construction of deep sea fishing vessels is dealt with by Department of Heavy Industry under the Ministry of Industry. The Department of Heavy Industry has been taking keen interest in the construction of deep sea fishing vessel in a bid to utilize the

ideal capacity of the ship building yard in the country. They have prepared a perspective plan, according to which the ideal capacity is sufficient to construct something like 140 vessels a year. They had also commissioned a study through M/s White Fish Authority and M/s A.P.Applodore International Co. Ltd of U.K. This study has recommended that over the next ten years our requirement of vessel will be as follows:

1. 14.8 metre vessels	500
2. 20.0 metre vessels	25
3. 26.0 metre vessels	50
4. 30.5 metre vessels	5
	Total 580

The Department of Heavy Industry has also announced a subsidy of 33% on indigenously constructed fishing vessels with provision for import of equipment out of an approved list up to the value of 20% of the aggregate cost of the vessel.

Department of Agriculture also started Indo-Norwegian Boat Building Programme with a view to encourage indigenous construction of fishing vessels by suitably equipping the Indian yards. Six vessels have been constructed/under construction with Norwegian assistance. It is proposed to construct two more fishing vessels under the same programme as a prototype commercial vessel, the type and design of which would be acceptable to fishing industry.

### 3. Ministry of Commerce.

#### Marine Products Export Development Authority (MPEDA).

The Marine Products Export Development Authority was established in 1972 under the Ministry of Commerce as a national organisation for the control, regulation and development of the Indian marine products industry. Represented on the authority are the Union Ministers of Commerce, Finance, Agriculture, Industry and Shipping and Transport, both Houses of Parliament, Maritime State Governments, the Sea Food Industry, labour and research institutions. The Authority with their headquarters at Cochin and regional offices in Bombay, Bhubanseshwar, Calcutta, Cochin, Madras and New Delhi provide services to the deep sea fishing industry. MPEDA also operates as a trade promotion office in Tokyo, Japan. It is proposed to establish similar offices in other countries also.



The main objectives of MPEDA are as follows:

- 1) Development, conservation and management of off-shore and deep sea fishing.
- 2) Registration of exporters and processing plants.
- 3) Laying down standards and specifications.
- 4) Rendering financial or other assistance and acting as an agency for extension of relief and subsidy.
- 5) Rendering other types of assistance and service to the industry in relation to market intelligence, export promotion, trade enquires and import of certain essential items required for the industry.
- 6) Regulation of export of marine products.
- 7) Imparting training in different aspects of marine products export with special reference to fishing, processing and marketing.

To provide effective, prompt and professional services to the fishing industry, MPEDA organizes its operation through specialized divisions like marketing, statistics and market research, research and product development, development of new equipment, quality control publicity and public relations. Although all these Departments are independent but they work in cohesive manner to evolve practical, effective and tailor made solutions.

To keep the domestic industry informed of the export market trends and prospects, MPEDA publishes market and resource potential surveys and regularly communicate with the industry on every aspect of sea food marketing and production. Through its fortnightly publications, "Sea Foods Newsletter", MPEDA keeps the domestic industry abreast of the international trend in sea food marketing. MPEDA sponsors delegations to over-seas markets for sale and market study assignments and publishes their reports for the benefit of the industry. It also invites sea food consultant and technical expert to India to help the industry to solve problems and quality, product development and fishery management.

#### 4. Export.

The export of marine products reached a record figure of 92,184 tonnes, valued at Rs. 2620 millions in 1979. However, in 1980 the estimates are placed at Rs. 2120 millions only showing decline in an otherwise increasing tempo of exports maintained all these years. India's exports had been largely one of frozen products, particularly shrimps and to a lesser extent of lobster-tails, froglegs, squids and cuttle fish. Break-up of 1979 marine products export and countrywise break-up is given in Appendix II.

Trawling accounts for 63% of the shrimp production, mostly by mechanized boats. The increase in fuel cost coupled with slight decrease in export prices have placed the industry in an uncomfortable position, as the processors and exporters could not offer a remunerative price. This has drastically curtailed fishing efforts. In order to tackle this problem, Government is considering for the relief of excise duty and matching relief on sales tax and built-in provision for avoiding mis-use of these concessions.

However, the export of marine products by the fishing industry is gaining momentum. The quality of marine products exported has also been steadily improving and the quality standards prescribed by importing countries and the intensity of inspection have also been increasing.

There is a good deal of information now available as a result of market surveys, exchange of trade delegations between India and other trading partners regarding the size of market as well as the trade requirements. All these market studies and trade exchanges have emphasised over and over again about the need for good business practices and development of proper image.

#### 5. Development of fishing harbours.

Self contained fishing harbours are being developed at both major and minor ports, in addition to limited landing facilities at a large number of sites. Such a scheme was non-existent during the First Five Year Plan. During Second and Third Plans it was a State Plan Scheme. Subsequent to the Third Plan, the scheme at minor ports was particularly under the purview of Centrally Sponsored Sector, with 50% grant and 50% loan in 1966-1967 and 100% grant during 1967-1968 to 1973-1974. During the Fifth Plan 100% grant was limited to certain essential items, e.g. breakwaters wharf jetty,

dredging reclamation, auction hall, slipway, workshop and navigation facilities and from 1979-1980 onwards to 50% grant on the total cost of fishing harbours. At present there are 5 major fishing harbours and about 87 minor harbours. The beneficiaries from major harbours are mainly deep sea vessels. The important fishing harbours having draft of more than 4 metres and main facilities available are indicated in Appendix III.

Pre-Investment Survey of Fishing harbours with their headquarters at Bangalore conducts surveys for the perspective location of harbours in various States. On the basis of investigation and recommendations made by the project, fishing harbours are constructed in consultation with maritime State Governments. During the Sixth Plan period (1980-1985) it is proposed to develop major fishing harbours at Paradeep, Sassoon Dock (Bombay), Cochin, Stage II, Madras and Visakhapatnam Stage II under the central Sector Scheme with an expenditure of Rs. 190 millions and at Veraval, Mangrol, Porbunder, Kosamba, Bansi Borsi (Gujarat) Ratnagiri, Satpaaati, Mora (Maharashtra), Karaiyhalen (Goa), Malpe, Mangalore, Karwar Stage II, Tadri (Karnataka), Neendakara, Munakkakadavu, Neeleswaran, Cheravathur, Vizhinjan Stage II, Chinnamuttom, Walinokkam, Pashaayar, Tondi, Veerapandiyapattanam (Tamil Nadu), Pondicherry, Kakinada, Nizampatnam, Bhavanapadu, Krishnapatnam, Machilipatnam (Andhra Pradesh), Nuagar, Rushikulya, Puthiappa (Orissa), Digha (W. Bengal), Phoenix Bay Stage II (Andaman and Nicobar Islands) and certain other small harbours with an expenditure of Rs. 170 millions under the Central Sector Scheme.

## 6. Processing and preservation.

Various fish processing practices like salting, drying, freezing and canning are practised for preservation. Modern methods like freezing and canning are developed almost exclusively for the export market. According to MPEDA registration there are in all 268 freezing and 64 canning factories with an installed capacity of freezing 1175 tonnes and canning 246 tonnes per day as per details given in Appendix IV.

Most of the factories handle the entire processing but some depend on pre-processing sheds for the supply of raw materials. Of late, a very large number of pre-processing sheds have come into being particularly in Kerala. Similarly frog cutting centres have also come up in other States. Proper facilities are being created at these centres.



APPENDIX i

NUMBER OF TRAINEES COMPLETED INSTITUTIONAL TRAINING AT CIFNET.

S.no.	Name of the course	Total No.of trainees (Cochin & Madras) who have successfully completed training (1963-1979)		
		Cochin	Madras	Total
1.	Fishing Second Hand	342	221	563
2.	Engine Driver	263	174	437
3.	Boat Building Foreman	74	-	74
4.	Shore Mechanic	65	26	91
5.	Gear Technician	93	15	108
6.	Radio Telephone Operator	58	14	72
7.	Teacher Training	25	N11	25

## EXPORT OF MARINE PRODUCTS FROM INDIA IN 1979

Commodity-wise item	1979 exports, quantity & value, expressed in %	
	quantity	value
1. Frozen shrimp	58.05	85.2
2. Frozen frog legs	4.08	3.3
3. Frozen lobster tails	0.82	2.0
4. Fresh and frozen fish	26.17	4.4
5. Canned shrimp	0.15	0.3
6. Dried fish	4.04	0.7
7. Shark fins & fish maws	0.40	1.1
8. Others	6.29	3.0
	100.00	100.0

Actuals: 92,184 tonnes      Rs. 26,202.82 lakhs

Countrywise Major importers	In percentage 1979	
	quantity	value
1. Japan	41.4	68.2
2. U.S.A.	15.9	15.3
Sub-Total	57.3	83.5
3. France	3.9	3.2
4. Netherlands	2.5	2.6
5. U.K.	1.7	2.2
6. Australia	0.5	0.9
7. Belgium	0.6	0.7
8. Sri Lanka	3.7	0.6
9. Others	29.8	6.3
	100.0	100.0

## MAIN FEATURES OF MAJOR FISHING HARBOURS IN INDIA

Name	Draft	Main features
1. Yeraval	4.5 m	Breakwaters, quays and jetties, slipway, auction hall and ancillary shore facilities.
2. Malpe	4.5 m	Wharf, jetty, slipway, auction hall etc.
3. Karwar	4.0 m	Wharf, auction hall etc.
4. Cochin stage I	6,0 m	Quay, auction hall, jetty, slipway.
5. Mardas	6,0 m	BWS, quay, slipway, auction hall, office buildings and shore facilities.
6. Tutricorin	4.0 m	BWS, wharf, slipway, auction hall etc.
7. Visakhapatnam	4.5 m	Wharf, slipway, auction hall, office bldg.
8. Roychowk	4.3 m	Jetty, auction hall and shore complex
9. Port Blair (A&N Islands)	6.5 m	Jetty and other shore facilities.

DETAILS OF REGISTERED FREEZING PLANT, CANNING PLANT ETC. IN INDIA  
(up to 30.06.78)

States	Capacity in Tonnes per day					
	Freezing		Canning		Cold storage	
	Nos.	Capacity	Nos.	Capacity	Nos.	Capacity
Gujarat.	7	63.5	1	6.4	14	1810
Maharashtra	31	204.5	1	2.5	37	4875
Tamil Nadu	43	140.04	4	5.5	57	3728.5
Goa	8	29.5	6	41.5	6	235
Pondicherry	-	-	1	1.5	1	5
Laccadives	-	-	1	1	-	-
Andhra Pradesh	13	46	1	0.25	16	1121
Karnataka	30	-	9	38	29	2462
Orissa	10	26 121.34	1	1	10	605
West Bengal	23	59.25	-	-	20	1061
Kerala	103	485.25	39	148.74	131	10984.5
<b>Total</b>	<b>268</b>	<b>1175.88</b>	<b>64</b>	<b>246.39</b>	<b>321</b>	<b>26889</b>



APPENDIX IV

REPORT TO NORAD ON

FISHERIES MISSION TO INDIA - APRIL 1972

BY

Peter Gurtner      Knut B. Jørgensen      Ole J. Østvedt

Oslo, July 1972.

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A. INTRODUCTION.

1. NORAD decided in late 1971 to send a mission to India to assess and evaluate an Indian request made in May 1971 for the utilization of Norwegian development assistance in the fisheries sector under the 1971 - 1974 country programme.
2. The mission members were:

Mr. Knut B. Joergensen,	Director INP, Leader,
Mr. Ole Johan Østvedt,	Senior Scientist, Norwegian Institute for Marine Research, Member,
Mr. Peter Gurtner,	Chief, Fishery Vessels and Engineering Branch, FAO, Member.
3. Detailed Terms of Reference were issued to the mission by NORAD on 23 March 1972, and these are attached as Annex 1 to this report. The mission had to work to slightly amended terms of reference during its stay in India, since discussions at the Ministry of Agriculture in Delhi revealed a significant change in the Government's intended utilization of the development assistance.
4. While still requesting assistance mainly in the form of fishery research/exploratory/training vessels, the Government had changed the suggested distribution of these vessels as follows:
  - a) No vessel was intended for operation by a State Government.
  - b) Two vessels were intended for use, one each, by the existing State Fishery Corporations of Mysore and Kerala.
  - c) Two vessels were intended for use, one each, by the Central Institute of Fisheries Education, (CIFE), Bombay, and the Central Marine Fisheries Research Institute, (CMFRI), Cochin.
  - d) The remaining seven vessels (or more if available) were to be made available to the Government of India Deep Sea Fishing Organization (DSFO) at selected stations.
5. Vessel sizes and types were indicated by the Government as follows:
  - i) One each, 90 ft. Exploratory/Experimental fishing vessels to be stationed at Mangalore and Cochin (Ref. b) above).
  - ii) One 120 ft. Research Vessel for environmental work on the whole west coast, to be stationed at Cochin and used by the CMFRI;  
One 72 ft. Training Vessel for CIFE to be stationed at Bombay. (Ref. c) above).

- iii) One each Exploratory/Experimental vessel of about 90 ft. to be stationed at the DSFO stations at:

Veraval	Vizakhapatnam
Goa	Paradip
Bombay	Calcutta

(Ref. d) above).

- iv) One 72 ft. Exploratory/Experimental vessel to be stationed at the DSFO station Vizhakapatnam (Ref. d) above).

- v) One 90 ft. Exploratory/Experimental vessel for DSFO work expected to be undertaken at Pondicherry, if more than 11 vessels could be made available (Ref. d) above).

6. The mission assembled in New Delhi on 10 April 1972. After initial discussions at the Ministry of Agriculture, Government of India, and at the Norwegian Embassy, it set out on its fact finding journey around India on 14 April 1972. During 3 weeks of intensive discussions, observations and investigations that included stops in Veraval, Bombay, Goa, Bangalore, Cochin, Trivandrum, Tuticorin, Madras, Hyderabad, Vizakhapatnam, Kakinada and Calcutta, the mission reassembled in Delhi on 3 May for a final round of discussions at the Ministry. On 6 and 7 May 1972 the mission members left India, after having agreed to meet in Oslo during the week 26 - 30 June for the preparation of a final mission report.
7. The detailed mission itinerary is attached as Annex II.
8. Numerous persons were interviewed by the mission and many institutions and organizations visited. A list of the main contacts made is attached as Annex III. The mission found all its contacts of great interest, and most helpful, particularly so the officers of the various DSFO stations visited, who had been instructed by the Ministry to extend all possible assistance to the mission. To list the names of all those who contributed with their knowledge and experience to the mission's enlightenment would fill a small volume; the appended list (Annex III) therefore contains only the names of the senior officers and officials contacted.
9. In presenting its recommendations, the mission considers it opportune to note that these are in 3 parts. Part 1 answers the requirements as set out in the original terms of reference for the mission, amended in some details as outlined above following clarification of the Government's intentions, Part 2 extending to additional sectors of Norwegian development assistance that would, in the mission's opinion, have a decided impact on fisheries development in India, and Part 3 containing some new proposals for assistance that have not,

apparently, been considered by the Government or NORAD in earlier discussions.

10. It may be noted that in asking the mission to assess and evaluate a specific Indian Government request, the mission would in effect have to judge the absorption capacity of India of substantial material aid in the fisheries sector of its economy. This is a very difficult task under any circumstances, only marginally assisted by a short, although intensive, visit; one would have to rely on projections of future needs in the light of planned infrastructure development. It is at least doubtful whether such projections can be considered to be realistic. The findings and recommendations of the mission are by necessity based on current realities; any projections made, even to the extent of only including the first two years of the 5th Plan period, have to be very cautious.
11. This approach is confirmed, in the mission's opinion, by the very limited progress achieved during the past 10 years, as compared to planned targets, in the field of vessel procurement and operations. For the 3rd Plan period, GOI expected to introduce 20 new vessels for use as exploratory units by the Off-Shore Fishing Stations (now DSFO). Of these 20 vessels, 8 were to be trawlers of about 75 ft., 2 larger trawlers of about 130 ft., 5 shrimp trawlers of 40 - 55 ft. and 5 combination vessels up to 70 ft.; the latter were to include one unit for live bait tuna fishing. It is seen that this programme did not materialize during the 3rd Plan, and that the 20 new 57 ft. vessels now under delivery to the DSFO, are only partly a valid substitute for those provided for in earlier plans, since their usefulness is rather restricted. The original vessel procurement plan provided for much more versatility and would have materially assisted, if implemented, in concluding the exploratory survey in off-shore waters at a much earlier date.

B. SUMMARY OF CONCLUSIONS

In the following, the mission presents a short summary of its findings in the form of conclusions. These are given in order of presentation of the chapters of the main body of the report.

1) Institutions:

i) Central Institute of Fisheries Education:

- The institute is not at present fully utilizing the 50' vessel at its disposal.
- The institute does not require the full time use for a second, larger vessel.
- The institute appears to be organizationally unsuited to management and operation of its own vessel(s).

ii) Central Institute of Fisheries Operatives:

- This is a well conceived and organized establishment for training of operative personnel for fisheries as a whole (except for fish processing).
- Available vessel space is insufficient for future expansion of student enrollment, which will be necessary to meet the growing demand for skippers and engineers.
- The institute is able to manage and operate its own fleet of training vessels, but the utilization of the vessels of the Madras unit is not satisfactory as yet.
- Insufficient weight is given to the course for shore mechanics, which is found to be too short and catering for too few students; demand for this type of trained personnel will increase sharply with accelerated development of the private sector deep sea fishing activities.
- The institute's course for boat building foremen could be a suitable forum for development work in advanced techniques of boat construction and for prototype construction with new materials.
- Coordination of effort and collaboration with other GOI institutions appears satisfactory, but a slight overlapping of work on fishing gear is noted with respect to CIFT.

iii) Deep Sea Fishing Organization:

- The organization is well established and able to manage and operate a complex fleet of exploratory vessels.

- To fulfil its terms of reference, the organization requires some additional vessels of higher power and winch capacity than now generally available.
- The organization needs to keep a careful watch on its growth to avoid overexpansion with consequent lack of trained personnel and reduced efficiency.
- The organization is today in India the logical institution to act as central governmental fishery vessel managing and operating agency, but will require suitable administrative and executive powers, as well as more specialised staff before it can successfully tackle relevant responsibilities.
- Norwegian assistance to this organization will result in enabling it to assume its appropriate role in the fishery development.

iv) Indo-Norwegian Project:

- The project is probably today, at the end of the era of Norwegian management, the best established and organised integrated fishery complex in India.
- Its contribution to development in the fields of fish handling, processing, vessel and plant maintenance is outstanding.
- Its eminent suitability as a permanent training centre in these fields is noted.

v) Central Marine Fisheries Research Institute:

- The institute has never during its past managed and operated its own research vessel (with the exception of very small mechanized boats).
- Thus the institute completely lacks experience, specialized staff and administrative flexibility to successfully manage and operate a large research vessel in its own right.
- The institute's programme of work has hitherto been not sufficiently practical and was aiming more at basic scientific research rather than concentrating on investigations bearing directly on fishery industry development.
- It is noted that a change in this attitude will require access to the facilities of a suitable research vessel.
- Coordination of the institute's work with that of other institutions working towards similar ends does not appear to be satisfactory at present; this is particularly true with respect to the work of the DSFO.

vi) Central Institute of Fisheries Technology:

- The institute's work is of a high level and of marked interest for fish production and product development; in some instances it lacks the required practical approach to be of immediate interest to industry.
- Due to the lack of a suitable sea going vessel, the institute is forced to concentrate its activities more on the shore based processing than on gear research and development.
- On the Craft and Gear side, the institute engages in some projects on electronic and acoustic instrument development; this is considered beyond its capacity and to be wasteful in terms of manpower and resources.
- In the absence of an own gear research vessel, the establishment of very close working relations with other institutions, particularly DSFO, CIFO, and INP, would appear to be of utmost importance with a view to better utilizing vessel facilities these may be able to offer.
- The establishment of good working and personal relations with all sectors of industry is essential, and could be improved.

2) Marine Resources:

- There appears to be no scope for further increase of catches in coastal waters within a depth of 36 m (20 fathoms).
- Catching effort must be concentrated in deeper water to increase total landings significantly.
- Hardly any exploratory fishing has been conducted beyond 72 m (40 fathoms) except off the Kerala coast; this results in lack of data for planning effective commercial fishery development.
- Extensive exploratory fishing in deeper water is required.
- First priority for extended survey activities must be in areas where available, although limited, data indicates availability of marine resources in off-shore waters that may support a commercial fishery; such areas are:
  - i) Gujarat - Maharashtra Coast: Trawling, gillnetting
  - ii) Goa - Mysore Coast: Purse Seining, trawling for pelagic species
  - iii) South East Coast (Tuticorin): Trawling on Wadge Bank and Pedro Bank.
  - iv) Andhra Pradesh Coast: Trawling from Kakinada/Vizakhapatnam.
  - v) North Andhra to West Bengal: Trawling



3) Fishery Harbours and Shore Facilities:

- Improved harbour and shore facilities are a pre-requisite for large scale fishing industry development (deep sea fishing).
- Development of suitable shore facilities for vessel maintenance and repair in all harbours designed as operating bases for deep sea vessels is of great importance.
- Operatives at all levels (vessel crew, shore staff, plant operators) appear not yet to be sufficiently aware of the importance of continuous maintenance of all equipment.
- Development of adequate fish handling and processing facilities, as well as marketing and distribution systems, assumes major importance if capacity catches from deep sea vessels (demersal and pelagic) are to be usefully utilized.
- Improved (and partly new) harbour facilities are under active preparation and will be available in 1974/75 in Bombay, Tuticorin, Madras, Vizakhapatnam, and Roychowk (Calcutta). Additional improved and new facilities will be operational in 1975/76 in Veraval, Ratnagiri, Goa, Malpe, Cochin, Kakinada.
- Training of technical, supervisory, and operative personnel for the new fishery harbour facilities needs to be put into effect with high priority.

4) Fishing Vessel Design and Construction:

- Construction facilities for modern, steel fishing vessels are available in a number of India shipyards.
- Marine diesel engines (MAN, Cummins) are being manufactured in India under licencing arrangements with the parent houses, and extension of these manufacturing programmes are planned. The same applies to marine gear boxes, stern gear, hydraulic pumps and motors, etc.
- The shipyards have only limited technical office staff, and in particular lack planning and design experience concerning fishing vessels.
- No consultant naval architects, or government fishing vessel development and design unit is available; this results in complete reliance on foreign designs with the consequent difficulties in adapting these to local practices and requirements.
- Recent experience with the 57' steel stern trawlers confirm the above points, in as much as the design - prepared in India by technical staff not conversant with the requirements of the fishing fleet - leaves much to be desired, and the vessel show many unsatisfactory details.
- Current negotiations between CMFRI - Mazagon Dock - Aukra Bruk in Norway, make it clear that foreign design adaptation is a very tricky business and should only be resorted to in very exceptional circumstances.

C. RECOMMENDATIONS

As indicated in A. Introduction, the mission's recommendations are presented in 3 Parts in view of the need to advance suggestions for assistance in addition to those directly connected with the Government of India request; these additional suggestions follow from the mission's observations in India, and B. Summary of Conclusions, of the report.

Part 1: Action recommended in response to Government of India request

- i) The Government requested the supply of one each 90 ft Exploratory/Experimental fishing vessel to be operated by the Mysore State Fishery Corporation out of Mangalore, and the Kerala State Fishery Corporation out of Cochin respectively.

The mission recommends that this request should not be entertained for the following reasons:

- The Mysore Corporation has already taken delivery of 2 new 57' steel trawlers built in India, but is operating only one of these, while the second one has been leased to a private operator for fishing operations out of Vizakhapatnam.
- It is not considered likely that the corporation could operate a 90' vessel without incurring substantial financial losses.
- The infrastructure available at Mangalore is not adequate to allow commercial sized catches from a 90' vessel to be effectively handled and distributed.
- Exploration of the deep water resources off the Mysore coast must be considerably extended before definite assessment of the vessel needs can be made, but the mission is of the opinion that 90' vessels would not be required for many years to come, at least until the infrastructure development has reached such a degree that effective catch handling and distribution can be assumed.
- The Kerala Corporation has already acquired a substantial fleet of fishing vessels (see Annex IV), and it would be unwise to supply to it a 90' vessel, before it is established beyond doubt that the corporation can manage, and operate with profit a still increased fleet.

- The corporation may face staffing problems already in the near future when endeavouring to man their 72' shrimp trawlers, and it is not recommended to aggravate these problems further.
- The remarks made above on the resources situation would also apply to the Kerala Corporation.
- The Kerala Corporation is known to have operated at a considerable loss since its inception.

ii) The Government requested the supply of one 72' Training vessel to be operated by the Central Institute of Fisheries Education in Bombay (CIFE).

The mission recommends that this request should not be entertained for the following reasons:

- The institute has at its disposal a 50' training vessel which it is not in a position to fully utilize for training purposes.
- The institute appears to be organizationally unsuited to manage and operate its own fleet of vessels; as a Government institution it would face severe difficulties in building up the required specialized staff within its budgetary allocation.
- The institute expects to shift emphasis in its training programme still further to academic work, and hopes to be recognized as an institute with university status, conferring M.Sc. degrees in Fishery Science to its students; its direct input into commercial fishery development in India would thereby become very marginal.

iii) The Government requested the supply of one 120' Fishery Research Vessel to be operated by the Central Marine Fisheries Institute in Cochin (CMFRI).

The mission recommends that this request should be further examined within the framework of the following considerations:

- The institute should be invited to use on a full time basis the R/V "VARUNA" of the INP (except for those short periods in 1973 that this vessel would be required to work for the UNDP/FAO Pelagic Fishery Project). It is suggested that during the CMFRI's use of the vessel, it should continue to be manned and operated by the INP, but that the CMFRI should reimburse the INP for the actual cost of this operation, including the vessels maintenance.

The CMFRI should make available on a full time basis one of its officers to act as a liaison officer with INP, and in a sense as a "trainee fleet manager".

The CMFRI should be invited to draw up a realistic programme of work for the full time utilization of the VARUNA.

- NORAD may wish to engage the services of consultants during the first 18 months of the above arrangements, for the purpose of specifying in detail, and with due consideration to Indian conditions and expected future programmes of work, including the proposed UNDP/FAO East Coast Survey, a 120' Research Vessel, which could be constructed and delivered to CMFRI in a second phase of the assistance programme, if the results with the VARUNA arrangements should be satisfactory
- CMFRI is currently considering actively the construction in India of a 107' Research Vessel to drawings purchased from Aukra Bruk A/S in Norway. This vessel, and 2 sister ships, had originally been built by Aukra Bruk for FAO (one for the Government of Peru) for service on Latin American UNDP/FAO projects. The adaptation of the detailed drawings to Indian shipyard practices and the amendments in layout required for the needs of the CMFRI are proving to be of a more complex nature than was originally thought.
- NORAD might wish to consider the possibility of offering to the Government the building of one vessel of this type in Norway; a consultant would also be required in this case, to assist the shipyard in detail amendments to layout and arrangement of fishing deck.
- Alternatively, NORAD might wish to offer to the Government assistance in this project in form of equipment, and the mission recommends that at least the following items should be considered:
  - a) Main engine, gearbox, and complete shafting and controllable pitch propeller equipment;
  - b) Complete set of hydraulic deck machinery, including requisite engine driven pumps;
  - c) Complete set of electronic and acoustic instruments and equipment required for their installation;
  - d) Complete lateral thruster unit, ready for installation.

Auxiliary engines, generators, pumps, and general electric equipment could probably be of Indian manufacture. This alternative would require very careful, and detailed coordination, and NORAD would be well advised to retain the

services of a qualified engineer for this purpose, or enter into a long range consultancy agreement with a firm of consultant engineers and naval architects in Norway. FAO may be able to give limited assistance in the form of recommending changes in the vessel based on service experience.

- In case NORAD should accept the suggestion of offering a rebuilding of the 107' type, and subject to Government's acceptance of this idea, the ultimate provision of a 120' Research Vessel should no longer be considered, as it is entirely unfeasible that CMFRI could operate two major vessels on a full time basis.
- Either of the two vessels mentioned above would probably be incorporated as counterpart contributions in the UNDP/FAO East Coast Survey project if available between 1974 and 1975.

iv) The Government requested the supply of six (possibly seven) 90' Exploratory/Experimental fishing vessels to be operated by the Deep Sea Fishing Organization (DSFO) at its stations in:

Veraval	Vizhakapatnam
Goa	Paradip
Bombay	Calcutta
Pondicherry (possibly)	

The mission recommends that this request be partly accepted, and makes the following concrete proposal:

- The maximum size of vessel to be supplied shall be about 75 ft length over all, with high engine power and winch capacity sufficient for deep sea work.
- Vessel distribution shall be:
  - 1 - 75 ft Trawler: Veraval (or Bombay, pending completion of the Veraval harbour and entrance channel extension)
  - 1 - 75 ft Trawler: Tuticorin
  - 1 - 75 ft Trawler: Vizhakapatnam
  - 1 - 75 ft Pursa Seiner/Trawler: Goa

The mission does not recommend the supply of vessels for Paradip and Calcutta, and notes that in contrast to information received in Delhi, there are no plans to operate a DSFO station at Pondicerry (for which station no vessel could be recommended in any case).

The mission further recommends that these vessels should be accompanied during a substantial period of time by Norwegian key personnel, and in particular by:

For each vessel:	Captain (Fishing Master), Engineer	- 2 years
For the fleet:	Maintenance Engineer	- 3 years (to be attached to the head-quarters of DSFO in Bombay)
	Electronic/Acoustic Technician	- 1 year (DSFO Bombay)

The mission also recommends that selected Indian technical personnel should be closely connected with the specifying, detailed design development, construction, and delivery of these vessels, and that such Indian personnel should be the nucleus of a Fishing Vessel Development Unit to be permanently attached to one of the Government institutions in India; DSFO or CIFO are suggested as the best suited choices for this purpose.

The mission considers it important to point out that NORAD will need to engage the services of a firm of consultant engineers and naval architects for the purpose of detailed specification preparation and design development, and that this firm should be given the opportunity to send representatives to India for initial discussions with the users (DSFO stations) of the exact detailed requirements the vessels will have to fulfil. It is suggested that NORAD would also greatly facilitate the execution of this assistance programme by retaining the services in Oslo of an engineer with fishing vessel design/construction experience, and with good knowledge of modern equipment and its use in fishing.

The mission regrets that owing to shortage of time it is not in a position to give detailed outline specifications of the vessels recommended, but should like to see the following points carefully considered when specifications are elaborate:

- As far as practical, the 75 ft vessel should have identical hulls.
- Hull form is recommended to be of the single chine, developed surface type, double chine also being acceptable.
- Construction details of the vessels should be so planned that subsequent repeat construction in India would be possible without undue difficulties. The construction capacity of shipyards such as Goa Shipyard, Brunton Cochin, and Rayabargar Calcutta should be studied in detail for this purpose.
- The choice of main engines and auxiliaries should be made after a detailed evaluation of the future marine diesel engine manufacturing plans in India, and so far as practical only engines should be chosen that will in due course be made in India also; power of the main engine is suggested to be about 500 HP.
- Although the vessels will no doubt be fitted with Norwegian equipment throughout, due consideration should be given in the design stage to the possible installation of Indian made equipment in repeat constructions in India.
- Acoustic equipment shall be of the type used in commercial vessels; the purse seiner/trawler shall be fitted with sonar. All vessels shall have net telemetering devices.
- Propellers should be calculated for maximum performance at trawling speed, with the exception of the purse seiner/trawler where a propeller giving maximum free running speed should be fitted, accepting reduced efficiency under trawling conditions.
- Controllable pitch propellers are not recommended for maintenance reasons and to keep the vessel equipment as simple as possible.
- Winches should be hydraulic and the pros and cons in selecting low or high pressure equipment carefully evaluated against Indian plans for the manufacturing of hydraulic pumps and motors.
- The trawlers may be fitted with net drums.
- Deck arrangement should be suitable for use of pelagic trawls on an experimental basis.

- All vessels should have accommodation space for a minimum of one supernumerary (CMFRI scientist).
- All equipment on board should be standardized, except where specific work requirements necessitate a deviation from this rule.
- Spare parts for vessels and equipment will have to be in excess of normal requirements.

In general, the vessels are envisaged as follows:

Stern fishing vessel, with engine room forward, insulated fish hold of maximum volume, gear store and steering compartment aft; accommodation forward above main deck under extended forecastle deck, with all-round vision wheelhouse above; natural and forced draft ventilation only (no air-conditioning) of high capacity; aft working deck to be arranged for handling of commercial size and type of gear for the requisite fishing methods; more than average beam is suggested, reducing if necessary the depth, but retaining good draft aft to allow for an optimum diameter propeller.

Estimated cost of Part 1) of Recommendations

3 Nos. 75 ft. Trawlers, complete with fishing gear	N.Kr.	5.000.000
1 Nos. 75 ft. Purse Seiner/Trawler, complete		2.000.000
Delivery costs		500.000
Personnel: Captains, Engineers - 8 man years		1.200.000
Shore Engineers - 4 " "		600.000
Consultant services		850.000
Additional NORAD personell - 4 man years		450.000
Travel		100.000
Associated Indian Personell (travel, fellowship) - 3 men for 2 years		300.000
Total	N.Kr.	<u>11.000.000</u>

To add regarding iii) above (depending on choice of alternative):

1 Nos. 120 ft. Research Vessel	N.Kr.	5.000.000
1 Nos. 107 ft. Research Vessel		3.750.000
Equipment only for 107 ft. R/V		1.250.000
Consultant fees, travel, etc.		500.000



### Timing of delivery

It is felt that the remainder of 1972 will probably be required to obtain agreement in principle between NORAD and the Government of India on the assistance to be provided. Some preliminary work on the vessel specifications could, however, already be undertaken during that time.

The detail planning of the vessels would take about 6 months in 1973, and allowing for 3 months for tender issue and bid evaluation, it should be possible to place orders in October 1973. Delivery may then be expected by October 1974, and the vessels should be in India in January 1975. This estimate does not include the possible supply of one of the other Research Vessels.

It may be difficult to obtain satisfactory delivery if all orders are placed with one shipyard; ordering from several yards simultaneously may have to be considered. This would require close supervision to assure equal performance of the yards.

### Follow-up

It is suggested that the performance of the vessels supplied, as well as the rate of utilization by the DSFO, should be evaluated in detail after one full year of operation. Thus in about July 1976 NORAD should be in a position to decide whether an expanded vessel delivery programme should be considered for a future programme period, and if so, whether the same type of vessels should be provided, or other types or sizes would be more advantageous. The mission thinks that at that time it should be possible to think in terms of switching emphasis from exploratory fishing to commercial feasibility fishing, and it is at least possible that the vessels required for that purpose may have to be of somewhat amended design.

Part 2: Supplementary Assistance suggested by the mission but not contained in the Government of India Request

- 1) The mission recommends that consideration should be given to the supply of one additional vessel, not so far requested by the Government, as follows:

1 Nos. 80 ft. Training Vessel for the Central Institute of Fisheries Operatives, Cochin (CIFO), to enlarge that institute's available vessel space in order to allow for an early expansion of the Fishing Second Hand, and the Engine Drivers courses.

This vessel should be of essentially the same type as the purse seiner/trawler described in Part i) above, but would require additional length in order to provide the required accommodation for trainees.

a/  
If such vessel could be made available, the CIFO should be encouraged to transfer one of its 57 ft trawlers to another institution suffering from lack of vessel facilities, and the mission suggests CIFT (Craft and Gear Division) as the recipient.

Estimated cost:

1 Nos. 80 ft Purse seiner/trawler/ training vessel	N.Kr. 2.550.000
Delivery costs	150.000
	<hr/>
	<u>N.Kr. 2.700.000</u>

- ii) The mission also recommends that due consideration should be given to continued assistance to INP, particularly with spareparts for vessels and equipment already in operation with the Cochin unit, and the sub-units in Karwar, Cannanore, and Mandapam, to insure for a maximum number of years the functioning of such equipment.

No cost estimate is possible for this item.

iii) The mission further recommends the inclusion in the assistance programme of equipment and materials necessary to assist in achieving early operational readiness of shore installations planned in those fishery harbours now under construction. Norwegian development assistance could assume a major role in ensuring that fish handling facilities and processing practices in these harbours are improved from the outset. It is emphasized that the items of equipment given below as examples of what might be considered, are not currently available in India. The following list is a random list only, and does not represent an order of priority.

If NORAD should accept this recommendation, and subject to the Government's indorsement, active participation in the early establishment of the shore facilities in the new harbours would require immediate coordination of effort between NORAD, The Government of India, and the various contractor firms engaged on the construction of the civil engineering works. It is suggested that specialised consultants should be retained for this purpose by NORAD.

List of proposed equipment

- a) Ice making machinery (flake and cube ice)
- b) Cooling machinery and plate freezers
- c) Transport equipment such as roller beds, conveyor belts, lift trucks, etc.
- d) Movable, hydraulic cranes for unloading of fishing vessels (truck mounted diesel/hydraulic units)
- e) Insulated containers for transportation of frozen fish.
- f) Equipment for washing and cleaning of fish, processing units.
- g) Aluminium and plastic fish boxes for use on board vessels.

Part 3: Possible new forms of assistance not previously considered by NORAD or the Government of India.

The mission recommends that active consideration should be given, in collaboration with the Government of India, to a

new form of assistance, which would involve NORAD in the form of a Contractor to Government (either Government of India or selected State Governments or Port Authorities).

The Contractor (NORAD) would undertake to build up the shore establishments (complete or in part as specified by the contract), in one or more of the newly to be constructed fishery harbours, particularly those for which detailed reports have been prepared by the UNDP/FAO Pre-Investment Survey Project. In addition the Contractor would undertake to run the shore establishments for a pre-determined period of time on commercial lines. Government participation in this operation would be minimal, and would principally extend to granting of the usual privileges to the Contractor's personnel and facilitation of the duty free importation of the required equipment. At the end of the contractual period, the establishments built and operated by the Contractor would revert to specially constituted bodies, such as cooperatives or Public Corporations.

This type of assistance could have a very decisive influence on early development of viable shore establishments in a number of fishery harbours, and could comprise any or all of the following services in relation to the expected fish landings and species at the related location:

- i) Construction of market halls, buildings for ice factories, freezing plants, cold storage, processing establishments, canning plants, fish meal plants, etc
- ii) Provision of equipment for the above plants and its installation.
- iii) Provision of management and supervisory personnel for the operation of the plant.
- iv) Construction of workshop buildings, slipways, boat lifts.
- v) Provision and installation of relevant equipment for iv).
- vi) Operation of the workshop facility.
- vii) In-service training of operative personnel for all facilities handled by the Contractor.
- viii) Setting up of fish marketing and distribution chains.
- ix) Setting up gear manufacturing plant.

It is important to note that this form of cooperation should run on essentially commercial lines; the Contractor would have to have, for example, the power to hire and fire, subject to the provisions of local labour laws, and to engage local sub-contractors and labour for physical construction work. A commercial undertaking of this type would have to show a certain profit, even if marginal, and this would have to be utilized in accordance with a pre-determined plan, for re-investment, plant improvement, depreciation, etc.

Planned port locations that would in the mission's opinion lend themselves well to this type of assistance, are:

- a) Goa
- b) Ratnagiri or Dahanu
- c) Tuticorin
- d) Kakinada (if a port extension is executed)

It is emphasized that this form of assistance would require very detailed and far reaching cooperation and liaison in the planning stage, as it would involve Central and State Governments, UNDP/FAO, and IBRD in those cases where they show interest to finance detail development, NORAD, and specialist consultants NORAD would require to retain.

A cost estimate is not possible at this stage and it is felt that this could only be provided by a specialized mission.

Oslo, 30 June 1972

Peter Gurtner

  
Knut B. Jørgensen

Ole J. Østvedt



TERMS OF REFERENCE

for

Mr. Roar Ramde

1. The Government of India has requested technical and financial assistance from Norway for the development of the fishing industry. This assistance will comprise technical assistance to two shipyards in India to be selected with a view to have these specialize in the building of larger fishing vessels, deliveries of Norwegian machinery and equipment for the two shipyards, equipment, machinery and spareparts for the vessels to be built, equipment and machinery for Central Government and/or State fishery institutions - excepting goods which are produced in India.

For the period 1973 - 1976 Norway has tentatively allocated total amount of 40 Million Norwegian Kroner for this purpose.

As a first step the Government of India has requested assistance in determining the types of vessels to be selected.

2. Mr. Roar Ramde is requested to carry out the following assignment in India.

On the basis of available reports and other information investigate and evaluate the need for larger fishing vessels in India in the next five to ten years with a view to assist the Indian authorities in (i) determining the main specifications of the types of vessels to be selected and (ii) in drawing up a plan for the connected follow-up work relating to construction of vessels with components to be supplied by Norway.

3. The assignment should be carried out in close cooperation with the authorities of India, in particular the Fishery Department in the Ministry of Agriculture. The assignment should be completed in 1 - 2 weeks.
4. A report in English on the findings and recommendations should be submitted to NORAD within four weeks after the completion of the assignment.

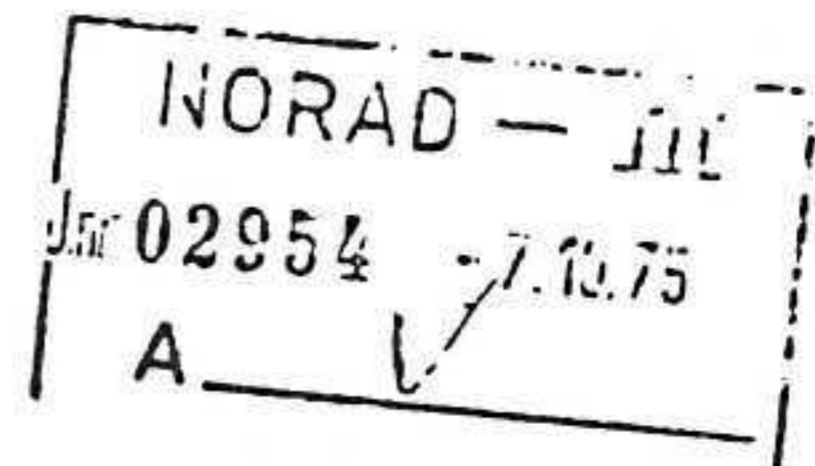
Paal Bog  
Director  
Planning Department

PE/Lj.  
10/7/73.



A G R E E M E N T

between



THE GOVERNMENT OF THE KINGDOM OF NORWAY

and

THE GOVERNMENT OF THE REPUBLIC OF INDIA

concerning

Development of Fisheries in India - Boatbuilding Programme.

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The Government of the Kingdom of Norway (hereinafter referred to as "Norway") and the Government of the Republic of India (hereinafter referred to as "India"),

in pursuance of the Agreement between the Government of the Kingdom of Norway and the Government of the Republic of India regarding Co-operation for the Economic and Social Development of India, dated 8 February 1974,

have agreed as follows:

Article I

Scope

Norway and India will co-operate in the development of a boat building programme (hereinafter called "the Programme") to be implemented in India from 1975 to 1979, and will finance and construct exploratory fishing vessels under the Programme, described in Annex I to this Agreement.

Article II  
Implementation

In matters relating to the implementation of the Program the Norwegian Agency for International Development (NORAD) shall represent Norway and the Ministry of Agriculture & Irrigation (Department of Agriculture) (hereinafter called the Ministry) shall represent India.

Article III  
Contributions and Obligations of India

India shall:

- a) (i) be responsible for the administration of the Program and ensure that the different Indian institutions taking part in the Programme provide the required manpower, financial and other resources at the time and to the extent needed to achieve the best possible results;
- (ii) arrange that the Terms of Reference of the Consultant referred to under paragraph 5 in the Programme description (Annex I), are approved as early as possible and Norway informed in the matter.
- b) present to Norway for approval
  - (i) the lists of equipment and materials to be procured abroad;
  - (ii) annual budgets for the funds needed for such purchases;
  - (iii) six-monthly requests for disbursements for purchases from abroad;
- c) present to Norway for information
  - (i) the contracts on the purchase of vessels between the Ministry and the two yards;
  - (ii) proposals for procurement procedures for the purchases of equipment and materials;
  - (iii) lists of equipment and materials to be procured in India;

- (iv) six-monthly progress reports with statements of expenditure;
- (v) accounts for the completed Programme, to be followed by audited accounts in due course.

#### Article IV

#### Contributions and Obligations of Norway

Norway shall:

- (i) Subject to Parliamentary appropriations, provide financial assistance on grant terms not exceeding an amount of N.Kr. 30,000,000 for purchases under the Programme as agreed upon,  
  
provide technical assistance as agreed upon for an amount not exceeding 4,000,000 N.Kr.;
- (ii) present to India as soon as possible decisions on the proposals made according to Article III, b), items (i)-(iii);
- (iii) present to India semi-annual reports on the expenditures incurred by Norway in accordance with paragraph (i) above;
- (iv) Whenever it shall be necessary for the purpose of this Agreement to determine the value of any other currency in terms of Norwegian Kroner, such value shall be determined by Norway on the basis of the current market selling rate, or if no such rate should exist, such rate as Norway shall reasonably determine after consultation with India.

#### Article V

#### Co-operation and Administration

1. Norway and India shall co-operate fully to ensure that the Programme will be implemented in an efficient manner. To that end each Party shall furnish to the other all such information as it may reasonably require and shall be free to send their representatives to visit the sites of the activities undertaken under the Programme.

2. The technical assistance referred to in Article IV (1) above will consist of i) consultant services and ii) expert personnel.

- (i) The services of a consultant firm (hereinafter called "the Consultants") will be provided by NORAD. The Consultants will be contractually responsible to NORAD for the conduct, execution and quality of their services.

India shall ensure that the management of the two shipyards make full use of the services of the Consultants and give the Consultants all support and information as are provided under contracts normally between the yards and the Consultants.

- (ii) Norway shall provide one expert to serve with each of the shipyards. Norway and India shall agree on job descriptions for the experts. If required, Norway shall provide two skippers to operate the first two vessels built in India for a period of up to 12 months.

3. Norway and India shall apply the Agreement on Technical Co-operation of 6 December 1972, on personnel to be engaged by NORAD for service under the Programme.

4. NORAD and the Ministry shall agree on the following main points in the Programme:

- (i) Preliminary projects design drawings prepared by the Consultants for the vessels.
- (ii) final design drawings, building specifications, and list of shopdrawings prepared by the consultants.
- (iii) time schedule for the construction of vessels.

5. Norway and India shall promptly inform each other of any condition which interferes with or threatens to interfere with the successful accomplishment of the purpose of this Agreement.

Article VI

Disputes - Entry into Force - Termination

1. If any dispute arises relating to the implementation or interpretation of the present Agreement, there shall be mutual consultations between the Parties with a view to secure a successful realization of the purpose of the Agreement.

2. The present Agreement shall enter into force on the date of its signature.

The Agreement shall terminate on the date upon which both Parties have fulfilled all obligations arising from it.

3. Notwithstanding the preceding paragraph, either Party may terminate the present Agreement by giving six months' written notice to the other Party.

In witness whereof, the undersigned, being duly authorized thereto by their respective Governments, have signed the present Agreement in two originals in the English language.

Done at ..... this ..... day of ..... 1975

For the Government of  
the Kingdom of Norway

For the Government of  
the Republic of India

## A N N E X I

### Description of the Boat Building Programme

1. The plans for the boat building programme are outlined in a Report on Proposals for building exploratory Fishing Vessels in India under Norwegian aid, dated 23 October 1973.
2. The objectives of the Programme are the following:
  - (i) Goa Shipyard and Rajabugan Dockyard, Calcutta, have been selected to build a series of larger fishing vessels to be used for exploratory fishing, charting of fishing grounds, evaluation of fishing methods and gear as well as training of personnel.
  - (ii) These vessels will be delivered to the Ministry, who will arrange that the vessels are operated by Central Government Fisheries Institutions.
  - (iii) To investigate the possibilities that the vessels may serve as models for the future fleet of deep sea fishing vessels to be developed in India.
3. Two basic types of vessels are to be developed and built:
  - (i) Purse seiner/long liner
  - (ii) Trawler/purse seiner

Proposals for design drawings of the vessels will be presented by NORAD to the Ministry.

4. After a decision on design and a tentative time schedule for the Programme has been reached between NORAD and the Ministry, the latter shall enter into contracts with the two shipyards referred to above for the purchase of vessels.
5. A firm of Consultants will advise and assist the yards in the implementation of the Programme, including the purchase of equipment and materials for the yards and for the vessels.

NORAD will present a proposal for Terms of Reference for the Consultants.

6. Two experts recruited by NORAD will serve as operational personnel with the yards.





**Terms of Reference****for**

the consulting services to be provided for the implementation of the Boatbuilding Programme, India.

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1. Reference is made to Agreement between the Government of the Kingdom of Norway and the Government of the Republic of India concerning Development of Fisheries in India - Boatbuilding Programme, dated November 22, 1975.
2. The consulting services referred to in Article 5 in the Programme description of the Agreement are available to Mazagon Dock / Goa Shipyard for the first two vessels and will be made available to Mazagon Dock/Goa Shipyard and Rajabagan shipyard (called the Shipyards hereinafter) for the remaining vessels at a time to be agreed upon. The terms of reference might be extended or changed for the Collaboration with the Rajabagan shipyard, if necessary.
3. The Consultancy Services have the following responsibilities:
  - 3.1 Technical documentation

Prepare the technical documentation (theoretical and building documentation) for the construction of the two types of previously agreed fishing vessels according to list given in Appendix I. This list may be revised and added to subject to mutual consent between the shipyards and the Consultant.

The tentative time schedule for the technical documentation to be supplied for the two first vessels to be constructed is given in same appendix.
  - 3.2 Approval of drawings

See to it that all design and shop drawings relating to NV classifications are submitted to Norske Veritas for approval. The final approved drawings to be presented to the shipyard.

The Consultant will be informed by the shipyards about the current national regulations applying to fishing vessels. The shipyards shall further obtain formal approval for all drawings and components relating to rules and regulations by national authorities and inform the Consultant that such approval is given.

### 3.3 Lists of equipment for vessels and shipyards

Assist the shipyards in finalizing the lists of equipment to be procured in India and abroad for vessels and shipyards.

All technical information on items to be ordered by the Shipyards indigenously would be furnished by the Shipyards to the Consultants for their use in design work.

As regards the items to be ordered by the Shipyard from abroad, the Consultants and the suppliers may correspond direct with each other for clarification/information on technical matters, provided, however, that the Consultants and the suppliers will send a copy of each of their letters to the Shipyards, keeping the Shipyards fully informed.

### 3.4 Procurement procedures

Assist the shipyards within the scope of the agreed Procurement Procedures.

The Consultant shall evaluate all offers for items to be financed by Norway and all major items to be supplied from India and shall give their recommendations in writing to the yards without delay.

Copies of all contracts entered into by the Shipyards concerning the supply of materials and equipment to be financed by Norway shall be forwarded to the Consultant.

The Consultant shall certify all invoices before these are presented to NORAD for payment.

### 3.5 General consultations

Be available for consultations regarding design problems etc. within the Programme and also provide expert services for rigging the vessels for tune long lining, purse-seining and necessary processing arrangements on board.

### 3.6 Communication

A direct line of communication to be established between the shipyards and the Consultant concerning all matters relating to the design and construction of the vessels and the procurement of materials and equipment.

The Consultant and the shipyards to present the names of persons authorized to deal with the Programme, addresses, including telegram, telex and phonenumbers, to be attached to the terms of reference.



Terms of Reference

for

Normaritim A/S

for consulting services to be provided for the implementation of the Boatbuilding Programme, India.

1. Reference is made to:

- Agreement between the Government of the Kingdom of Norway and the Government of the Republic of India concerning Development of Fisheries in India - Boatbuilding Programme, dated 22 November 1975 with later addendums.
- Contract between Normaritim A/S and NORAD dated 15/27 September 1976 with later addendums, regarding the Boatbuilding programme.
- Agreement between the Government of the Kingdom of Norway and the Government of the Republic of India regarding co-operation for the Economic and Social Development of India, dated 30 December 1980.

2. The consultancy services referred to in the contract between Normaritim A/S and NORAD dated 15/27 September 1976 will be altered to include the following responsibilities:

2.1 Experts.

Provide technical experts to the Programme as requested by the Government of India.

2.2 One expert, a practical Marine Engineer, will be the employee of Normaritim A/S and will perform the following tasks:

- He will advise and assist Goa Shipyard in the construction of the vessels under the Programme, particularly in the installation of machinery and equipment. He will be stationed in Goa as resident technical inspector from January 1981 for a period of not less than a year.

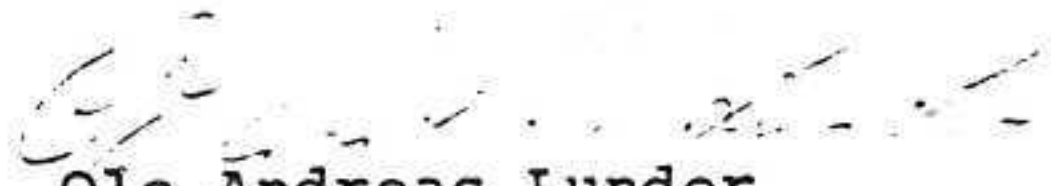
2.3 In addition to the above technical expert Normaritim A/S will provide technical assistance on temporary basis as requested by the Indian authorities and the Shipyard and agreed upon by NORAD.

2.4 Normaritim A/S personnel are to perform their services in accordance with high professional standards within their assigned fields of professional competence and within the approved plans of the Programme:

- They are reporting to the general manager of Goa Shipyard Ltd. and shall consider themselves to be associated members of the Shipyard staff and follow the working of Shipyard personnel of the same category.

- They should observe that Normaritim A/S is liable to NORAD for their performance and should, when in doubt, confer with Normaritim A/S in all professional matters they feel are of such nature and complexity that a sharing of the responsibility for their advice is needed.
- Adjustments in workshop drawings deemed necessary to ease production and adjust to Shipyard practice should be reported to Normaritim A/S as feed-back data for their design office.
- Technical correspondance related to the execution of their services under the Programme shall be routed to NORAD, Oslo and NORAD, New Delhi via Normaritim A/S, Horten.
- Other correspondance when appropriate can be sent to NORAD, New Delhi or NORAD, Oslo directly.

Oslo, 12 January 1981

  
Ole Andreas Lunder  
Head of Fisheries Division



