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Report No. 2436a-TUN

STAFF APPRAISAL REPORT

OF THE

SECOND FISHERIES PROJECT

TUNISIA

June 6, 1979

EMENA Projects Department
Agriculture Division II

CURRENCY EQUIVALENTS

(As of March 31, 1979)

Currency Unit	=	Tunisian Dinar (D)
D 0.4	=	US$1.00
D 1.00	=	US$2.50
D 1,000,000	=	US$2,500,000
US$1,000,000	=	D 400,000

WEIGHTS AND MEASURES

(Metric System)

1 t	=	1,000 kg 2,205 lb
1 km	=	0.621 mi
1 km2	=	0.386 sq mi
1 m	=	3.281 ft
1 m2	=	10.75 sq ft
1 m3	=	35.315 cu ft

GOVERNMENT OF TUNISIA

Fiscal Year

January 1 - December 31

ABBREVIATIONS

BNT	Banque Nationale de Tunisie - National Bank of Tunisia
CLCM	Caisse Locale de Crédit Mutuel - Mutual Credit Bank
DSP	Direction des Services des Pêches - Directorate of Fisheries
FAO-CP	Food and Agriculture Organization Cooperative Program
FOSDA	Fonds Spécial de Développement Agricole - Special Fund for Agricultural Development
FOSEP	Fonds Spécial d'Encouragement à la Pêche - Special Fund for Fisheries Development
GDP	Gross Domestic Product
ICB	International Competitive Bidding
INSTOP	Institut Scientifique et Technique d'Océanographi et de Pêche - Institute of Science and Technology for Oceanography and Fisheries
ONP	Office National des Pêches - National Office of Fisheries
MSY	Maximum Sustainable Yield
HARBOR DEPARTMENT	Department of Harbors and Aerial Bases in the Ministry of Equipment

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

This report is based on the findings of an appraisal mission in October/November 1978, consisting of Mr. J. Duester and Miss M. Varkie (Bank), and Messrs. D.R.P. Farleigh and N. Quere (Consultants).

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A. The Agricultural Sector

1.01 Tunisia covers an area of 164,000 km2 and has a coastline of about 1,300 km. In 1977, the population was about 5.9 million, and the average annual population growth rate during 1966-1975 was 2.3%.

1.02 The country is rather poorly endowed with an agricultural resource base. Much of the land is arid or semi-arid, with most of the agricultural activity concentrated along the coast and in a few oases. A little over one-third of Tunisia's total land area, or about 5.3 million ha, is classified as cultivable. The main crops are wheat and olives. These crops are subject to sharp year-to-year output fluctuations, because of irregular rainfall in the case of wheat and changes in the natural output cycle for olives. Agriculture plays an important role within the Tunisian economy. In 1977, agriculture, including fisheries, accounted for 16% of gross domestic product (GDP), employed 35% of the total labor force and yielded 16% of total exports. Over the period 1970-1977, GDP in the agricultural sector including fisheries grew at a compound rate of 6.8% p.a. in real terms. During the Fourth Development Plan (1973-1976) agricultural exports were nearly equal to food imports (on average D 74 million annually exported compared to D 76 million imported). Fluctuations in agricultural output continue to have a major impact on the country's economic performance. During 1977 there was a decline in agricultural production by 9.1% from the 1976 level, primarily due to bad weather conditions. This factor, in particular, was responsible for the comparatively weak overall growth in GDP in 1977, which declined from 7.5% in 1976 to 2.8% in 1977.

1.03 To achieve the Government's main development objective in agriculture, which is a balanced commodity trade in foodstuffs by 1981, total agricultural output would have to grow at a rate of about 7% p.a. However, the Bank's revised estimates of agricultural growth 1/ indicate that over the Fifth Plan Period (1977-1981), the growth rate will only be 3.3% p.a. This is due to a growth rate of -1.2% p.a. in 1977 and 1978 when imports grew by 10% p.a. instead of 7.7% p.a. as planned and exports by only 4.9% p.a. instead of 9.9% p.a. Achievement of the projected growth rate would still depend on favorable weather conditions, but greater availability of credit, implementation of land reform and introduction of conducive price policies would contribute to an improvement in the growth rate.

1/ Tunisia: Economic Position and Prospects Country Economic Memorandum IBRD November 1978.

B. The Fisheries Subsector

Production

1.04 In 1977, fisheries contributed to about 6% of GDP in the agricultural sector. During the period 1970-1977 the growth rate of GDP in the fisheries subsector alone was higher than that in the agricultural sector, excluding fisheries (8.8% p.a. as compared with 6.7% p.a.). In terms of output, over the same period fish production grew from 27,800 t to 54,000 t, an increase of almost 9.9% p.a. However, in spite of the production increases, the present catch level falls far short of satisfying the potential demand for fish and represents a per capita consumption of only 7 kg per year in Tunisia compared with a consumption of 13 kg in Italy, 15 kg in France, and 39 kg in Spain. Consequently, the Fifth Plan aims to increase per capita consumption to 9 kg in 1981 by raising fish production to 88,000 t. To achieve this target, the Plan foresees investments of D 46 M (US$115 M) for equipment, research and training, and development of harbor and related facilities. Although this amount represents only 9% of total agricultural investments during the Fifth Plan, the average annual investment for fisheries during 1977-1981 is about twice that planned for the Fourth Plan (1973-1976).

1.05 A breakdown of the 1977 fish production of 54,000 t shows that coastal fishing was the most important category with a catch of 23,800 t. Lamparo fishing 1/ accounted for 15,400 t and trawler fishing for 10,600 t. The remaining 4,200 t were attributable to lagoon fishing, tuna fishing, fishing for crustaceans and mollusks, sponge and coral fishing. In 1977, fish exports represented 7% of total agricultural exports as compared to 3% in 1970. The main species exported have been shrimp, octopus and lobster. Most of the catch is consumed fresh on the domestic market with the remainder, about 15,000 t in 1977, being processed by canning plants for both domestic and export markets.

Fish Resources and Existing Facilities

1.06 Pelagic 2/ fish resources in Tunisian waters have been estimated in 1972-1974 to be 580,000 t with a maximum sustainable yield (MSY) of 150,000 t. About 16,500 t, equivalent to 11% of this MSY were exploited in 1977. The objective of the Fifth Plan is to bring production up to 33,000 t which would mean exploitation of 22% of MSY. This is a very ambitious target given the fact that lamparo fishing and tuna fishing are capital intensive operations and require well-trained crews. Fishing for pelagic species is highly competitive and along the northern coast of the country is a continuous source of dispute between fishermen from neighboring countries.

1/ Lamparo fishing involves the use of lights to attract fish, which are then caught in seining operations by lamparo fishing units consisting of a carrier boat and two or three small boats.

2/ Pelagic fish live in open waters and frequently migrate, e.g. tuna, mackerels, sardines, anchovies.

1.07 Demersal 1/ fish resources have never been properly assessed. Appropriate stock assessment studies are urgently needed to direct future Government policies and to avoid possible over exploitation, although there are at present no signs of overfishing in any of the Tunisian fish ports. Stocks and MSY estimates of demersal fish caught by artisanal coastal fisheries are more difficult to make than those for trawler fishing because of the selective fishing methods used. Only certain fish sizes are caught which are not representative of the total fish population. The MSY estimates that were made vary between 50,000 t and 80,000 t. The 1977 production of 34,400 t (23,800 t coastal and 10,600 t trawler fishing) therefore leaves ample scope for increases. This is especially true since there are still rich unexploited fishing grounds beyond the three nautical miles reserved for coastal fisheries in the northern part of the coast and beyond the depth of 50 m reserved for coastal fishing in the southern part. Beyond these limits all other types of fishing, including trawlers are permitted.

1.08 At present about 45 fishery harbors including small shelters are scattered along the Tunisian coast. Major ports, such as Tabarka, Bizerte, La Goulette and Sousse in the northern half, and Mahdia, La Chebba, Sfax, Gabes and Zarzis in the southern half (Map No. 14165), are mostly used by trawlers and lamparo units. They are all equipped with basic facilities including access roads, water and electricity supply. However, the majority of landing sites used by coastal fisheries exclusively like Ghar El Melh, Monastir, Saiada, Teboulba, Salakta, La Skhira and Houmt Souk on Djerba Island is not well equipped and very often does not provide even a basic shelter for boats.

1.09 The total continental shelf area along the Tunisian coast down to -200 m depth covers approximately 77,000 km2. Of this about 17,500 km2 are reserved for coastal fisheries in accordance with the limits given in para. 1.07. 7,000 km2 are in the northern zone and 10,500 km2 from Mahdia to the south. The northern zone is characterized by a narrow continental shelf, a rocky coast and small tidal ranges, and the southern zone by gently sloping foreshores resulting in a wide continental shelf and large tidal ranges of up to 2 m at Gabes. The distribution of area exploitable for coastal fishing activities in each half of the coastline is about 40% in the north and 60% in the south, while actual production is only 15% and 85% of the total production in the north and in the south zones respectively. This distortion results from lesser fishing activity in the north, due to a lack of adequate port facilities and adequate boats, which would be able to withstand the rougher sea conditions especially in wintertime. Construction of small ports for coastal fishing is further constrained by difficult topographical conditions in the north between Tabarka and Bizerte. Fully protected ports in deep waters are costly and very often not economically justified. The proposed Project is based on a careful investigation of all the possibilities and has found that only the following sites could be developed economically. They are Sidi Daoud in the Gulf of Tunis, and Beni Khiar and Hergla in the Gulf of Hammamet. In the southern part of the coast line the most restraining factor

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1/ Demersal fish are bottom water fish, e.g. mullets, perches, bass, breams.

is the lack of port infrastructure in sufficient water depth to allow fishing activities at all tidal ranges. At present the rowing and sailing boats and the light motor boats used can only go out fishing at high tide. The few existing fishing ports are almost totally lacking in shore facilities such as ice-making plants, cold stores, and boat repair facilities, resulting in poor fish quality and down time for motorboats.

1.10 To tap the substantially unexploited fish resources of the coastal areas, Government needs to construct new ports and further equip existing ones, especially in the south. Fishing boats adapted to rough sea conditions in the north also need to be constructed.

Fishing Population

1.11 It is difficult to determine the exact number of fishermen in Tunisia. Estimates vary from 18,000 to 22,500. Assuming that about 12 crew members operate each trawler, 3 of them each coastal boat and about 14 each lamparo fishing unit, the number of fishermen involved in coastal fishing would be 16,600 and the total number 22,500. However, taking into account the fact that the fishermen owning rowing or sailing boats could also be involved in other fishing activities in certain times of the year (lamparo, trawling), a more realistic figure for coastal fishing would be about 12,000.

1.12 In the past, rural migration has affected the fisheries subsector in Tunisia, especially young people, who have found better opportunities in the tourist industry which has flourished along the coast between Hammamet and Sousse, on Djerba Island and to a lesser extent on the Kerkennah Islands. However, since the growth of the tourist industry has now slowed down, these opportunities are getting more scarce and with the modernization of the fishing industry, and the high demand for fish, it is expected that the subsector will be attracting more and more labor which would be supplied mainly from the agriculture sector where unemployment and underemployment is high. Fisheries training schools and vocational training centers are available to train young people as crew members for coastal fishing boats.

1.13 Training. The responsibilities for training fishermen and craftsmen of related industries are shared between the Directorate of Fisheries within the Ministry of Agriculture (DSP), which operates three training schools and five vocational training centers and the Rural Development Program under the Ministry of Planning, which operates another six vocational training centers. In 1977, a total number of 950 students were enlisted in these training schools and centers. Training schools offer a two-year course and the annual number of students awarded diplomas is about 45 skippers, 25 mechanics and 20 marine carpenters. In 1977, the training centers gave one-year courses to 463 participants of which 301 were trained as fishermen and 107 as engine operators. There has been little coordination between the Ministries of Agriculture and Planning regarding training facilities and programs. Training standards are not uniform and there are long delays in awarding diplomas and certificates as this responsibility lies with yet another Ministry, namely the Merchant Marine Department under the Ministry of Transport and Communications. Training is

free and includes full board. The budgetary allocations for training are usually sufficient to cover the most urgent needs of the cost of boarding the students and teachers' salaries. However, training equipment and demonstration material are not available in sufficient quantities.

1.14 The majority of students attending the schools come from rural areas, mainly landless farmers. Fishermen do not send their children to training schools or training centers beause they prefer to train them themselves. However a great many of the fishermen already in the profession need some on-the-job training to bring their knowledge of fishing techniques, boat operation and boat maintenance up-to-date. This kind of training is not available.

1.15 Research. Basic fisheries research is carried out by INSTOP (Institut Scientifique et Technique d'Oceanographie et de Peche), which is supervised by DSP. INSTOP has been involved in exploratory trawling and shrimp research and has undertaken pollution studies, but to date no research has been done on the available resources of demersal fish (para 1.07). This is because of lack of priority planning and coordination between DSP and INSTOP.

Fishing Fleet and Fishing Techniques

1.16 The biggest quantity of fish is landed by the coastal fishing fleet, which includes rowing, sailing and motorboats of up to 13 m overall length. Coastal fishing activity is found everywhere along the Tunisian coast with boats moored in existing ports, on beaches and in river mouths. It represents the traditional sector of Tunisian fisheries and in 1977 accounted for about 44% of total catch.

1.17 Lamparo fishing is used to catch pelagic species, mainly sardines, anchovies, mackerels and horse mackerels. The main fishing ports for lamparo fishing are Mahdia, La Chebba and Sfax, where about 195 seining units are stationed. This type of fishing is a seasonal operation which normally lasts from April to November. In off-season, some of the smaller boats involved in lamparo fishing switch to coastal fishing. In 1977 lamparo fishing accounted for about 29% of total catch. The larger pelagic species, mainly tuna, are caught in traps (madragues) which are set up perpendicularly to the coast line in places where tuna migrates in May and June.

1.18 Trawlers catch demersal species on the continental shelf in depths exceeding 50 m in the sourthern zone and in distances greater than 3 nautical miles from the coast in the northern zone. About 210 trawlers of 20 to 25 m length operate along the Tunisian coast. The species caught are white and grey mullets, whiting, pandoras, breams and other demersal species. Shrimp catches are confined to the Gulf of Gabes where trawlers are also allowed.

1.19 The number of existing crafts used for coastal fishing was estimated to be about 5,000 in 1977, less than four per km of coastline. Only about 1,400 are motorboats. The other 3,600 boats are sailing and rowing boats with a very limited operating radius. Normally the motorboats are well protected against waves arriving at the bow but less protected against waves at the

stern. They frequently transport the catch on deck together with the entire fishing gear which results in quality deterioration even before the catch is landed. Rowing boats and most of the sailing boats do not have decks which make them very vulnerable to wave action. Motorboats have decks but do not provide any shelter to the fishermen and appear to have insufficient height in free board and bulwark.

1.20 The most commonly found motorboats are those of the 7 to 8 m overall length (with engines of 15 to 20 hp), which are constructed in local shipyards according to the individual requests of the boat owners. Although large numbers of this type of boat are used all along the Tunisian coast, they are generally considered to be too small for the more remote fishing grounds. The daily catch rate is low, estimated to be 35 kg, with an average of 150 fishing days per year, which brings production to about 5 t of fish per year.

1.21 Under the First Fisheries Project a new type of boat of 11.25 m overall length was developed of which 190 were sold. Despite the initial difficulties with the boat engine (para. 1.35), it is now well accepted by fishermen. Its principal dimensions are as follows: length overall 11.25 m, length at water line 9.05 m, deck width 3.35 m, draft 0.86 m, displacement 7.5 t. Recorded catches of these boats vary between 50 and 70 kg per fishing day, but it is estimated that production, including unrecorded catch consisting of own consumption and sales outside recording points, reaches at least 90 kg per fishing day.

1.22 Fishing Techniques. Fishing techniques used in coastal fisheries include both passive and active fishing gear. The floating gill net is most frequently used in catching demersal fish but the trammel net which consists of a triple netwall--two wide meshed outerwalls surrounding a rather loose interior net--is also used. Another type of fishing gear presently used is the long line, which has short and usually thinner branch lines carrying hooks at intervals. Motorboats of 11.25 m overall length are usually equipped with 15 trammel nets of 150 m length each, i.e. 2,250 m of trammel net and three long lines of 250 m each with 750 hooks. Due to the lack of training, fishermen have not learnt to use the available techniques efficiently.

1.23 Boat Construction Capacity. There is considerable capacity for construction of wooden boat hulls in Tunisian shipyards, which are well distributed along the coast. The largest boat builder is ONP with four shipyards at Bizerte, Sfax, Sousse and La Chebba. The shipyards at Bizerte, Sfax, and Sousse have a total annual capacity of 80-95 boats of 11.25 m length per year. The shipyard at La Chebba does only repair work. The capacity of privately owned shipyards equals that of ONP. The two biggest of these are in Sousse (Societe de Construction Navale) with a capacity of 35-40 hulls, and in Sfax (Salim) with a capacity of 20-25 hulls.

1.24 Quality of construction varies, but with proper supervision, it is considered good. Some shipyards prepare better designs than others and obtain superior results in the assembly of main components and the quality of

planking. The wood used for the hull ribs is eucalyptus, which is found in Tunisia. The most important components and planking are made of iroko, which is imported from Cameroon, Gabon, Ivory Coast and Nigeria. It is a rather smooth wood, which can be worked well and in which nails and bolts hold firm. However, it has little resistance to shock and in general its characteristics are inferior to those of oak or teak. Eucalyptus, used for the ribs, is of lower quality than iroko; it is brittle, but because of the small size of the boats constructed, it is acceptable.

1.25 An experiment with the construction of ferro-cement boats has been under way for several years under the direction of FAO. Several 11.25 m and 12 m vessels have been built and a 17 m boat is under construction. However, it would not be realistic to try and promote a new type of boat and a new material at the same time in any country. Fishermen often tend to confuse the problems and can reject a good "design" because of poor workmanship; on the other hand, they tend to accept a mediocre "design" with well used material. Therefore, the FAO experiment, which consists in particular of making prototypes of several types of boats, could be of interest only for the 11.25 m boats in the context of the present Project. The dimensions of the 11.25 m ferro-cement boat are close to those of the wooden boat and its conception is completely identical. If tests with the prototypes turn out to be successful and if it is well accepted by the fishermen, the boat would be built in series. Investment costs are estimated to be similar to those of wooden boats.

Financing of Investments in the Subsector.

1.26 Fisheries Credit (FOSEP and IDA). The Tunisian Government has pursued the objective of promoting fisheries investments by making available concessionary credit and subsidies to investers since 1968 through a special Government fund (Fonds Special d'Encouragement a la Peche - FOSEP) administered by BNT. As of November 1978 FOSEP funds committed by BNT amounted to D 13.2 million (US$33 million) in loans and D 2.6 million (US$6.5 million) in subsidies. In addition BNT had at the same date committed D 0.9 million (US$2.0 million) in IDA funds, (Credit 270 TUN) plus D 0.16 million (US$0.4 million) in related subsidies. BNT does not assume any default risk for FOSEP loans, but 50% under the IDA Credit Agreement. For subloan applications DSP makes the technical evaluation of applicants and a committee chaired by the Minister of Agriculture gives the final approval. BNT usually assumes the privilege of final approval for IDA subloans, because of the risk involved.

1.27 As Government feels that fisheries investments are particularly needed to ensure development of important national resources and maintain the livelihood of the rural population, which have very limited employment opportunities, these investments are subsidized in Tunisia. At present, the Government encourages the mobilization of domestic resources by providing subsidies of up to 40% for investments in agriculture and 15% for indivudual investments in fisheries, especially for boat purchases whose costs have doubled in the last four years. FOSEP regulations envisage 20% subsidy for investments by production cooperatives. Government subsidy for the purchase

of motorized boats and fishing equipment applies to investments financed by both FOSEP and IDA subloans. The loan amount is 75% of investment costs at 6% annual interest. The fishermen are expected to finance the remaining 10% themselves. Up to 1977, it was common practice for fishermen to obtain an additional loan from the Rural Development Program (a Government fund established in 1973 to finance rural development projects), so that they often did not make any actual contribution to the boat acquisition. This practice was stopped in 1977 and the Program now extends only short-term credit to fishermen.

1.28 FOSEP legislation was promulgated in 1969/70 and revised in 1972 and in 1977. The last revision was undertaken with the FOSDA legislation governing agricultural funds. Since the introduction of the new legislation, after a long dialogue between Government and the Bank, a uniform interest rate of 6% and uniform lending conditions for FOSDA, FOSEP and Bank financed loans in agricultural Projects have been applied. In the FOSEP ministerial decision of 1977 (Arrete) new maximum investment amounts to be considered for the determination of subloan amounts and subsidies for boats not exceeding 11 m overall length were set at D 10,000 (US$25,000) and for boats of 12 m to 16 m overall length at D 15,000 (US$37,500). These amounts are now too small and an upward revision would be needed, if investments in boats under the Project will also be governed by FOSEP. Under the proposed Project the present ceilings, if applied, would have an effect on the subsidies, which as a result of price increases would become less than 15% of the total investment costs. Fishermen's own contributions and BNT lending would have to cover the price increases.

Organizational and Institutional Constraints of the Subsector

1.29 There are several ministries and agencies involved in the administration of the fisheries subsector; the most important being the Directorate of Fisheries (Direction des Peches - DSP) in the Ministry of Agriculture, the Department of Harbors and Aerial Bases in the Ministry of Equipment (Harbor Department), the Merchant Marine Department under the Ministry of Transport and Communications, the Rural Development Program under the Ministry of Planning, and the Office National des Peches (ONP). (Details of ONP are in the Project File). The responsibilities of these various agencies are widely overlapping and not clearly defined. Each of these agencies is concerned in achieving their own short-term goals rather than the nationally perceived needs of the subsector. The lack of coordination and cooperation between them has led to difficulties in agreeing on action to be taken in the subsector and has therefore resulted in contradictory policy making decisions. All these factors have led to a weak and inefficient administration of the subsector. Because of these institutional weaknesses, project preparation and implementation have, more than in other sectors, encountered difficulties, which although eventually resolved, have cost the Government time and money (paras. 1.35-1.40 and 2.01).

1.30 DSP is normally entrusted with formulation of fishing policies, (in the absence of a functioning Superior Fisheries Council), enforcement of fishing regulations, issuance of fishing permits and export licenses, collection of production data and preparation of statistics, training, fisheries

research and development, and administration of the coastal fishing fleet. DSP has 8 regional and 11 local offices, (Arrondissement des Peches) with a total staff of about 110, i.e. about 10 staff per 100 km of coast, most of them concentrated in the important fishery centers. DSP has been plagued by lack of budgetary allocations and hence there has been a chronical shortage and frequent exchange of personnel which has had a detrimental effect on the whole administration of the subsector. This has resulted in inefficient extension work, unreliable fishery statistics, lack of proper research and very often the abandonment of regulatory and training functions to parastatal organizations such as ONP. These weaknesses have often led to conflict of interest because the agencies involved are themselves fishing operators (ONP) and do not have the legal status to carry out the tasks assigned to them.

1.31 The Harbor Department is responsible for the construction and maintenance of all port facilities. It also manages a number of fish ports and shore facilities, a task which it shares with ONP and the municipalities. The harbor master is responsible for the entire supervision of the port activities and is under the jurisdiction of the Harbor Department. At present the actual operation of the port and shore facilities is run by different agencies in each port. Responsibilities are not clearly defined and because of the lack of communication between agencies there are difficulties in identifying problems, ensuring proper maintenance and planning for new construction.

1.32 The Merchant Marine Department is responsible for navigational security services, personnel management of seamen and fishermen, the fishing fleet and fishing facilities. It approves boat designs, supervises construction and delivers certificates of inspection. While it approves the designs for each boat type it hardly carries out any supervision during boat construction, leaving the shipyards and especially those of ONP at liberty to introduce modifications in the design in accordance with the wishes of individual fishermen. This department is more involved with the merchant marine and is ill equipped to supervise and direct fishing activities.

Banque Nationale de Tunisie - BNT

1.33 BNT is the only source of institutional credit to the fisheries subsector. It was established by Government's initiative in 1959 to provide agricultural credit. It also performs all normal banking and financial operations. Fisheries lending is centralized in BNT's headquarters, its branch offices along the coast are only involved in the initial creditworthiness examination of loan applicants. Government funds for fisheries (FOSEP) and the IDA financed loans (para 1.26) are channelled through BNT to the fishermen (paras.1.38-1.40).

Conclusion

1.34 Both physical and institutional constraints are presently hindering development in the fisheries subsector in Tunisia. A comprehensive development strategy for coastal fisheries would need to include the following actions:

(a) development of marine and shore facilities to harbor fishing fleets, handle fishermen's production and service their fleets. This would mean adding new fishing ports and modernizing existing ones wherever it is technically and economically feasible. Modernizing existing ports would involve extending existing facilities to allow for operations at all times and equipping the ports with additional shore facilities;

(b) provision of adequate equipment mainly boats and fishing gear. This would include design of a new type of boat, especially for the northern coast, capable of sustaining rough weather conditions and modernization of the largely outdated fleet along the coast;

(c) establishment of a central Fisheries Authority with well defined responsibilities, budget and staff to:

(i) make clear policy decisions on the subsector;

(ii) initiate and plan a fisheries development strategy, including promotion of public and private investments;

(iii) implement the regulatory functions in progress in the subsector;

(iv) promote training and research; and

(v) administer the country's fisheries resources and Government's fisheries investments along the coast.

C. Bank Involvement in the Subsector

1.35 In 1971, IDA made available an amount of US$2 million to the Tunisian Government under a Credit Agreement (Credit 270-TUN) mainly to finance the procurement of about 335 boats with inboard engines and spare parts. The number of boats was later reduced to 190, due to increases in investment costs. A new boat design developed after Credit signature was found to be generally unacceptable by the fishermen and had to be altered. An existing boat design with slight modifications was finally accepted. Procurement difficulties arose due to the Bank's insistence on complying with agreed ICB procedures and on awarding the engine contract to the lowest evaluated bidder, whereas DSP would have preferred an award to a firm selling locally assembled engines. The stated preference of the authorities was based on the fact that the locally assembled engines were already well accepted by the fishermen in Tunisia, while the marine version of the lowest evaluated bidder's engine was

not known to them. This engine was more sophisticated and also had a better technical performance than the locally assembled engine. DSP eventually accepted the Bank's views, but because of accumulated delays in the boat design and engine procurement, the first boats were delivered to fishermen only at the end of 1974 more than three years after Credit signature.

1.36 The new boatowners were not used to the electrical starting system attached to the engine which at the beginning led to quite a number of breakdowns, caused by mishandling or dead batteries. Moreover, insufficient training was given to fishermen and service facilities, especially for the engine, were not available. The engine supplier's general agent in Tunis did not fulfill the obligations under the contract to establish sub-agencies in all ports. In the towns where sub-agencies were established, the agents were reluctant to incur the high costs of storing spare parts for the boat engines as the turnover was slow. This resulted in boats remaining unrepaired for weeks. It was only in 1977 that DSP created mobile workshops which have helped fishermen substantially.

1.37 As a result of these difficulties, there was a long delay in Project implementation, because initial boat sales were sluggish and picked up only after DSP had introduced a mobile repair unit which made periodic visits to ports and was also available on call to do repairs free of charge. The closing date of the Credit has been postponed to December 31, 1979. The last boats are likely to be sold by June 1979 and the remaining amount of US$152,000, undisbursed under the Credit, will be used to make supplementary loans for fishing gear and to pay the outstanding bills for boat construction (US$66,600).

Subloan Conditions and Loan Recovery

1.38 Under the First Fisheries Project, the Tunisian Government on-lent the Project funds under a Subsidiary Loan Agreement to BNT at an interest rate of 3%. BNT assumed 50% of the risk on IDA funds only. Other funds, namely FOSEP funds, were managed by BNT on behalf of Government against an annual commission of 3% but with no risk to BNT. BNT then made subloans to individual fishermen at 6% with a duration of eight years, giving BNT an interest rate spread of 3% to cover its administrative costs and the default risk. All subloans to fishermen (FOSEP and IDA financed) were made centrally at headquarters upon the recommendation of DSP. BNT's branch personnel was involved in fisheries loans only at the application stage when the branches had to give their opinion on the applicant's creditworthiness. Loan administration was carried out centrally from headquarters, which led to the situation where branch personnel normally had no direct contact with fishermen after the initial creditworthiness evaluation. This differs from the lending practices in agriculture, where farmers receive annual seasonal credits from the branches and remain in constant contact with branch personnel.

1.39 The repayment performance under subloan agreements between BNT and fishermen has been low due to several reasons:

(i) A large percentage of fishermen have received funds from the Rural Development Program to finance the required 10% advance payment for the acquisition of boats. Most of the fishermen have regarded this as a grant rather than a loan, and have gradually begun to regard BNT loans as grants also. In effect, fishermen have contributed nothing towards the acquisition of their boats. They have therefore been less inclined to take good care of their boats and have not even been too concerned about losing their boats in legal proceedings after loan default.

(ii) Fishermen have used various excuses to avoid paying their debts. The most common complaint has been that the boat has not been operating due to technical defects and therefore, there has been no income available to repay the loan. Initially neither DSP nor BNT had sufficient personnel to verify the situation.

(iii) The total lack of cooperation between BNT and DSP in attempting to recover loan repayments has aggravated the situation. DSP is reluctant to become involved in loan collection, claiming that this is BNT's role, and BNT maintains that it cannot undertake effective loan supervision without the assistance of DSP.

(iv) Credit supervision and a collection system of fisheries loans by BNT has been non-existant in the past. None of the twenty BNT branch offices along the coast had a collection agent.

1.40 The effect of these deficiencies has been disastrous on the recovery rate defined as the ratio of total principal and interest collected to total loan and interest amounts fallen due. It declined steadily to a low of about 6% in September 1978 for IDA financed loans. Bank supervision missions have frequently proposed specific measures to correct the situation, but it was only during pre-appraisal and appraisal of the proposed Project in July and October 1978 that DSP as well as BNT recognized the seriousness of the situation and adopted concrete measures to rectify it. These measures consisted of:

(i) improvement in the cooperation between DSP and BNT's technical services at the central and regional levels;

(ii) the recruitment of seven BNT recovery agents by March 1979;

(iii) the agreement of the Ministry of Agriculture to instruct DSP to link renewal of fishing licenses and granting of subsidies on fuel to loan recovery;

(iv) opening of legal proceedings against loan defaulters which resulted in the seizure of seven boats in March 1979.

During negotiations, a program for recovery of subloans under the First Fisheries Project was agreed upon which foresees an improvement of the recovery rate to 40% by the end of 1979 and to 75% by the end of 1982.

D. The Project Area

Location and Climatic Conditions

Coastline

1.41 The coast of Tunisia extends eastward from the Algerian frontier, 10 km west of Tabarka to Cap Bon, and southward to the Libyan border, 6 km east of El Ketef. The coast has three large bights, the Gulfs of Tunis, Hammamet and Gabes. Off the coast there are several rocks, dangerous shoals and islands, the largest of which are La Galite, the Kerkennahs and Djerba (Map No. 14165).

1.42 The coastline of about 1,300 km including the islands, may be subdivided into two zones each with different characteristics. The northern and north-eastern zone, from Tabarka to Mahdia, is mainly bold and rocky and is dominated, particularly in the north, by the eastern flank of the Atlas Mountains. It has a very narrow Continental Shelf with steep foreshores backed by rock cliffs, which are interspersed with pockets of sandy beach and broken occasionally by small estuaries and lagoons. The south-eastern zone from Mahdia to the Libyan border, on the other hand, has flat, arid hinterlands and sandy, gently-sloping foreshores with, for example, depths of only 5 m at distances of 3 to 12 km offshore of Sfax.

Tide, Wind and Wave Activity

1.43 To the north of Mahdia the tidal ranges are small, rarely exceeding 40 cm, and the tidal currents are correspondingly weak. To the south of Mahdia the tides are larger, with spring tidal ranges in the Gulf of Gabes increasing from 1.6 m at Sfax to over 2 m at Gabes, but tidal and wind-driven currents seldom exceed 0.5 m/s.

1.44 On the northern coast of Tunisia strong winds and gales blowing over considerable fetches from W and NW predominate throughout the year (Map No. 14166), generating an east-going current and raising high seas, with wave heights in deep water exceeding 4 m on an average of 7 days a year (Map No. 14170). Being exposed to such wave action necessitates the construction of massive and costly breakwaters to obtain adequate shelter for vessels, and explains why so few fishery harbors have been built on this coast.

1.45 Although the distribution and frequency of wind strength and wave activity is similar at sea off the eastern coast of Tunisia to that of the northern part, the coastline itself is exposed mainly to lighter local winds, principally from the NE to SE sector, and waves which rarely exceed 2 m in height. Consequently, there is less need for protection from wave action.

II. THE PROJECT

A. Project Preparation and Location

2.01 As a follow-up to the First Fisheries Project, the Tunisian Government requested Bank assistance in financing a new project involving the integrated development of coastal fisheries. Two preliminary studies financed by Government were undertaken by the consulting firms PROJETUD and CEGOS in 1974 and 1976. However, these studies were found to be inadequate as a basis for Project appraisal by an IBRD/FAO CP mission in 1976, and consequently the Tunisian Government in November 1977 employed the engineering consulting firm Societe Generale de Technique et d'Etudes (SGTE) to undertake a critical review of the two earlier studies, and to prepare a complete feasibility study, including detailed engineering and the preparation of tender documents for the port works. This was financed by an advance of US$430,000 from the Bank's Project Preparation Facility. The work of the consultant was supervised jointly by the Ministry of Equipment in Tunisia and IBRD/FAO CP. Pre-appraisal was undertaken in June 1978 by a joint Bank/FAO CP mission and appraisal took place in October 1978.

2.02 In the course of Project preparation and appraisal 47 sites were visited. By exclusion of sites unsuitable or too costly for development, the number of sites under consideration was gradually reduced to the following 10 sites finally retained: Sidi Daoud, Beni Khiar, Hergla, Salakta, En Najet, La Louata, Mahares, Zarat, Bou Grara, and Adjim. Criteria for retaining sites were (i) technical feasibility of port construction; (ii) least cost alternative; (iii) access to fishing grounds; (iv) availability of human resources; and (v) need of port facilities.

B. Project Objectives

2.03 In line with the objectives set forth in the Fifth Development Plan to increase fish production (para. 1.04), the Project aims at contributing to an increase in production of coastal fisheries from 23,800 t in 1977 to about 34,000 t in 1984. Of the total increase of 10,200 t about 8,800 t are attributable to the Project. The increase in production will be achieved by satisfying the pressing need for port infrastructure, to permit the existing coastal fishing fleet to undertake more fishing trips per year, and by adding new fishing capacity in the form of new boats.

2.04 A further major objective is the creation of permanent employment for about 1,750 fishermen, which will alleviate the situation of open and hidden unemployment in the agricultural sector. A considerable share of fishermen taking up the new jobs is expected to come from the rural poor. Additional employment will be created in auxiliary industries like boat building and repair, wholesale and retail markets, cooperatives and fisheries supply stores (para 6.02). The Project also aims at improving fish supply

and the uneven distribution of fish among the population. Further important objectives are related to institution building:

(i) establishment of a central Fisheries Authority with well defined coordinating responsibilities; and

(ii) better access to credit for fishermen and improvement of the collections of loan repayments by adequate supervision of subloans. This would result in more funds collected which would be available for relending.

2.05 Project production would also be directed toward earning foreign exchange directly through the export of frozen shrimps and indirectly through the consumption of high quality fish by about one million tourists visiting Tunisia every year.

C. Project Description

General

2.06 Ports. The Project is designed to meet the objectives outlined in paras. 2.03-2.05 and comprises five main components. Most important in value will be the construction of 10 small fish ports with the required shore facilities to serve as bases for coastal fishing activities along the Tunisian coast. The new port sites will be evenly spread from Cap Bon to the Gulf of Bou Grara. Boat repair facilities, ice making and cold storage equipment for some existing ports will also be made available.

2.07 Boats. The second component will be the construction of 430 coastal inshore fishing boats with inboard engine. Two boat types will be constructed, the existing "IDA-type" of 11.25 m overall length, which is well accepted under the First Fisheries Project, with some small but important modifications; and a new and larger type of 13.80 m overall length with larger working radius and suitable for rougher weather conditions. Spare parts will also be included in this component.

2.08 Training and Technical Assistance. The Project will provide for on-the-job training of fishermen with the help of mobile training units. It will also include the necessary training and demonstration equipment and technical assistance and fellowships for the staff of the newly created Fisheries Authority responsible for the administration of the fisheries subsector and the implementation of the proposed Project.

2.09 Studies. The last Project component will be the preparation of studies for the expansion of the ports in Tabarka and Kelibia, and a study examining the potential of lagoon fishing and research work to determine the exploitable fish stocks and the maximum sustainable yields.

Detailed Features

Port Facilities

2.10 A summary table of the port facilities envisaged for each of the new or expanded ports follows:

Ports	Expected Annual Production at Full Development (t)	Expected No. of Fishermen Using Facilities	No. of Mooring Facilities (berths)	No. of Jetties x Length	Total[a] Investment Cost/m run of Berth (US$/m)	Cold Storage Capacity (m^3)	Ice Plant Production (t/day)
Sidi Daoud	925	225	70	2 x 100 m	5,545	Already existing	Already existing
Beni Khiar	850	220	85	2 x 100 m	6,850	240	5
Hergla	400	100	64	3 x 60 m	6,750	100	3
Salakta	670	250	94	2 x 100 m	2,028	Available in Mahdia	Already existing
La Louata	1,000	500	212	7 x 60 m	3,020	100	5
En Najet	1,800	700	150	5 x 60 m	6,100	240	5
Mahares	1,300	510	111	3 x 60 m) 1 x 80 m)	11,650	Available in Sfax	5
Zarat	900	300	90	2 x 100 m	6,533	Available in Gabes	3
Bou Grara	800	270	66	4 x 60 m	5,750	100	5
Adjim	1,300	490	190	6 x 60 m	3,075	100	5

/a Including service quay.

2.11 All the ports constructed under the Project will have a service quay, jetties and standard shore facilities, which include administration and socio-commercial buildings, a fish hall, a caretaker's house, a slipway, workshops, storerooms, cold storage and ice-making plants. The cold storage capacity

will be either 100 m3 or 240 m3 and the ice-making plant production either 3 t/day or 5 t/day, depending on the needs of each port. Jetties of either 100 m, 80 m or 60 m length will be constructed in each port and the boats will be moored perpendicular to them. Distances between jetties will be 41 m, for the Project boats and 25 m for the non-powered boats and the smaller motor boats. The investment cost per m run of berth based on the least cost design was one of the criteria for site selection. The cost at Mahares is relatively high due to the long causeway, the high cost of transporting rock, and the difficult soil conditions which require a special drainage technique. The construction of this port is nonetheless justified as there are no alternative sites for the active fishing activity between Sfax and Skhira Kedima.

2.12 To increase the quality of production and the efficiency of fishing operations in existing Tunisian ports, the Project will include the financing of ice-making equipment for existing facilities in Ghar El Melh (10 t/day), Monastir (5 t/day), Saiada (5 t/day) and Houmt Souk (10 t/day). In Saiada, Monastir and Teboulba, urgently needed ship repair facilities will be constructed and equipped with the same equipment that is envisaged for the new ports. La Goulette will receive a cold store of 240 m3 to accommodate the incoming catch of coastal and trawler fishing for domestic consumption. Mahdia will receive a freezing tunnel for incoming pelagic and demersal species destined for export. Twenty refrigerated trucks of about 5 t and an additional 20 of 3 t carrying capacity will be provided under the Project for the entities or organizations charged with fish collecting and marketing. These trucks will be insulated and equipped with a compressor connected to the engine.

Boats

2.13 11.25 m Boats. The Project will finance about 400 boats of 11.25 m overall length. The boats would predominantly have wooden hulls and inboard diesel engines and would, in design and equipment, be similar to those constructed and sold under the First Fisheries Project (para. 1.21). Only wooden hulls are accepted by fishermen in Tunisia because (i) they have had no experience with other materials and (ii) they are afraid that ferro-cement and fiberglass boats cannot be repaired. Tests with ferro-cement boats are being undertaken (para. 1.25) but fiberglass boats are virtually unknown. The boats' main technical data would be: overall length 11.25 m, length at water-line 9.05 m, deck width 3.25 m, draft middle and astern 0.86 m, displacement 7-7.5 t. The boat hulls would be constructed in Tunisian shipyards which are well equipped for this task and have a sufficiently large capacity (para 1.23). As compared to the boats built under the First Fisheries Project, a number of small but important technical changes would be introduced. The proposed changes would be directed toward maximum utilization of the boat by (i) making it safer to maneuver in bad weather, (ii) introducing two types of deck plans with superstructure on the aft deck or in front at the buyer's choice, and (iii) giving more comfort to the fishermen so that they are encouraged to undertake more or longer fishing trips.

2.14 Because of the unsatisfactory results experienced by the introduction of a new engine under the First Fisheries Project (paras 1.36 and 1.37), new

equipment should not be imposed on fishermen. Boat owners should be given the option to choose between two different engine makes and between manual and electrical starting systems. It would be important to guarantee the availability of spare parts and adequate after-sale service.

2.15 The new boats would be equipped with sufficient quantities of fishing gear, consisting normally of gill nets, trammel nets and longlines in accordance with the fishing techniques to be used by the boatowner.

2.16 Upon the request of fishermen, the financing of ferro-cement and fiberglass boats would also be permissible under the Project. The ONP shipyard in Bizerte has constructed a prototype under an FAO financed program which has nearly the same dimensions as the wooden 11.25 m boat. The prototype is successfully operating for ONP in Sidi Daoud. The price for a ferro-cement boat of this type is expected to be in the price range of the wooden boat if built in series.

2.17 The 400 11.25 m boats would mainly be sold in the 10 Project sites (283 boats), but also in existing ports north of Mahdia where, according to fish resource estimates, there is considerable underexploitation of stocks, and in other ports in areas which are not overfished. For fishing along the northern coastline, where seas are rough, especially in winter time, a large type of coastal fishing boat will be introduced with an overall length of 13.80 m. About thirty of those boats would be located in Sidi Daoud (10), La Goulette (3), Bizerte (10) and Tabarka (7). They would have a greater fishing radius to take account of the lower density of harbors at the northern coast and would offer better protection in rough weather. The vessels' main characteristics would be: overall length 13.80 m, length at water line 10.80 m, deck width 3.90 m, maximum draft astern 1.40 m, engine hp about 100. They, too, would have wooden hulls. The investment cost for the 11.25 m boat is estimated to be D 11,502 (US$25,755) and that for the 13.80 m boat D 30,016 (US$75,040). Assurances were obtained during negotiations that Government would alter the Arrete of May 4, 1977 to increase the investment cost ceilings on boats to be considered for lending and subsidies if needed for the implementation of the Project.

Institution Building

2.18 Equipment and Vehicles for the Fisheries Authority. The Project will also comprise the establishment, by Government, of the central Fisheries Authority responsible for all regulatory functions within the fisheries subsector in Tunisia (para. 3.05-3.06). Following the successful examples of the special "offices" set up for the administration of the irrigated perimeters in Tunisia this Authority would take the form of a semi-autonomous public agency with legal status and its own budget. It will play an important role in the implementation of the Project (para. 3.05). To facilitate administration of the new ports, the Project will finance 10 small pick-ups for the regional offices of the Fisheries Authority in charge of the port administration. The Project will focus on on-the-job training of fishermen who are normally not willing to spend several months in a training school or training center. For this purpose, 10 mobile training units will be set up consisting of three instructors and a driver equipped with a van-type vehicle,

and all the necessary demonstration equipment. Nine 45 hp boat engines and three 100 hp boat engines would be installed in the most important training schools and training centers for demonstration purposes.

2.19 Technical Assistance for Training. The Project will make available technical assistance to train 40 training instructors for the mobile units and 15 training instructors for training schools and training centers (paras. 3.12 and 3.14). Forty eight man-months of expert service for training purposes will be needed. The Project will also finance 55 fellowships granted to Tunisian instructors at the end of each training course.

Studies and Research

2.20 Port Expansion. Feasibility studies for the expansion of the ports in Kelibia and Tabarka will be prepared under the Project because of their importance as cargo and fisheries ports for the development of the Northwest Region. The feasibility studies will include a critical evaluation of the existing technical and economic studies, the necessary geotechnical and hydraulic work, the preparation of preliminary designs and layouts, and the calculation of investment costs. If it is decided that the port expansion project should be implemented, the preparation of tender documents and detailed design specifications would follow. Terms of reference for these studies are in the Project File.

2.21 Study of Lagoon Fishing. The Project will also include a comprehensive study of the possibilities of lagoon fishing mainly in the Lake of El Biban, the Gulf of Bou Grara, the Lake of Tunis and the Lake of Ichkeul. These lagoons with small openings to the sea are considered to have large fish resources which are at present underexploited.

2.22 Research. Under the Project, research work will be undertaken to determine the fish stocks, pelagic as well as demersal, along the entire Tunisian coast line. This work will be undertaken by the Fisheries Authority in collaboration with INSTOP, with the advice of an expert consultant for whom three man-months are envisaged to lay the initial groundwork and make periodic visits at a later date.

Status of Engineering

2.23 Ports and Shore Facilities. For all Project sites with the exception of Salakta, detailed engineering has been undertaken for port works and shore facilities, design specifications and costed bills of quantities have been prepared and tender documents are ready. The preliminary design for Salakta has also been made and tender documents are being prepared. Cost estimates for Salakta have an acceptable degree of accuracy because no breakwaters are required and only little dredging would have to be done in the existing port basin. Shore facilities for Salakta would be of the standard size used for the other sites too.

2.24 Boats. The design for the 11.25 m Project boat is available. Slight modifications were proposed by a naval architect during pre-appraisal

(para 2.13). The new design for the 13.80 m boat was also prepared during pre-appraisal. Tender documents for procurement of hulls and engines for both boat types would be prepared by the Fisheries Authority after Loan signature.

D. Cost Estimates

2.25 The total Project cost is estimated to be D 27.0 million (US$67.6 million) of which the foreign exchange component is D 11.3 million (US$28.3 million) or about 42%. A foreign exchange component of 40% is estimated for port infrastructure based on the assumption that the works would be undertaken by a joint venture of foreign and local firms. A foreign exchange component of 15% is applied to other civil works because it is assumed that Tunisian contractors will be awarded these civil works contracts.

2.26 The cost estimates are expressed in projected 1980 prices. Average physical contingencies of 10% are added for port works, other civil works and equipment. Price contingencies for local and foreign exchange components are 6% per annum for 1980 through 1984 in accordance with the projected rates of inflation. Taxes and duties estimated at D 2.6 million (US$6.5 million) and representing 10% of total Project costs are included in the cost estimates. Details of cost estimates are given in Annex 1, Table 1 and are summarized below.

Project Cost Estimates

	Local	Foreign	Total	Local	Foreign	Total	Foreign Exchange
	(Dinars '000)			(US$'000)			%
Ports							
Port Infrastructure	4,902	3,268	8,170	12,255	8,170	20,425	40
Buildings	2,041	360	2,401	5,103	900	6,003	15
Equipment /a	775	758	1,533	1,937	1,895	3,832	50
Subtotal	7,718	4,386	12,104	19,295	10,965	30,260	36
Equipment for Existing Ports							
Civil Works	47	8	55	118	20	138	15
Equipment	640	783	1,423	1,600	1,957	3,557	55
Subtotal	687	791	1,478	1,718	1,977	3,695	54
Supervision of Construction and Installation	528	237	765	1,320	593	1,913	31
Boats and Spare Parts	2,265	3,397	5,662	5,663	8,492	14,155	60
Training and Institution Building							
Equipment	80	108	188	200	270	470	57
Training/ Fellowships	28	131	159	70	328	398	82
Incremental Local Personnel Costs /b	1,268	-	1,268	3,170	-	3,170	0
Subtotal	1,376	239	1,615	3,440	598	4,038	15
Studies and Research	194	350	544	485	875	1,360	65
Base Costs Without Contingencies	12,768	9,400	22,168	31,921	23,500	55,421	42
Contingencies							
Physical	872	508	1,380	2,180	1,270	3,450	37
Price	2,058	1,406	3,464	5,145	3,515	8,660	40
Subtotal	2,930	1,914	4,844	7,325	4,785	12,110	39
Total Project Cost	15,698	11,314	27,012	39,246	28,285	67,531	42

/a Includes working capital for shipyards.
/b Includes local instructors, incremental personnel costs of Fisheries Authority and loan administration BNT.

NOTE: Discrepancies due to rounding.

E. Financing

2.27 The proposed Bank Loan of US$28.5 million will be made to the Tunisian Government and will finance the foreign exchange cost of the Project. The proposed financing plan is given below:

	Sub-borrowers	Government	BNT	IBRD Loan	Total
	US$ million				
New Ports					
Civil Works	-	21.1	-	11.1	32.2
Equipment	-	2.5	-	2.2	4.7
Existing Ports	-	1.8	-	1.8	3.6
Supervision of Construction	-	1.4	-	0.8	2.2
Boats	1.6	4.9	-	9.8	16.3
Training					
Technical Assistance	-	0.1	-	0.3	0.4
Local Personnel	-	1.2	-	-	1.2
Fellowships	-	-	-	0.1	0.1
Equipment	-	0.2	-	0.3	0.5
Vehicles					
Refrigerated Trucks	-	1.0	-	1.2	2.2
Ports	-	0.2	-	0.1	0.3
Incremental Personnel Cost	-	2.0	0.5	-	2.5
Study under Project Preparation Facility	-	0.3	-	0.4	0.7
Other Studies	-	0.3	-	0.4	0.7
	1.6	37.0	0.5	28.5	67.6

2.28 Goverment contributions will be made to:

(i) The Harbor Department to cover the local expenditure of civil works and equipment in the Project sites (US$25.4 million equivalent) of supervision of construction and installation (US$1.4 million equivalent) and of the feasibility studies for the expansion of the ports of Kelibia and Tabarka (US$0.2 million equivalent). Local funds of US$0.3 million equivalent have already been paid by the Harbor Department for the Project feasibility study financed under the Bank's Project Preparation Facility;

(ii) the Fisheries Authority to cover the local expenditure of training equipment (US$0.2 million equivalent), of technical assistance for training and various studies (US$0.2 million equivalent), of refrigerated trucks and other vehicles (US$1.2 million equivalent) and its incremental personnel cost including cost of instructors (US$3.2 million equivalent); and

(iii) BNT to cover the local expenditure of boat construction (US$4.9 million equivalent).

2.29 These Government contributions will be equity contributions and allocations to the budgets of the Harbor Department and the Fisheries Authority. A Project Agreement with BNT will specify the conditions under which Government and Bank funds will be given to BNT under a Subsidiary Loan Agreement (para. 2.33). US$2.45 million equivalent of Government funds will be given as subsidies for the fishermen's acquisition of boats (15% of investment cost) and an equal amount as loans (para. 2.33).

2.30 Bank funds will be made available to Government and passed on to:

(i) The Harbor Department to cover the foreign expenditure of civil works and equipment in the ten port sites (US$13.3 million) and in the existing ports (US$1.8 million), of supervision of construction and installation (US$0.8 million) and of the feasibility studies for Kelibia and Tabarka (US$0.25 million). An amount of US$0.4 million is being disbursed under an advance from the Bank's Project Preparation Facility;

(ii) the Fisheries Authority to cover the foreign expenditure of training equipment (US$0.3 million) of technical assistance for training, various studies and fellowships (US$0.55 million) and of refrigerated trucks and other vehicles (US$1.3 million); and

(iii) BNT to cover the foreign expenditure of boat construction (US$9.8 million).

2.31 The Bank funds will be allocated to the budgets of the Harbor Department and the Fisheries Authority. Funds for BNT will be given as a loan (para. 2.33).

2.32 BNT will contribute the personnel cost for the subloan recovery system (total US$0.5 million equivalent).

2.33 During negotiations, assurances were obtained that the Government, prior to Loan Effectiveness, will conclude an agreement with the Fisheries Authority regarding channelling of Government and Bank funds. Assurances were also obtained that prior to Loan Effectiveness, a Subsidiary Loan Agreement with BNT will be concluded to specify that BNT will obtain Government and Bank funds (total of US$12.3 million equivalent) at 2.5% interest for 12 years, including five years of grace. A 3.5% interest spread is necessary to cover BNT's administrative cost, prefinancing contract payments and the lending risk. Subloans to Fishermen will be made at the FOSEP current interest rate of 6%. This rate is the same as that charged for agricultural lending and is about the same as the past and projected rates of inflation in Tunisia (1975: 5.4%, 1977: 6.7%, 1978: 5.3%; 1979-1981: 6%). The FOSEP also provides for 15% subsidy (para. 1.26). Sublending conditions under the Project are outlined in para. 3.07. They will be reviewed periodically to determine their justification and will be adjusted if required. In compliance with the Government Policy to have banking institutions assume a greater portion of the lending risk (Supplementary letter No. 2 to Loan Agreement No. 1340 TUN of December 17, 1976), BNT will assume 25% of the default risk on subloans granted throughout Project implementation. Assurances were obtained during negotiations that the Government will maintain this policy and will periodically review the rates of BNT's risk assumption.

2.34 Fishermen will contribute 10% of boat investment cost (US$1.6 million equivalent).

Project Preparation Facility

2.35 The feasibility study for this Project, including detailed engineering and preparation of tender documents, amounted to D 292,852 (US$732,130). The Bank financed part of the foreign exchange component amounting to US$430,000 under the Bank's Project Preparation Facility. The cost of this study has been included in the Project cost and the amount advanced by the Bank will be refinanced under the proposed Loan.

F. Procurement

2.36 Ports. Contracts for port construction including delivery and installation of equipment in the ten new port sites as well as in the existing ports will be grouped together in lots (para. 2.40) by the Harbor Department and will be tendered under procurement procedures consistent with Part A of the "Guidelines for Procurement under World Bank Loans and IDA Credits" published by the Bank in March 1977. Contracts not exceeding the cost of

US$250,000 equivalent for civil works and US$100,000 equivalent for equipment will be let under competitive bidding procedures, advertised locally, provided that the aggregate amount of all such contracts will not exceed US$750,000 equivalent for civil works and US$300,000 equivalent for equipment. Assurances to this effect were obtained during negotiations.

2.37 Boats and Boat Equipment. Since the capacity of Tunisian shipyards is sufficiently large to guarantee adequate competition and since experience shows that competition from foreign boat yards for wooden hulls is highly improbable, these hulls will be procured by the Fisheries Authority on the basis of competitive bidding advertised locally. The Authority will have the option to enter into contracts with several shipyards in order to arrive at more rapid delivery. Fishing gear and boat diesel engines will be procured under international competitive bidding procedures. For the procurement of the 45 hp engines the Authority may reserve the right to enter into contracts with up to two engine suppliers in order to take account of fishermen's preferences. Each engine supplier (two for the 45 hp and one for the 100 hp engines) will be asked to maintain a central consignment stock of spare parts with the Authority in Tunis. The entities operating the ship repair facilities at the various port sites will purchase spare parts from this consignment stock through the Authority. Assurances to this effect were obtained during negotiations.

2.38 Vehicles. The Fisheries Authority will purchase the 40 refrigerated trucks under international competitive bidding procedures and the ten pick-ups and 10 vans under competitive bidding procedures advertised locally.

2.39 Margin of Preference and Advertisement. Assurances were obtained during negotiations that Tunisian manufacturers will be granted a margin of preference in bid evaluations for goods manufactured in Tunisia, and that amendments to contracts adding or deleting more than 16% of their respective value will not be made without the prior concurrence of the Bank. The Harbor Department and/or the Fisheries Authority will provide general procurement notices in a timely manner for publication in the UN Development Forum.

2.40 Procurement Lots. It is estimated that procurement for port infrastructure will be done in three lots, the first to comprise the port works at Sidi Daoud, Beni Khiar and Hergla (about US$7.8 million), the second the port works at Salakta, La Louata and Mahares (about US$9 million) and the third the port works at En Najet, Zarat, Adjim and Bou Grara (about US$8.5 million). Similarly about three contracts would be let for civil works of shore facilities in the same groups of ports (about US$2.4 million, US$2.6 million and US$3.6 million respectively). Equipment for all new and existing ports would be combined in one contract (about US$8.8 million).

2.41 Boats. For boat hulls about nine contracts will be awarded to Tunisian shipyards, three in 1980 for a period covering approximately 18 months, three in 1981 for another 18 months and three in 1983 for the remaining number of hulls. Total estimated contract value for hulls is D 3.7 million (US$9.3 million). Upon special request of fishermen, fully equipped

ferro-cement or fiberglass boats will be purchased through negotiated contracts provided that the estimated amount of contracts for such boats within any twelve-month period does not exceed the equivalent of US$100,000.

2.42 Under the assumption that contracts for boat engines would be awarded to three different suppliers (two suppliers for the 45 hp and one for the 100 hp engines), it is estimated that seven contracts would be let. The contract for the 100 hp engines would be let in 1980 and the six contracts for the 45 hp engines would be awarded with the same phasing as indicated above for the hulls. The combined value for all boat engines including spare parts is estimated to be D 2.0 million (US$4.9 million).

2.43 For fishing gear three contracts will be let with the same phasing as indicated above for the hulls. The estimated value of these contracts is D 0.9 million (US$2.2 million).

2.44 For refrigerated trucks one contract will be awarded in an estimated value of D 0.9 million (US$2.2 million). For vehicles and other equipment, several small contracts will be awarded with a total value of D 0.8 million (US$2.0 million). Assurances regarding grouping in lots of sufficient size to enable international competitive bidding for the components described above in paras. 2.36-2.43 were obtained during negotiations.

G. Disbursements

2.45 The proposed Bank loan of US$28.5 million is expected to be disbursed over a period of five years, 1980-1984. The loan will finance:

	Category		Cost (US$ million)
I.	35% of the cost of all civil works contracts for port infrastructure and buildings representing the estimated foreign exchange component		10.3
II.	100% of foreign expenditures for all imported equipment for shore facilities and vehicles; and 55% of local expenditures for the cost of goods purchased locally representing the estimated average foreign exchange component		4.9
III.	100% of foreign expenditures for all imported boat engines and boat equipment including fishing gear and 80% of local expenditures for the cost of boat engines and boat equipment purchased locally, and 30% of local expenditures for boat hulls, and 100% of foreign and 70% of local expenditures for all fully equipped ferro-cement or fiberglass boats representing the estimated average foreign exchange component		9.8
IV.	100% of foreign expenditures for:		
	(a) supervision of construction of port works and shore facilities;	0.8	
	(b) technical assistance for the training of instructors and fellowships;	0.4	
	(c) studies for the expansion of the ports of Kelibia and Tabarka; and research work on fish stocks	0.4	
			1.6
V.	Refunding of Project Preparation Advance		0.4
VI.	Unallocated		1.5
			28.5

2.46 Disbursements under all categories will be made against appropriate documentation to be forwarded to the Bank together with each withdrawal application. No disbursements will be made against statements of expenditures.

H. Project Accounts and Audits

2.47 Separate accounts will be maintained for all Project expenditures by all entities involved in Project implementation, i.e. the Harbor Department, the Fisheries Authority and BNT. BNT will have its accounts and annual financial statements audited by an independent auditor acceptable to the Bank. Audited Project accounts and annual financial statements will be forwarded to the Bank within 6 months of the end of each fiscal year in a form acceptable to the Bank. Assurances to this effect were obtained during negotiations.

2.48 BNT will maintain an adequate accounting system to show subloans committed and disbursed, interest fallen due and collected, and principal fallen due and collected. The overdue amounts categorized by age, will also be recorded. Assurances to this effect were obtained during negotiations.

III. PROJECT IMPLEMENTATION AND EXECUTING AGENCIES

A. Borrower and Project Execution

3.01 The Republic of Tunisia will be the borrower of the Loan. The Fisheries Authority will have the task of coordinating and supervising the various entities involved in the implementation of the Project.

3.02 Participating in the implementation of the Project would be the Ministry of Equipment for the construction of the ports and port facilities, the newly created Fisheries Authority and BNT.

3.03 The Harbor Department will be the executing agency for the construction of the ten port sites, including infrastructure and shore facilities, as well as the construction of facilities in existing ports. This department has already supervised together with the FAO/IBRD Cooperative Program the preparatory work for the Project and is well qualified for the job because of its previous involvement in numerous ports and other infrastructure projects already carried out. Assurances were obtained during negotiations that the Harbor Department will be assisted in the supervision of construction and installation by an engineering consultant to be employed prior to the award of the contract for the first lot of ports, whose qualifications, experience and terms and conditions of employment will be satisfactory to the Bank. A total of about 108 man-months of expatriate consultant's time and about 720 man-months of local consultant's time will be needed. Assurances with respect to the Harbor Department's role in port construction and supervision of works were obtained during negotiations.

3.04 The Harbor Department will also be responsible for hiring a qualified consulting firm for the preparation of feasibility studies for Kelibia

and Tabarka. For this study a total of approximately 40 man-months of consultant's time will be needed. Assurances were obtained during negotiations that consultants will be hired, whose qualifications, experience and terms and conditions of employment will be satisfactory to the Bank.

3.05 The Fisheries Authority will be created as a semi-autonomous public agency under the supervision of a ministry to undertake all administrative and regulatory functions in the fisheries subsector. It will play an important role in the implementation of the Project by being involved in the following Project activities:

(i) Carrying out the whole procurement process for boats, equipment and vehicles, including preparation of tender documents, tendering procedures, bid evaluations and contract awards;

(ii) supervising boat construction and pre-delivery inspection;

(iii) making the technical/economic appraisal of fishermen's applications for subloans;

(iv) coordinating its own Project-related activities with those of other agencies especially (a) the Harbor Department regarding port construction, (b) BNT regarding subloan supervision and collection, and (c) ONP regarding marketing and export of Project boat catch;

(v) operating Project ports and collecting harbor dues from fishermen;

(vi) operating shore facilities until they can be leased under a commercial lease agreement and then supervising the leases;

(vii) supervising the study on the potential of lagoon fishing and the research program on assessment of fish stocks and MSY;

(viii) organizing and implementing Project-related training programs;

(ix) monitoring fish production and Project progress and preparing statistics;

(x) preparing periodic progress reports, including reports on sea pollution; and

(xi) promoting the formation of fishermen's cooperatives or similar professional organizations and supervising their activities.

3.06 One of the possible forms of organizational set-up is reflected in Annex 1, Chart 1 with a description in the Project File. During negotiations, assurances were obtained that prior to Loan Effectiveness (i) appropriate legislation will be promulgated by the Tunisian Government to formally

establish a new Fisheries Authority whose role would be, inter alia, to undertake the tasks described in para. 3.05 above; (ii) the Director General of the Authority will be appointed; and (iii) the necessary arrangements will be made to provide the Authority with resources and determine the details of its functions and responsibilities.

3.07 BNT. As under the First Fisheries Project, subloan disbursements to fishermen will be channelled through BNT. BNT will make individual loans to fishermen after having received a technical/economic appraisal of loan applications from the Fisheries Authority. BNT will evaluate the financial viability of a proposed operation and the applicant's creditworthiness. For this purpose, BNT will continue its efforts to decentralize decisions on loan applications to its branches and to gradually raise the ceilings for loan approval to be undertaken by the branch directors. Upon receipt of the 10% contribution from the fishermen, subloans will be made for a total duration of eight years including six months of grace period at 6% annual interest on the outstanding amount paid in monthly installments or by direct deduction. In order to ensure that boat ownership would not be concentrated in the hands of a few owners, assurances were obtained during negotiations that BNT will make only one subloan per person.

3.08 New boats will be mortgaged to BNT before delivery. This form of security could eventually be replaced by a guarantee of a fishermen's cooperative for its members. Also, a certificate of insurance will have to be presented to BNT by the fishermen before delivery. BNT would examine the possibility of financing the insurance amounts for the duration of the subloan in order to guarantee an uninterrupted insurance of Project boats and obtaining bulk insurance at more favorable rates. Assurances were obtained during negotiations that BNT will apply subloan conditions as specified in paras. 3.07 and 3.08 and that the fishermen's down-payment of 10% will have to be made with his own funds.

3.09 To reinforce its loan supervision and collection system, BNT has recently recruited six recovery agents to supervise its fisheries portfolio. Assurances were obtained during negotiations that prior to Loan Effectiveness, BNT will recruit a total of seven recovery agents and maintain a ratio of one recovery agent per 50 outstanding subloans financed by the Bank. These agents will be responsible for full-time loan supervision and collection for all types of subloans. Assurances were also obtained that BNT will be assisted in its collection efforts by the Fisheries Authority which will, in cooperation with BNT, provide appropriate training in credit matters to fishermen and students at training schools and vocational centers, and which in cases of necessity will arrange that tax exemption on fuel will be withheld for defaulters and that their fishing licenses will be revoked or not renewed.

3.10 Professional Organization. The construction of the new port sites would be an ideal opportunity to reorganize the fishermen and establish of this type of fishermen's organizations would be promoted under the Project and if successful the system could be expanded to include other Tunisian fishing ports. Membership would be on a voluntary basis. These cooperatives

and organizations would be eligible for renting and managing port facilities made available by the Fisheries Authority. They would provide their members with services concerning marketing of their products. For this purpose, they would assist them in the collection, storage and auctioning of fish at competitive costs. They would also sell fisheries equipment such as fishing gear, ropes, lines, mechanical parts, tools, and make available short-term seasonal credit to be refinanced by BNT. If successful, the cooperatives and organizations could expand their services by guaranteeing the subloan repayment of their members to BNT. This could replace the present cumbersome system of boat mortgaging. Through the marketing arrangements the cooperatives and organizations could automatically deduct certain percentages from the catch value to cover their own costs and advances and to repay BNT.

3.11 Fishermen's cooperatives would have a members' assembly, a board consisting of elected members and a president, who would also be elected. A salaried manager paid by the cooperative and assisted by additional staff if necessary would be responsible for the administration, accounting, operation of shops and other services granted to fishermen and accountable to the assembly and the board. Progress in cooperative development would be closely monitored by Bank missions.

3.12 Training. Under the Project mobile training units will be set up and attached to training schools or training centers. These mobile units would cover all coastal districts and would be composed of three specialized instructors and one driver. Their fields of specialization would be: (i) fishing technology, (ii) mechanical and electrical repairs, and (iii) boat carpentry. Three consultants would be employed to train the instructors. During the first Project year, they would spend the initial three months in Tunisia studying the conditions and preparing the training program. Training would be carried out in three groups, with ten instructors in each group, and would last for a period of three months. The consultants would also hold classes for carpenters, electricians, mechanics and cold store technicians, who would be employed in the new port sites. The training of the 30 instructors (10 instructors in the mechanical and electrical field, 10 in boat carpentry, and 10 in fishing techniques) would be completed by a one month fellowship. In 1982 or 1983 the consultants would conduct refresher courses and train newly recruited instructors for a period of three months.

3.13 The training teams will be equipped with a van-type vehicle containing all the necessary demonstration equipment in terms of fishing gear and tools. The mobile units would make regular trips to certain ports and accompany fishermen on fishing trips for training purposes. The mobile units would be attached to the three fisheries schools located in Bizerte, Kelibia and Sfax and to the vocational training centers in Tabarka, Monastir, Gabes, Zarzis and La Goulette. The mobile units would be informed from the shipyards and the Fisheries Authority about all deliveries of Project boats and the port of registration. The mobile units would be available to train the new crew of each boat and would make periodic visits to the ports - at least three or four times annually, even after full development.

3.14 A fourth consultant would undertake the training of 15 specialized instructors who would also be attached to training schools and training centers. The consultant would be responsible for promoting the idea of cooperative formation and giving insight into the mechanisms of the credit system. The consultant will prepare his training course in close cooperation with BNT. Assurances were obtained during negotiations that training consultants will be employed whose qualifications, experience and terms and conditions of employment will be satisfactory to the Bank.

B. Implementation Schedule

3.15 The Project would be implemented over a period of five years. It is estimated that the construction of ports would take three years: the first two years for dredging and construction of quays, jetties and breakwaters, and the third year for the construction of shore facilities and installation of equipment. Salakta would be an exception, where, due to the small amount of new infrastructure required, the works could be finished by the end of 1981.

3.16 Construction of Project boats would start in 1980, and boats would be delivered to the existing ports in the same year. Deliveries to the other Project ports would start in 1982 and continue until 1984. The training and technical assistance component could start as soon as the first boat hulls were built and the first batch of engines was delivered. This is expected to take place by the end of 1980. The training of fishermen on the job would be carried out throughout the implementation period and could be continued after 1984 if deemed necessary. The Fisheries Authority would be institutionalized prior to Loan Effectiveness which is expected to take place in the fall of 1979, and would start operations immediately thereafter. It is expected that the Authority would not reach its full manpower strength before 1982.

3.17 The study for the expansion of the harbors in Kelibia and Tabarka would commence in 1980 and be finalized by 1982. Research work for the determination of fish stocks along the Tunisian coast would start as soon as possible in 1980. The study on the potential of lagoon fishing would also commence in 1980 and is expected to be finalized in 1982. A bar chart showing the implementation schedule of the various Project components is in Annex 1, Chart 2.

C. Operation and Maintenance

3.18 The ports to be constructed under the Project would all be ready for operation at the end of Project year 3, i.e., December 1982. Assurances were obtained during negotiations that the Fisheries Authority will appoint a harbor master prior to the initial operation of any of the ports and related shore facilities. The harbor master will be in charge for the

smooth operation of all port facilities and will plan and supervise execution of maintenance and repair works; such as maintenance dredging, seaweed removal, maintenance of buildings and slipways. An estimation of the cost of maintenance is shown in the Project File. The cost for maintaining port infrastructure will be borne by the fishermen under a system of port fees to be devised by 1982 (para 3.20). The Fisheries Authority will be responsible to collect the port fees and to this end will employ one accountant/finance officer in each port.

3.19 Fishermen would land their catch at the service quays in the new ports, from where it would be transported to the fish halls. The fishermen's organizations would sell the catch for the fishermen to a wholesaler on a commission basis. Fish would be stored in the cold stores till the time of the fish auctions, which would normally be held in the morning. The organizations would have office space in the socio-economic buildings of each port, where they might also maintain retail shops for fishing gear and other items. Boat servicing and boat repairs would be done in the repair facilities attached to each port, which would be equipped with slipways, mechanical workshops and carpentry workshops. All shore facilities will be operated on a commercial basis (para. 3.20).

D. Cost Recovery

3.20 Under the Project, the Government will carry out a study in 1980 to review cost recovery aspects for port infrastructure. The study will determine the basis and terms and conditions of port fees to be levied. The Government will then introduce a system of port fees not later than December 31, 1982 to recover operating and maintenance costs of port infrastructure and, to the extent possible, depreciation. Shore facilities such as boat repair yards and slipways, ice-making plants, cold stores, service buildings, stores, refrigerated trucks and fuel stations will be leased to commercial operators by the Fisheries Authority against rental fees that will cover operation and maintenance costs, depreciation and, to the extent possible, will yield a reasonable rate of return on investment. Assurances to this effect were obtained during negotiations.

3.21 In the past, no user charges, such as port fees, were levied on fishermen for coastal fishing, and, in the framework of a general production promotion policy, Government has subsidized individual investments in the subsector (paras 1.27 and 1.28). On the other hand, through a complex taxation system, Government has managed to recover part of these subsidies through custom duties, taxes on production of goods and services and income taxes. Under the Project, the Government will recover through taxes, duties, port and rental fees all of the operating and maintenance costs and more than 80% of the total investment cost for port infrastructure, shore facilities and the subsidy on boat investment. Costs and benefits for these calculations were discounted at 10% representing the estimated opportunity cost of capital in Tunisia.

E. Monitoring and Reporting

3.22 Production under the Project will have to be closely monitored by the Fisheries Authority with the assistance of fishermen's associations. Special attention will have to be given to a complete recording of catch including the fishermen's own consumption. Assurances were obtained during negotiations that one adequately trained employee of the Fisheries Authority to be appointed not later than June 30, 1980 will undertake to monitor on a sample basis the impact of the Project on fish production, profitability of boats, income of boats owners and crew members, fish prices and supply in various ports, and that results of these efforts will be periodically reported to the management of the Fisheries Authority and the Bank. During Project implementation the Fisheries Authority will be required to submit quarterly progress reports to the Bank in which the progress of all Project activities will be described. It will have the responsibility of combining these progress reports with reports obtained from the Ministry of Equipment, during construction of ports, and from BNT. BNT's reports would include details on loan applications, loans committed and disbursed, and loan supervision, including recoveries. The Fisheries Authority will submit to the Bank annual reports together with their budget of income and expenditure. BNT will also submit annual reports together with its audited financial statements not later than six months after the end of the fiscal year. Not later than six months after the Closing Date of the Loan, the Fisheries Authority will prepare and furnish to the Bank a completion report on the execution and initial operation of the Project, its cost, the benefits derived and to be derived from it, the performance of the Fisheries Authority, the Harbor Department and BNT, and inform the Bank of their respective obligations under the proposed Loan Agreement, and the accomplishment of the purposes of the proposed Loan. Assurances to this effect were obtained during negotiations.

IV. PRODUCTION, MARKETING AND DEMAND

A. Production Parameters of the Project

4.01 In determining the production parameters of the existing fishing fleet and the fishing vessels to be financed under the Project, expected catch rates have been used. These are based on experience gained during implementation of the First Fisheries Project and on extensive field observation during appraisal. The estimates take account of a number of additional factors which in the past have hindered the full utilization of the fishing craft.

4.02 The Project will introduce a training element (paras. 3.12-3.14) which should yield quick results in making fishermen fully acquainted with their boats and in making them more flexible in adopting varying fishing techniques, which they can use in the exploitation of alternative fishing

grounds. Being fully familiar with boat hulls and boat engines, the number of repair days would be reduced. Through the introduction of proper repair facilities in each of the new ports and additionally in Saiada, Teboulba and Monastir, repair days for boats would be further reduced enabling the fishermen to undertake more fishing trips per year.

4.03 The unrecorded portion of the catch at present is estimated to be between 30% and 50%. This occurs most frequently in areas where there are no port facilities for disembarking the fish and where tourist hotels are located, so that the fish is sold directly. The Project will make more landing facilities available. The incidence of unrecorded catch in coastal fisheries cannot totally be avoided, but with these added facilities it is expected to decrease. An allowance for unrecorded catch has been made in the financial analysis of the boats, the economic analysis of the new harbors, and the economic analysis of the Project as a whole.

4.04 Details of the production parameters are in Annex 4 and are summarized below:

	Year 1	Year 2	Year 3	Year 4-15
Catch in kg per day 11.25 m boat				
Fish	70	70	80	90
Octopus	35	35	35	35
Shrimp	25	25	25	25
Catch in kg per day 13.80m boat				
Fish	90	110	130	150

	Year 1	Year 2	Year 3	Year 4-15
Annual Catch in t per 11.25 m boat				
Group A Ports a/				
Fish	14.0	14.0	16.0	18.0
Group B Ports b/				
Fish	4.2	4.2	4.8	5.4
Octopus	3.5	3.5	3.5	3.5
Shrimp	1.0	1.0	1.0	1.0
Annual Catch in t per 13.80m boat	18.0	22.0	26.0	30.0

	Fish	Octopus	Shrimp
Fishing days per year for all boats			
Group A Ports a/	200	-	-
Group B Ports b/	60	100	40

/a Group A Ports include Sidi Daoud, Beni Khiar, Hergla and Salakta where no shrimp and octopus are caught.

/b Group B Ports include La Louata, En Najet, Mahares, Zarat, Bou Grara and Adjim where shrimp and octopus are caught.

4.05 The 11.25 m Project boats would thus have an expected annual catch at full development of 18 t. Of this, up to 5 t are expected to be unrecorded.

Without ports and on-the-job training, the boats would produce 70 kg/day with 130 fishing days in the year which would bring annual production to 9.1 t. On-the-job training would bring about an increase in the production per day from 70 to 90 kg, which would result in an annual production increase of 2.6 t. With the port facilities, the number of fishing days would increase to 200. For the 13.80 m Project boats, production per fishing day would gradually increase from 90 kg to 150 kg, resulting in an annual production increase from 18 t to 30 t.

B. Total Production

4.06 It is assumed that without the Project, there would be a slight overall decrease in the existing number of rowing and sailing boats and motorboats over the 30-year period under consideration. The anticipated decrease of the existing fleet in the Project sites would consist of a 20% decrease in rowing and sailing boats (in absolute numbers about 160 craft), and an increase of motorboats by 30% (about 70 craft). Skippers who would switch from a sailing or rowing boat to a motorboat or from an existing boat to a new motorboat, would sell their craft so that they would continue to be in use. With the Project, the existing fleet is assumed to remain stable. Under the Project, 283 11.25 m boats and 10 13.80 m boats would start operation in the new ports and another 117 11.25 m boats and 20 13.80 m boats in existing ports. All these would be considered as net additions to the fleet, i.e., not as replacements of existing boats.

4.07 Total incremental production of white fish under the Project would be about 8,600 t of which 2,700 t would be attributable to new boats in existing ports, 5,600 t to new boats in ports constructed under the Project and 300 t to incremental production of existing boats. The 160 t additional shrimp and 60 t additional octopus would be produced by new boats.

C. Marketing

Marketing and Distribution

4.08 The marketing system for fish in Tunisia is characterized by the operation of a number of different agents and marketing methods. From the point of first sale several selling methods can be identified. The producer may sell the fish directly to the consumer in which case it would not be registered or go through various intermediaries, including ONP. The most commonly practiced method is the sale of fish through regulated daily auctions in municipality-owned market places to wholesalers, retailers, hotels and restaurants all along the coast. The catch earmarked for export or for freezing and canning is not auctioned, but instead is sent to ONP or private canneries for processing.

4.09 Prior to liberalization in 1969, ONP monopolized fish marketing through its extensive marketing system and the Government's price regulations. Since 1969, ONP has transferred part of its facilities and nearly its entire retail system to private ownership. In spite of its reduced marketing operations, ONP is still the major Tunisian fish distributor, processor and exporter. Marketing facilities established by ONP include a network of fish collection centers, ice-making plants, refrigeration plants, frozen fish storage and refrigeration depots. In addition, ONP has a fleet of insulated and semi-refrigerated trucks to deliver fresh fish to main depots and retail outlets. These facilities would continue to be run by ONP under the Project. The Fisheries Authority would lease the marketing facilities constructed under the Project to ONP or other commercial operators (para. 3.20).

4.10 About 60% of the total landed catch is collected and distributed by ONP, while the rest is handled by private dealers. There are between 50 to 60 refrigerated trucks used for transporting fish in Tunisia, of which 30 are owned by ONP. ONP distributes the fish to the main markets, and also to the large towns in the interior of the country. There are only about 4 to 5 vehicles per 100 km of coast which is clearly inadequate, especially if the distribution of fish inland is also considered. The fish which is not handled by ONP is conveyed by every form of transport ranging from refrigerated trucks to carts drawn by donkeys. Of the 40 refrigerated trucks provided under the Project, 10 would service the new Project ports. Together with the other 30 trucks, they would also be used to improve the distribution system between the wholesale and retail markets, especially to reach the interior of the country.

4.11 In terms of the quantity of fish handled, the wholesale fish markets at Tunis and Sfax dominate the marketing and distribution system. 75% of the total supplies of fresh fish which is sold through the markets is distributed at Sfax and Tunis. The right to sell fish at the wholesale market lies with commission agents who normally take a commission of 4% of sales.

4.12 The sale of fish at the retail level is characterized by a large number of small retail outlets. In 1977 there were 113 fish retail outlets in Tunisia; 104 run by private shopkeepers and 9 run by ONP. While some of the retail shops maintain a supply of ice and a few have chill stores, these facilities are not generally found and, hence, deterioration in the quality of fish occurs. Since ONP disposed of its extensive retail network in 1970 the State has kept virtually no control over the quality and prices of the fish sold in the outlets.

Domestic Prices

4.13 In 1978, average wholesale prices of white fish, shrimp and octopus were D 0.578/kg, D 2.681/kg and D 0.326/kg respectively. Over the past four years fish prices have been increasing by about 12% per year (6% per year in real terms) as a result of the inadequate supply in relation to demand. Under the Project it is expected that prices will continue to rise by 6% p.a. in real terms up to 1985 (para. 5.01).

4.14 Fish prices in Tunisia are set by the Tunisian wholesale market. The wholesale price margin is about 30%, which covers the profit margin and the costs of collecting, packaging, transport, operating costs of sales at the market and taxes. The maximum retail margin, which is set by law, is 20% of the wholesale price. These margins are often theoretical as some agents charge much higher prices in their private dealings. ONP keeps to these margins, but private retailers can easily avoid control from the state authorities and hence tend to charge higher prices. The taxes and levies paid on fish are fairly high. The town corporations run the wholesale markets and collect taxes for themselves on behalf of the State, commission agents and handlers. The taxes vary in each market, usually ranging from 8 to 10% of sales.

D. Domestic and Export Demand

Domestic Market Demand

4.15 Consumption of fish in Tunisia has increased substantially over the past decade. Estimates of the present domestic consumption of fresh fish indicate that about 7 kg are consumed per person per year as compared to 4 kg in 1970. This represents an increase of about 8.3% p.a. over the 1970-1977 period. In Morocco and Algeria the present per capita consumption is 5 kg and 2 kg respectively, while in France it is 15.4 kg. In terms of the quantity of fish consumed, over the period 1972-1977, total consumption grew from 27,200 t in 1972 to 39,700 t in 1977.

4.16 The average per capita consumption of fish figure is fairly misleading in Tunisia as consumption is unevenly distributed with most of the fish being consumed in the coastal zones and by tourists. In 1977, the Centre National d'Etudes Industrielles of Tunis undertook a study on the fisheries sector and estimated the per capita fish consumption in the big cities, urban and rural areas to be 12.6 kg, 8.5 kg and 2.5 kg respectively in 1976. There is no data available on the quantity of fish consumed by tourists, but if one takes account of the tourist population, estimated to be about 1 million per year, the average per capita domestic consumption would be even lower.

4.17 FAO's projections, based on their basic projected growth rate of demand for fish in Tunisia, where it is assumed that there would be a continuation of present trends in population and income growth and no major shift in relative prices, indicate that total demand for fish by 1985 will be about 55,000 t and with the same assumptions, supply of fresh fish will be about 45,400 t. This represents an increase of respectively 39% and 14% from the 1977 figure of 39,700 t and therefore would give rise to a gap of 25%. However, based on an evaluation of the Fifth Plan's targets for production, exports, processing and fresh fish supply, and the expected output of the Project, it seems more realistic to assume that the supply of fresh fish will reach about 55,000 t by 1985. Based on the 1976 consumption per capita figures quoted in para. 4.15, a growth in private consumption expenditure

of 3.5% p.a., an income elasticity of 1 1/, and a population growth rate of 4.2% p.a. and 0.5% p.a. in urban and rural areas respectively, demand for fresh fish is expected to reach about 66,000 t by 1985. This results in a gap in demand and supply of about 27%. The domestic market is therefore expected to continue to remain undersupplied in the foreseeable future.

Export Market

4.18 Tunisian exports of octopus have grown significantly over the past five years from around 186 t in 1973 to 2,356 t in 1977. Over the same period shrimp exports grew from 622 t to 722 t. France, Spain and Italy have been the principal importers of shrimp from Tunisia. Octopus has been exported to Japan, France, Greece, and Italy. During the past two years almost 50% of the octopus exports from Tunisia have been destined for the Japanese markets.

4.19 FAO projections indicate that the major shrimp markets Japan, the U.S. and Western Europe will require an additional 100,000 t of shrimp (above 1974 usage levels) by 1985. As shrimp catches in France, Spain and Italy are thought to be approaching their upper limit, these markets are expected to offer improved prospects for sales of shrimp. World trade in the general category fresh, frozen and cured cephalopods has been increasing very rapidly in recent years. The main stimulus to this growth in trade has been a large increase in demand from Japan, Italy and Spain. In Japan, demand for fresh and frozen octopus has notably risen and this trend is expected to continue.

V. FINANCIAL ANALYSIS

A. Fish Prices and Market Assumptions

5.01 For the financial analysis of the Project, the prices used for valuing the fish have been based on the 1978 producer prices of D 0.490/kg for whitefish, D 2.268/kg for shrimp and D 0.276/kg for octopus. Assuming a price demand elasticity of about -0.6 and based on the demand projections discussed in para. 4.17, the cumulative price increase from 1978 up to 1985 is expected to be about 45% or 5.5% p.a. It has been assumed that fish prices will continue to increase in real terms by about 6% per annum up to 1985, by 4.8% per annum up to 1990 and thereafter increase at a slower rate of 3.6% per annum. These assumptions take into account the past trends in fish prices (para 4.13), the mission price projections based on demand development and have been agreed upon by the Bank's Commodities division.

1/ From FAO's Agricultural Commodities Projections.

5.02 At full development of the Project, by 1985, incremental production of whitefish, shrimp and octopus is expected to reach about 8,600 t, 160 t and 60 t, respectively (para. 4.07). A part of the shrimp and octopus production will be destined for export. As the domestic market is expected to continue to remain undersupplied (para. 4.17) and there is sufficient demand in the export markets for shrimp and octopus (para. 4.18 - 4.19), no problems are foreseen in marketing the additional production. The quality of fish and the distribution system is expected to improve with the Project due to the continuous training effort of the new Fisheries Authority, and the provision of ice, cold storage and refrigerated trucks for transporting and marketing the fish.

B. Financial Analysis

5.03 Calculation and projections have been made for the boat repair facilities in the new ports. Assuming that the annual hull service fees would be D 250 (US$625) and the engine service fees D 400 (US$1,000) including spare parts, the financial rate of return for a 11.25 m boat repair facility would be 11% for Type 1 and 13% for Type 2 1/. With gross income from boat repairs and associated variable costs such as consumption of auxiliary materials, utilities, etc. going down by 5, 10 and 20%, the financial rates of return of the Type 1 shipyard would decrease to 9%, 8% and 5% respectively, and of the Type 2 shipyard to 14%, 12% and 7% respectively.

Project Boats

5.04 Financial projections have been made for both the 11.25 m and the 13.80 m Project boats. With the production parameters discussed in paras. 4.01-4.05, the 11.25 m Project boat would yield a financial rate of return of 26% and the 13.80 m Project boat 23%. The Government's 15% subsidy has been considered in the analysis. If the boat owner were to pay the full investment costs without Government subsidy, the corresponding financial rates of return would be 22% and 20%. Production could go down by 27% for both the 11.25 m and the 13.80 m boat, and the FRR would still be over 10%. Only with a decline of 50% and 46% respectively would the the rates of return become negative. Switching values for the investment costs are 124% and 96%. With benefits and cost directly related to benefits lagging one year the rates of return would be 21% and 19%.

VI. PROJECT BENEFITS AND ECONOMIC JUSTIFICATION

A. Project Benefits

6.01 The economic benefits of the Project would arise from an estimated 8,600 t of incremental whitefish production per annum at full development.

1/ Type 1 and Type 2 refer to the two different sizes of shipyards.

Project production would also contribute to foreign exchange earnings directly through an estimated 160 t of incremental shrimp production and 60 t of incremental octopus production which would contribute to export earnings of about D 469,200 (US$1.2 million) annually by 1990. The increase in fish production would be brought about by providing new boats and by developing urgently needed port infrastructure, which would permit the existing coastal fishing fleet at the Project sites to undertake more fishing trips per year, (paras. 4.05 and 4.07) and the new boats to operate more efficiently.

6.02 The Project will create about 2,000 new jobs, 1,750 for fishermen and 250 for craftsmen and personnel of the Fisheries Authority The expected evolution of their income in constant terms by 1985 is shown in the table below:

	Number of New Jobs Created	Annual Net Income /1 Without Project (D)	Annual Net Income /1 With Project (D)
I. Boats			
Skippers	430	240-360	1,900
Mechanics	430	240	1,600
Young Crew Members from Training Schools	890	-	1,100
	1,750		
II. Port Facilities			
Craftsmen and Personnel of Authority	250	240	1,500
Total of New Jobs	2,000		

/1 The absolute poverty level in rural areas in Tunisia is estimated to be D 41.8/year (US$104.5).

2,000 fishermen at present engaged in less efficient fisheries activities at the port sites would have their incomes improved because of an increased number of fishing days brought about by the construction of the new ports which will permit fishing trips at all tide levels.

6.03 One of the most important long-term economic benefits of the Project would stem from the increased efficiency in the administration of the fisheries sector as a whole as a result of the operation of the Fisheries Authority

which would be established under the Project. The entire credit system and recovery of loans would also improve with the appointment of recovery agents in BNT's branches, thus preparing the sector for expanded credit on a financially sound basis. The marketing system and quality control is also expected to improve under the supervision of the Authority, and with the provision of additional refrigerated trucks under the Project the uneven distribution of fish marketing is expected to change over time as new markets are penetrated in the interior. Finally, the training component of the Project would improve the skills of the existing fishermen and contribute to more efficient operations in the fisheries subsector.

B. Economic Analysis

6.04 The overall Project economic rate of return based on all quantifiable benefits and costs is 27%. The economic rates of return for the ports range from 17% to 35% (Annex 3, Table 2). Benefits included for the overall Project economic analysis are the total catch value of new boats and the incremental catch value of the existing fleet due to increased number of fishing days as a result of the port facilities. However, the scope for potential benefits is far greater than those included in the analysis as there are benefits which do not lend themselves to quantification, but which are nonetheless substantial; these benefits are outlined in paras. 6.02 and 6.03. Costs included are the port works and boat investment costs and their corresponding operating costs, equipment for existing ports, training, institution building and research.

6.05 The construction of the ports would be phased over a three-year period beginning in 1980, and the boats would be phased over a five-year period. The phasing of benefits and costs is presented in Annex 3, Table 2. operating costs are projected over a 30-year period. As the official exchange rate is considered to be a close approximation of the shadow exchange rate, all calculations have been based on the rate of US$1 = 0.4 Dinars (1 Dinar = US$2.5).

Investment and Operating Costs

6.06 All costs including physical contingencies are expressed in 1980 constant prices adjusted to exclude taxes.

Labor Pricing

6.07 The potential fishermen for the Project would be mainly drawn from the agricultural sector, where they are at present unemployed or employed part time. As their full-time employment in the fisheries sector would only generate a small labor loss in the agricultural sector, shadow wage rates have been assessed at 50% of the minimum agricultural wage rate for 3 members of the 11.25 m and 13.80 m boat crew and at the full minimum agricultural wage rate for the remaining members of the crew in each boat.

Catch Rates and Fish Pricing

6.08 The catch rates assumed for each boat are shown in para. 4.04. The domestic retail price net of wholesale and retail costs has been used as economic price of white fish. (Annex 3, Table 1). No adequate basis exists for valuing whitefish in border prices. There is sufficient demand within the country so that the fish would not be exported, and due to the specialized nature of the market, where certain fish species are not found elsewhere, the insufficient data on import prices and the physical problems of importation, import prices have not been used. The price increases applied have been discussed in para 5.01. In 1985, whitefish is valued at D 0.895/kg, and from 1990 onwards an average price of D 1.575/kg has been applied. Prices used for valuing shrimp and octopus, which are both exported, are based on the f.o.b. Sfax 1978 prices net of internal transport, freezing and packing costs and projected to 1980 (Annex 3, Table 1). The prices used for shrimp and octopus are D 2.696/kg and D 0.538/kg, respectively. The fact that the expected price increases up to 1990, based on the Bank's Commodities Division's price projections, are very slight (6% above 1978 levels) the 1980 prices are used to value these benefits over the life of the Project.

Foreign Exchange Effect

6.09 The exports of incremental shrimp and octopus production are expected to result in foreign exchange earnings of D 480,000 (US$1.20 million) in 1984, and would decline slightly to D 469,200 (US$1.17 million) annually by 1990. In 1984, the foreign exchange outflow to finance the Bank Loan will be D 1.7 million (US$4.2 million). Subsequently, this will taper off to D .47 million (US$1.2 million) in year 17 (1996), the last year of repayment. Based on these assumptions the total estimated foreign exchange gain over the 30-year life of the Project will be D 5.1 million (US$12.7 million). The export earnings are considered to be of secondary importance as production generated under the Project is directed primarily towards the domestic market. There would be additional indirect foreign exchange effects as a result of the increased availability of good quality fish for tourist consumption, which are considered unquantifiable.

Environmental Impact

6.10 Pollution caused by effluent of Project boats would be minor and would have no important effect on sea water contamination. Discharge from shore facilities in the new port sites would be minimal. Waste water would be discharged into the sewer system built for each port site.

6.11 The existing level of contamination of the Mediterranean Sea along the Tunisian coast, which may have a detrimental effect on the fish catch, would be closely monitored by the Tunisian Government's Environmental Agency. Areas with dangerous levels of sea water contamination are the Gulf of Gabes and the area around Tunis. The Tunisian Government has recently initiated a program to halt the discharge of industrial effluent into the Mediterranean Sea.

Sensitivity Analysis and Project Risk

6.12 Sensitivity analysis was used to determine which variables would be most critical to the success of the Project. Switching values for a 10% discount rate (the best estimate of the opportunity cost of capital in Tunisia) were calculated for a number of variables. The switching value is the value of the variable tested for which the Project's net present value, calculated at 10% discount rate, is zero, or, equivalently, the value beyond which the economic rate of return would be below 10%. Separate calculations were made for each port and the Project as a whole (see Annex 3, Table 2).

6.13 Major variables tested were

(a) catch rates,

(b) port construction and maintenance costs, and

(c) boat investment costs.

Results in general indicate little sensitivity to shortfall in Project benefits or increases in Project costs. The permissible shortfalls in benefits in the ports vary from 37% to 62%, while the total Project benefits could fall as much as 53% without causing the economic rate of return to fall below 10%. On the cost side, the permissible increases in total costs range from 57% to 153% for the ports and 112% for the total Project. The switching values of port construction and maintenance costs and boat investment costs, treated separately, are higher than 100% of appraisal estimates.

6.14 The sensitivity tests indicate that the risk to the Project's economic viability as a result of decreases in benefits or increases in costs is minimal. Even a delay in boat construction by one year, which would cause benefits to lag one year, would result in a total Project economic rate of return of 23%. The main risk involved in the Project would result from a delay in the implementation of the new organizational set-up proposed under the Project, which would affect the supervision and control, the training efforts and more importantly the rates of recovery on loans made to fishermen.

VII. RECOMMENDATIONS AND LOAN CONDITIONS

7.01 During negotiations the following main assurances were obtained:

(a) the Harbor Department will be the executing agency for the construction of the new ports and of facilities in existing ports (para. 3.03);

(b) the Harbor Department prior to award of the contract for the first lot of ports will employ an engineering consultant firm whose qualifications, experience and terms and conditions of employment will be satisfactory to the Bank (para. 3.03);

(c) the Harbor Department and the Fisheries Authority will procure all civil works and equipment in accordance with the stipulations of paras. 2.36-2.44;

(d) the Fisheries Authority, not later than December 31, 1982, will introduce a system of port fees based upon a study to be undertaken in 1980 (para. 3.20); and

(e) shore facilities will be leased to fishermen's cooperatives and organizations or individuals or companies and operated on a commercial basis (para. 3.20).

7.02 The Loan Agreement would be effective upon the fulfillment of the following conditions:

(a) the legal establishment of a Fisheries Authority whose functions and responsibilities are outlined in para 3.05 and the appointment of its Director General;

(b) Government making necessary funds available to the Fisheries Authority to implement the Project (paras. 2.28-2.31);

(c) Government entering into a subsidiary loan agreement with BNT (para. 2.33);

(d) BNT recruiting recovery agents according to the stipulations of para. 3.09.

7.03 With the above assurances and agreements the proposed Project is suitable for a Bank loan of US$28.5 million to the Tunisian Government for a term of 17 years including 4 years of grace.

June 6, 1979

TUNISIA

STAFF APPRAISAL REPORT OF THE
SECOND FISHERIES PROJECT

Total Project Cost and Schedule of Expenditure
Total des Coûts du Projet et Plan des Dépenses
(D'000)

	1980			1981			1982			Total			
	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	
I. PORTS													PORTS
Sidi Daoud													Sidi Daoud
Port Infrastructure	346	231	577	96	63	159	-	-	-	442	294	736	Infrastructure Portuaire
Buildings	-	-	-	-	-	-	170	30	200	170	30	200	Bâtiments
Equipment	-	-	-	-	-	-	54	67	121	54	67	121	Matériel
Supervision of Construction	24	10	34	7	3	10	14	6	20	45	19	64	Supervision de la Construction
Physical Contingencies	37	24	61	10	7	17	24	10	34	71	41	112	Aléas Physiques
Subtotal	407	265	672	113	73	186	262	113	375	782	451	1,233	Sous Total
Beni Khiar													Beni Khiar
Port Infrastructure	549	366	915	114	76	190	-	-	-	663	442	1,105	Infrastructure Portuaire
Buildings	-	-	-	-	-	-	212	37	249	212	37	249	Bâtiments
Equipment	-	-	-	-	-	-	85	103	188	85	103	188	Matériel
Supervision of Construction	39	17	56	8	3	11	18	8	26	65	28	93	Supervision de la Construction
Physical Contingencies	59	38	97	12	8	20	31	15	46	102	61	163	Aléas Physiques
Subtotal	647	421	1,068	134	87	221	346	163	509	1,127	671	1,798	Sous Total
Hergla													Hergla
Port Infrastructure	382	255	637	51	34	85	-	-	-	433	289	722	Infrastructure Portuaire
Buildings	-	-	-	-	-	-	205	36	241	205	36	241	Bâtiments
Equipment	-	-	-	-	-	-	75	91	166	75	91	166	Matériel
Supervision of Construction	26	12	38	3	2	5	17	8	25	46	22	68	Supervision de la Construction
Physical Contingencies	41	27	68	6	3	9	29	13	42	76	43	119	Aléas Physiques
Subtotal	449	294	743	60	39	99	326	148	474	835	481	1,316	Sous Total
Salakta													Salakta
Port Infrastructure	38	25	63	85	56	141	-	-	-	122	82	204	Infrastructure Portuaire
Buildings	-	-	-	78	14	92	-	-	-	78	14	92	Bâtiments
Equipment	-	-	-	27	33	60	-	-	-	27	33	60	Matériel
Supervision of Construction	2	2	4	11	7	18	-	-	-	14	8	22	Supervision de la Construction
Physical Contingencies /a	10	6	16	34	20	54	-	-	-	44	26	70	Aléas Physiques /a
Subtotal	50	33	83	235	130	365	-	-	-	285	163	448	Sous Total
La Louata													La Louata
Port Infrastructure	195	129	324	130	87	217	-	-	-	325	216	541	Infrastructure Portuaire
Buildings	-	-	-	-	-	-	266	47	313	266	47	313	Bâtiments
Equipment	-	-	-	-	-	-	78	96	174	78	96	174	Matériel
Supervision of Construction	13	6	19	9	4	13	21	8	29	43	18	61	Supervision de la Construction
Physical Contingencies	21	13	34	14	9	23	36	16	52	71	38	109	Aléas Physiques
Subtotal	229	148	377	153	100	253	401	167	568	783	415	1,198	Sous Total

/a Includes 25% on port infrastructure including supervision on construction and 10% on building and equipment.

NOTE: Discrepancies due to rounding

/a Comprenant 25% sur l'infrastructure portuaire y compris supervision de la construction et 10% sur les bâtiments et le matériel.

NOTE: Les chiffres ont été arrondis

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

Total Project Cost and Schedule of Expenditure
Total des Coûts du Projet et Plan des Dépenses
(D'000)

	1980			1981			1982			Total			
	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	
1. PORTS (Con'd)													1. PORTS (Suite)
En Najet													En Najet
Port Infrastructure	523	349	872	127	84	211	-	-	-	650	433	1,083	Infrastructure Portuaire
Buildings	-	-	-	-	-	-	248	44	292	248	44	292	Bâtiments
Equipment	-	-	-	-	-	-	86	104	190	86	104	190	Matériel
Supervision of Construction	37	15	52	9	4	13	20	9	29	66	28	94	Supervision de la Construction
Physical Contingencies	56	36	92	13	9	22	36	16	52	105	61	166	Aléas Physiques
Subtotal	616	400	1,016	149	97	246	390	173	563	1,155	670	1,825	Sous Total
Mahares													Mahares
Port Infrastructure	1,133	756	1,889	147	98	245	-	-	-	1,280	854	2,134	Infrastructure Portuaire
Buildings	-	-	-	-	-	-	244	43	287	244	43	287	Bâtiments
Equipment	-	-	-	-	-	-	63	76	139	63	76	139	Matériel
Supervision of Construction	79	34	113	11	4	15	17	8	25	107	46	153	Supervision de la Construction
Physical Contingencies	121	79	200	15	10	25	33	13	46	169	102	271	Aléas Physiques
Subtotal	1,333	869	2,202	173	112	285	357	140	497	1,863	1,121	2,984	Sous Total
Zarat													Zarat
Port Infrastructure	249	166	415	131	87	218	-	-	-	380	253	633	Infrastructure Portuaire
Buildings	-	-	-	-	-	-	178	31	209	178	31	209	Bâtiments
Equipment	-	-	-	-	-	-	77	52	129	77	52	129	Matériel
Supervision of Construction	18	7	25	9	4	13	15	6	21	41	18	59	Supervision de la Construction
Physical Contingencies	26	17	43	14	10	24	27	9	36	68	35	103	Aléas Physiques
Subtotal	293	190	483	154	101	255	297	98	395	744	389	1,133	Sous Total
Bou Grara													Bou Grara
Port Infrastructure	280	187	467	58	38	96	-	-	-	338	225	563	Infrastructure Portuaire
Buildings	-	-	-	-	-	-	193	34	227	193	34	227	Bâtiments
Equipment	-	-	-	-	-	-	103	68	171	103	68	171	Matériel
Supervision of Construction	20	8	28	5	1	6	17	7	24	42	16	58	Supervision de la Construction
Physical Contingencies	30	20	50	7	4	11	31	11	42	68	35	103	Aléas Physiques
Subtotal	330	215	545	70	43	113	344	120	464	744	378	1,122	Sous Total
Adjim													Adjim
Port Infrastructure	142	95	237	127	85	212	-	-	-	269	180	449	Infrastructure Portuaire
Buildings	-	-	-	-	-	-	247	44	291	247	44	291	Bâtiments
Equipment	-	-	-	-	-	-	103	68	171	103	68	171	Matériel
Supervision of Construction	10	4	14	9	4	13	20	8	28	39	16	55	Supervision de la Construction
Physical Contingencies	15	10	25	14	9	23	37	12	49	66	31	97	Aléas Physiques
Subtotal	167	109	276	150	98	248	407	132	539	724	339	1,063	Sous Total
Working Capital Shipyard /a	-	-	-	-	-	-	24	-	24	24	-	24	Roulement de Fonds des Chantiers Navals
SUBTOTAL - PORTS	4,521	2,944	7,465	1,391	880	2,271	3,154	1,254	4,408	9,066	5,078	14,144	SOUS TOTAL - PORTS

/a Working capital for shipyards D 2,350 each (excludes spare parts). See Annex 4.

/a D 2,350, fonds de roulement pour chaque chantier naval (non compris les pièces de rechange). Voir Annex 4.

NOTE: Discrepancies due to rounding

NOTE: Les chiffres ont été arrondis

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

Total Project Cost and Schedule of Expenditures
Total des Coûts du Projet et Plan des Dépenses

(D'000)

	1980			1981			1982			1983			1984			Total			
	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	Local	Foreign Exchange	Total	
II. EQUIPMENT FOR EXISTING PORTS																			II. MATERIEL POUR PORTS EXISTANTS
Refrigerated Trucks	-	-	-	369	451	820	-	-	-	-	-	-	-	-	-	369	451	820	Camions Réfrigérés
Ice Making and Cold Storage Equipment	-	-	-	168	205	373	-	-	-	-	-	-	-	-	-	168	205	373	Matériel pour la Fabrication de Glace et des Entrepôts Frigorifiques
Ship Repair Facilities																			Facilités de Chantiers Navals
- Civil Works	47	8	55	-	-	-	-	-	-	-	-	-	-	-	-	47	8	55	- Génies Civils
- Equipment	-	-	-	85	105	190	-	-	-	-	-	-	-	-	-	85	105	190	- Matériel
Vehicles for Ports	-	-	-	-	-	-	18	22	40	-	-	-	-	-	-	18	22	40	Véhicules pour les Ports
Base Cost without Supervision and Contingencies	47	8	55	622	761	1,383	18	22	40	-	-	-	-	-	-	687	791	1,478	Coût de Base sans Supervision et Aléas Physiques
Supervision of Installation /c	3	1	4	17	17	34	-	-	-	-	-	-	-	-	-	20	18	38	Supervision de l'Installation /c
Physical Contingencies /c	5	1	6	27	33	60	-	-	-	-	-	-	-	-	-	32	35	67	Aléas Physiques /c
Subtotal	55	10	65	666	811	1,477	18	22	40	-	-	-	-	-	-	739	844	1,583	Sous Total
III. BOATS AND SPARE PARTS																			III. BARQUES ET PIECES DE RECHANGE
30 Boats of 13.80 m length	60	90	150	96	144	240	108	162	270	96	144	240	-	-	-	360	540	900	30 Barques de 13.80 m
400 Boats of 11.25 m length	133	200	333	281	421	702	442	662	1,104	510	766	1,276	474	711	1,185	1,840	2,760	4,600	400 Barques de 11.25 m
Spare parts for Engines	7	9	16	11	17	28	16	24	40	18	27	45	13	20	33	65	97	162	Pièces de Rechange pour Moteurs
Subtotal	200	299	499	388	582	970	566	848	1,414	624	937	1,561	487	731	1,218	2,265	3,397	5,662	Sous Total
IV. TRAINING AND INSTITUTION BUILDING																			IV. FORMATION ET CREATION DE L'INSTITUTION
Demonstration Engines	25	38	63	-	-	-	-	-	-	-	-	-	-	-	-	25	38	63	Moteurs de Demonstration
Equipment for Mobile Training Units	55	70	125	-	-	-	-	-	-	-	-	-	-	-	-	55	70	125	Matériel pour la Formation des Equipes Mobiles
Local Instructors and Drivers	42	-	42	84	-	84	84	-	84	84	-	84	84	-	84	378	-	378	Instructeurs Locaux et Chauffeurs
Training Assistance	15	61	76	2	7	9	9	34	43	2	7	9	-	-	-	28	109	137	Assistance en Formation
Fellowships	-	18	18	-	-	-	-	4	4	-	-	-	-	-	-	-	22	22	Bourses
Incremental Personnel Cost of Project Entity	58	-	58	131	-	131	187	-	187	172	-	172	158	-	158	706	-	706	Coût Additionnel du Personnel
Loan Administration BNT	28	-	28	28	-	28	32	-	32	44	-	44	52	-	52	184	-	184	Administration de Prêts BNT
Subtotal	223	187	410	245	7	252	312	38	350	302	7	309	294	-	294	1,376	239	1,615	Sous Total
V. STUDIES AND RESEARCH																			V. ETUDES ET RECHERCHES
Study Under Project Preparation Facility	101	191 /b	292	-	-	-	-	-	-	-	-	-	-	-	-	101	191 /b	292	Etude sous le "Avance pour la Préparation du Projet"
Studies	46	76	122	46	76	122	1	7	8	-	-	-	-	-	-	93	159	252	Etudes
Subtotal	147	267	414	46	76	122	1	7	8	-	-	-	-	-	-	194	350	544	Sous Total
Total Project Cost Without Price Contingencies	5,146	3,707	8,853	2,736	2,356	5,092	4,051	2,169	6,220	926	944	1,870	781	731	1,512	13,640	9,908	23,548	Coût Total du Projet sans Aléas Physiques
Price Contingencies /a	415	270	685	341	274	615	857	428	1,285	210	214	424	235	220	455	2,058	1,406	3,464	Aléas Physiques /a
GRAND TOTAL	5,561	3,977	9,538	3,077	2,630	5,707	4,908	2,597	7,505	1,136	1,158	2,294	1,016	951	1,967	15,698	11,314	27,012	GRAND TOTAL

/a The following expected inflation rates (in percent per annum) were used in determining price contingencies:

	Imported Component	Local Component
1980-1985	6.0%	6.0%

/b Financed only US$430,000 (D 172,000) (Polo).
/c On ice making and cold store equipment and shipyards.

NOTE: Discrepancies due to rounding

May 1979

/a Les taux suivants (en pourcent par an) ont été adoptés pour déterminer les aléas financiers:

	Composante Importée	Composante Locale
1980-1985	6.0%	6.0%

/b Finance seulement US$430,000 (D 172,000) (Polo).
/c Sur materiel pour fabrication de glace et entrepôts frigorifiques, et chantiers navals.

NOTE: Les chiffres ont été arrondis

Mai 1979

ANNEX 1
Table 2

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

Disbursement Schedule

Calendrier du Paiement

IBRD Fiscal Year and Quarter / BIRD Année Fiscale et Trimestre	Accumulative Disbursements at End of Quarter / Déblocages Accumulés à la Fin du Trimestre --------US$ million-------
1980	
March 31, 1980	2.3
June 30, 1980	4.4
1981	
September 30, 1980	6.9
December 31, 1980	9.9
March 31, 1981	11.6
June 30, 1980	13.4
1982	
September 30, 1981	14.9
December 31, 1981	16.4
March 31, 1982	17.8
June 30, 1982	19.3
1983	
September 30, 1982	20.9
December 31, 1982	22.3
March 31, 1983	23.0
June 30, 1983	24.0
1984	
September 30, 1983	24.6
December 31, 1983	25.8
March 31, 1984	26.6
June 30, 1984	27.5
1985	
September 30, 1984	28.1
December 31, 1984	28.5

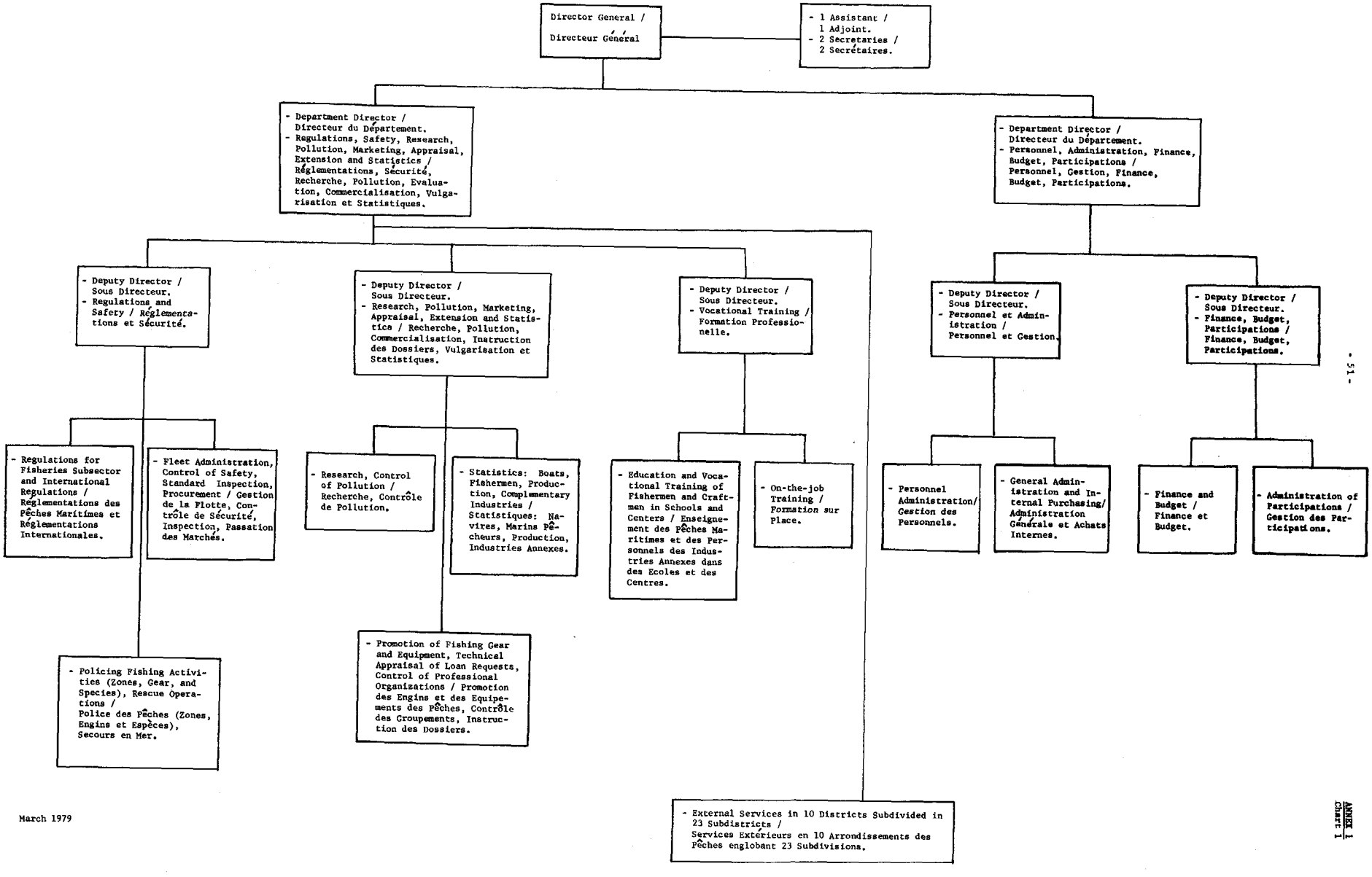
June 1979
Juin 1979

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

Organization Chart of Fisheries Authority / Organigramme de l'Autorité des Pêches



March 1979

ANNEX 1
Chart 1

TUNISIA

SECOND FISHERIES PROJECT

Project Implementation Schedule

(Plan de Réalization du Projet)

	COMPONENTS	Years/Annees 1980	1981	1982	1983	1984	COMPOSANTES
1	**Ports**						**Ports**
	Port Infrastructure						Infrastructure portuaire
	Buildings and Equipment						Bâtiments et équipements
	Supervision of Construction						Supervision de construction
2	**Boats**						**Bateaux**
	11m boats	29 boats	61 boats	96 boats	111 boats	103 boats	Bateaux de 11 m
	14m boats	5 boats	8 boats	9 boats	8 boats		Bateaux de 14 m
3	**Equipment for Existing Ports**						**Equipements dans des Ports existants**
4	**Training and Institution Building**						**Formation et développement institutionel**
	Equipment						Equipement
	Training and Fellowships						Formation et Bourses
	Operation of Fisheries Authority and BNT Credit Service						Operation de l'autorité des pêches et Service Crédit de BNT
5	**Studies and Research**						**Etudes et recherche**
	Study Under Project Preparation Facility						Etude financée par avance pour la préparation du projet
	Other Studies						Autres études

February 1979

ANNEX 1
Chart 2

ANNEX 2

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

Incremental Fish Production Under the Project[a]
Production Additionnelle du Poisson Sous le Projet

Location		Year/Annee 1	2	3	4	5	6	7	8	9	10
		t									
PRODUCTION WITH PROJECT/PRODUCTION AVEC PROJET											
Sidi Daoud		192	334	680	815	875	913	925	925	925	925
Beni Khiar		88	88	230	462	700	744	806	838	838	838
Hergla		31	31	95	211	331	355	387	403	403	403
Salakta		245	315	431	534	624	644	664	674	674	674
La Louata		1,070	1,094	1,139	1,208	1,276	1,289	1,305	1,313	1,313	1,313
En Najet		1,490	1,490	1,575	1,666	1,761	1,782	1,804	1,814	1,814	1,814
Mahares		823	823	968	1,163	1,362	1,402	1,450	1,474	1,474	1,474
Zarat		289	289	423	612	811	851	899	923	923	923
Bou Ghrara		291	291	389	535	693	726	765	784	784	784
Adjim		754	754	839	998	1,169	1,200	1,241	1,262	1,262	1,262
Total		5,273	5,509	6,769	8,204	9,602	9,906	10,246	10,410	10,410	10,410
of which/dont:	Shrimp/Crevettes	156	158	202	269	336	336	336	336	336	336
	Octopus/ Poulpe	3,226	3,226	3,226	3,226	3,226	3,226	3,226	3,226	3,226	3,226
	White Fish/Poisson Blanc	1,891	2,125	3,341	4,709	6,040	6,344	6,684	6,848	6,848	6,848
PRODUCTION WITHOUT PROJECT/PRODUCTION AVEC PROJET[b]											
Sidi Daoud		65	68	68	68	68	70	70	70	70	72
Beni Khiar		57	60	60	62	62	65	65	65	65	68
Hergla		20	20	20	20	20	20	20	20	20	20
Salakta		162	164	164	164	164	167	167	167	167	168
La Louata		913	914	909	905	901	897	893	888	884	883
En Najet		1,268	1,265	1,256	1,248	1,239	1,230	1,222	1,213	1,204	1,205
Mahares		700	704	704	709	709	713	708	710	707	706
Zarat		245	250	250	250	250	250	250	250	250	258
Bou Ghrara		243	248	248	253	253	258	258	262	263	263
Adjim		643	648	648	648	648	653	653	649	644	645
Total		4,316	4,341	4,327	4,327	4,314	4,323	4,306	4,294	4,274	4,288
of which/dont:	Shrimp/Crevettes	156	162	162	164	164	167	167	169	170	176
	Octopus/Poulpe	3,216	3,227	3,216	3,213	3,203	3,203	3,189	3,179	3,161	3,165
	White Fish/Poisson Blanc	944	952	949	950	947	953	950	946	943	947
INCREMENTAL PRODUCTION IN PROJECT PORT SITES[c] PRODUCTION ADDITIONNELLE DANS LES PORTS DU PROJET		957	1,168	2,442	3,877	5,288	5,583	5,940	6,116	6,136	6,122
of which/dont:	Shrimp/Crevettes	-	-4	40	105	172	169	169	167	166	160
	Octopus/ Poulpe	10	-1	10	13	23	23	37	47	65	61
	White Fish/Poisson Blanc	947	1,173	2,392	3,759	5,093	5,391	5,734	5,902	5,905	5,901
INCREMENTAL PRODUCTION IN EXISTING PORTS[d] PRODUCTION ADDITIONNELLE DANS LES PORTS EXISTANTS											
White Fish/Poisson Blanc		404	1,182	1,782	2,202	2,520	2,640	2,692	2,706	2,706	2,706
TOTAL INCREMENTAL PRODUCTION UNDER THE PROJECT/ TOTAL PRODUCTION ADDITIONNELLE SOUS LE PROJET		1,361	2,350	4,224	6,079	7,808	8,223	8,632	8,822	8,842	8,828
of which/dont:	Shrimp/Crevettes	-	-4	40	105	172	169	169	167	166	160
	Octopus/ Poulpe	10	-1	10	13	23	23	37	47	65	61
	White Fish/Poisson Blanc	1,351	2,355	4,174	5,961	7,613	8,031	8,426	8,608	8,611	8,607

/a For assumptions on catch rates and number of boats see Annex 4.

/b Without the project it is assumed that the number of rowing and sailing boats decreases by about 20% and the number of motor boats increases by about 30% over the life of the project.

/c Incremental production in project sites.

/d Existing ports where boats will be provided under the project. Only white fish is caught.

/a Pour les estimations sur les taux des captures et le nombre de barques, voir Annex 4.

/b Sans le projet, on estime que le nombre de bateaux à rames et à voile diminuera d'environ 20% et le nombre de bateaux à moteur augmentera d'environ 30% pendant la duree du projet.

/c Production additionnelle dans les sites du projet.

/d Ports existants qui seront pourvu de barques sous le projet. Seul le poisson blanc est pêché.

January 1979

ANNEX 3
Table 1

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

Economic Prices of Fish
Prix Economiques du Poisson

(D/kg)

SHRIMP		CREVETTE
FOB Sfax (1980 price)	2.719	FOB Sfax (Prix en 1980)
Freezing/Packing/Ice	.020	Congelation/Conditionnement/Glace
Internal Transport	.003	Transport intérieur
Price at beach	2.696	Prix sur plage
OCTOPUS		POULPE
FOB Sfax (1980 price)	.562	FOB Sfax (Prix en 1980)
Freezing/Packing/Ice	.020	Congelation/Conditionnement/Glace
Internal Transport	.004	Transport intérieur
Price at beach	.538	Prix sur plage
WHITE FISH		POISSON BLANC
Average Retail Price (1980)	.780	Prix de détail moyen (1980)
Retailer's costs /a	.047	Coûts des Détaillants
Wholesaler's costs /a	.064	Coûts des Grossistes
Net Retail Price	.669	Prix de détail net

/a Included are costs of collecting, packaging, transport and taxes. The taxes charged by the town corporation and state are fees for services rendered i.e. use of facilities at the market place and are therefore included as economic costs.

/a Les frais pour collection, conditionnement, transport et taxes sont inclus. Les taxes chargées par la municipalité et par l'état représentent des charges pour l'utilisation du marché et par conséquant sont inclus comme frais économiques.

January 1979

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

Economic Rate of Return

	Year 1	2	3	4	5	6	7	8	9	10	11 - 22	23 - 30
	(Dinars '000)											
Project Benefits												
Value of Fish (White Fish, Shrimp and Octopus)	853	1,605	3,151	4,935	6,772	7,524	8,242	8,791	9,197	9,591	13,800	13,964
Residual Value of Boats/a	-	-	-	-	-	-	-	-	-	-	182	70
Project Benefit Total	853	1,605	3,151	4,935	6,772	7,524	8,242	8,791	9,197	9,591	13,982	14,034
Project Costs												
Investments												
Ports	7,762	2,297	3,585	-	-	-	-	-	-	-	-	-
Boats/a	328	707	1,059	1,193	1,052	21	21	21	21	21	488	154
Spare Parts for Engines	12	24	35	39	30	-	-	-	-	-	-	-
Equipment for Existing Ports	55	739	26	-	-	-	-	-	-	-	-	-
Training and Installation Building/b	456	304	397	345	322	322	322	322	322	322	322	322
Studies and Research	415	122	8	-	-	-	-	-	-	-	-	-
Investments Subtotal	9,028	4,193	5,110	1,577	1,404	343	343	343	343	343	810	476
Operating Costs												
Ports	92	194	242	365	216	216	216	216	216	241	300	216
Boats	129	404	832	1,338	1,789	1,887	1,964	1,966	1,982	2,000	2,000	2,000
Operating Cost Subtotal	221	598	1,074	1,703	2,005	2,103	2,180	2,182	2,198	2,241	2,300	2,216
Project Costs Total	9,249	4,791	6,184	3,280	3,409	2,446	2,523	2,525	2,541	2,584	3,110	2,692
Project Net Benefits	-8,396	-3,186	-3,033	1,655	3,363	5,078	5,719	6,266	6,656	7,007	10,872	11,342

Economic Rate of Return = 27%

/a Engines replaced every 10 years - residual value is 20% of engine costs; Boats replaced every 15 years - residual value is 60% of engine costs and 30% of the costs of the rest of the boat.
/b Includes operating costs of local instructors and administration of BNT.

April 1979

ANNEX 3
Table 3

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

Economic Rates of Return Analysis Summary

Résumé de l'Analyse du Taux de Rentabilité Economique

	Economic Rate of Return/ Taux de Rentabilité économique.	ERR with Delay in Boat Construction by One Year /a TRE avec la Construction des Barques déferée par 1 an	Net Present Value at 10% Discount Rate/ Valeur présente nette à 10% taux d'Escompte	Switching Values /b Catch/ Boat /c/ Prise Barque	Total Costs / Coûts Totaux	
	%	%	(D'000)	%	%	
Total Project	27	23	41,211	-53	+112	Total du Projet
Ports						Ports
SIDI DAOUD	35	27	4,780	-62	+150	
BENI KHIAR	21	18	2,931	-48	+ 92	
HERGLA	17	15	1,155	-37	+ 57	
SALAKTA/d	34	26	1,863	-61	+152	
LA LOUATA	29	23	2,364	-60	+150	
EN NAJET	24	20	2,994	-54	+119	
MAHARES	17	15	2,559	-37	+ 57	
ZARAT	29	23	3,416	-57	+132	
BOU GRARA	25	21	2,412	-52	+106	
ADJIM	35	26	3,418	-61	+153	

/a Causes a resulting lag in benefits by one year.

/b The percentage change which reduces the net present value to zero at the opportunity cost of capital of 10%.

/c Includes a resulting decrease in 7% of boat operating costs which are directly related to catch rates.

/d Only production from new boats is considered as a port already exists and it is assumed that there would be no incremental production from existing fleet.

/a Il en résulte un retard des bénéfices d'un an.

/b Change en pourcentage qui réduit la valeur présente nette à zéro, le coût d'opportunité du capital étant 10%.

/c Y compris un décroissement de 7% de frais d'exploitation en relation directe avec les prises.

/d Uniquement la production des nouvelles barques est prise en considération étant donné que le port existe déjà et sous l'hypothèse qu'aucune production additionnelle provient de la flotte existante.

February 1979

TUNISIA

STAFF APPRAISAL REPORT OF THE

SECOND FISHERIES PROJECT

Selected Documents and Data Available in the Project File

A. Selected Reports and Studies on the Fisheries Subsector in Tunisia

Bilan d'Activites 1977 et Programme 1978 - Republique Tunisienne, Ministere de l'Agriculture, Direction des Peches (January 1978)

Etude sur le Developpement de la Peche - Centre National d'Etudes Industrielles (November 1977)

B. Selected Reports and Studies Relating to the Project

Etude de Developpement Integre de Centres de Peche Cotiere - CEGOS, Tunisie (May 1976)

Draft Report of the Second Fisheries Project Identification Mission - FAO/World Bank Cooperative Programme (August 1976)

Preparation Progress Reports - FAO/World Bank Cooperative Programme (April 1978 and July 1978)

Etude des Ports de Peche Cotiere - S.G.T.E. Societe Generale de Techniques et d'Etudes (February 1978)

C. Selected Working Papers, Tables and Designs Prepared by the Bank Staff or its Consultants, Including Materials Needed for Implementation

Appendix

IBRD 14165
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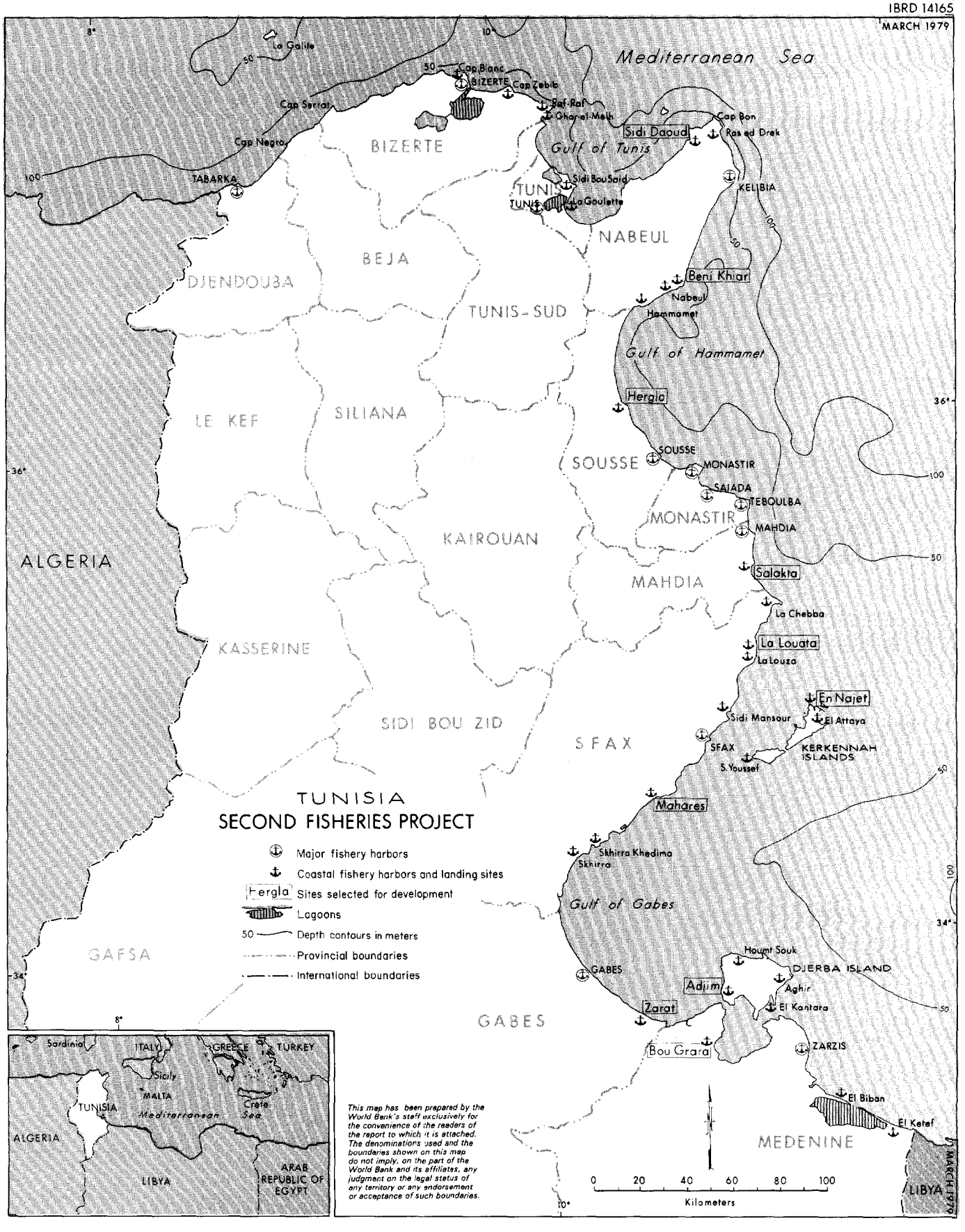

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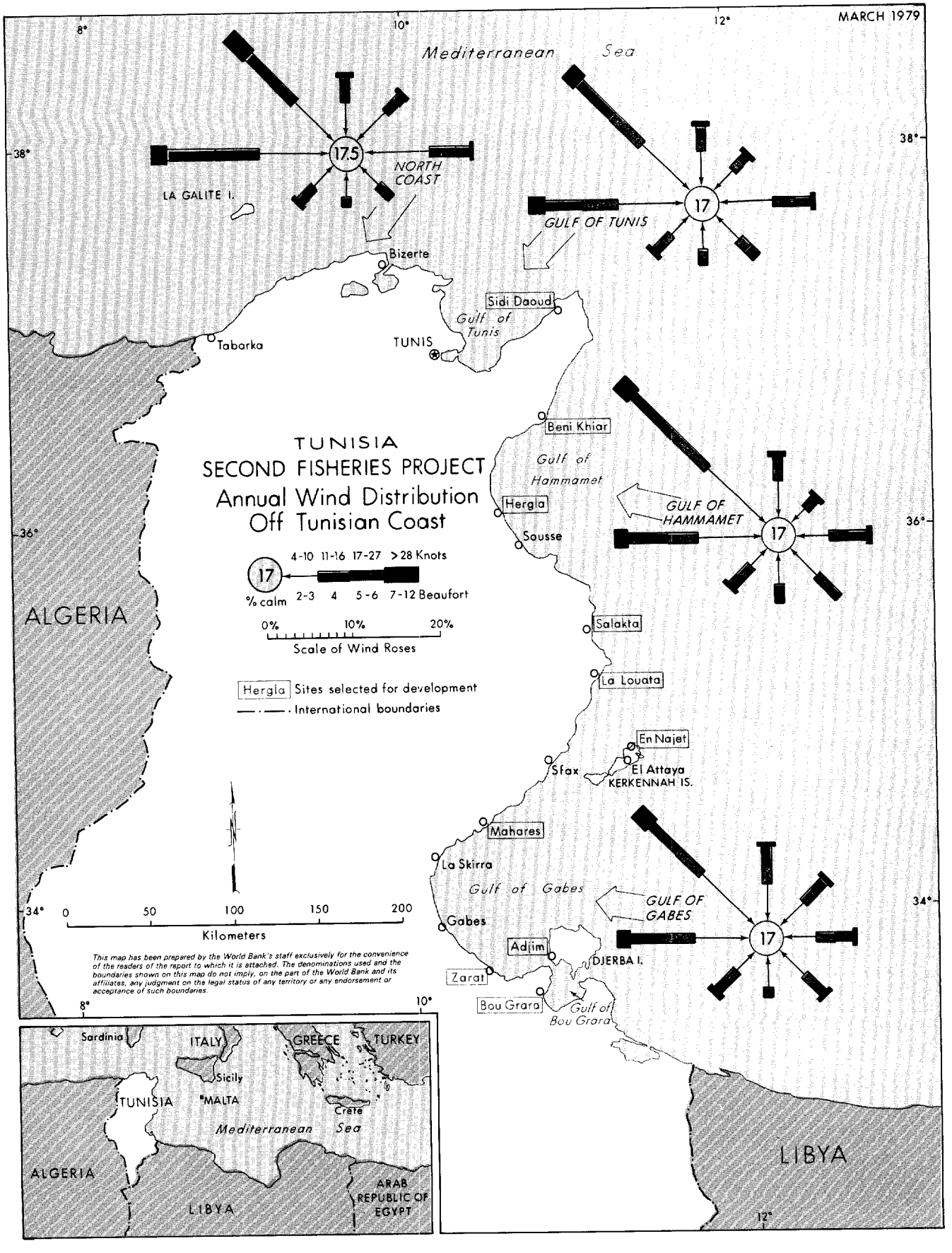
MARCH 1979

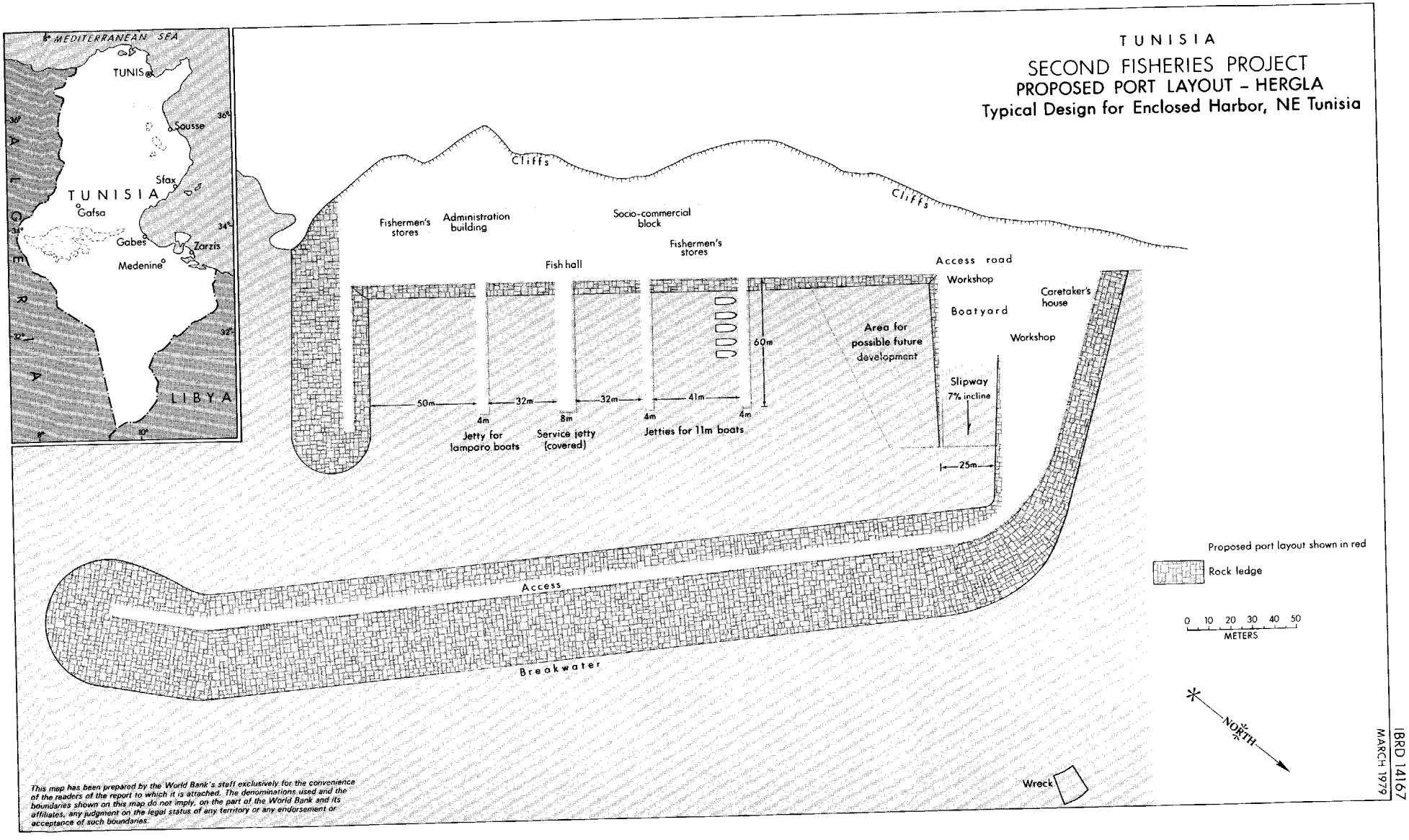


TUNISIA

SECOND FISHERIES PROJECT

PROPOSED PORT LAYOUT – HERGLA

Typical Design for Enclosed Harbor, NE Tunisia



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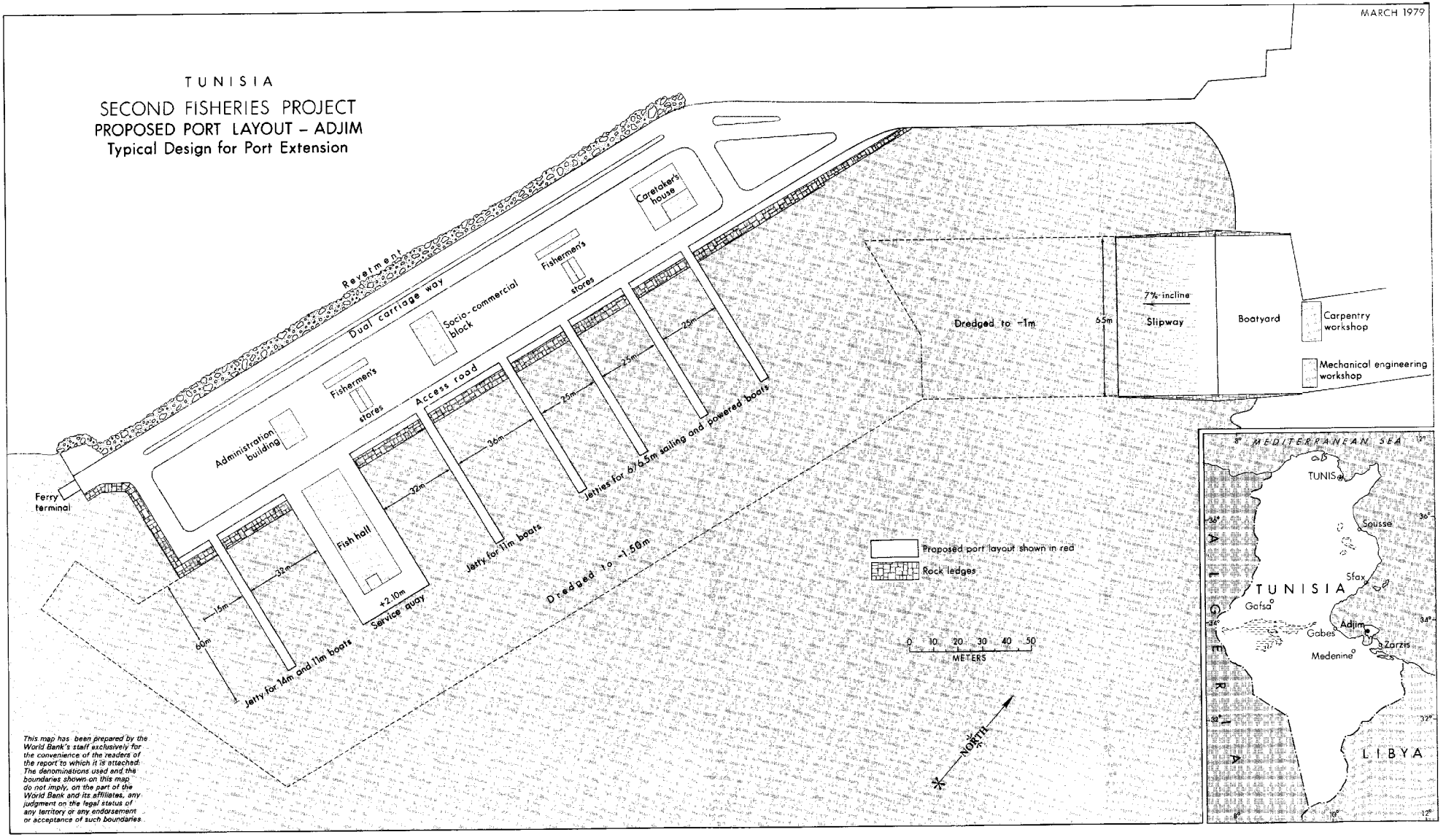
TUNISIA

SECOND FISHERIES PROJECT
PROPOSED PORT LAYOUT – ADJIM
Typical Design for Port Extension



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