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Philippines: Appraisal of the Second Fisheries Project

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East Asia and Pacific Projects Department
Agricultural Credit and DFC Division

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CURRENCY EQUIVALENTS 1/

US\$1.00	=	7.5 Philippine Pesos (P)
P 1.00	=	US\$0.133

WEIGHT AND MEASURES (METRIC SYSTEM)

1 sq meter (m ²)	=	10.8 sq feet
1 sq kilometer (km ²)	=	0.386 sq miles
1 hectare (ha)	=	2.47 acres
1 millimeter (mm)	=	0.0394 inches
1 centimeter (cm)	=	0.394 inches
1 meter (m)	=	3.28 feet
1 kilometer (km)	=	0.62 mile
1 liter	=	0.264 US gallons
1 kilogram (kg)	=	2.205 pounds
1 metric ton (ton)	=	2,205 pounds

ABBREVIATIONS

ADB	-	Asian Development Bank
BFAR	-	Bureau of Fisheries and Aquatic Resources
CB	-	Central Bank of the Philippines
COA	-	Commission on Audit
DBP	-	Development Bank of the Philippines
FAO	-	Food and Agriculture Organization (of the United Nations)
FG	-	Fisheries Group (of DBP)
NIA	-	National Irrigation Administration
SEAFDEC	-	South East Asia Fisheries Development Center
UNDP	-	United Nations Development Programme
UP	-	University of the Philippines
UPCA	-	University of the Philippines, College of Agriculture
USAID	-	United States Agency for International Development

FISCAL YEAR

July 1 through June 30

1/ Floating since 1970.

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1/ This report is based on the findings of a mission composed of Messrs. D. Lee, S. Ettinger and L. Sprague (Bank) that visited the Philippines in August/September 1975.

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PHILIPPINES

SECOND FISHERIES PROJECT

SUMMARY AND RECOMMENDATIONS

- i. The Government of the Philippines (GOP) has requested a Bank loan of \$12.0 million to finance the continuation of the ongoing Bank-financed (first) Fisheries Credit Project (Loan 891-PH, \$11.6 million, 1973). The objective would be to assist the Philippine Government in its effort to increase fish production for domestic consumption and to build up an institutional base for financing investments in marine and inland fisheries. GOP would onlend the proceeds of the loan to the Development Bank of the Philippines (DBP) to support a three year lending program for fisheries facilities to be owned and operated by private entrepreneurs in the Philippines.
- ii. The first Fisheries Credit Project is progressing satisfactorily, and, as of April 30, 1976, Bank disbursement was \$3.5 million, and DBP is expected fully to commit the remaining funds by December 1976.
- iii. The first project consisted of three major components; (i) financing of viable marine fisheries sub-projects, (ii) financing of inland fishpond development and rehabilitation, mainly for milkfish farming, and (iii) technical assistance required to support lending operations and to build up DBP's technical capability for providing medium and long-term fisheries development financing.
- iv. The proposed project would be the fifteenth Bank/IDA project for agricultural development in the Philippines, and the tenth Bank project involving on-lending through DBP.
- v. DBP, a wholly Government-owned development bank, is the single largest source of long-term funds in the Philippines. Since its inception, it has approved financial assistance totalling nearly \$3 billion. About 25% of its long-term loan portfolio is in agriculture. In FY75, DBP's total lending reached \$320 million, of which 23% was to agriculture. The volume and diversity of DBP's operations give it a prominent and unique role as the Government arm for financing economic development.
- vi. The project would provide credit to the private sector for the construction of about 380 new and rehabilitated milkfish ponds, construction of 17 fishing boats in the 45 and 90 gross ton classes, refitting of 4 second-hand fishing vessels into fish carrier boats, construction of 3 ice plants with cold storage, and a marine slipway.
- vii. Although fisheries contribute only 4% of GNP, it is an important economic activity in the Philippines. The archipelago with over 7,000 islands provides excellent access to productive marine fisheries, and the coastline with its many estuarine areas is ideal for brackish water fish

farming. Fisheries employ directly about 700,000 persons (about 5% of total employment) mainly in the traditional sector. Fish is a staple in the Filipino diet and provides over one-third of animal protein. Fish imports for human consumption, mainly canned mackerel and sardines, stood in 1974 at about \$32 million per annum, equivalent to about 120,000 tons of fresh fish, and the demand for marine products is growing rapidly. The Government aims at self-sufficiency in fish production, and the proposed project would help meet that objective.

viii. The estimated total project cost is \$23.5 million. The Bank would finance \$12.0 million, representing 50% of the inland sector project cost, and the foreign exchange component of the marine sector. The Bank loan would be for 18 years including a five-year grace period.

ix. Sub-loans would be for a maximum of 14 years including a three-year maximum grace period, at interest rates of 12% per annum for loans secured by land and 14% for others. Subloans in excess of \$600,000 would be subject to prior Bank approval.

x. Contracts for construction of ice plants or the slipway with an estimated cost of \$200,000 or more would be awarded on the basis of international competitive bidding, in accordance with Bank guidelines, and those of \$100,000 or more but less than \$200,000 would be let through local competitive bidding in accordance with procedures acceptable to the Bank. Contracts for ice plants or the slipway costing less than \$100,000 would be let through ordinary commercial channels. Equipment for vessels, such as engines, winches, fishing gear and electronic instrument would be procured on the basis of quotations received from firms prequalified through international advertisement. Bulking of contracts would not be feasible because of the geographic and temporal spread of the sub-projects, and the need to take sub-borrowers' preferences into account, including compatibility with existing equipment.

xi. The estimated financial rates of return range from 17% to 39%, with a weighted average of 27%. The estimated overall economic rate of return is 30%. The benefits consist primarily in increasing fish production and in strengthening DBP's capabilities for fisheries development financing. The project annual production would be about 26,000 tons of fish, with an estimated value of about \$10.8 million.

xii. The project would create about 1,000 new jobs directly required for the sub-projects. Virtually all of these would be filled by those in the rural poverty target group. In addition, the marketing of the project production of some 26,000 tons of fish per annum is expected to generate about 150,000 man-days of employment per year.

xiii. The project is suitable for a Bank loan of \$12.0 million repayable over 18 years including a five-year grace period.

PHILIPPINES

SECOND FISHERIES PROJECT

INTRODUCTION

1.01 The Government of the Philippines (GOP) has requested a Bank loan of \$12.0 million to finance continuation of the ongoing Bank-financed Fisheries Credit Project (Loan 891-PH), which loan is expected to be fully committed by December 1976.

1.02 As under the first project, the loan would be made to GOP which would on-lend the proceeds to the Development Bank of the Philippines (DBP) under a subsidiary loan agreement, and DBP would, out of the loan proceeds and its counterpart funds, provide medium and long-term loans to private fisheries operators for financing fisheries and related facilities. The loan would be the Bank's sixteenth project for the Philippine agricultural sector, 1/ and it would finance about 17 fishing vessels, four fish carrier vessels, three ice plants, one slipway, and 380 fishpond sub-projects. The fishing vessels would be of the 45 to 90 gross ton classes, and the fishponds are expected to have an average size of 24 hectares. All of these elements are expected to make contributions to the modernization of marine fisheries and the expansion and rehabilitation of inland fisheries.

1.03 In April 1975, DBP sent the Bank a project proposal for the Second Fisheries Project. In August/September 1975, an appraisal mission composed of Messrs. D. Lee, S. Ettinger and L. Sprague (Bank) visited the Philippines. The report is based on the findings of the mission.

1/ Agricultural Education Project, 393-PH, \$6.0 million, 1964, UPCA,
(First) Rural Credit Project, 432-PH, \$5.0 million, 1965, CB,
Second Rural Credit Project, 607-PH, \$12.5 million, 1969, CB,
Third Rural Credit Project, 1010-PH, \$22.0 million, 1974, CB,
Upper Pampanga Irrigation Project, 637-PH, \$34.0 million, 1969, NIA,
Aurora-Penaranda Irrigation Project, 984-PH, \$9.5 million, 1974, NIA
(Aurora-Penaranda Irrigation Project, 462-PH, \$9.5 million, 1974, NIA),
(First) Rice Processing and Storage Project, 720-PH, \$14.3 million, 1971, DBP,
Second Grain Processing Project, \$11.0 million, 1976, DBP,
(First) Fisheries Credit Project, 891-PH, \$11.6 million, 1973, DBP,
(First) Livestock Development Project, 823-PH, \$7.5 million, 1972, DBP,
Second Livestock Development Project, 1225-PH, \$20 million, 1976, DBP,
Tarlac Irrigation Project, 1080-PH, \$17 million, 1975, NIA,
Rural Development Project, 1102-PH, \$25 million, 1975, Government,
Magat River Multi-purpose Project, 1154-PH, \$42.0 million, 1976, NIA and
Chico River Irrigation Project, 1227-PH, \$50.0 million, 1976, NIA.

II. THE FISHERIES SECTOR

Contribution to the Economy

2.01 As in all other countries in the region, fisheries play a very important role in the national food economy of the Philippines. During the past decade, fish production in the Philippines more than doubled, from 550,000 tons in 1963 to 1,200,000 tons in 1973, and per capita consumption increased by 50%, from 20 kg to 30 kg.

2.02 Fish and other marine products are a staple in the Filipino diet. The estimated total fisheries production of 1.3 million tons for 1974 consisted of 684,000 tons (53%) from the municipal fisheries, 471,000 tons (38%) from the commercial, and 113,000 tons (9%) from the inland fisheries. The Government estimates that fisheries accounted for about 4% of gross national product in recent years and about 11% of the agricultural sector. Fisheries employment has been estimated to be about 700,000 (about 5% of total employment), most of whom are subsistence fishermen.

2.03 The Philippines has been a net importer of fish and fish products but is expected to become a substantial net exporter during the coming decade. The estimated 1974 fish import of \$32 million consisted of 42,000 tons of canned mackerel (\$26 million), 3,500 tons of canned sardine (\$2.5 million) and 10,500 tons of other processed fish products (\$3.5 million), including 9,300 tons of fishmeal. The \$18 million exports for the same year consisted of 1,700 tons of frozen shrimp (estimated \$5 million) and 11,400 tons of frozen tuna (\$7.0 million). These two export items appear to have potentials for substantial expansion.

2.04 With the estimated 1973 consumption of 1.2 million tons as the base, the demand for fish is estimated to increase by at least 6% per year, which is about the rate at which the marine fisheries production reportedly expanded during the 1968-73 period. Since the sustainable yields from the Philippine waters are estimated to be at least about 1.7 million tons, consisting of 0.7 million for the municipal (subsistence) and 1.0 million tons for the commercial fisheries, the resource base would not be a constraint for the industry in meeting the production requirement. Because the scope for further expansion of the municipal fisheries catch is now rather limited, however, much of the additional production would have to come from the commercial fisheries. Since the present scale of investment in the commercial fisheries appears to be grossly inadequate to meet the projected production requirement, however, an increasing fish deficit is anticipated for the coming years.

Fishing Industry

2.05 The fishing industry of the Philippines is classified into two major categories, the marine and the inland fisheries. The marine fisheries are further sub-divided into the municipal and the commercial fisheries (Annex 1 discusses the marine fisheries and Annex 2 the inland).

Municipal Fisheries

2.06 Although the municipal fisheries account for about 53% of the total fisheries production, not much is known about this subsector. It is made up largely of subsistence, artisanal, and part-time fishermen-farmers, timber workers, etc. It involves, by and large, unmotorized small boats (bancas) of not more than 3 gross tons. In 1974, these fisheries, engaging approximately 500,000 subsistence fishermen, operated about 27,000 fishing boats and produced some 684,000 metric tons, 61% of the total marine fisheries production.

2.07 Despite the lack of reliable statistical information, it is clear that, in the more densely populated areas, the limits of fisheries resources available to municipal fishermen have been reached, and any significant increase in fishing effort in these areas would only serve to lessen the productivity per fisherman which is on the average thought to be already as low as one or two tons per year. In the less populated areas, on the other hand, there appears to be considerable scope for increasing the catch, but the lack of suitable transportation and marketing facilities tends to make it unprofitable to catch more than the isolated markets can absorb without depressing the prices unduly.

Commercial Fisheries

2.08 The commercial fisheries fleet comprises an estimated 2,500 vessels with tonnage capacities ranging from 3 gross tons to over 100 (see Annex 1, Table 2). The fleet is operated by some 1,500 fishing operators, based mostly in Manila and around the Visayan Sea. In the last ten years, there has been a gradual reduction in the number of small vessels (less than 10 tons) and a substantial increase in the number of larger vessels (50 tons or more). Most fish are caught by trawl, purse seine, and bagnet. The reported 1974 catch of 471,000 tons by the commercial fisheries consisted of 65 major species, but five dominant species accounted for 60% of the total (round scad 35%, slipmouth 9%, sardines 3%, chub mackerel 7% and brems 6%).

2.09 The nature of the chief problem for the fishing industry has changed categorically during the past several years. Before the oil crisis of 1973, the most serious problem was over-fishing on the traditional fishing grounds, and the appropriate response to this was to build boats capable of reaching more distant grounds and equip them with more powerful engines and larger trawl fishing gear. The fishermen adopting this approach found it quite profitable. The situation changed fundamentally, however, because of the sharply increased oil prices. The larger trawls and more powerful engines proved to be a highly oil-intensive method of catching, and the tripling and quadrupling of the pump price of fuel oil made the more powerful trawlers much less financially viable. The industry now has to adapt itself to fishing methods that are less oil-intensive, and many operators are in fact showing a tendency to prefer (i) smaller vessels, (ii) less oil-intensive methods of catching such as purse seining, and (iii) vessels which have more flexible capabilities (for example, trawling as well as purse seining).

Inland Fisheries

2.10 The Philippines is among the leading countries in the region in developing brackish water culture, milkfish culture in particular. The milkfish, Chanos chanos, locally called "Bangus" is the main species cultivated. The milkfish is found in the warm waters of the Indian and Pacific Ocean. Fully grown they may weigh up to 30 kg, but the commercially cultivated milkfish are marketed at about 250-1,200 grams.

2.11 The estimated 1974 production of milkfish was 110,000 tons and accounted for more than 97% of the entire inland fisheries production, which includes some tilapia, mullet, shrimp and crab (these minor species are cultivated as incidental products as they enter the ponds with the inflow of water). Although the average milkfish yield of 600 kg/ha/yr in the Philippines is considerably higher than the 300 kg/ha/yr average for Indonesia, it is far below the 1,700-2,000 kg/ha/yr average obtained in Taiwan. There are large production potentials to be achieved by enhancing the average yield.

2.12 In 1974, there were 176,000 ha of fishponds, including 6,000 ha of freshwater ponds. About half of the total fishpond areas is leased from the Government under long-term arrangements (up to 25 years, renewable for another 25 years) and the remainder is privately owned. Potentially the fishpond areas could be expanded about threefold, judging from the swampland classified as suitable for fishpond development. However, lack of infrastructure (roads and distribution facilities), distance from major markets, and the marginal quality of much of the remaining swampland reduce the scope for immediate realization of this potential.

Shore Facilities

2.13 Despite the importance of fisheries, there has been a surprising lack of specialized fishing port facilities. Even at Navotas at Manila, which handles the bulk of all Philippine landings, fish are brought in by amphibious trucks from vessels anchored over a mile offshore. Partly financed with a \$5.7 million loan from the Asian Development Bank (ADB), a project is underway to develop Navotas as a well equipped fishing port, involving dredging an approach channel, anchorage reclamation of the foreshore area, and construction of breakwaters, piers, wharves, quay walls and a fish marketing building. The facility is expected to be operational in 1976. Existing ice-making facilities, transport equipment, cold storage facilities, auction halls and the like, are inadequate and any large-scale increase in fish production would require expansion and provision of new facilities.

Boat Building

2.14 The construction of fishing boats in the Philippines is carried out at shipyards near Navotas, and in many small private shipyards in the Visayas. In the Visayas, a considerable number of independent contractors capable of building wooden vessels have successfully developed methods of construction which require low fixed capital overhead in the form of shipways and conventional shipyard infrastructure. The quality of the vessels is satisfactory, boat building is usually well supervised by the owner, and

the costs of the vessels are quite competitive with those of the comparable ones in other countries in the region.

Marketing

2.15 Most of the fish is sold fresh, because of strong consumer preference. Where fish is iced for transport, the ice is usually removed before sale in order to give it a fresh appearance. Because of the limited storage and distribution capacity and the consumer resistance to chilled or iced fish, rural fresh fish markets are easily saturated, even where there is unsatisfied demand in the vicinity. The excess fish is sold for processing (drying and smoking), at greatly reduced prices.

2.16 Fish wholesale markets in the Manila area are located at Navotas, Malabon and Divisoria. Most fishing vessels discharge fish at Navotas. Sorting takes place on board and sales are by tubs. Auctioning takes place at all three markets by a method of secret oral bidding, the buyers whispering their bids to the broker who, on the basis of the prices offered and his assessment of the collectability, decides which bidder should be the buyer. This system of "whisper bid" appears to be functioning well in the Philippine context where the collectability is perhaps a more important factor than the bid price. A small number of brokers, probably 6 to 8, control the marketing at Navotas. The brokers charge a 3 to 6% commission depending on the services performed such as loading and unloading, provision of containers, supply of ice (especially for milkfish), and advances for working capital. The Malabon market handles most of the milkfish and milkfish fry arriving in Manila, but the Navotas market is rapidly increasing its milkfish trade. There are some minor wholesale markets in the larger cities in the provinces with access to the sea, but these are very small. Retailing in the Manila area takes place through some 100 central markets with special fish sections. In addition, there are a large number of door-to-door vendors. Retail of processed fish takes place in the grocery sections. There is a substantial demand for processed fish in the inland areas, and it is estimated that at least about 25% of the total catch is diverted to salting, drying, smoking and making of fish paste and fish sauce. Low value fish like anchovies, slipmouth and round scad are the usual raw materials for this processing. Freezing of tuna and shrimp for exports is increasing, and a few small fish canning plants are being established.

Extension, Education and Research

2.17 Inland fisheries research and extension services are provided primarily by the Bureau of Fisheries and Aquatic Resources (BFAR). The College of Fisheries, University of the Philippines (UP), also conducts research. BFAR has a large staff and its facilities are reasonably well developed, and the quality and effectiveness of its service appear to be improving. The establishment of a marine Fisheries Training Center with UNDP assistance is presently under discussion. This center would provide on-the-job training for captains and fishermen in modern equipment and fishing gear. Further training is being provided by UP and numerous fisheries schools. BFAR operates four training vessels which are used to demonstrate improved

fishing techniques, and to undertake experimental fishing surveys and explorations. The recent addition of two more research vessels has provided the means to conduct test fishing programs to determine the marine resource base more accurately.

Fisheries Credit

2.18 The most important institutional sources for medium and long-term credit for the fisheries sector are, in order of importance, DBP, commercial banks, rural banks, savings and loan associations and private development banks. DBP has been by far the most important source and is expected to play the leading role in financing the bulk of fisheries investments in the coming decade.

Fisheries Administration

2.19 In November 1972, the Government issued a Presidential Decree No. 43 to provide policy guidance and to coordinate and delineate the various activities of the participating agencies of the fishing industry. This was followed by another Presidential Decree (No. 704) in 1975 which further clarified fisheries administration and the laws regulating the fishing industry. The overall responsibility for policy coordination is vested in BFAR as a Directorate under the Department of Natural Resources. As a result, BFAR functions include coordination of training, research and extension as well as administration and regulation. The only major function outside BFAR relates to extension of credit, although the decree envisages the establishment of a development fund to provide finance for special programs, which are yet to be defined in detail. In 1973, BFAR's staff totalled over 1,600. Of these, about 25% were employed on inland fisheries extension and 20% on the improvement of the marine fisheries sector.

Development Policies

2.20 The Government attaches a high priority to increasing fish production. The program envisaged for the sector calls for (i) better knowledge of the resource base, (ii) improved extension and training services, (iii) provision of better infrastructure (ice plants and other shore facilities), and (iv) strengthening of financial institutions and credit resources. In addition, the Government seeks to reduce the fish deficit as rapidly as possible (para 6.01), and to promote the effects of income redistribution the commercial fisheries sub-projects facilitate in favor of the Visayan and other southern provinces.

III. THE FIRST FISHERIES PROJECT

3.01 The Loan Agreement for the ongoing first Fisheries Credit Project (891-PH) was signed on May 21, 1973, and became effective September 25, 1973 (inland sector) and December 5, 1973 (marine sector). It provided for

an \$11.6 million loan to the Government of the Philippines to be on-lent to the Development Bank of the Philippines to carry out a program for development of marine and inland fisheries.

3.02 The project consisted of three major components; (i) financing of viable marine fisheries sub-projects, (ii) financing of inland fishpond development and rehabilitation mainly for milkfish-farming, and (iii) technical assistance required to support the lending operation and to build up the technical capability of DBP for long-term fisheries development work.

3.03 The marine fisheries component envisaged financing of (a) construction of 60 fully equipped fishing vessels of the 70 to 130 ton class, (b) importation of 10 second-hand fish carrier boats, (c) construction of 3 ice plants, and (d) 2 slipways.

3.04 The inland fisheries component was to provide credit to individuals for rehabilitation of 4,500 ha of flood-damaged fishponds to restore full production and for improvement of existing ponds and construction of new ones with an aggregate area of 7,500 hectares.

3.05 The technical assistant component included provision for (a) a marine specialist and a naval architect to assist the Assistant Manager (Project Administrator), (b) a study of fish marketing and distribution to be carried out by consultants to aid future fisheries investment plans, (c) a feasibility study for a smallholder (milkfish) fishpond estate scheme, (d) an aquaculture extension specialist to assist the Government to organize and execute an inland fisheries technical training program, and (e) a test fishing program to obtain marine fisheries resource data.

Project Implementation

3.06 Marine Fisheries. There was a considerable delay in implementing this component. It took longer than expected to staff the Fisheries Group (FG) of DBP and prepare it to implement the rather complex project activities, such as selecting consultants for the two studies, evolving working procedures with the Bureau of Fisheries and with consultants, and developing suitable fishing vessel designs. As FG prepared itself for project implementation, the oil crisis came and seriously impaired the business outlook for marine fisheries. There was a sharp increase in the cost of vessels (from the appraisal estimate of about \$60,000 for 70 gross ton vessel to an actual cost of about \$200,000), and also in the operating cost for the oil intensive trawler operations. The designs of the fishing vessels had to be modified to reflect higher oil prices, so that the vessels had to have more flexible capabilities and be less dependent on oil-intensive techniques. Steel vessels became so costly that they were no longer financially and economically viable (cost of steel vessels rose considerably more than these for comparable wooden vessels). Moreover, the sharply increased fuel cost associated with steel vessels, which are more fuel-intensive than wooden vessels, are expected to have operating costs greater than the net sales. As of February 1976, 19 wooden vessels had been approved, and the project is expected to finance about 25 wooden vessels, compared with the original target of 60 vessels (15 steel vessels and 45 wooden vessels). As of

February 1976, all of the three ice plants originally projected had been approved. Because of the greatly increased investment cost, however, the rate of commitment has been higher than the number of sub-projects might suggest. As of February 1976, \$2.9 million out of \$5.9 million of the Bank loan allocated for the marine sector was committed. As most of the sub-projects are still in the gestation stage, it is still premature to determine their productivity and financial and economic rates of return. It appears, however, that most of the sub-projects would be financially and economically viable.

3.07 Inland Fisheries. From the outset, the lending for the inland sector maintained a fairly rapid pace. As of February 1976, 383 sub-projects covering a total of about 9,300 ha for total subloans of about P 46.5 million (\$6.2 million) had been approved. The average fishpond financed was about 24 ha at an average cost of about P 5,000/ha. About 37% of the loans were in Luzon, 42% in the Visayas, 14% in Mindanao and 7% in other provinces. DBP experience shows that good fishpond management coupled with appropriate inputs can raise milkfish production to the levels of 2,500 kg/ha/yr achieved by successful commercial fish farmers in Taiwan. Milkfish production of well managed DBP fish-farms appears to be between about 1,600 kg and 2,100 kg/ha/yr, depending on the location of the ponds, the type of management system practiced and the inputs used. FG has done well in organizing itself in the inland sector and has developed a capable technical and financial staff who have been active in investment counseling, in loan preparation, and appraisal. There appears to be, however, a need to strengthen the loan supervision staff in order to derive better measures of the impact of the lending program on overall production and better measures of productivity.

3.08 Feasibility Studies. Consultants were retained by the Bureau of Fisheries and Aquatic Resources (BFAR) to carry out two studies, (i) Smallholder Fishpond Project Study, and (ii) Fish Marketing and Distribution Study. The Smallholder Fishpond Project Study was conducted jointly by Sino-tech Engineering Consultants, Inc., Taipei, Taiwan, and International Engineering Co. Inc., San Francisco, California, USA. The study was technically well done, but failed to demonstrate that the smallholder fishpond estate ^{1/} concept was technically, financially or economically sound. The Fish Marketing and Distribution Study was carried out by Norconsult, A.S., Norway. The study presents a large body of useful fisheries data and analyses.

3.09 Other Related Activities. The first project included components for (i) a test fishing program, and (ii) an inland fisheries training program to be carried out by the Bureau of Fisheries. For the test fishing

^{1/} The "estate concept" here is for a scheme contemplated by the Philippine government for development of large tracts of mangrove swampland, 1,500 to 3,000 ha, into fishpond estates to be sub-divided into hundreds of 3 to 5 ha plots to be farmed by local residents, mostly without previous fish farming experience.

program, three fishing vessels of BFAR have conducted purse seining, trawling and longline cruises, primarily in trial fishing in the southern part of the Philippines. These activities have made a significant contribution towards a broader investigation of fisheries resources in the area. For the inland fisheries training program, the Pond Fishery Extension and Training Group, under the BFAR direction, conducted training courses and field extension service demonstrations in five principal field extension units. This program, with courses in three subject areas, (i) general, (ii) extension teaching methods, and (iii) technical, has developed into one of the best training programs of the kind in the region and has produced a number of highly qualified extension personnel and teaching aides.

3.10 Sub-loan disbursement. The rate of sub-loan processing in both the inland and marine sub-sectors was increasing rapidly at the time of the last supervision (February 1976). As of April 30, 1976, \$3.5 million, out of a commitment of \$6.4 million of the Bank loan had been disbursed, and it is expected that the Bank loan of \$11.6 million would be fully committed by December 1976 (full commitment might take place by as early as October 1976).

3.11 DBP Fisheries Group. Although increased supervision staff is needed for proper monitoring and supervision of the rapidly expanding inland fisheries portfolio, and the technical staff in the marine sector needs to be strengthened, the performance of FG has been good. While DBP lending in fisheries has not been a large part of the total lending activity in the fisheries sector in the Philippines in the past, the changes in the structure of the fishing industry which began about 1970, requiring a rapid expansion of the catches of commercial fleet, would call for DBP to play a far more important role in financing fisheries investments. DBP is in a unique position to develop its institutional and technical capabilities to a greater degree by building on the experience gained in executing the first Fisheries Credit Project.

IV. THE PROJECT

General Description

4.01 The project would be a continuation of the first Fisheries Credit Project. The objective would be to assist the Philippine Government in its effort to (i) increase fish production for domestic consumption, and (ii) build up an institutional base for financing investments in marine and inland fisheries. The project would continue financing viable medium-sized commercial marine fisheries operations and the construction of new inland fishponds as well as improvements of existing ones. A greater emphasis would now be placed on upgrading of DBP's performance and standards for fisheries investment promotion, project appraisal and supervision. In the course of the project implementation, the Fisheries Group (FG) of DBP would be further strengthened and would prepare itself to play an important role in facilitating the greatly increased fisheries investments anticipated for the coming decade. At full development, the fishponds financed under the project would produce some 15,000 tons of additional milkfish per year and the 17 project fishing vessels would contribute an additional annual catch of about 10,000 tons.

4.02 Specifically, over a three-year investment period, the project would provide credit to individuals and private companies for the following:

Inland Sector

- (i) Construction of 114 new fishponds for milkfish farming,
- (ii) Expansion and rehabilitation of 266 existing milkfish ponds,

Marine Sector

- (iii) Construction of 14 90-gross ton fishing vessels,
- (iv) Construction of 3 45-gross ton fish vessels,
- (v) Conversion of 4 second-hand vessels into fish carrier boats,
- (vi) Construction of 3 ice plants with cold storage, and
- (vii) Construction of 1 slipway for repair of fishing vessels.

Detailed Features

4.03 Construction of New Fishponds. The project would continue to finance, among others, the construction of new fishponds for milkfish farming. Under the project, 114 new fishponds with a total of 2,700 hectares would be financed. The size of the fishpond would vary greatly, depending upon the nature of the land available and the operator's capacity for efficient management. There are considerable economies of scale in investment costs for fishponds up to about 30 hectares, and the standard commercial model adopted by DBP, on the basis of the typical size of the fishpond sub-loans processed (para 3.07 and Annex 4, para 8), involves a 24-hectare fishpond, with an average investment cost of about ₱ 11,000 (\$1,470) per hectare. Annex 2, paragraph 3 describes the essentials of fishpond construction.

4.04 Expansion and Rehabilitation of Existing Fishponds. The project would continue to finance expansion and rehabilitation of existing fishponds. There are generally two types of investment under this category; (i) rehabilitation of fishponds damaged by typhoons and flood and (ii) straight expansion of existing fishponds. The project would finance expansion and rehabilitation of 266 existing fishponds and facilitate full production from about 6,400 hectares. These investments usually have greater financial and economic viabilities than those for new fishponds. Unlike those for new fishponds, the operators of existing ponds usually have demonstrated pond management experience and skill. The investment cost per hectare is only about ₱ 6,500 (\$860), much lower than that for new fishponds (\$1,470). More importantly, existing fishponds by and large have better natural conditions, i.e., soil, water quality, proximity to markets, accessibility, etc.

4.05 Fishing Vessels. The project would finance 17 fishing vessels, of which 14 would be of the 90-gross ton class and 3 would be of the 45-gross ton class. All of these vessels would have wooden hulls of a relatively simple design (See schematic drawings with outline specifications), be powered by diesel engines, equipped with trawl, and purse seine fishing gear, short-wave radios, fish finders, and mechanical net hauling gear. The larger vessel would have a crew of 25, and the smaller ones a crew of 17. DBP's naval architect would evaluate the final design and specifications in consultation with sub-borrowers. Because of the generally depressed state of the fishing industry, the number of vessels projected for financing under the project is only 17, very small relative to the existing fleet of about 1,000 vessels of comparable tonnages. The most important consideration has been to maintain continuity of DBP's lending operation in the marine sector, especially in view of the eventuality that recovery from the present economic recession would call for greatly expanded investments in the sector.

4.06 Conversion of Second-hand Vessels into Fish Carrier Boats. The project would finance acquisition of four second-hand vessels for conversion and refitting into fish carrier boats. These boats would deliver ice, fuel and other supplies to the vessels fishing on distant grounds and transport fish from there to the markets. As a result of the sharply increased oil prices, these specialized services have become one of the most effective means of reducing the cost of fish landed by commercial fishing vessels. There are dozens of second-hand vessel hulls on the market that are suitable for conversion into fish carrier boats, and the carrier boats refitted out of these inexpensive hulls appear to be at present the only way to provide the specialized fish carrier services on a financially viable basis.

4.07 Ice Plants. The project would finance three ice plants, each with a capacity to produce 20 tons of ice and to hold 40 tons of fish in cold storage. The plants would be located around the Visayan Sea, which would serve as an advance base for the vessels fishing primarily for the Manila market. Ice usage for marine fisheries has been rapidly increasing, and the supply seems to be already very short. These plants would provide the ice required for the vessels operating on the distant grounds and provide cold storage facilities for fish being held for better prices or those to be collected by carrier boats for delivery to distant markets. Local consultants engaged by the sub-borrowers would prepare the detailed design, layout and engineering, if the estimated cost is \$100,000 or more.

4.08 Slipway. The project would finance a slipway at a suitable location around the Visayan Sea to be used for repair and maintenance of fishing and carrier vessels. At present, there is no suitable slipway and vessels in need of repair are beached at high tide and repaired at low tide. The slipway would be capable of servicing practically all categories of fishing vessels. In the Philippines, there are a number of qualified consulting engineers available to prepare design and provide engineering services for the purpose. The sub-borrower would be required to hire such consultants for the preparation and execution of the sub-project, if the estimated cost is \$100,000 or more.

Project Cost

4.09 Total project cost is estimated at \$23.5 million (P 176.0 million), of which foreign exchange costs would be \$6.3 million, or 27% of the total (Annex 5 gives detailed project cost estimates). The estimated costs for the different sub-project components are given in Annex 6 and summarized below:

SUMMARY OF PROJECT COSTS

	<u>Number of Units</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
		(P Million)			(\$ Million)		
I. Inland Fisheries							
New Fishponds	114	30.2	2.8	33.0	4.0	.4	4.4
Rehabilitation of Fishponds	<u>266</u>	<u>40.8</u>	<u>7.2</u>	<u>48.0</u>	<u>5.4</u>	<u>1.0</u>	<u>6.4</u>
Sub-total	<u>380</u>	<u>71.0</u>	<u>10.0</u>	<u>81.0</u>	<u>9.5</u>	<u>1.3</u>	<u>10.8</u>
II. Marine Fisheries							
90-ton Boats	14	15.4	16.6	32.0	2.1	2.2	4.3
45-ton Boats	3	2.6	2.3	4.9	.3	.3	.7
Fish Carriers	4	1.8	2.0	3.8	.2	.3	.5
Ice Plants	3	2.6	5.4	8.0	.3	.7	1.1
Slipway	<u>1</u>	<u>1.7</u>	<u>.6</u>	<u>2.3</u>	<u>.2</u>	<u>.1</u>	<u>.3</u>
Sub-total	<u>25</u>	<u>24.1</u>	<u>26.9</u>	<u>51.0</u>	<u>3.2</u>	<u>3.6</u>	<u>6.8</u>
Base Cost Estimate		<u>95.1</u>	<u>36.9</u>	<u>132.0</u>	<u>12.7</u>	<u>4.9</u>	<u>17.6</u>
Expected Price Increases <u>1/</u>		<u>33.7</u>	<u>10.3</u>	<u>44.0</u>	<u>4.5</u>	<u>1.4</u>	<u>5.9</u>
Total Expected Cost of Project		<u>128.8</u>	<u>47.2</u>	<u>176.0</u>	<u>17.2</u>	<u>6.3</u>	<u>23.5</u>

1/ For annual rates of price increase applied, see Annex 6, Tables 1-7.

4.10 The composition of total project cost in terms of goods and services of domestic origin and of the foreign exchange component, contingencies and incremental working capital is given in detail in Annex 6, Tables 1 - 7 and summarized below:

	<u>Domestic Cost</u>	<u>Foreign Exchange</u>	<u>Total</u>	<u>% of the Total</u>
	-----\$'000-----			
<u>Inland Fisheries</u>				
Investment Costs	8,185	1,335	9,520	
Incremental Working Capital	1,272	-	1,272	
Contingencies (Price) /a	<u>3,462</u>	<u>365</u>	<u>3,827</u>	
<u>Sub-total</u>	<u>12,919</u>	<u>1,700</u>	<u>14,619</u>	<u>62.3%</u>
<u>Marine Fisheries</u>				
Investment Costs	2,257	3,121	5,379	
Incremental Working Capital	753	-	753	
Contingencies (Price) /a	<u>1,246</u>	<u>1,474</u>	<u>2,720</u>	
<u>Sub-total</u>	<u>4,256</u>	<u>4,595</u>	<u>8,852</u>	<u>37.3%</u>
<u>Total</u>				
Investment Costs	10,442	4,457	14,899	
Incremental Working Capital	2,025	-	2,025	
Contingencies (Price) /a	<u>4,708</u>	<u>1,839</u>	<u>6,547</u>	
<u>Grand Total</u>	<u>17,175</u>	<u>6,296</u>	<u>23,471</u>	<u>100.0%</u>

/a See Annex 6, Tables 1-7.

Project Financing

4.11 The Bank would finance \$12.0 million, representing, as under the first project, 50% of the total cost of the inland sector (87% of which consists of local cost) and the foreign exchange cost of the marine sector. The beneficiaries of the inland sector would contribute 10% of the cost of investment project, and those of the marine sector would contribute a minimum of 20% of the cost of investment project, defined to exclude the cost of land 1/ and working capital.2/ DBP would make sub-loans in an amount not exceeding 90% of the cost of investment project under the inland sector and 80% of the same under the marine sector. The Bank would reimburse DBP 61% of its sub-loans for the cost of investment project (excluding working capital loan) for inland sector (which would involve substantial local cost financing) and 71% of the

1/ The land required would be provided by the beneficiary.

2/ The working capital required would be provided by DBP out of its own resources.

same for the marine sector. In the inland sector, most of the Bank funds would be used to finance local costs. In view of the fact that the development of this sub-sector is of a high priority, and that the requisite medium and long term credit resources are not available from other sources, the use of Bank funds for local cost financing appears justified, as fishpond construction requires no foreign exchange components other than the watergate systems of limited costs. The shares of Bank reimbursement are determined on the basis of the formula that has been effective for the first Fisheries Credit Project, i.e., in financing 50% of the total sub-project cost (including the estimated incremental working capital) for the inland sector and financing the estimated average foreign exchange cost of sub-project for the marine sector. The corresponding shares of Bank reimbursement under the first project have been 56% and 100% respectively. The differences in the shares of Bank reimbursement between the first and the proposed project are due to the fact that the present 56% under the first project was derived from the assumption that there would be no incremental working capital for the inland sector and that the marine sector's foreign exchange component would be 100% of the DBP expenditure. It has been found that some provision of incremental working capital would be essential for both the inland and the marine sector and that it would be difficult for the sub-borrowers to raise such funds from other sources. The working capital required for the fishpond sub-projects would be mainly for the stock of fry, fish feed and fertilizers for growing micro-organisms in the pond for fish feed - analogous to the initial stock, feed concentrates and pasture development in animal husbandry. In the marine sector, it would be mainly for start-up expenses. The following summarizes the proposed financing:

Proposed Project Financing

	<u>Investment Project</u>		<u>Working Capital</u>		<u>Total Project Cost</u>	
	<u>Amount</u>	<u>Share</u>	<u>Amount</u>	<u>Share</u>	<u>Amount</u>	<u>Share</u>
-----in millions of US dollars-----						
<u>Inland Sector</u>						
Sub-borrowers	1.3	10%	-	-	1.3	9%
DBP	4.7	35%	1.3	100%	6.0	41%
IBRD	7.3	55%	-	-	7.3	50%
<u>Sub-total</u>	<u>13.3</u>	<u>100%</u>	<u>1.3</u>	<u>100%</u>	<u>14.6</u>	<u>100%</u>
<u>Marine Sector</u>						
Sub-borrowers	1.6	20%	-	-	1.6	18%
DBP	1.9	23%	.8	100%	2.7	30%
IBRD	4.6	57%	-	-	4.6	52%
<u>Sub-total</u>	<u>8.1</u>	<u>100%</u>	<u>.8</u>	<u>100%</u>	<u>8.9</u>	<u>100%</u>
<u>Total</u>						
Sub-borrowers	2.9	14%	-	-	2.9	12%
DBP	6.6	30%	2.1	100%	8.7	37%
IBRD	11.9	56%	-	-	11.9	51%
<u>Grand Total</u>	<u>21.4</u>	<u>100%</u>	<u>2.1</u>	<u>100%</u>	<u>23.5</u>	<u>100%</u>

Terms and Conditions of the Bank Loan

4.12 The Bank loan would be made to GOP for 18 years, including five years' grace, at standard Bank lending rate of interest. A grace period of five years would be a minimum consistent with a four-year disbursement period and possible slippage in project implementation. It is not expected that there would be any significant roll-over. GOP would bear the foreign exchange risk and would onlend the proceeds to DBP on the same terms under a subsidiary loan agreement. This agreement would specify the main operating procedures to be followed under the project, including the establishment of a separate project account in which all receipts and payments for or in connection with project implementation would be recorded. Execution of a subsidiary loan agreement between the Government and DBP, satisfactory to the Bank, would be a condition of effectiveness of the Bank loan.

Terms and Conditions of Sub-loans

4.13 Sub-loans would be for qualified private individuals and companies. Each sub-loan application would be filed either with the nearest DBP branch or the head office. The application would give details of the applicant's past experience, the purpose of the loan and the collateral offered. The

information would be sent to the Fisheries Group (FG) of DBP for further investigation. The sub-loans would be approved by DBP's Board of Governors, on the basis of the findings of FG regarding such factors as applicant's managerial and technical competence, and fisheries experience.

4.14 The first project provides for varying repayment terms for different items being financed, ranging from 4 to 12 years, in addition to varying grace periods, ranging from 1 to 4 years. These specific stipulations have been found to be of little practical significance. The project would introduce simplified sub-loan repayment terms of a maximum of 14 years including a grace period not exceeding 3 years.

4.15 Based upon the interest schedule agreed at the negotiations for the Second Industrial Investment Project, DBP would charge 12.0% per annum for the loans secured by land and 14.0% for loans otherwise secured. Any future change in the rates DBP charges on its loans in general would be made applicable to commitment of sub-loans under the project. Since the cost of the money to DBP would be about 8.6%, ^{1/} the margin would be a minimum of 3.4% and there would be an additional 2.0% to cover the risks on loans not secured by land, these rates should be adequate and, at the same time, provide, in view of the Philippines' projected long-term inflation rate of 7.5%, an acceptable real rate of interest of 4.5 to 6.5%. The borrowers would be required to pay other additional charges, such as (i) a one-time application fee of ₱ 60 to ₱ 500 depending on the amount of sub-loan, (ii) penalty interest charges of 2.0% per month on arrears of 90 days or more (this 2.0% is scheduled to be raised to 3.0% effective June 30, 1977), and (iii) DBP's appraisal and supervision costs for sub-loans exceeding ₱ 3.0 million, not to exceed 2.0% per annum on the loan outstanding, etc. DBP normally finances up to 85% of the appraised value of the collateral offered.

Free Limit

4.16 Any sub-loan which, together with any other sub-loan or working capital loans to the same sub-borrowers under the first and second Bank-financed fisheries projects, exceeded \$600,000 would be subject to the Bank's prior approval. Such sub-loans would be submitted to the Bank together with DBP's project feasibility study demonstrating the technical, managerial, financial and economic viability of the sub-project.

Procurement

4.17 The procurement procedures would be similar to those effective under the first project.

^{1/} 56% of DBP sub-loans would be reimbursed by the Bank at 8.5% annual interest; the remainder would be covered by DBP's local funds with marginal annual interest cost of 8.75%. The local funds come largely from the public sector in the form of deposits, debentures and bonds.

4.18 Formal competitive bidding procedures would not be appropriate for fishpond construction, rehabilitation, and improvements. The nature of work to be done would vary widely from one sub-project to another, and the amount involved would be normally small, ranging from about \$7,000 to \$70,000 per sub-project, averaging about \$25,000, scattered widely across the country. Construction techniques are simple and the work would be done by manual labor, which, in most cases, would be in part provided by the sub-borrowers themselves. Sub-borrowers would be required to make appropriate arrangements, subject to prior DBP approval, with local workers or contractors in their respective area. DBP would maintain an up-to-date schedule, showing the cost of new construction, rehabilitation, and expansion per unit of fishpond, for use in determining the acceptability of the estimated project costs for inland fisheries sub-projects.

4.19 Wooden hulls of the type required for relatively small vessels proposed for financing under the project are constructed normally on a custom basis on make-shift backyard sites in the Philippines, and are not suitable for competitive bidding. The quality of the hulls produced is good and the cost reasonable. The second-hand fishing vessels to be converted to fish carriers would also be unsuitable for competitive bidding. These would, therefore, be procured through ordinary commercial channels under the supervision of DBP, which would ensure that the cost is reasonable and that the hulls procured conform to the standardized design criteria for the two categories of project vessels established by the DBP naval architect.

4.20 Contracts for ice plant or slipway estimated to cost \$200,000 or more would be awarded on the basis of international competitive bidding in accordance with Bank guidelines and those estimated to cost \$100,000 or more but less than \$200,000 would be placed following local competitive bidding in accordance with procedures acceptable to the Bank. Contracts for ice plants or slipway estimated to cost less than \$100,000 would be let through ordinary commercial channels, but with due regard for economy and efficiency.

4.21 Equipment for the vessels, such as main engines, winches, fishing gear and electronic equipment is not usually manufactured in the Philippines, but suppliers from several countries, mainly USA, Japan, Germany, UK and Norway are already established there. Through international advertisement, other suppliers would be encouraged to establish themselves and provide adequate service facilities and spare parts inventories, and the market would be open to suppliers meeting project standards and specifications. The advertisement would indicate the approximate type of equipment and total quantity required and potential suppliers would quote prices on various quantities of each type of equipment. DBP would then assist the sub-borrower in obtaining the make of equipment and quantity needed on the basis of these quotations.

Disbursement

4.22 The Bank would reimburse 61% of DBP's disbursement for sub-loans for investment projects (excluding land and working capital) for the inland

sector, representing 50% of total sub-project costs, and 71% likewise for the marine sector, representing 100% of foreign exchange cost, upon submission of documentation by DBP supported by statement of expenditure. Supporting documentation would be retained by DBP for review during the course of project supervision. An estimated quarterly schedule of disbursements appears in Annex 8.

Audit and Accounts

4.23 Under the Second Industrial Investment Project through DBP (Loan 1190-PH), a series of measures were agreed to by DBP and the Commission on Audit (COA) which are expected to result in substantial improvements in the quality and coverage of the audit. In particular, COA will now undertake a thorough review of DBP's portfolio with a view to determining its quality and recommending appropriate corrective actions. Satisfactory progress is being made in this direction and COA has already submitted an audit report for FY75 in the form required by the Bank. The report is under review. Furthermore, records and accounts pertaining to all Bank-financed agricultural projects would be kept and audited separately; the depth and coverage of this audit would be satisfactory. A copy of the audited report would be sent to the Bank within three months of the close of the fiscal year until full disbursement of the loan.

Reporting Requirements

4.24 Sub-borrowers Reports. On the basis of a form agreed upon at negotiations, sub-borrowers would report to DBP on their operations to enable it to assess the impact of the sub-projects on an annual basis. The data would include quantities and values of production, itemized production costs, and indices of productivity to enable DBP to prepare and update financial and economic analysis of sub-projects along the lines presented in the Cash Flow Projections (Annex 11, Tables 1 - 7) and the Economic Analysis (Annex 12, Tables 1 - 2).

4.25 DBP Reports. DBP would be required to submit, in addition to the summary report it submits to the Bank under the first Fisheries Credit Project (891-PH), two sets of reports; (i) an annual summary report on the project impact compiled on the basis of the form outlined in para. 4.24, and (ii) a quarterly summary report on the state of its portfolio showing, among others, the arrears position and the repayment collection on the fisheries loans, and the ages of overdues, accounting for the Bank-financed sub-loans separately. Assurances have been obtained at negotiations that DBP would furnish the Bank these reports, at intervals not exceeding 12 months.

New Features of the Project

4.26 Fishing Vessel Design. Experiences under the first project have shown that rigid design specifications can be self-defeating in marine fisheries financing. The first project was designed for very different basic financial parameters providing only for steel and wooden vessels of relatively

large tonnage classes (15 steel vessels of 130 gross ton class and 45 wooden vessels of 70 gross ton class). Especially since the oil crisis, many fishing operators found it more profitable to use smaller purse seine vessels. The project, therefore, would be made more flexible in respect to the eligibility of the tonnage classes of the vessels, and make all wooden vessels of 45 gross tons or more eligible.

4.27 Institution Building. A major objective of the project would be institution building. As part of the program to achieve this objective, DBP would be required to monitor more closely the sub-project impact and institute a systematic procedure for maintaining a running record of its arrears position and repayment collection performance (5.07). These monitoring activities are expected to enhance the appraisal and supervision standards of FG and contribute significantly to strengthening DBP as the leading fisheries development finance institution.

V. ORGANIZATION AND MANAGEMENT

DBP

5.01 DBP was established in 1958 (Republic Act No. 85) as an autonomous government-owned development bank for supplying credit to industry and agriculture. ^{1/} It is the single largest institutional source of long-term funds in the Philippines. Since its inception, it has approved financial assistance totalling nearly \$3 billion. The volume and diversity of its operations give it a prominent and unique role as the Government's arm for financing economic development. The bulk of its activities has been in loans and guarantees for industry and agriculture.

5.02 Overall management of DBP is entrusted to a nine-man Board of Governors consisting of the Chairman (who is chief executive officer), four full-time Supervising Governors (one position is now vacant) with responsibility for different departments of DBP, and four part-time Governors (presently the former Executive Secretary to the President, the Secretary of Industry, a private lawyer, and one vacancy). One of the Supervising Governors is Vice-Chairman of the Board. The present Chairman, Leonides S. Virata, was appointed in February 1970.

5.03 DBP's operating core consists of three broad departmental groupings (Industry, Agriculture and Community-Development) each under the direction of a Supervising Governor. In the past two years, DBP has concentrated its efforts on consolidation. As a result, noticeable improvements in the functioning of individual departments and in inter-departmental coordination have taken place. DBP has a total staff of about 3,000, 55% of whom are

^{1/} For more comprehensive description of DBP, see Appraisal of a Second Loan to the Republic of the Philippines for Industry Financing Through the Development Bank of the Philippines, Report No. 872a-PH, 1975.

located in the 35 branches and 24 agencies. The staff is of generally good calibre. Salaries are competitive with other Government financial institutions, and above those of the general civil service.

5.04 The Bank has so far approved eight loans totalling \$213.4 million, all since 1971, for on-lending through DBP. ^{1/} In addition, the Second Grain Processing Project for \$11.0 million has been appraised recently, and the Second Shipping Project will be appraised soon.

5.05 Through FY74, the large majority of DBP's financial assistance consisted of the guaranteeing of foreign loans - in FY74, this was 88% of all operations (by amount). In FY75, however, there was a dramatic change as DBP's loan approvals rose from P 0.3 billion in FY74 to P 2.4 billion, while its guarantees fell from P 2.8 billion to P 0.8 billion. As of June 1975, DBP's total assets stood at P 7.84 billion, an increase of 48% from P 5.28 billion a year earlier. DBP's liquidity position is reasonably sound (current ratio of 2.1) as is its present long-term capital structure (total debt/equity ratio of 4.5:1).

5.06 DBP's net income for FY75 was P 71.4 million, 21% below its FY74 net income. This decline is in sharp contrast to the rising performance trend of FY73 and FY74. Since DBP's financial statements are prepared on an adjusted cash rather than on an accrual basis, the decline in income reflected mainly a decline in collections as a result of adverse economic conditions which affected many of DBP's clients, and rapidly rising expenses. In judging its financial performance, it is essential to recognize that DBP is a government-owned development-oriented institution and that its earnings performance is not strictly comparable to that of private profit-oriented institutions. Nevertheless, the continuation of the present income trend on its loan portfolio can only increase DBP's reliance on continual government assistance. A low level of collections and the magnitude of its arrears continue to pose the main financial problems for DBP. At negotiations for the Second Industrial Investment Project, DBP agreed to a number of measures to improve its income, including higher interest rates and better loan-collection efforts (Annex 10, paras 15-16).

5.07 DBP has only recently become a major source of credit for the fishing industry. Its volume and amount of lending in the fisheries sector has increased substantially since 1972. Excluding the sub-loans under the Bank financed first Fisheries Credit Project (Loan 891-PH), DBP had approved as of June 30, 1975, about P 225 million for fisheries purposes, of which about P 120 million was for a very large number (over 20,000) of small loans in the

^{1/} Rice Processing and Storage Project, 720-PH, \$14.3 million, Fisheries Credit Project, 891-PH, \$11.6 million, (First) Livestock Development Project, 823-PH, \$7.5 million, Second Livestock Development Project, 1070-PH, \$20.0 million, (First) Industrial Investment and Smallholder Tree-Farmers Project, 990-PH, \$50.0 million, Second Industrial Investment Project, 1190-PH, \$75.0 million, Shipping Project, 1048-PH, \$20.0 million, and Small and Medium Industries Development Project, 1120-PH, \$15.0 million (out of a country-wide \$30.0 million).

"foreshore" fisheries sub-sector. Of the P 225 million approved, about P 188 million in principal is outstanding. DBP reports that a total of P 25 million of the outstanding amount is overdue. In addition, as of July 31, 1975, DBP has committed P 35.5 million in the inland sector, and P 9.8 million in the marine sector, under the Bank-financed first Fisheries Credit Project.

Fisheries Group

5.08 FG of DBP would be responsible for the processing of sub-loans financed under the project. It has at present 25 staff including fisheries experts, marine engineers, and financial and economic analysts. Since the latest reorganization in April 1976, it has two divisions, an Inland Fisheries and a Marine Fisheries Division, each consisting of an appraisal and a supervision section. Under the first project, FG has developed considerable expertise in fisheries lending and evolved satisfactory working relationship with BFAR. It does, however, need to increase its technical capacity by recruiting additional marine engineers to support the deepsea lending operation and additional staff to supervise its growing inland fisheries portfolio. Assurances have been obtained at negotiations that DBP would adequately strengthen the technical staff by the addition of at least five new recruits for inland fisheries portfolio supervision and two for marine fisheries project appraisal.

VI. MARKETS AND PRICES

Demand Projections

6.01 The major determinants of the demand for fish in the Philippines appear to be (i) the rate of population growth, (ii) the rate at which the road network is extended to areas hitherto inaccessible to motor vehicles, and (iii) the level of per capita income, especially in the rural sector. All of these indicate a high long-term growth rate of the demand for fish. The population is increasing by about 3% per year. Feeder roads are being extended at a greatly accelerated rate with the aid of the Bank, Asian Development Bank (ADB), and the United States Agency for International Development (USAID). And, the per capita real income, especially of the farmers whose terms of trade have greatly improved along with the sharp increases in grain prices since 1973, is expected to increase at about 2-3%. On the basis of these, it is estimated that the demand for fish would increase by at least 6% per year, which is about the same as the rate at which the marine fisheries production has been actually expanding during the 1968-1973 period. The requirement for domestic fish production would increase somewhat faster than 6% per year, if the Government proceeds with its program to substitute domestic fish for the significant quantities of canned and other processed fish imports (equivalent to about 10% of domestic production in net weight terms).

Production Possibilities

6.02 Since the sustainable yields from the Philippine waters are estimated to be at least about 1.7 million tons for the marine fisheries (0.7 million tons for the municipal and 1.0 million tons for the commercial fisheries), it should be possible for the industry to meet the production requirement for the coming decade. In view of the fact that the scope for further expansion of the municipal fisheries catch is now rather limited, however, much of the additional production would have to come from the commercial fisheries. Since the present scale of investment in the commercial fisheries appears to be grossly inadequate to meet the projected production requirement, an increasing fresh fish deficit is anticipated for the coming years.

Project Production

6.03 At full development, the project facilities would produce about 26,000 tons of fish per year (15,000 tons of inland milkfish and 11,000 tons of marine fish), representing about 2.0% of the estimated total fish production of 1.3 million tons for 1974. The quantity of incremental production from the project facilities would be so small that it would not pose any serious marketing problem.

Imports and Exports

6.04 Imports. The Philippines has been importing substantial quantities of canned fish, mainly canned mackerel and sardine. The estimated 1974 fish import of \$32 million consisted of 42,000 tons of canned mackerel (\$26 million), 3,500 tons of canned sardines (\$2.5 million) and 10,500 tons of other processed fish products (\$3.5 million), including about 9,300 tons of fishmeal. As a result of the recently adopted government policy, canned fish imports are likely to diminish in the next several years, but the extent of the import restrictions is not yet clear.

6.05 Exports. Philippine exports of fisheries products have been increasing rapidly in recent years. The estimated 1974 fish export of \$18 million consisted of 1,700 tons of frozen shrimp (estimated \$5 million), 11,400 tons of frozen tuna (\$7 million) and a variety of other items including frozen milkfish, scallop, etc. The tuna was exported mainly to the United States, but Japan took a small share, and the shrimp export was almost entirely to Japan. These two export items appear to have potentials for substantial expansion.

Fish Prices

6.06 During the five year period from 1968 to 1973, the wholesale marine fish price kept pace with the general wholesale price (the index for the fish being 200 and for general price 199 with the 1968 prices as the base). Since 1973, however, the oil crisis has had far reaching effects on the determinants of fish prices. First, it caused a sharp increase in operating cost for fishing boats. Second, by causing a business recession at home and abroad, it

greatly weakened the demand for fish. These two factors together forced many of the relatively inefficient boat operators to suspend their operation, and, as a result, there appears to have been a substantial decrease in the commercial fisheries catch, hence a reduced supply of fish from the marine sector. Average wholesale prices of fish in the meantime appear to have risen somewhat faster than the general wholesale prices because of the greatly reduced supply, despite the weakened demand. Compared with the rates at which the wholesale fish prices have increased, ex-vessel fish prices appear to have increased very little. Surveys made in 1972 (November), 1973 (November) and 1975 (September) show that the estimated average price received by boat operators for comparable fish delivered to Navotas (Manila) was P 1.4/kg in 1972, P 1.6/kg in 1973, and P 1.8/kg in 1975. These indicate that, during the three year period, the boat operators' average receipt per kg of fish landed in Manila increased only about 29% (13% for the last two years), while the operating and investment costs have nearly doubled. It is anticipated, however, that the ex-vessel fish prices would recover along with general economic activities. The ex-vessel prices assumed for the project financial analyses are P 1.8/kg for the trawler and purse-seiner-caught fish and P 2.5/kg for tuna and high quality mackerels (estimated ex-vessel prices in September 1975).

VII. BENEFITS AND JUSTIFICATION

7.01 Incremental Fish Production. When the fishponds under the projects, with an aggregate area of 9,120 ha, reach full development, they are expected to add 15,000 tons of milkfish per annum to the present annual milkfish production of about 110,000 tons. The 17 fishing vessels would annually harvest an additional 11,000 tons of marine fish. The total incremental fish production facilitated by the project would thus be about 26,000 tons per year, with an estimated value of about \$10.8 million.

7.02 Fisheries Supporting Services. In addition the project fish carriers and ice plants would lend important support to efficient utilization of fishing vessels and improved fish marketing. As a result of the increased oil prices, the need for fish carriers is much greater than at the appraisal of the first project. The fish carriers would permit fishing vessels to operate on more distant grounds without having to make frequent trips to the market. These trips consume much oil and reduce the time the vessels can put to actual fishing. With proper coordination between fishing vessels and carriers, the productivity can be greatly increased, and the cost of fish landed considerably reduced. As the near-shore grounds near major markets are almost fully exploited, so that much of the incremental production from commercial fisheries would have to come from more distant grounds, the requirement for carrier vessels would greatly increase in the future.

7.03 Institution Building Effect. One of the most important benefits of the project would be its contribution to the strengthening of DBP's capabilities for fisheries development financing. DBP is the only financial

institution in the Philippines providing medium and long-term credit in any significant scale for fisheries development. In the course of implementing the first project, DBP has considerably strengthened its technical capabilities for fisheries development, but it is still in need of further strengthening, especially in the technical staff for marine fisheries and supervision standards for inland fisheries. In the coming years, the requirement for medium and long-term credit for marine fisheries is expected to expand rapidly, because much of the additional fish production required to keep the per capita fish consumption from falling would have to come from the commercial fisheries, which cannot be expected to maintain the required level of investment without medium and long-term credit. The project would make a significant contribution in helping DBP to evolve into an institution competent in meeting this important development requirement.

7.04 Financial and Economic Viability. All of the seven sub-project models have acceptable financial rates of return, ranging from 17% to 39%, with a weighted average rate of return of 27% (see Annex 11 for detailed financial analyses). Since the financial costs and benefits of the project are assumed to approximate the corresponding economic costs and benefits, no adjustments have been made except the deduction of duties and taxes on imported investment goods required for the marine sector. The respective economic rates of return, therefore, are equal to or higher than the corresponding financial rates of return, ranging from 21% to 43%, with a weighted average of 30%. The estimated economic rates of return are relatively insensitive to investment cost overruns and operating cost increases. They are quite sensitive to decreases in the prices of the fish, but the chances of fish prices decreasing are extremely remote. Detailed economic rates of return sensitivity analyses appear in Annex 12, Table 3. Annex 12, Tables 1 and 2 present the details of economic rate of return calculations, which are summarized below:

	<u>Rates of Return (%)</u>	
	<u>Financial</u>	<u>Economic</u>
<u>Inland Sector</u>		
New Fishponds	21	21
Rehabilitated Fishponds	39	39
<u>Marine Sector</u>		
90 g.t. Fishing Vessels	20	28
45 g.t. Fishing Vessels	19	28
Fish Carriers	25	43
Ice Plants	20	23
Slipway	17	n.a. /a
<u>Weighted Average</u>	<u>27</u>	<u>30</u>

/a Much of the economic benefits for the slipway would be external, and no attempt has been made to estimate its economic rate of return.

7.05 Employment Effect. The project would create about 1,000 new jobs directly required for the sub-projects (Annex 12, Table 4). As it is expected that the present widespread unemployment of marine fisheries work force would persist for the coming decade, and the newly fitted fishing vessels are manned largely by currently unemployed fishermen, virtually all of these would be filled by those in the rural poverty target group. In addition, the marketing of the project production of some 15,000 tons of fish per annum is expected to generate about 150,000 man-days of employment per year and the construction of the project facilities would require about 4 million man-days of labor.

7.06 Distribution of Benefits. Although the direct beneficiaries would be some 400 rural entrepreneurs who would borrow funds under the project, about 1,000 from the poverty target group would derive major benefits from the permanent employment and an additional 750 from fish marketing job opportunities created by the project. Finally, there would be benefits of a general nature that the project would help limit the widening deficit of fish, which is a staple in the Filipino diet.

Effects on the Environment

7.07 On the whole, the project is expected to have a positive environmental effect. The only possible pollution causing elements of the project would be the 17 fishing vessels and the 4 fish carriers projected for financing, which would constitute less than 1.0% of the commercial fishing fleet of the country. On the inland sector, however, the environmental effect would be a positive one. The fish-farmers generally have much to lose by pollution of the environment, and they already constitute an important pressure group against pollution.

VIII. RECOMMENDATIONS

8.01 The proposed project is suitable for a Bank loan of \$12.0 million at standard Bank lending rate of interest repayable over 18 years including a five-year grace period.

8.02 The condition of effectiveness would be the execution of a subsidiary loan agreement between GOP and DBP satisfactory to the Bank.

8.03 Assurances have been obtained at negotiations that DBP would submit annually to the Bank in an agreed form the data on sub-project impact outlined in para 4.24 and para 4.25 and a report on the status of its fisheries portfolio, showing among others, the arrears position and the repayment collection on the fisheries loans, and the ages of overdues, accounting the Bank-financed sub-loans separately.

8.04 Assurances have been obtained at negotiations that DBP would adequately strengthen its technical staff of FG (para 5.08).

PHILIPPINES

SECOND FISHERIES PROJECT

Marine Fisheries

1. The fishing industry of the Philippines is classified into two major categories, the marine and the inland fisheries. The marine fisheries are subdivided further into two sub-categories, the commercial and the municipal fisheries. The total fisheries production of 1.3 million tons for 1974 consisted of 684,000 tons (53%) from the municipal fisheries, 471,000 tons (38%) from the commercial and 113,000 tons (9%) from the inland fisheries. This Annex discusses the marine fisheries, and Annex 2 deals with the inland fisheries. The waters adjacent to the Philippines and principal fishing grounds are shown in Map (IBRD 11915).

Marine Fisheries Resources

2. South China Sea Region. The South China Sea includes some of the widest expanses of shallow shelf in the world. Of the total sea around involved (nearly five million km²), 20% is less than 50 m deep and 30% is between 50 m and 500 m deep. Including the nearby East China Sea, the waters of Southeast Asia make up about 20% of the total shallow water areas of the entire world. Because shelf areas tend to have higher natural fish production, and more of this production becomes harvestable, the region offers the possibility of very substantial sustainable fish catches. The following table reflects the state of fishing industries in the region.

Marine Fisheries LandingsSouth China Sea1970 or 1971

(in thousands of metric tons)

	<u>Types of Fishing</u>				
	<u>Total</u>	<u>Trawls</u>	<u>Purse Seines</u>	<u>Drift Nets</u>	<u>Other Gear</u>
Hong Kong	115.6	75.2	6.9	9.2	24.3
Philippines	892.4	135.6	86.7	0.4	125.5 (Bagnets) 544.2
Khmer	39.4	27.2	3.5	0.8	7.9
Thailand	1,246.2	658.9	75.1	65.3	446.9
West Malaysia	317.9	112.2	88.5	18.8	26.0 72.4
Sarawak	25.5	12.8	7.0		5.7
Sabah	57.8	38.1			19.7
Singapore	14.3	5.8			8.5
Sumatra	340.0	136.0	51.0		153.0
<u>Total</u>	<u>3,049.1</u>	<u>1,201.0</u>	<u>260.7</u>	<u>152.5</u>	<u>1,434.1</u>

Source: Food and Agriculture Organization of the United Nations, United Nations Development Programme, South China Sea Fisheries Development and Coordinating Programme, Indo-Pacific Fisheries Council SCS/DEV/73/1/Rome, A Proposal for Accelerated Development, Bureau of Fisheries and Aquatic Resources, GOP.

Philippines Fisheries Territorial Base

3. The territorial sea of the Philippines, based on the so-called "archipelago principle", encompasses approximately 1.6 million km² within an area about 540 nautical miles wide (118°E to 127°E) and 1,640 nautical miles long (21°25'N to 4°45'N). Only a few Philippine commercial fishing vessels operate outside these limits--mainly in the South China Sea--and their catch makes only a small contribution to the total catch. The Philippine Islands are marked by an extremely narrow continental shelf and a precipitous continental shelf, so that most of the fishing area is over waters deeper than 200 m. The shelf areas suitable for trawling are not extensive and covers only a small area of about 185,000 km² made up largely of the Sulu Sea (127,000 km²) and the Visayan Sea (15,000 km²).

Major Species

4. The stocks of the Philippine waters may best be classified into four groups (i) pelagic fish, (ii) demersal fish, (iii) tuna, and (iv) crustaceans and molluscs.

5. Pelagic Fish. As shown in the following table, Pelagic (i.e. not bottom associated) fish make up the largest group of fish caught at present as well as the largest and most valuable potential for future development. FAO reports have estimated that annual potential yields from pelagic fishery resources in the South China Sea waters are in the order of 4.2 million tons. The 1971 landings in the region totalled about 2 million tons. The main groups of species concerned, excluding the tuna which are covered separately in para 7 are the scads (Decapterus spp.), sardinellas, anchovies (Stolephorus spp.) and Indian mackerels (Rastrelliger spp.). All these fish form near surface schools (often quite large) at least at some time of the day or night, when they can be caught in quantity by purse seines or other types of surrounding nets. The larger species are also caught in gillnets. The quick escape reaction of some species often causes large differences in catch by a large or efficiently handled net as compared with a slightly smaller or poorly set net. The Philippines catch of these species is approximately 550,000 tons including the municipal fisheries catch, and there appears to be an excellent opportunity to increase catches from the pelagic species group, particularly in the grounds farther offshore.

Commercial Fisheries Catch

(in thousands of metric tons)

	<u>1965</u>	<u>1970</u>	<u>1973</u>	<u>1974</u>
<u>Pelagic</u>				
Anchovy	12.6	9.2	11.1	9.3
Sardine	32.6	32.9	39.7	14.7
Chub mackerel	5.5	21.0	25.9	36.2
Bige-eyed scad	10.6	14.4	13.5	9.3
Round scad	99.9	150.7	170.0	167.9
Bonito	3.0	7.2	11.0	8.9
Others	<u>31.3</u>	<u>42.3</u>	<u>63.9</u>	<u>66.4</u>
<u>Sub-total</u>	<u>195.5</u>	<u>277.7</u>	<u>335.1</u>	<u>312.7</u>
<u>Demersal</u>				
Breams	12.7	17.2	25.6	29.8
Croaker	11.2	10.1	8.7	7.8
Slipmouth	31.2	33.3	40.6	45.1
Lizard fish	16.3	12.3	7.6	7.9
Shrimp	10.5	10.4	10.4	13.6
Others	<u>22.7</u>	<u>20.2</u>	<u>37.5</u>	<u>53.8</u>
<u>Sub-total</u>	<u>104.6</u>	<u>103.5</u>	<u>130.4</u>	<u>158.0</u>
<u>Total</u>	<u>304.1</u>	<u>381.2</u>	<u>465.5</u>	<u>470.7</u>

Source: BFAR, Fisheries Statistics of the Philippines, 1974.

Because of the increase in fuel oil prices and the increasingly heavy fishing on grounds near the major landing ports, the relative effort expended on pelagic species is expected to increase and bottom trawling is expected to decline. While the data on catch per effort are not enough to determine whether, even for the near shore grounds, there has been undue fishing upon the bottom associated stocks, most authorities agree that a cautious approach to the expansion of this particular part of the Philippine fishing industry is called for. Except for the fishing grounds around Palawan, the Samar Sea and Mindanao, the size frequency distribution of fish appears to be declining and fishermen report more effort required to obtain profitable catches than in previous years.

6. Demersal Fish. This group of fish includes the very wide variety of species that live near or just off the bottom. These range from large, often long-lived species of high market value such as croaker and snappers,

to small fish which are used mainly as dried fish for human consumption and for animal feed (fishmeal). Shrimp and other crustaceans are often significant and valuable elements of the bottom species community, but they are discussed separately in para 8. Almost all demersal fish are caught by trawling, hook and line and beach seines. Commercial trawlers caught about 158,000 tons of demersal fish in 1974, an increase of about 39% from the 114,000 tons caught in 1968.

7. Tuna. Oceanic fisheries for tuna occur near the Philippines using longline gear set by vessels from Korea, Taiwan, and Japan, but, the large tuna caught by this method are believed to be fully exploited or over-exploited and no increase in catch is thought to be commercially feasible. The rapidly expanding tuna catch by the municipal fisheries shows that substantial stocks of skipjack and yellowfin tuna occur throughout the waters near the Philippines. It is reported that about 12,000 tons of tuna were caught in the 1974 season by hand lines set from small motorized canoes and sold to freezer vessels for export to Japan. In addition, small purse seine vessels fishing near anchored rafts have developed good catches of skipjack tuna (about 5,000 tons in 1974), which have been landed in Davao for freezing and export. With increasing effort being given to solving the technical problems of catching skipjack (which appear to have highly erratic behavior patterns and are difficult to catch), the catch of this species is expected to increase greatly. Some estimates place the potential catch available to vessels from the Philippines between 10,000 and 30,000 tons per year. In 1939, four small vessels owned by a Japanese company using live bait pole-and-line methods caught 1,256 tons of skipjack and 265 tons of yellowfin tuna from Zamboanga, Mindanao. It is expected that this method of fishing for which adequate supplies of bait fish are available will grow in importance, if the difficulties of communication and transportation in the southern part of the country were overcome, and the fishing grounds to the east toward the Caroline Islands were explored by larger vessels with better capabilities to cope with the sometimes violent weather conditions.

8. Crustaceans and Molluscs. The most important are shrimp, which can be divided into two main groups according to size. The larger shrimps, mainly species of the genera Penaeus and Metapenaeus, are principally caught offshore, although several species spend the early months of their life inshore in lagoons or estuaries. Fishing for them is mainly by trawl, either as part of the general demersal fishery or by specialized shrimp trawlers. Shrimp fisheries are well developed in the southern part of the country. Total catches are of the order of 10,000 tons, and it is likely that the stocks of panaeid shrimp are fully exploited, with no significant opportunities for expanding catches. By contrast, the small shrimps (Parapeneopsis spp., Acetes spp., etc.) mainly occur in inshore or estuarine areas. They are used mostly as shrimp paste for local consumption. Employing a variety of gear, shrimping is somewhat localized, depending to a considerable extent on the local demand. Since the fishermen involved are mainly artisanal, the catch data are poor, and no reliable calculation of the status of the stocks has

been made. Other crustaceans found in the area include the large freshwater or brackish water prawn (Macrobrachium spp.) of which the natural stocks are probably fully exploited, and a variety of crabs. It is believed that catches of the latter could be increased, but they would not make a major contribution to the fisheries economy. Cephalopods (squid, octopus and cuttlefish) are caught mainly by trawls and other demersal gear. The present knowledge of the status of stocks is poor.

Municipal Fisheries

9. Although the municipal fisheries account for a great majority of the Philippine fishermen and for about 53% of the total fisheries production, not much is known about the composition of the catch (species, value, location, time of catch, gear used, etc.), the cost of operation, and the specific problems encountered.

10. The sub-sector has been characterized as being made up largely of subsistence, artisanal, and part-time fishermen-farmers, timber workers and others. The municipal fisheries by and large involve the use of unmotorized small boats (bancas) of not more than 3 gross tons. In 1974, these fisheries, engaging approximately 500,000 subsistence and part-time fishermen from 6,000 fishing villages (barrios), operated about 27,000 fishing boats (bancas) and produced some 684,000 metric tons, 61% of the total marine fisheries production.

11. The municipal councils regulate the fishing within their jurisdiction and a wide range of fishing methods and gear are employed, ranging from simple snares, spears, small traps to very complicated and large stake and hanging net traps. Vessels of tonnages under three tons are licensed for the municipal waters, which include marine waters up to three miles from the coastline, as well as inland waters within the jurisdiction of municipal councils.

12. Despite the lack of reliable statistical information, it is clear that, in the more densely populated areas, the limits of fisheries resources available to municipal fishermen have been reached, and any significant increase in fishing effort in these areas would only serve to lessen the index of productivity per fisherman which is on the average thought to be already a very low one ranging between one and two tons per fisherman per year. In the less populated areas, on the other hand, there appears to be considerable scope for increasing the catch, but the lack of suitable transportation and marketing facilities tends to make it unprofitable to catch more than the isolated markets can absorb without depressing the prices unduly.

13. In order to overcome the limitations imposed by finite resources, geographically limited fishing areas, and the lack of supply and landing places, many fishermen have sought to exploit more distant fishing grounds from bases where marketing facilities exist such as Manila and Iloilo, employing larger and more powerful fishing vessels, and more sophisticated fishing gear, so that some of them have thus entered the commercial fisheries.

Commercial Fisheries

14. The commercial fisheries of the Philippines are licensed and regulated by BFAR, which, jointly with the Philippine Coast Guard, licenses vessels larger than three gross tons.

15. Fishing Methods, Fish Types, Catch and Grounds. In the last 10 years, there has been a gradual reduction in the number of small vessels (less than 10 tons) and a substantial increase in the number of vessels 50 tons or more (Table 1). Most fish are caught by trawl, bagnet and purse seine, methods common to all sizes of vessels. Fishing by gillnet and round haul nets and by hook and line is largely restricted to the smaller vessels. BFAR publishes production data for some 65 types of fish, but five species accounted for about 60% of the total catch of about 471,000 tons by commercial vessels in 1974 (round scad 35.6%, slipmouth 9.5% and sardines 3.1%, chub mackerel and breams about 6.0% each).

16. The reported 1973 commercial fisheries catch for the most important fishing grounds is given below:

1973 Commercial Fisheries Catch /1

by Fishing Grounds

(in thousands of metric tons)

<u>Fishing Grounds</u>	<u>Catch</u>	<u>Percent of Total</u>
Visayan Sea	169	36.4
Malampaya Sound	88	19.0
Sulu Sea	77	16.6
Manila Bay	31	6.6
San Miguel Bay	15	3.1
Tayabas Bay	11	2.2
Mindoro Strait	10	2.1
Moro Gulf	7	1.7
Davao Gulf	5	1.1
Samar Gulf	5	1.1
Other	<u>47</u>	<u>10.1</u>
<u>Total Commercial Catch</u>	<u>465</u>	<u>100.0</u>

/1 See Map (IBRD 11915).

Marketing and Prices

17. Marketing. Marketing is carried out by the private sector (Annex 3 deals with prices and marketing in greater detail). Fish are sold by whis- per auction and traded through a network of private dealers, wholesalers and small independent retail outlets. The retail sale of fish takes place in

the public central markets scattered throughout the main population centers and the suburbs of larger towns where the local food markets have specialized sections for selling fresh fish. The bulk of the fish is marketed in the fresh condition. Frozen fish is practically unknown in local markets and there is marked consumer prejudice against the use of ice. One of the main problems in fish marketing is the physical inaccessibility of the isolated rural markets because of the absence of even jeepable feeder roads.

18. Prices. Since 1973, the oil crisis has had far reaching effects on the determinants of fish prices. First, it caused a sharp increase in operating cost for fishing boats. Second, by causing a business recession at home and abroad, it greatly weakened the demand for fish. These two factors together forced many of the relative inefficient boat operators to suspend their operation, and, as a result, there appears to have been a substantial decrease in the commercial fisheries catch, hence a reduced supply of fish from the marine sector. Average wholesale prices of fish in the meantime appear to have risen somewhat faster than the general wholesale prices because of the greatly reduced supply, despite the weakened demand. Compared with the rates at which the wholesale fish prices have increased, the ex-vessel fish prices appear to have increased very little. Surveys made in 1972 (November), 1973 (November) and 1975 (September) show that the estimated average prices received by boat operators for comparable fish delivered to Navotas (Manila) was ₱ 1.4/kg in 1972, ₱ 1.6/kg in 1973, and ₱ 1.8/kg in 1975. These indicate that, during the three year period, the boat operators' average receipt per kg of fish landed in Manila increased only about 29% (13% for the last two years), while the operating and investment costs have nearly doubled. It is anticipated, however, that the ex-vessel fish prices would recover along with general economic activities. The ex-vessel prices assumed for the project financial analyses are ₱ 1.8/kg for the trawler and purse seiner-caught fish and ₱ 2.5/kg for tuna and high quality mackerels (estimated ex-vessel prices in September 1975).

19. Industry Trends. The nature of the chief problem for the fishing industry changed categorically during the past several years. Before the oil crisis, the overriding problem was over-fishing on the traditional fishing ground, and the appropriate response to this was to build boats capable of reaching more distant grounds, and equipping them with more powerful engines and larger trawl fishing gear. This was the correct response and the fishermen adopting this approach found it quite profitable. The situation changed categorically, however, because of the oil price increase. The larger heavier trawls and more powerful engines proved to be a highly oil-intensive method of catching, and the tripling and quadrupling of the pump price of fuel oil made the larger more powerful trawlers much less financially attractive. Now the industry has to adapt itself to fishing methods that are less oil-intensive. In fact, the industry shows an apparent tendency to prefer (i) smaller vessels, (ii) less fuel-intensive methods of catching

such as purse seining, and (iii) vessels which have more flexible capabilities (for example, trawling as well as purse seining) to respond to changes in operating costs, as well as to exploit different fish species in order to take advantage of price fluctuations.

20. These changes in the strategy of the industry make it imperative that more specialized fishing bases become available. Such bases with adequate capabilities to reprovision, fuel and handle catch could prove decisive in the development of the fishing industry in the coming years. In addition, there is a general shortage of freezing facilities in the country. The small existing facilities are producing frozen fish mainly for export (mainly shrimp, tuna and milkfish). The Government attaches a very high priority to developing a program for harbor development, cold chains and marketing systems.

21. Fish Landing Facilities. Most of the commercial catch is landed in the Manila area. Navotas, the country's largest fishing port located in the Metropolitan Manila alone received 61% of the total commercial catch, and if the landings in adjacent Magallanes, North Harbor (Manila) and Malabon were added, the Manila area then accounts for about 67% of the total commercial catch. Navotas is the receiving point for almost 90% of the catch from the Palawan waters, almost 85% of the Manila Bay catch, and about 45% of the Visayan Sea. The remainder of the Visayan catch was landed in Iloilo City (Panay Island) and Cadiz City (Negros Occidental).

22. There are some 100 other minor landing sites usually without wharf or other landing facilities, which handle small quantities for local consumption. Despite the importance of fisheries, there has been a surprising lack of specialized fishing port facilities. Even at Navotas, which handles the bulk of all Philippine landings, fish are brought in by amphibious trucks from vessels anchored over a mile offshore. Partly financed with a \$5.7 million loan from the Asian Development Bank (ADB), a project is underway to develop Navotas as a well equipped fishing port, involving dredging an approach channel, anchorage reclamation of the foreshore area, and construction of breakwaters, piers, wharves, quay walls and a fish marketing building. The facility is expected to be operational in 1976. Existing ice-making facilities, transport equipment, cold storage facilities, auction halls and the like, are inadequate and any large-scale increase in fish production would require expansion and provision of new facilities.

Boat Building

23. The construction of fishing boats in the Philippines is carried out at shipyards near Navotas, and in many small private shipyards in the Visayas. In the Visayas a considerable number of independent contractors capable of building wooden vessels have successfully developed methods of construction which require low fixed capital overhead in the form of shipways and conventional shipyard infrastructure. The quality of the vessels

is satisfactory, boat-building is usually well supervised by the owner, and the costs of the vessels are quite competitive with those of the vessels of comparable size in other countries in the region.

EAP Projects Department
April 15, 1976

PHILIPPINES

SECOND FISHERIES PROJECT

Fisheries Production

(in thousands of metric tons)

	<u>Marine Fisheries</u>			<u>Inland Fisheries</u>	<u>Total</u>
	<u>Municipal</u>	<u>Commercial</u>	<u>Sub-total</u>		
1955	219.0	107.0	326.0	36.7	362.7
1960	264.5	120.0	384.5	60.1	444.6
1965	303.9	300.1	604.0	63.2	667.2
1966	326.7	314.9	641.6	63.7	705.3
1967	351.2	330.9	682.1	63.9	746.0
1968	444.2	406.8	851.0	86.7	937.7
1969	477.5	368.7	846.2	94.6	940.8
1970	510.5	381.9	892.4	96.5	988.9
1971	542.9	382.3	925.2	97.9	1,032.1
1972	598.7	424.8	1,023.5	98.0	1,122.4
1973	640.0	465.4	1,105.4	99.6	1,205.0
1974	684.5	470.7	1,115.2	113.1	1,268.3

Source: BFAR, Fisheries Statistics of the Philippines, 1974.

PHILIPPINES

SECOND FISHERIES PROJECT

Philippine Commercial Fishing Fleet

(number of boats by tonnage classes)

1966-1974

<u>Gross Tonnage</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
3 - 9	955	832	711	677	666	664	619	694	655
10 - 19	501	534	476	469	478	443	466	529	480
20 - 49	345	411	421	414	426	422	444	534	468
50 - 99	359	416	437	480	478	440	458	495	427
Over 100 tons	<u>133</u>	<u>156</u>	<u>162</u>	<u>182</u>	<u>192</u>	<u>211</u>	<u>195</u>	<u>203</u>	<u>266</u>
<u>Total</u>	<u>2,293</u>	<u>2,349</u>	<u>2,207</u>	<u>2,222</u>	<u>2,240</u>	<u>2,180</u>	<u>2,182</u>	<u>2,455</u>	<u>2,296</u>

Source: BFAF, Fisheries Statistics of the Philippines, 1974.

PHILIPPINES

SECOND FISHERIES PROJECT

Inland Fisheries

1. The Food and Agriculture Organization (FAO) estimates that in Asia more than 2 million hectares are under cultivation for aquatic food production and that about 2 million tons of food or aquatic products are produced. Many organisms are farmed and they include seaweeds, shellfish, crustaceans, and a number of fish species. The Philippines is among the leading countries in the region in developing brackish water culture, milkfish culture in particular. The main species cultivated is the milkfish (Bangus), or Chanos chanos, which is found in the warm coastal waters of the Indian and Pacific Ocean. Fully grown they may weigh up to 30 kg, but commercially cultivated milkfish are marketed at about 250-1,200 grams. Some tilapia, mullet, shrimp and crab also enter the ponds with the inflow of water, and may be cultivated as incidental products.

Milkfish Culture

2. The Fry. The basic condition necessary for commercial milkfish culture is the availability of the fry at reasonable prices. Milkfish spawn in the near shore areas, often near the mouths of creeks and rivers. The hatched fry drift with the current in the shallow coastal areas. They are caught in many of the coastal localities by professional collectors with special hand operated nets during certain season. Most of the collected fry are shipped and sold to the fry dealers in Malabon (near Manila), who sell them to pond operators or place them in their own nurseries for subsequent resale as fingerling of about 5-6 cm. As the pond and pen hectarage has expanded rapidly, there has developed an active fry trade across the country. There has been occasional demand for fry from Taiwan and Indonesia, but the Government prohibits export of the fry. The trade appears to be under an oligopolitic control of a few dominant dealers based in Malabon. In 1974-75, it is now stabilizing at about P 0.70 per-1,000. The concensus among the knowledgeable fishpond operators is that fry resources available in the coastal waters of the Philippines would be adequate to support any foreseeable expansion of milkfish culture.

3. Fishpond Construction and Layout. Generally, brackish water ponds are constructed in the tidal zone of an estuarine mangrove swamp by bunding a perimeter, removing trees and stumps, levelling the bottom, and constructing water supply and drainage canals equipped with gates for water control. The maximum range of tidal fluctuations in the Philippines is 2 to 3 meters

with a normal daily range of 1.5 m. This is ideal for management of brackish water ponds. The construction work involves mainly manual labor, often hired by the pond owner. The ponds are filled with water during high tide, and water can be retained or drained by manipulating the water gates. During the typhoon season, ponds, especially in Central Luzon, are subject to strong wave action and flooding which causes damage to the perimeter dike, allowing the fish to escape. To prevent the fish from escaping, the perimeter dikes should have height of about 1.0 to 1.5 m above the highest tidal levels and be strong enough to resist wave action. The work for removing the tree stumps and levelling the bottom is laborious and is usually completed over a number of years. Frequently, a large area, say, between 25 to 50 ha, is enclosed. In most cases, the operating pond units are divided by secondary dikes into one or two nursery ponds, a transition pond and two or three rearing ponds. A 24 hectare pond is often used as a model for analytic purposes. In this model the dike occupies about 10% of the area. The growing area comprises a nursery pond, covering about 5% of the total pond area, a transition pond with 10% of total pond area, and the remainder would be used for the main rearing ponds.

4. Fishpond Management. Milkfish feed on bottom algae (mostly green and blue green), tiny crustaceans and, to a lesser extent, planktons. The principal food, bottom algae and plankton community, is called lab-lab. Promoting and maintaining the growth of lab-lab is the most essential fishpond management task, comparable to pasture development in livestock industries. It is done by providing suitable environmental conditions and adequate plant nutrients in the pond (organic and inorganic fertilizer), proper management of the water conditions (depth, salinity, temperature, transparency, etc.), eliminating undesirable algae feeders (snails, worms), and preventing overgrazing. The organic fertilizer most commonly used in the Philippine is chicken manure, but rice bran, peanut cake, soybean cake, sesame cake, copra, legumes and pig nature are also used. In addition, various nitrogen, phosphorus, and potassium-based inorganic fertilizers are sometimes applied. Standard procedures are difficult to enumerate because they vary significantly with water and soil conditions and individual ideas of management. As the costs of inputs are high, it is important for the pond operators to achieve the growth of fish on natural fish food organisms produced in the ponds and minimize the supplemental feed requirements.

5. Stocking Practices. There are broadly two ways of stocking fishponds; stocking with single size fingerlings, which is more common, and stocking with mixed size groups. In the first case, the fry are reared in the nursery pond, and the fingerlings, all of a uniform size of about 5-6 cm, are transferred to the rearing pond where they grow to the marketable size, and a complete harvesting is done. If managed well, three harvests per year can be expected. The second method, introduced more recently, involves the stocking of fingerlings of usually three different sizes in one rearing pond. After a lapse of about 1-2 months the first marketable size group is harvested (with specific mesh size nets) and a new group of fingerlings is introduced. Through selective harvesting and repeated stocking 4-6 harvests can be gathered in a year. There are no significant differences

between these methods in total annual production, but the latter may have some marketing advantages. In the areas where there are many fishponds, such as Malabon and Iloilo, there are quite a number of specialized fry and fingerling farms and they provide rearing farms fingerlings of standard sizes on a custom basis.

6. Fishpond Yields. There are large production potentials to be achieved by increasing yields of existing fishponds by improving the management and inputs. Although the average milkfish yields of 600 kg/ha in the Philippines are considerably higher than the 300 kg/ha average in Indonesia, they are far below the 1,700-2,000 kg/ha average yields obtained in Taiwan. The high yields in Taiwan are obtained by the skillful use of inputs, fertilizers pesticides, supplemental feed, and scientific stocking and harvesting. In the Philippines, the average yield data appear to be quite misleading. Although the official data show an average yield of only 600 kg/ha/yr, it appears that well managed fishponds in the Philippines achieve average yields well over 1,400 kg/ha/yr and that yields of over 1,850 kg/ha/yr are achieved by many milkfish farmers. The soil, water and climatic conditions of existing fishponds and of new ones proposed for financing under this project appear to be much favorable to the growth of milkfish and its natural food organisms than those for the average fishponds, and, therefore, the yields for DBP financed ponds are expected to be much higher than the national average.

7. Fish Pen Culture. Although restricted in location, a recent new innovation in the industry is the development of pen culture for milkfish in Laguna de Bay (a lake near Manila). The pen consists of nylon net enclosures with bamboo frames set up in a relatively shallow nutrient rich lake (1.5 to 3 m deep). The ponds vary from 1 ha to several ha in area with yields in some cases high as 5,000 kg/ha/yr. The main advantage of the pen culture is that the fish grow on nutrients available in the water and, therefore, the operating cost is minimal. The fish pen culture is still in its experimental stage, and appears to be too vulnerable to typhoon damages.

8. Fishpond Areas. BFAR estimates that in 1974 fishponds covered some 176,000 ha, almost all of brackish water (perhaps 6,000 ha are fresh water ponds) and produced about 110,000 tons of milkfish for domestic consumption. About half of this area consists of the lands leased from the Government under long-term arrangements (up to 25 years, renewable for another 25 years) and the remainder is privately owned. The leased area has increased by about 17,000 ha since 1968, whereas the privately owned area has remained more or less unchanged. The Map (IBRD 11915) shows the distribution of the present main fishpond areas and the production. Potentially, BFAR believes that the fishpond area could be expanded about threefold. At present, some 60% of the area and over 70% of the output are concentrated in Bulacan, Quezon and Pampanga in Luzon, and in Iloilo, Cadiz, and Negros Occidental in the Visaya, where yields rank high. More than half of the swamplands available for development are in Northern Samar, and in Agusan del Sur and Northern Davao in Mindanao where present yields are among the lowest (Mindanao has most of the potential area for fresh water fishponds). There is some limited room

for further expansion of brackish water ponds in Palawan, Quezon, Pampanga and Mindoro Provinces (See also para 12).

9. Milkfish Prices. Milkfish is traditionally one of the most preferred fish species for the Filipinos and its price has always been considerably higher than the average prices for the better quality marine fish. The present farmgate milkfish price of P 4.00/kg is about 60% higher than the average high quality marine fish wholesale price of P 2.50/kg (which is considerably higher than the average trawler caught fish price of P 1.80/kg).

10. Fishpond Profitability. Because of the relatively high prices for the product, milkfish ponds have thrived in the Philippines. The very large total hectareage (almost 180,000 ha) devoted to fishponds attests to the apparent viability. As shown in Annex 11, Tables 1 and 2, if the ponds achieve a yield of 1,850 kg/ha, the pond farmer would have an average financial rate of return ranging from 21% to 39% depending upon the development cost (the return on his equity would be much higher).

11. Project Fishponds Hectareage. The project would finance 114 sub-projects for construction of new fishpond with a total of 2,736 hectares and 266 sub-projects for expansion and improvement of existing ones involving an addition of 6,384 hectares. The total fishpond hectareage to be financed under the project would be 9,120 hectares, and this would be only about 5% of the total fishpond area of about 176,000 hectares for 1974 reported to BFAR (See Table 1).

12. Potentials for Fishpond Expansion. In looking toward large-scale development of swamplands into fishponds, it should be noted that much of those swamplands are located in remote areas with poor access to potential markets. It is tempting to visualize the vast mangrove swamps as lands suitable for development into fishponds, but it appears very unlikely that it would be possible to accomplish this on the scale proposed by BFAR. Most of the lands suitable for fishing farming have already been taken up by established fish farmers, and those that are still available tend to be prohibitively expensive to develop because they are in areas where the tidal range is unsuitable for filling completely or, conversely or draining the pond. Pond drainage and drying are essential to the production of the lab-lab algae. Another problem with some of the remaining areas is the high acid content of the soil. In these areas, considerable quantities of tannic and other organic acids are released and they interfere in a number of important ways with optimum operation of the ponds. There are no reliable estimates of the actual extent of land available for fishpond development, but it appears that some further 80,000 ha (20% of the BFAR projected 400,000 ha) might be suitable for fishpond development. This potential fishpond area amounts to about eight times as much area as is being proposed for financing under this project.

Shrimp Culture

13. Shrimp (prawn) cultivation is of great interest to fishpond operators, especially in the Southern Philippines. However, the technical base

for shrimp farming is not expected to be established in the near future. For instance, in Japan, more than 10 years elapsed since shrimp (Penaeus japonica) cultivation was developed, and, while hatching of eggs from naturally fertilized shrimps has been successful, experience with shrimp cultivation from the fry stage to commercial size has not been financially viable because of high production costs associated with high mortality.

Freshwater Culture

14. Freshwater culture is not yet common in the Philippines and the technical base and management requirements are not as well advanced as for milkfish culture. Potentially, over time, Chinese mixed carp and American catfish culture in freshwater could produce yields as great or greater than those of milkfish in the brackish water ponds. A constraint now is the limited market demand for freshwater fish in the Philippines. Perhaps one-fourth of the total undeveloped fishpond area is suitable for freshwater ponds, and large areas could be developed in Cotabato and Agusan del Sur on Mindanao and in Pampanga on Luzon but the prospects for commercial freshwater culture are not promising.

Extension, Education and Research

15. Research and extension services for aquaculture are provided by the Department of Natural Resources through BFAR and, to some extent, by the National Food and Agriculture Council. The College of Fisheries of the University of Philippines (UP) conducts research through the Inland Fisheries Project assisted by the United States Agency for International Development (USAID). When UP's research and training centers, one in Central Luzon and one in Panay Islands, are fully operational, they are expected to assist in increasing fishponds productivity by developing modern fishpond management methods, and teaching them, to research trainees, extension workers and fish farmers. While BFAR has a large number of personnel who are organized into its field offices, the quality and effectiveness of the extension service need to be improved. BFAR and UP are presently carrying out a training program aimed at upgrading BFAR extension service. The demonstration fish farms of BFAR and the cooperation of private operators with UP in demonstration and experimentation could also provide effective means for dissemination of the research benefits.

16. In addition, the Aquaculture Department of the Southeast Asian Fisheries Development Center, one of three departments organized under the six nation 1/ SEAFDEC Agreement has almost completed its construction program. At full development, it would undertake and coordinate research on aquaculture in Southeast Asia, train researchers and technicians and serve

1/ Japan, Malaysia, Philippines, Singapore, Thailand, and Vietnam.

as an information source to the member countries. The research program is assisted by the Government of Japan. Although its main emphasis would be on shrimp culture, the center would also carry out investigations on brackfish water fish, including shall fish, oysters, mullet as well as other promising species. Major SEAFDEC facilities are located at Tigbauan and Leganes, both near Iloilo on Panay Island. When the research and training program become fully operational, the center would contribute in a major way to the development of aquatic culture methods in the Philippines and in other Southeast Asian countries.

EAP Projects Department
April 15, 1976

PHILIPPINES
SECOND FISHERIES PROJECT

Milkfish Production

	<u>Milkfish Pond</u> <u>Hectarage</u>	<u>Production</u>	<u>Estimated</u> <u>Value</u>
	(hectares)	(metric tons)	(P million)
1969	164,414	94,573	191
1970	168,118	95,461	253
1971	171,446	97,915	328
1972	174,100	98,922	332
1973	176,184	99,600	434
1974	176,032	113,195	784

Source: BFAR, Fisheries Statistics of the Philippines, 1974.

PHILIPPINESSECOND FISHERIES PROJECTFish Marketing and PricesRole in the Economy

1. As in all other countries in the region, fisheries play a very important role in the national food economy in the Philippines. During the past decade, fish production in the Philippines more than doubled, from 550,000 tons in 1963 to 1,200,000 tons in 1973, and per capita consumption increased by about 50%, from 20 kg to 30 kg.

Demand Projections

2. The major determinants of the demand for fish in the Philippines appear to be (i) the rate of population growth, (ii) the rate at which the road network is extended to areas hitherto inaccessible to motor vehicles, and (iii) the level of per capita income, especially in the rural sector. All of these indicate a high long-term growth rate of the demand for fish. The population is increasing by about 3% per year. Feeder roads are now being extended at a greatly accelerated rate with the aid of the Bank, Asian Development Bank (ADB), and the United States Agency for International Development (USAID). And, in the per capita real income, especially of the farmers whose terms of trade have greatly improved along with the sharp increases in grain prices since 1973, is expected to increase at about 2-3%. On the basis of these, it is estimated that the demand for fish would increase by at least 6% per year, which is about the same as the rate at which the marine fisheries production has been actually expanding during the 1968-1973 period.

3. The requirement for domestic fish production would be increasing somewhat faster than 6% per year because of the recently adopted Government program to substitute domestic fish for the significant quantities of canned and other processed fish imports (equivalent to about 10% of domestic production in wet weight terms). Since the sustainable yields from the Philippine waters are estimated to be at least about 1.7 million tons for the marine fisheries (0.7 million tons for the municipal and 1.0 million tons for the commercial fisheries), it should be possible for the industry to meet the production requirement for the coming decade. In view of the fact that the scope for further expansion of the municipal fisheries catch is now rather limited, much of the additional production would have to come from the commercial fisheries. Since the present scale of investment in the commercial fisheries appears to be grossly inadequate to meet the projected production requirement, however, an increasing fresh fish deficit is anticipated for the coming years.

Marketing

4. Most of the fish is sold fresh, because of strong consumer preference. Where fish is iced for transport, the ice is usually removed before sale in order to give it a fresh appearance. Because of the limited storage and distribution capacity and the consumer resistance to chilled or iced fish, rural fresh fish markets are easily saturated, even where there is unsatisfied demand in the vicinity. The excess fish is sold for processing (drying and smoking), at greatly reduced prices.

5. Fish wholesale markets in the Manila areas are located at Navotas, Malabon and Divisoria. Most fishing vessels discharge fish at Navotas. Sorting takes place on board and sale are by tubs. Auctioning takes place at all three markets by a method of secret oral bidding, the buyers whispering their bids to the broker who, on the basis of the prices offered and his assessment of the collectability, decides which bidder should be the buyer. A small number of brokers, probably 6 to 8, control the marketing at Navotas. The brokers charge a 3 to 6% commission depending on the services performed, such as loading and unloading, provision of containers, supply of ice (especially for milkfish), and advances for working capital. The Malabon market handles most of the milkfish and milkfish fry arriving in Manila, but the Navotas market is rapidly increasing its milkfish trade. There are some minor wholesale markets in the larger cities in the provinces with access to the sea, but these are very small.

6. Retailing in the Manila area takes place through some 100 central markets with special fish sections. In addition, there are a large number of door-to-door vendors. Retail of processed fish takes place in the grocery sections. There is a substantial demand for processed fish in the inland areas, and it is estimated that at least about 25% of the total catch is diverted to salting, drying, smoking and making of fish paste and fish sauce. Low value fish like anchovies, slipmouth and round scad are the usual raw materials for this processing. Freezing of tuna and shrimp for exports is increasing, and a few small fish canning plants are being established.

Imports and Exports

7. Imports. The Philippines has been importing substantial quantities of canned fish, mainly canned mackerel and sardine. The estimated 1974 fish import of \$32 million consisted of 42,000 tons of canned mackerel (\$26 million), 3,500 tons of canned sardine (\$2.5 million) and 10,500 tons of other processed fish products (\$3.5 million), including about 9,300 tons of fishmeal. As a result of the recently adopted government policy, canned fish imports are likely to diminish in the next several years, but the extent of the import restriction is not yet clear.

8. Exports. Philippine exports of fisheries products have been increasing rapidly in recent years. The estimated 1974 fish export of \$18 million consisted of 1,700 tons of frozen shrimp (estimated \$4.9 million),

11,400 tons of frozen tuna (\$7.0 million) and a variety of other items including frozen milkfish, scallop, etc. The tuna was exported mainly to the United States, but Japan took a small share, and the shrimp export was almost entirely to Japan. These two export items appear to have potentials for substantial expansion.

Fish Prices

9. During the five year period from 1968 to 1973, the wholesale marine fish price kept pace with the general wholesale price (the index for the fish being 200 and for general price 199 with the 1968 prices as the base).

10. Since 1973, however, the oil crisis has had far reaching effects on the determinants of fish prices. First, it caused a sharp increase in operating cost for fish boats. Second, by causing a business recession at home and abroad, it greatly weakened the demand for fish. These two factors together forced many of the relatively inefficient boat operators to suspend their operation, and, as a result, there appears to have been a substantial decrease in the commercial fisheries catch, hence a reduced supply of fish from the marine sector. Average wholesale prices of fish in the meantime appear to have risen somewhat faster than the general wholesale prices because of the greatly reduced supply, despite the weakened demand. Compared with the rates at which the wholesale fish prices have increased, the ex-vessel fish prices appear to have increased very little. Surveys made in 1972 (November), 1973 (November) and 1975 (September) show that the estimated average price received by boat operators for comparable fish delivered to Navotas (Manila) was P 1.4/kg in 1972, P 1.6/kg in 1973 and P 1.8/kg in 1975. These indicate that, during the three year period, the boat operators' average receipt per kg of fish landed in Manila increased by only about 29% (13% for the last two years), while the operating and the investment costs have nearly doubled. It is anticipated, however, that the ex-vessel fish prices would recover along with general economic activities. The ex-vessel prices assumed for the project financial analyses are P 1.8/kg for the trawler and purse seiner-caught fish and P 2.5/kg for tuna and high quality mackerels (estimated ex-vessel prices in September 1975).

PHILIPPINES

SECOND FISHERIES PROJECT

The First Fisheries Credit Project

1. The Loan Agreement for the ongoing first Fisheries Credit Project (891-PH) was signed on May 21, 1973, and became effective September 25, 1973 (inland sector) and December 5, 1973 (marine sector). It provided for an \$11.6 million loan to the Government of the Philippines (GOP) to be onlent to the Development Bank of the Philippines (DBP) to carry out a program for development of marine and inland fisheries.
2. The project consisted of three major components; (i) financing of viable marine fisheries sub-projects, (ii) financing of inland fishpond development and rehabilitation mainly for milkfish-farming, and (iii) technical assistance required to support the lending operation and to build up the technical capability of DBP for long-term fisheries development work.
3. The marine fisheries component envisaged financing of (a) construction of 60 fully equipped fishing vessels of the 70 and 130 ton class, (b) importation of 10 second-hand fish carrier boats, (c) construction of 3 ice plants, and (d) 2 slipways.
4. The inland fisheries component was to provide credit to individuals for rehabilitation of 4,500 ha of flood-damaged fishponds to restore full production and for improvement of existing ponds and construction of new ones with an aggregate area of 7,500 hectares.
5. The technical assistance component included provision for (a) a marine specialist and a naval architect to assist the Assistant Manager (Project Administrator), (b) a study of fish marketing and distribution to be carried out by consultants to aid future fisheries investment plans, (c) a feasibility study for a smallholder (milkfish) fishpond estate scheme, (d) an aquaculture extension specialist to assist the Government to organize and execute an inland fisheries technical training program, and (e) a test fishing program to obtain marine fisheries resource data.

Project Implementation

6. Marine Fisheries. There was a considerable delay in implementing this component. It took longer than expected to staff the Fisheries Group (FG) of DBP and prepare it to implement the rather complex project activities, such as selecting consultants for the two studies and evolving working procedures with the Bureau of Fisheries and with consultants, and developing suitable fishing vessel designs. As FG prepared itself for project implementation, the oil crisis came and seriously impaired the business outlook for marine

fisheries. There was a sharp increase in the cost of vessels (from the appraisal estimate of about \$60,000 for 70 gross ton vessel to an actual cost of about \$200,000), and also in the operating cost for the oil intensive trawler operations. Moreover, the oil crisis brought with it a general economic downturn and caused a slackening of the demand for fish, and, hence, stagnant prices for the fish landed. As a result, a large number of trawlers suspended their operations. Under these circumstances, DBP's efforts in investment promotion were not as effective as anticipated at the 1972 appraisal. In the meantime, the designs of the fishing vessels had to be modified to reflect higher oil prices, so that the vessels had to have more flexible capabilities (such as purse seining, in addition to trawling) and be less dependent on oil-intensive techniques. Steel vessels became so costly that they were no longer financially and economically viable. As of February 1976, loans for 19 wooden vessels had been approved, and the project is expected to finance about 25 wooden vessels, compared with the original target of 60 vessels (15 steel vessels and 45 wooden vessels).

7. As of February 1976, loans for all three ice plants originally projected had been approved. Because of the greatly increased investment cost, however, the rate of commitment has been higher than the number of sub-projects might suggest. As of February 1976, \$2.9 million out of the \$5.9 million of the Bank loan allocated for the marine sector was committed.

8. Inland Fisheries. From the outset, the lending for the inland sector maintained a fairly rapid pace. As of February 1976, 383 sub-projects covering a total of about 9,300 ha for total subloans of about ₱ 46.5 million (\$6.2 million) had been approved. The average development area was for about 24 ha of fishponds at an average cost of about ₱ 5,000/ha. 37% of the loans were in Luzon, 42% in the Visayas, 14% in Mindanao and 7% in other provinces. The table below shows the size frequency distribution of loans in eight of the most important fish growing areas. No loans were made for development of fishponds larger than 100 ha.

Size Distribution of Fishpond

financed by DBP Subloan

<u>Area</u>	<u>Number of Loans</u>	<u>% of Total</u>
0 - 1	15	10%
5 - 20	52	36%
20 - 50	49	34%
50 - 100	<u>29</u>	<u>20%</u>
Total	<u>145</u>	<u>100%</u>

9. DBP experience shows that good fishpond management coupled with appropriate inputs can raise milkfish production to at least the levels

of 2,500 kg/ha/yr achieved by successful commercial fish farmers in Taiwan. Milkfish production of well managed DBP fish-farms appears to be between about 1,600 kg and 2,100 kg/ha/yr, depending on the location of the ponds, the type of management system practiced and the inputs used.

10. FG has done well in organizing itself in the inland sector and has developed a capable technical and financial staff who have been active in investment counseling, in loan preparation, and appraisal. There appears to be, however, a need to strengthen the loan supervision staff in order to derive better measures of the impact of the lending program on overall production and better measures of productivity.

11. Feasibility Studies. Consultants were retained by the Bureau of Fisheries and Aquatic Resources (BFAR) to carry out two studies, (i) Smallholder Fishpond Project Study and (ii) Fish Marketing and Distribution Study. The Smallholder Fishpond Project Study was conducted jointly by Sinotech Engineering Consultants, Inc., Taipei, Taiwan, and International Engineering Consultants, Inc., San Francisco, California, USA. The study was technically well done, but failed to demonstrate that the smallholder fishpond estate concept was technically, financially or economically sound. The Fish Marketing and Distribution Study was carried out by Norconsult A.S., Oslo, Norway. The study presents a large body of useful fisheries data and analyses. Unfortunately, however, the final report of this study was not available in time for the preparation of the Second Fisheries Credit Project.

12. Other Related Activities. The first project included components for (i) a test fishing program, and (ii) an inland fisheries training program to be carried out by the Bureau of Fisheries. For the test fishing program three fishing vessels of BFAR (M/V Sabalo, M/V Lapu-Lapu and R/V Research I) have conducted purse seining, trawling and longline cruises, primarily in trial fishing in the southern part of the Philippines. These activities have made a significant contribution towards a broader investigation of fisheries resources in the area. For the inland fisheries training program, the Pond Fisheries Extension and Training Group, under the BFAR direction, conducted training courses and field extension service demonstrations in five principal field extension units. This program, with course in three subject areas, (i) general, (ii) extension teaching methods, and (iii) technical, has developed into one of the best training programs of the kind in the region and has produced a number of highly qualified extension personnel and teaching aides.

13. Subloan Disbursement. The rate of subloan processing in both the inland and marine sectors was increasing rapidly at the time of last supervision (February 1976) and it is expected that the full amount of the loan would be committed by December 1976. As of April 8, 1976, Bank disbursement was \$3.5 million.

DBP Fisheries Group

14. Although increased supervision staff is needed for proper monitoring and supervision of the rapidly expanding inland fisheries portfolio,

and the technical staff in the marine sector needs to be strengthened, the performance of FG has been good. While DBP lending in fisheries has not been a large part of the total lending activity in the fisheries sector in the Philippines in the past, the changes in the structure of the fishing industry which began about 1970 requiring a rapid expansion of the catches of commercial fleet, call for DBP to play a far more important role in financing fisheries investments. DBP is in a unique position to develop its institutional and technical capabilities to a greater degree by building on the experienced gained in executing the first Fisheries Credit Project.

EAP Projects Department
April 15, 1976

PHILIPPINES

ANNEX 4
Table 1

SECOND FISHERIES PROJECT

Distribution of Fishpond Sub-loans 1/

	<u>Fishpond Sub-loans</u>		
	<u>Number</u>	<u>Hectarage</u>	<u>Amount (P'000)</u>
<u>Luzon Region</u>			
Bataan	2	21.9	169
Batangas	2	23.6	141
Bulacan	14	71.4	1,272
Cagayan	9	171.6	1,344
Cavite	1	4.4	31
Dapitan	1	26.9	32
La Union	1	5.6	11
Marinduque	2	73.7	372
Nueva Ecija	7	91.9	399
Pampanga	28	923.0	4,127
Pangasinan	9	200.0	567
Quezon	39	979.1	4,521
Rizal	1	0.2	15
Zambalas	2	22.0	136
Sub-total	<u>118</u>	<u>2,715.3</u>	<u>13,137</u>
<u>Visayas Region</u>			
Aklan	15	519.9	2,553
Antique	1	50.6	366
Bohol	3	103.9	351
Capiz	26	829.0	4,151
Cebu	2	41.4	340
Iloilo	27	976.7	4,886
Legaspi	1	6.1	64
Leyte	2	45.0	221
Masabate	1	52.1	293
Misamis Occ.	1	28.1	50
Negros	6	210.8	727
Roxas City	2	24.3	282
Samar	3	78.8	371
Sorsogon	2	34.0	191
Sub-total	<u>92</u>	<u>3,000.6</u>	<u>14,846</u>
<u>Mindanao Region</u>			
Basilan	2	135.1	401
Butuan	4	98.2	275
Camarina Sur	2	54.0	290
Cotabato	1	23.0	124
Davao	11	248.2	1,065
General Santos	2	86.6	391
Zamboanga	7	406.8	2,230
Sub-total	<u>29</u>	<u>1,051.9</u>	<u>4,776</u>
<u>Mindoro Region</u>	Sub-total	<u>17</u>	<u>436.6</u>
<u>Grand Total</u>	<u>256</u>	<u>7,204.4</u>	<u>35,332</u>

1/ As of August 11, 1975.

EAP Projects Department
February 22, 1976

PHILIPPINES

SECOND FISHERIES PROJECT

The First Fisheries Credit Project

Summary of DBP Sub-Loan Processing

	----- P in millions of Pesos ----- \$ in millions of US\$ -----			
	<u>May 1974</u> ^{1/}	<u>January 1975</u>	<u>August 1975</u>	<u>February 1976</u>
<u>Inland Sector</u>				
Number of sub-loans	65	139	258	383
Approximate area (ha)	1,750	4,000	7,365	9,262
Amount DBP approved	P 6.2	P 16.7	P 35.5	P 47.0
IBRD Share (56%)	P 3.5	P 9.4	P 20.0	P 26.3
Amount DBP released	P 2.6	P 8.6	P 17.6	P 23.5
<u>Marine Sector</u>				
Number of sub-loans	-	1	5	20
Number of fishing boats	-	1	7	19
Number of ice plants	-	-	-	3
Fisheries equipment	-	-	-	1
Amount DBP approved	-	P 1.0	P 9.8	P 21.7
IBRD Share (100%)	-	P 1.0	P 9.8	P 21.7
Amount DBP released	-	-	P 4.6	P 7.7
<u>Total</u>				
Number of sub-loans	6.5	140	263	403
Amount DBP approved	P 6.2	P 17.7	P 45.3	P 68.7
Approximate US\$ equivalent	\$.9	\$ 2.4	\$ 6.0	\$ 9.3
IBRD Share US\$ equivalent ^{2/}	\$ 0.5	\$ 1.5	\$ 4.3	\$ 6.4
Amount DBP released	P 2.6	P 8.6	P 22.2	P 31.2
Approximate US\$ equivalent	\$.4	\$ 1.2	\$ 3.0	\$ 4.2
Amount IBRD disbursed US\$	\$.1	\$.9	\$ 2.0 ^{3/}	\$ 3.5 ^{4/}

^{1/} DBP started processing Inland Sector sub-loan applications in June 1973.

^{2/} Because of currency rate fluctuations this is an approximate amount.

^{3/} As of 06/30/75.

^{4/} As of 04/08/76.

SECOND FISHERIES PROJECT

Project Cost Estimates 1/

	in thousands of Pesos			% of Total	in thousands of US dollars ^{2/}		
	Domestic	Foreign Exchange	Total		Domestic	Foreign Exchange	Total
I. Inland Fisheries							
(i) New Fishponds							
Investment Costs	27,314	2,804	30,118		3,642	374	4,016
Contingencies	11,295	767	12,062		1,506	102	1,608
Incremental Working Capital	2,861	-	2,861		381	-	381
Sub-total	41,470	3,571	45,041	25.6%	5,529	476	6,005
(ii) Rehabilitation of Fishponds							
Investment Costs	34,075	7,209	41,284		4,543	961	5,505
Contingencies	14,673	1,968	16,641		1,956	262	2,219
Incremental Working Capital	6,677	-	6,677		890	-	890
Sub-total	55,425	9,177	64,602	36.7%	7,390	1,224	8,614
Total for Inland Fisheries							
Investment Costs	61,389	10,013	71,402		8,185	1,335	9,520
Contingencies	25,968	2,735	28,703		3,462	365	3,827
Incremental Working Capital	9,538	-	9,538		1,272	-	1,272
Total	96,895	12,748	109,643	62.3%	12,919	1,700	14,619
II. Marine Fisheries							
(iii) 90 Gross-Ton Boats							
Investment Costs	11,158	16,632	27,790		1,488	2,218	3,705
Contingencies	5,053	4,611	9,664		674	615	1,289
Incremental Working Capital	4,200	-	4,200		560	-	560
Sub-total	20,411	21,243	41,654	23.6%	2,721	2,832	5,554
(iv) 45 Gross-Ton Boats							
Investment Costs	1,977	2,328	4,305		264	310	574
Contingencies	786	626	1,412		105	83	188
Incremental Working Capital	600	-	600		80	-	80
Sub-total	3,363	2,954	6,317	3.6%	448	394	842
(v) Converted Fish Carriers							
Investment Costs	1,560	2,040	3,600		208	272	480
Contingencies	633	593	1,226		84	79	163
Incremental Working Capital	200	-	200		26	-	26
Sub-total	2,393	2,633	5,026	2.9%	319	351	670
(vi) Ice Plant with Cold Storage							
Investment Costs	2,148	5,397	7,545		286	720	1,006
Contingencies	813	1,448	2,261		109	193	301
Incremental Working Capital	450	-	450		60	-	60
Sub-total	3,411	6,845	10,256	5.8%	455	913	1,367
(vii) Slipway							
Investment Costs	1,520	612	2,132		203	82	284
Contingencies	625	179	804		83	24	107
Incremental Working Capital	200	-	200		27	-	27
Sub-total	2,345	791	3,136	1.8%	313	105	418
Total for Marine Fisheries							
Investment Costs	18,363	27,009	45,372		2,448	3,601	6,050
Contingencies	7,910	7,457	15,367		1,055	994	2,049
Incremental Working Capital	5,650	-	5,650		753	-	753
Total	31,923	34,466	66,389	37.7%	4,256	4,595	8,852
III. Grand Total							
Investment Costs	79,752	37,022	116,774		10,634	4,936	15,570
Contingencies	33,878	10,192	44,070		4,577	1,359	5,876
Incremental Working Capital	15,188	-	15,188		2,025	-	2,025
Total	128,818	47,214	176,032	100.0%	17,175	6,296	23,471

1/ For details, see Annex 6.

2/ At the rate of ₱7.5 to US\$1.00. On account of rounding, the figures may not add up.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Sub-Project Cost by Component

New Fishponds 1/
Model 1 of 7

(in thousands of Pesos)

	Base Year 1975	Year 1 1977	Year 2 1978	Year 3 1979	TOTAL
I. Contingency Rates					
Equipment	-	17%	8%	8%	
Civil Works	-	23%	12%	12%	
Working Capital	-	20%	10%	10%	
II. Sub-Project Unit Cost by Input 2/					
Equipment					
Domestic	33.6	39.3	42.5	45.9	
Imported	24.6	28.8	31.1	33.6	
Total	58.2	68.1	73.6	79.5	
Civil Works					
Domestic	206.0	253.4	283.8	317.8	
Imported	-	-	-	-	
Total	206.0	253.4	283.8	317.8	
III. Sub-Project Unit Cost by Currency 2/					
Domestic	239.6	292.7	326.3	363.7	
Foreign Exchange	24.6	28.8	31.1	33.6	
Total	264.2	321.5	357.4	397.3	
IV. Number of Sub-Projects Implemented					
		32	41	41	114
V. Total Investment Project Cost					
Domestic	-	9,366.0	13,376.0	14,912.0	37,654.0
Foreign Exchange	-	921.0	1,274.0	1,376.0	3,571.0
Total	-	10,287.0	14,650.0	16,288.0	41,225.0
VI. Working Capital per Unit					
	25.1	30.1	33.1	36.4	
VII. Total Incremental Working Capital					
	-	964.0	1,358.0	1,494.0	3,816.0
VIII. Total Sub-Project Cost					
Investment Project Cost	-	10,287.0	14,650.0	16,288.0	41,225.0
Incremental Working Capital	-	964.0	1,358.0	1,494.0	3,816.0
Total	-	11,251.0	16,008.0	17,782.0	45,041.0
IX. Total Sub-Project Cost by Currency					
Domestic	-	10,330.0	14,734.0	16,406.0	41,470.0
Foreign Exchange	-	921.0	1,274.0	1,376.0	3,571.0
Total	-	11,251.0	16,008.0	17,782.0	45,041.0

1/ 24 ha. model. On account of rounding, figures may not exactly add up.

2/ The unit cost for the implementation period includes the corresponding contingency allowances. The detailed breakdown of the foreign exchange cost is presented in Annex 7, Table 1.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Sub-Project Cost by Component

Rehabilitated Fishponds 1/
Model 2 of 7

(in thousands of Pesos)

	Base Year 1975	Year 1 1977	Year 2 1978	Year 3 1979	TOTAL
I. Contingency Rates					
Equipment	-	17%	8%	8%	
Civil Works	-	23%	12%	12%	
Working Capital	-	20%	10%	10%	
II. Sub-Project Unit Cost by Input 2/					
Equipment					
Domestic	30.6	35.8	38.7	41.8	
Imported	<u>27.1</u>	<u>31.7</u>	<u>34.2</u>	<u>37.0</u>	
Total	<u>57.7</u>	<u>67.5</u>	<u>72.9</u>	<u>78.8</u>	
Civil Works					
Domestic	97.5	119.9	134.3	150.4	
Imported	-	-	-	-	
Total	<u>97.5</u>	<u>119.9</u>	<u>134.3</u>	<u>150.4</u>	
III. Sub-Project Unit Cost by Currency 2/					
Domestic	128.1	155.7	173.0	192.2	
Foreign Exchange	<u>27.1</u>	<u>31.7</u>	<u>34.2</u>	<u>37.0</u>	
Total	<u>155.2</u>	<u>187.4</u>	<u>207.2</u>	<u>229.2</u>	
IV. Number of Sub-Projects Implemented					
	-	76	95	95	266
V. Total Investment Project Cost					
Domestic	-	11,835.0	16,433.0	18,258.0	46,526.0
Foreign Exchange	-	<u>2,410.0</u>	<u>3,253.0</u>	<u>3,514.0</u>	<u>9,177.0</u>
Total	-	<u>14,245.0</u>	<u>19,686.0</u>	<u>21,772.0</u>	<u>55,703.0</u>
VI. Working Capital per Unit					
	25.1	30.1	33.1	36.4	-
VII. Total Incremental Working Capital					
	-	<u>289.0</u>	<u>3,148.0</u>	<u>3,462.0</u>	<u>8,899.0</u>
VIII. Total Sub-Project Cost					
Investment Project Cost	-	14,245.0	19,686.0	21,772.0	55,703.0
Incremental Working Capital	-	<u>2,289.0</u>	<u>3,148.0</u>	<u>3,462.0</u>	<u>8,899.0</u>
Total	-	<u>16,534.0</u>	<u>22,834.0</u>	<u>25,234.0</u>	<u>64,602.0</u>
IX. Total Sub-Project Cost by Currency					
Domestic	-	14,124.0	19,581.0	21,720.0	55,425.0
Foreign Exchange	-	<u>2,410.0</u>	<u>3,253.0</u>	<u>3,514.0</u>	<u>9,177.0</u>
Total	-	<u>16,534.0</u>	<u>22,834.0</u>	<u>25,234.0</u>	<u>64,602.0</u>

1/ 24 ha model. On account of rounding, figures may not exactly add up.

2/ The unit cost for the implementation period includes the corresponding contingency allowances. The detailed breakdown of the foreign exchange cost is presented in Annex 7 Table 2.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Sub-Project Cost by Component

90 Gross Ton Fishing Vessel
Model 3 of 7

(in thousands of Pesos)

	Base Year 1975	Year 1 1977	Year 2 1978	Year 3 1979	TOTAL
I. Contingency Rates					
Equipment	-	17%	8%	8%	
Civil Works	-	23%	12%	12%	
Working Capital	-	20%	10%	10%	
II. Sub-Project Units Cost by Input 1/					
Equipment					
Domestic	437	511	552	596	
Imported	1,148	1,343	1,451	1,567	
Total	1,585	1,854	2,003	2,163	
Civil Works					
Domestic	360	443	496	555	
Imported	40	49	55	62	
Total	400	492	551	617	
III. Sub-Project Unit Cost by Currency 1/					
Domestic	797	954	1,048	1,151	
Foreign Exchange	1,188	1,392	1,506	1,629	
Total	1,985	2,346	2,554	2,780	
IV. Number of Sub-Projects Implemented					
	-	4	5	5	14
V. Total Investment Project Cost					
Domestic	-	3,816	5,240	5,755	14,811
Foreign Exchange	-	5,568	7,530	8,145	21,243
Total	-	9,384	12,770	13,900	36,054
VI. Working Capital per Unit					
	300	360	396	436	-
VII. Total Incremental Working Capital					
	-	1,440	1,980	2,180	5,600
VIII. Total Sub-Project Cost					
Investment Project Cost	-	9,384	12,770	13,900	36,054
Incremental Working Capital	-	1,440	1,980	2,180	5,600
Total	-	10,824	14,750	16,080	41,654
IX. Total Sub-Project Cost by Currency					
Domestic	-	5,256	7,220	7,935	20,411
Foreign Exchange	-	5,568	7,530	8,145	21,243
Total	-	10,824	14,750	16,080	41,654

1/ The unit cost for the implementation period includes the corresponding contingency allowances. The detailed breakdown of the foreign exchange cost is presented in Annex 7 Table 3.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Sub-Project Cost by Component

45 Gross Ton Fishing Vessel
Model 4 of 7

(in thousands of Pesos)

	Base Year 1975	Year 1 1977	Year 2 1978	Year 3 1979	TOTAL
I. Contingency Rates					
Equipment	-	17%	8%	8%	
Civil Works	-	23%	12%	12%	
Working Capital	-	20%	10%	10%	
II. Sub-Project Unit Cost by Input ^{1/}					
Equipment					
Domestic	470	550	594	641	
Imported	755	883	954	1,030	
Total	1,225	1,433	1,548	1,671	
Civil Works					
Domestic	189	232	260	292	
Imported	21	26	29	32	
Total	210	258	289	324	
III. Sub-Project Unit Cost by Currency ^{1/}					
Domestic	659	782	854	933	
Foreign Exchange	776	909	983	1,062	
Total	1,435	1,691	1,837	1,995	
IV. Number of Sub-Projects Implemented					
	-	1	1	1	3
V. Total Investment Project Cost					
Domestic	-	782	854	933	2,569
Foreign Exchange	-	909	983	1,062	2,954
Total	-	1,691	1,837	1,995	5,523
VI. Working Capital per Unit					
	200	240	264	290	
VII. Total Incremental Working Capital					
	-	240	264	290	794
VIII. Total Sub-Project Cost					
Investment Project Cost	-	1,691	1,837	1,995	5,523
Incremental Working Capital	-	240	264	290	794
Total	-	1,931	2,101	2,285	6,317
IX. Total Sub-Project Cost by Currency					
Domestic	-	1,022	1,118	1,223	3,363
Foreign Exchange	-	909	983	1,062	2,954
Total	-	1,931	2,101	2,285	6,317

^{1/} The unit cost for the implementation period includes the corresponding contingency allowances. The detailed breakdown of the foreign exchange cost is presented in Annex 7 Table 4.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Sub-Project Cost by Component

Converted Fish Carriers
Model 5 of 7

(in thousands of Pesos)

	Base Year 1975	Year 1 1977	Year 2 1978	Year 3 1979	TOTAL
I. Contingency Rates					
Equipment	-	17%	8%	8%	
Civil Works	-	23%	12%	12%	
Working Capital	-	20%	10%	10%	
II. Sub-Project Unit Cost by Input 1/					
Equipment					
Domestic	190	222	241	259	
Imported	510	597	644	696	
Total	700	819	885	955	
Civil Works					
Domestic	280	246	276	309	
Imported	-	-	-	-	
Total	280	246	276	309	
III. Sub-Project Unit Cost by Currency 1/					
Domestic	390	468	517	568	
Foreign Exchange	510	597	644	696	
Total	900	1,065	1,161	1,264	
IV. Number of Sub-Projects Implemented					
	-	1	1	2	4
V. Total Investment Project Cost					
Domestic	-	468	517	1,136	2,121
Foreign Exchange	-	597	644	1,392	2,633
Total	-	1,065	1,161	2,528	4,754
VI. Working Capital per Unit					
	50	60	66	73	
VII. Total Incremental Working Capital					
	-	60	66	146	272
VIII. Total Sub-Project Cost					
Investment Project Cost	-	1,065	1,161	2,528	4,754
Incremental Working Capital	-	60	66	146	272
Total	-	1,125	1,227	2,674	5,026
IX. Total Sub-Project Cost by Currency					
Domestic	-	528	583	1,282	2,393
Foreign Exchange	-	597	644	1,392	2,633
Total	-	1,125	1,227	2,674	5,026

1/ The unit cost for the implementation period includes the corresponding contingency allowances. The detailed breakdown of the foreign exchange cost is presented in Annex 7 Table 5.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Sub-Project Cost by Component

Ice Plants with Cold Storage
Model 6 of 7

(in thousands of Pesos)

	Base Year <u>1975</u>	Year 1 <u>1977</u>	Year 2 <u>1978</u>	Year 3 <u>1979</u>	<u>TOTAL</u>
I. Contingency Rates					
Equipment	-	17%	8%	8%	
Civil Works	-	23%	12%	12%	
Working Capital	-	20%	10%	10%	
II. Sub-Project Unit Cost by Input 1/					
Equipment					
Domestic	440	514	556	600	
Imported	<u>1,765</u>	<u>2,065</u>	<u>2,230</u>	<u>2,409</u>	
Total	<u>2,205</u>	<u>2,579</u>	<u>2,786</u>	<u>3,009</u>	
Civil Works					
Domestic	276	339	380	426	
Imported	<u>34</u>	<u>42</u>	<u>47</u>	<u>52</u>	
Total	<u>310</u>	<u>381</u>	<u>427</u>	<u>478</u>	
III. Sub-Project Unit Cost by Currency 1/					
Domestic	716	853	936	1,026	
Foreign Exchange	<u>1,799</u>	<u>2,107</u>	<u>2,277</u>	<u>2,461</u>	
Total	<u>2,515</u>	<u>2,960</u>	<u>3,213</u>	<u>3,487</u>	
IV. Number of Sub-Projected Implemented					
	-	1	1	1	3
V. Total Investment Project Cost					
Domestic	-	853	936	1,026	2,815
Foreign Exchange	-	<u>2,107</u>	<u>2,277</u>	<u>2,461</u>	<u>6,845</u>
Total	-	<u>2,960</u>	<u>3,213</u>	<u>3,487</u>	<u>9,660</u>
VI. Working Capital per Unit					
	150	180	198	218	
VII. Total Incremental Working Capital					
	-	180	198	218	596
VIII. Total Sub-Project Cost					
Investment Project Cost	-	2,960	3,213	3,487	9,660
Incremental Working Capital	-	<u>180</u>	<u>198</u>	<u>218</u>	<u>596</u>
Total	-	<u>3,140</u>	<u>3,411</u>	<u>3,705</u>	<u>10,256</u>
XI. Total Sub-Project Cost by Currency					
Domestic	-	1,033	1,134	1,244	3,411
Foreign Exchange	-	<u>2,107</u>	<u>2,277</u>	<u>2,461</u>	<u>6,845</u>
Total	-	<u>3,140</u>	<u>3,411</u>	<u>3,705</u>	<u>10,256</u>

1/ The unit cost for the implementation period includes the corresponding contingency allowances. The detailed breakdown of the foreign exchange cost is presented in Annex 7 Table 6.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Sub-Project Cost by ComponentSlipway
Model 7 of 7

(in thousands of Pesos)

	<u>Base Year</u> <u>1975</u>	<u>Year 1</u> <u>1977</u>	<u>Year 2</u> <u>1978</u>	<u>Year 3</u> <u>1979</u>	<u>TOTAL</u>
<u>I. Contingency Rates</u>					
Equipment	-	17%	8%	8%	
Civil Works	-	23%	12%	12%	
Working Capital	-	20%	10%	10%	
<u>II. Sub-Project Unit Cost by Input 1/</u>					
Equipment					
Domestic	114	133	144	-	
Imported	<u>456</u>	<u>534</u>	<u>576</u>	-	
Total	<u>570</u>	<u>667</u>	<u>720</u>	-	
Civil Works					
Domestic	1,406	1,729	1,937	-	
Imported	<u>156</u>	<u>192</u>	<u>215</u>	-	
Total	<u>1,562</u>	<u>1,921</u>	<u>2,152</u>	-	
<u>III. Sub-Project Unit Cost by Currency 1/</u>					
Domestic	1,520	1,862	2,081	-	
Foreign Exchange	<u>612</u>	<u>726</u>	<u>791</u>	-	
Total	<u>2,132</u>	<u>2,588</u>	<u>2,872</u>	-	
<u>IV. Number of Sub-Projects Implemented</u>					
	-	0	1	0	1
<u>V. Total Investment Project Cost</u>					
Domestic	-	-	2,081	-	2,081
Foreign Exchange	-	-	<u>791</u>	-	<u>791</u>
Total	-	-	<u>2,872</u>	-	<u>2,872</u>
<u>VI. Working Capital per Unit</u>					
	200	240	264	-	
<u>VII. Total Incremental Working Capital</u>					
	-	-	264	-	264
<u>VIII. Total Sub-Project Cost</u>					
Investment Project Cost	-	-	2,872	-	2,872
Incremental Working Capital	-	-	<u>264</u>	-	<u>264</u>
Total	-	-	<u>3,136</u>	-	<u>3,136</u>
<u>IX. Total Sub-Project Cost by Currency</u>					
Domestic	-	-	2,345	-	2,345
Foreign Exchange	-	-	<u>791</u>	-	<u>791</u>
Total	-	-	<u>3,136</u>	-	<u>3,136</u>

1/ The unit cost for the implementation period includes the corresponding contingency allowances. The detailed breakdown of the foreign exchange cost is presented in Annex 7 Table 7.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Unit Investment Costs

New Fishponds 1/
Model 1 of 7

(in Pesos)

	<u>Sub-Project Cost</u>		
	<u>Local</u>	<u>Foreign Exchange</u>	<u>Total</u>
Excavating and leveling <u>2/</u>	6,133 46,000	-	6,133 46,000
Removal of stumps <u>3/</u>	6,400 48,000	-	6,400 48,000
Dike construction <u>4/</u>	13,867 104,000	-	13,867 104,000
Caretaker's hut	1,067 8,000	-	1,067 8,000
Gate system <u>5/</u>	4,267 32,000	3,067 23,000	7,334 55,000
Fishpond equipment <u>6/</u>	213 1,600	213 1,600	427 3,200
Total	<u>239,600</u> 31,947	<u>24,600</u> 3,280	<u>264,200</u> 35,227

1/ 24 ha model. This does not include the incremental working capital projected. (See Annex 6 Table 1)

2/ About P 1,900/ha for cutting, clearing and burning of mangrove trees.

3/ About P 2,000/ha for digging or blasting mangrove stumps.

4/ About P 3.8/m³ to construct a main dike of about 17,600 m³, a secondary dike of about 8,500 m³ and 1,000 m³ of tertiary dikes including water control canals.

5/ About P 16,500 for a two door main gate constructed of hollow block walls and wooden doors, P 8,000 for a single door secondary gate of similar construction and P 30,500 for 5 single door wooden secondary gates.

6/ Small seine net, fish baskets, fish traps, and hand tools.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Unit Investment Costs

Rehabilitated Fishponds 1/
Model 2 of 7

(in Pesos)

<u>Items</u>	<u>Sub-Project Cost</u>		
	<u>Local</u>	<u>Foreign Exchange</u>	<u>Total</u>
Excavating and Leveling <u>2/</u>	4,667 35,000	-	4,667 35,000
Dike rehabilitation <u>3/</u>	7,267 54,500	-	7,267 54,500
Caretaker's hut	1,067 8,000	-	1,067 8,000
Gate system <u>4/</u>	3,867 29,000	3,400	7,267 54,500
Fishpond equipment <u>5/</u>	213 1,600	213 1,600	427 3,200
<u>Total 6/</u>	<u>128,100</u> 17,080	<u>27,100</u> 3,613	<u>155,200</u> 20,695

1/ 24 ha model. DBP experience shows that substantial amounts of additional undeveloped land adjacent to developed fishpond areas is included in many fishpond rehabilitation loans.

2/ About P 1,621/ha for excavating and leveling trees.

3/ About P 2.0/m³ to renovate a main dike of about 17,600 m³, a secondary dike of about 8,500 m³ and 1,000 m³ of tertiary dikes including water control canals.

4/ About P 16,500 for a two door main gate constructed of hollow block walls and wooden doors, P 8,000 for a single door secondary gate of similar construction and about P 6,000 each to repair or construct five single door wooden secondary gates.

5/ Small seine net, fish baskets, fish traps, and hand tools.

6/ This does not include the incremental working capital projected. (See Annex 6 Table 2).

SECOND FISHERIES PROJECTEstimated Unit Investment Costs90 Gross Ton Fishing Vessels 1/
Model 3 of 7

(in thousands of Pesos)

<u>Items</u>	<u>Sub-Project Cost</u>		
	<u>Local</u>	<u>Foreign Exchange</u>	<u>Total</u>
	48	5.3	53
Hull <u>2/</u>	360	40	400
	13	45	57
Engine <u>3/</u>	95	340	425
	4	15	19
Winch <u>4/</u>	28	112	140
	.5	2.1	2.7
Radio <u>5/</u>	4	16	20
	1.3	5.3	7
Echo sounder <u>6/</u>	10	40	50
	4.2	17.	21
Main generator <u>7/</u>	32	128	160
	.4	1.6	2
Auxiliary generator <u>8/</u>	3	12	15
	27	27	53
Purse seine net <u>9/</u>	200	200	400
	1.1	4.3	5.3
Net skiff <u>10/</u>	8	32	40
	2.4	9.6	12
Light boat <u>11/</u>	18	72	90
	.7	2.7	3
Navigation equipment <u>12/</u>	5	20	25
	5.9	23	29
Miscellaneous <u>13/</u>	44	176	220
Total	807	1,188	1,985
	108	158	265

1/ This does not include the incremental working capital projected (See Annex 6 Table 3).

2/ About P 250,000 for 80,000 board feet (bf) of lumber at P 3.3/bf; P 80,000 for labor; and P 70,000 for fittings nails, bolts and other hardware.

3/ 350 hp medium speed (1,800 rpm) marine diesel with marine reduction gear of about 6:1.

4/ 100 hp hydraulic winch, driven by main engine.

5/ 100 watt single side band two channel transmitter and receiver.

6/ 40-50 khz "fish finder".

7/ 50 kw diesel electric generator for fishing lights.

8/ 7.5 kw diesel electric generator for vessel electrical service.

9/ Purse seine net approximately 700 m long and 120 m deep, complete with floats, rings and cable.

10/ 5-6 m heavy duty skiff with 10-20 hp engine.

11/ 7 m wooden light boat with reconditioned 25 hp marine diesel engine and 30 kw electric generating set for fishing lights.

12/ Navigation lights, signal flares, fire extinguishers, inflatable life raft, life jackets.

13/ Stern gear tube, propeller shaft, propeller, rudder, steering gear, fuel tanks, water tanks, pipe, valves, mast, electrical system, rigging, deck fittings, anchor and hydraulic net block for purse seine net.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Unit Investment Costs

45 Gross Ton Fishing Vessels 1/
Model 4 of 7

(in thousands of Pesos)

<u>Items</u>	<u>Sub-Project Cost</u>		
	<u>Local</u>	<u>Foreign Exchange</u>	<u>Total</u>
Hull 2/	189 ²⁵	21 ^{2.8}	210 ²⁸
Engine 3/	30 ⁴	120 ¹⁶	150 ³⁰
Winch 4/	12 ^{1.6}	48 ^{6.4}	60 ⁸
Purse seine nets 5/	375 ⁵⁰	375 ⁵⁰	750 ¹⁰⁰
Net skiff 6/	6 ^{.8}	24 ^{3.2}	30 ⁴
Light raft 7/	6 ^{.8}	19 ^{2.3}	25 ^{3.3}
Miscellaneous 8/	42 ^{5.6}	168 ²²	210 ²⁸
Total	660	775	1,435
	88	103	191

- 1/ This does not include the incremental working capital projected (See Annex 6 Table 4).
- 2/ About P 90,000 for 27,000 bf of lumber at P 3.3 bf; P 70,000 for labor; and P 50,000 for fittings, nails, bolts and other hardware.
- 3/ 150 hp medium speed (1,800 rpm) marine diesel engine with reduction gear of about 4:1.
- 4/ 60 hp hydraulic winch driven by main engine.
- 5/ About P 500,000 for one complete purse seine net of about 900 m long and 140 m deep, and P 250,000 for one complete purse seine net of about 300 m long and 60 m deep.
- 6/ 45 m medium duty skiff with 8-15 hp engine.
- 7/ One anchored raft, of about 64 m², with 4 to 5 pressurized kerosene lights.
- 8/ Navigation lights, signal flares, fire extinguisher, inflatable life raft, life jackets, stern gear tube, propeller shaft, propeller, rudder, steering gear, fuel tanks, water tanks, pipe, valves, mast, electrical system, rigging, deck fittings, anchor and hydraulic net block for purse seine net.

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SECOND FISHERIES PROJECT

Estimated Unit Investment Costs

Converted Fish Carriers 1/
Model 5 of 7

(in thousands of Pesos)

<u>Items</u>	<u>Sub-Project Cost</u>		
	<u>Local</u>	<u>Foreign Exchange</u>	<u>Total</u>
Hull <u>2/</u>	27 200		27 200
Engine <u>3/</u>	13 95	45 340	58 435
Radio <u>4/</u>	0.5 4	2.1 16	2.6 20
Generator <u>5/</u>	0.4 3	1.6 12	2 15
Navigation equipment <u>6/</u>	0.7 5	2.7 20	3.4 25
Hull fittings <u>7/</u>	0.7 5	2.7 20	3.4 25
Miscellaneous <u>8/</u>	10 78	17 102	27 180
Total	<u>390</u> 52	<u>510</u> 68	<u>900</u> 120

- 1/ This does not include the incremental working capital projected (See Annex 6 Table 5).
- 2/ Purchase of a used (4-7 yr old) vessel hull of about the outline specifications of the new 90 gross ton fishing vessel described in schematic drawing IBRD 15330, the vessel would be capable of carrying of about 42,000 kg of iced fish in 35 kg tubs.
- 3/ New 350 hp medium speed (1,800 rpm) marine diesel with reduction gear of about 6:1.
- 4/ 100 watt single side band two channel transmitter and receiver.
- 5/ 7.5 kw diesel electric generator for vessel electrical service.
- 6/ Navigation lights, signal flares, fire extinguishers, inflatable life raft, life jackets.
- 7/ Replace stern gear tube, propeller shaft, propeller.
- 8/ Renovate and/or replace rudder, steering gear, fuel tanks, water tanks, pipe, valves, mast, electrical system, rigging, deck fittings, and anchor.

PHILIPPINESSECOND FISHERIES PROJECTEstimated Unit Investment CostsIce Plant with Cold Storage 1/
Model 6 of 7

(in thousands of Pesos)

<u>Items</u>	<u>Sub-Project Cost</u>		<u>Total</u>
	<u>Local</u>	<u>Foreign Exchange</u>	
	33	2	41
Building <u>2/</u>	248	62	310
Diesel generator <u>3/</u>	3.2	37	40
	24	276	300
Heavy duty compressor <u>4/</u>	12	47	59
	88	352	440
Electric motor <u>5/</u>	1.7	71	72
	13	53	66
Ice making equipment <u>6/</u>	7.5	20	27
	56	223	279
Brine reservoir and pump	1.2	5	6
	9	35	44
Continuous duty compressor <u>7/</u>	2.4	9	12
	18	70	88
Ammonia condenser and receiver	4	16	20
	30	117	147
Pumps, pipe, valves, fittings	2.9	16	19
	22	88	110
Controls and wiring	2	5	7
	12	47	59
Fresh water well <u>8/</u>	11	11	22
	86	86	172
Installation <u>9/</u>	43	11	54
	320	80	400
Engineering and licenses	11	3	14
	80	20	100
Total	1,006	1,509	2,515
	134	201	335

1/ The model assumes an ice plant having a capacity of 20 tons of ice per day and cold storage facilities for 60 tons of ice and 40 tons of chilled or frozen fish.

2/ Concrete building with machinery room, small office, ice making shed and insulated ice storage, and fish storage rooms.

3/ 130 hp 100 kw diesel electric generator.

4/ 100 hp 4 cylinder ammonia compressor for ice making.

5/ 120 hp 220 v. 3 phase electric motor for ice making.

6/ 20 ton/day - 130 blocks 150 kg each - 120 m³ tank, cooling coils, molds, chain hoist, walkway, and covers.

7/ 20 hp ammonia compressor for chill room and ice storage.

8/ 300 foot 8 inch well.

9/ Plumbing, welding, wiring, electrical service, lights, equipment foundations and mounting.

PHILIPPINES

SECOND FISHERIES PROJECT

Estimated Unit Investment Costs

Slipway 1/
Model 7 of 7

(in thousands of Pesos)

	<u>Sub-Project Cost</u>		
	<u>Local</u>	<u>Foreign Exchange</u>	<u>Total</u>
Marine railway <u>2/</u>	162 1,215	18 135	180 1,350
Buildings	25 191	2.8 21	28 212
Electric generator <u>3/</u>	9 65	34 258	43 323
Winch <u>4/</u>	4 28	15 112	19 140
Welding equipment	1.0 8	4.0 32	5 40
Band saw	3 2	1.3 10	2 12
Planner	1.3 2	1.0 8	1.3 10
Machine and hand tools	2 19	4.8 36	6 45
Total	<u>1,520</u> 203	<u>612</u> 82	<u>2,132</u> 284

- 1/ Costs are assumed to represent least cost alternatives similar to those in existing slipways in the Visayan region of the Philippines. It is assumed that the slipway would be constructed in the Visayan where there are numerous gently sloping natural beaches which do not require extension dredging and filling to be suitable for small slipways.
- 2/ The slipway would consist of a single track marine railway about 400 feet long with a transverse carriage way. A winch and power house.
- 3/ 120 hp 100 kw diesel electric generator.
- 4/ 90 hp geared electric driven winch, a carpentry and machine tool work shed, and a small office and with shipyard space for up to about 8 vessels at a time.

PHILIPPINESSECOND FISHERIES PROJECTEstimated Quarterly Schedule of Disbursement^{1/}

<u>IBRD FY and Quarters</u>	<u>Commitments</u>	<u>Disbursements</u>	<u>Cumulative Disbursements</u>
	-----US\$'000-----		
1977			
3rd	758	-	-
4th	758	463	463
1978			
1st	758	758	1,221
2nd	759	758	1,979
3rd	1,073	759	2,738
4th	1,074	942	3,680
1979			
1st	1,075	1,073	4,753
2nd	1,075	1,074	5,827
3rd	1,143	1,074	6,901
4th	1,143	1,143	8,044
1980			
1st	1,143	1,143	9,187
2nd	1,228	1,143	10,330
3rd	-	1,143	11,473
4th	-	527	12,000

^{1/} For the project implementation schedule, See Annex 9.

EAP Projects Department
February 20, 1976

PHILIPPINES

SECOND FISHERIES PROJECT

Phasing of the Lending Program
(in thousands of Pesos)

<u>Calendar Year</u>	<u>1977</u>		<u>1978</u>		<u>1979</u>		<u>Total</u>	
	<u>Number of Sub-projects</u>	<u>Project Costs</u>						
New Fishponds	32	11,251	41	16,008	41	17,782	114	45,041
Rehabilitated Fishponds	76	16,534	95	22,834	95	25,234	266	64,602
90 Gross Ton Fishing Vessel	4	10,824	5	14,750	5	16,080	14	41,654
45 Gross Ton Fishing Vessel	1	1,931	1	2,101	1	2,285	3	6,317
Converted Fish Carriers	1	1,125	1	1,227	2	2,674	4	5,026
Ice Plant with Cold Storage	1	3,140	1	3,411	1	3,705	3	10,256
Slipway	<u>0</u>	<u>-</u>	<u>1</u>	<u>3,136</u>	<u>0</u>	<u>-</u>	<u>1</u>	<u>3,136</u>
<u>Total</u>	<u>115</u>	<u>44,805</u>	<u>145</u>	<u>63,467</u>	<u>145</u>	<u>67,760</u>	<u>405</u>	<u>176,032</u>

EAP Projects Department
February 20, 1976

PHILIPPINES

SECOND FISHERIES PROJECT

The Development Bank of the Philippines (DBP)

Background

1. DBP was established in 1958 (Republic Act No. 85) as an autonomous government-owned development bank for supplying credit to industry and agriculture. It succeeded the Rehabilitation Finance Corporation, created in 1947 primarily for post-war reconstruction. DBP is the single largest institutional source of long-term funds in the Philippines. Since its inception it has approved financial assistance totalling nearly \$3 billion. The volume and diversity of its operations give it a prominent and unique role as the Government's arm for financing economic development.

2. Under its Charter, DBP is empowered to engage in a wide range of financial activities, including:

- (i) granting loans for the establishment or development of any agricultural or industrial enterprise, including public utilities, mining, livestock, fisheries, and home financing;
- (ii) purchasing equity investments in any agricultural or industrial enterprise;
- (iii) guaranteeing loans and other obligations incurred for the development of agriculture or industry; and
- (iv) granting loans to provincial and municipal governments for self-liquidating or income-producing projects;

The bulk of its activity, however, has been in loans and guarantees for industry and agriculture. About 25% of the long-term loan portfolio is in agriculture. In 1964, it was also given the responsibility of assisting in the establishment of smaller private development banks throughout the Philippines.

Management and Staffing

3. Overall management of DBP is entrusted to a 9-man Board of Governors consisting of the Chairman (who is chief executive officer), 4 full-time Supervising Governors (one position is now vacant) with responsibility for different departments of DBP, and 4 part-time Governors (presently the former Executive Secretary to the President, the Secretary of Industry, a private lawyer, and one vacancy). One of the Supervising

Governors is Vice-Chairman of the Board. The present Chairman, Leonides S. Virata, was appointed in February 1970.

4. DBP's present organization (Chart No. 9981) dates from September 1973. The operating core consists of three broad departmental groupings (Industry, Agriculture and Community Development) each under the direction of a Supervising Governor. A fourth grouping of central support departments is under the direct control of the Chairman. In addition, two other offices, Legal and Audit, are linked loosely to the organization, although these offices are under the functional jurisdiction of respective independent bodies, i.e., the Department of Justice, and the Commission on Audit (COA). In the past two years DBP has concentrated its efforts on consolidation. As a result, noticeable improvements in the functioning of individual departments and in inter-departmental coordination have taken place.

5. DBP has a total staff of about 3,000, 55% of whom are located in the 35 branches and 24 agencies. The staff must have civil service eligibility and is of generally good calibre. Salaries are competitive with other Government financial institutions, and above those of the general civil service structure.

Bank Lending to DBP

6. The Bank has so far approved eight loans totalling \$213.4 million, all since 1971, for on-lending through DBP. ^{1/} In addition, the Second Grain Processing Project for \$11.0 million has been appraised recently, and Second Shipping project will be appraised soon.

Operations

7. Through FY74, the large majority of DBP's financial assistance consisted of the guaranteeing of foreign loans - in FY74, this was 88% of all operations (by amount). In FY75, however, there was a dramatic change, as DBP's loan approvals rose from P0.3 billion in FY74 to P2.4 billion (of which 23% was to agriculture), while its guarantees fell from P2.8 billion to P0.8 billion (Table 1). Part of the lending increase (P0.9 billion) was for a special program of hotel construction (geared in part to the IBRD/IMF Annual Meeting in Manila in October 1976), but other lending rose sharply as well, due largely to the increased

^{1/} Rice Processing and Storage Project, 720-PH, \$14.3 million, Fisheries Credit Project, 891-PH, \$11.6 million, (First) Livestock Development Project, 823-PH, \$7.5 million, Second Livestock Development,-PH, \$20.0 million, (First) Industrial Investment and Smallholder Tree-Farmers Project, 998-PH, \$50.0 million, Second Industrial Investment Project, 1190-PH, \$75.0 million, Shipping Project, 1048-PH, \$20.0 million, and Small and Medium Industries Development Project 1120-PH, \$15.0 million (out of a country-wide \$30.0 million).

availability of funds from the Bank, Central Bank of the Philippines (CB), Department of Finance, and commercial banks, which enabled it to substitute direct lending for a substantial proportion of its guarantee operations, chiefly of suppliers' credit for capital goods imports. In addition, the Credit Guarantee Corporation took over part of DBP's role as a guarantor. Equity investment approvals, mainly in government enterprises, rose to P 212 million from P 79 million in FY74.

Financial Position

8. As of June 30, 1975, DBP's total assets stood at P 7.8 billion (over US\$1 billion) up from P 5.3 billion a year earlier (Table 2). DBP's liquidity position is reasonably sound (current ratio 2.1) as is its present total debt/equity ratio of 4.5:1 (long-term debt being inclusive of contingent liabilities).

9. An increasing proportion of DBP's long-term local currency loans, however, is being financed with short-term funds. This should be corrected to ensure DBP's future ability to service its debts. In particular, a large part of the hotel financing program approved by DBP in FY75 is to be financed by a one-year securities repurchase agreement with CB, which would be rolled over for at least five years. Furthermore, the approval of most of DBP's domestic currency industrial and agricultural loans in FY75 has been based on an increase in its short- and medium-term holdings of deposits from the Treasury and other government financial institutions. A part of these deposits might be rolled over and, therefore, considered long-term, but there is no certainty as to the amounts or the length of time the rollover might be permitted.

10. DBP's management recognizes the need to increase its long-term domestic resources. In the first nine months of FY75, DBP issued P 500 million in medium-term notes (5 years, 9%) and plans to raise another P 1 billion between FY77-81 through a savings bond scheme. These actual and planned efforts will go some distance toward establishing an adequate long-term resource base. However, DBP will still need additional long-term funds to support its existing commitments.

Financial Performance

11. DBP's net income for FY75 was P 71.4 million, 21% below its FY74 net income. This decline is in sharp contrast to the rising performance trend of FY73 and FY74. The decline in income reflected mainly a decline in collections and rapidly rising expenses, which included a depreciation charge of P42 million on its assets acquired through foreclosures. In judging DBP's financial performance, it is essential to recognize that DBP

is a government-owned development-oriented institution and that its earnings performance is not strictly comparable to private profit-oriented institutions. At negotiations for the Second Industrial Investment Project, DBP undertook to take steps to improve its financial position, and these would include (i) an across the board upward revision of interest rates (within ceilings presently allowed by the Monetary Board for those loans not covered by specific statutes), guarantee fees and associated charges on all future loan accounts, (ii) radical measures to improve its collections performance, including better follow-up, and (iii) an increase in its penalty charges on overdue accounts.

Arrears and Collections

12. A low level of collections and the magnitude of its arrears continue to pose the main financial problem for DBP. As of June 30, 1975,

Development Bank of the Philippines Arrears Position on Loans as of June 30, 1974 and 1975

	<u>1974</u>	<u>1975</u>
No. of accounts in arrears as % of total number of accounts	56.6%	60.0%
Amount in arrears as % of principal outstanding	23.5%	15.5%
Principal affected by arrears as % of principal outstanding	58.7%	46.8%

13. DBP has not always made adequate efforts to improve its collections performance. However, judgments about DBP's arrears situation have to be tempered by the recognition that (i) as the major financier of entire industries, ^{1/} DBP is highly vulnerable to changes in the economic conditions affecting these industries, and in view of the wide repercussions of any actions it takes, DBP does not have complete freedom of maneuver in dealing with its arrears problem, and (ii) the peso devaluation in 1970 caused outstanding obligations of foreign currency borrowers to increase by about 70%; given the economic conditions prevailing, most borrowers were unable to service the additional debt along with previous amortization schedules. With DBP's reluctance to reschedule loans, these accounts simply kept piling up arrears.

14. Delinquencies on DBP's guarantee portfolio are also a major cause for concern, with about 50% of DBP's guarantee portfolio being affected by

^{1/} At present, DBP has provided, through loans and guarantees, more than 50% of the term finance needed to purchase the assets of the following entire industries: textiles, wool products, pulp and paper, cement, coconut oil milling, sugar, steel and shipping.

arrears. Defaults on guarantees have required DBP to advance an average of about ₱ 400 million a year over the last 4 years to honor foreign obligations. These advances, which are immediately due and payable by clients, have also accumulated extensive arrears. DBP has reduced these arrears primarily by converting them into long-term loans:

Development Bank of the Philippines
Arrears on Guarantee Accounts
(Amount in ₱ million)

	<u>FY73</u>	<u>FY74</u>	<u>FY75</u>
Advance on guarantees during period	442.9	323.4	375.2
Less: Repaid to DBP during period	128.6	146.1	68.4
Less: Converted to long-term loans	165.3	367.1	539.2
Less: Transferred to litigation accounts or acquired assets, etc.	1.3	89.9	6.1
(a) Advances outstanding at end of period	1,066.6	786.9	548.4
(b) Guarantees outstanding at end of period	2,566.3	2,999.7	3,514.6
(c) (a) divided by (a+b)	41.6%	26.2%	13.5%

15. Reflecting the Government's concern over arrears, a Presidential Decree (P.D. 358) was passed in January 1974, requiring government financial institutions (in particular DBP) to mandatorily foreclose on loans and advances for which arrears exceeded 20% of outstanding obligations. In the wake of this measure, DBP's loan collection efforts were stepped up; unfortunately, with the economic downturn in FY75 which affected several major Philippine industries (particularly the export oriented ones), DBP had to slacken its pressure on borrowers to repay. This factor notwithstanding, the main reasons for the high level of arrears are: (i) the inadequacy of DBP's system and practices for recording and reporting arrears; (ii) poor follow-up and collection practices; (iii) low penalty rates which make it profitable for borrowers to postpone repayments, placing their funds instead in the money market; and (iv) overdues on several large industrial accounts which should have been rescheduled two or three years ago.

16. Steps are now being taken to reduce arrears by rescheduling those major accounts on which such action is warranted and overdue. Follow-up and collection practices are also gradually being improved. To bring this persistent and serious problem under control, agreement was reached at the Second Industrial Financing Project negotiations that DBP would, inter alia, reschedule all accounts in need of such action by March 31, 1976; increase penalty charges; and intensify follow-up and collection efforts. The Government also agreed that it would protect DBP against the risk of default or loss on all accounts which DBP finances at the Government's request (e.g. the hotels). Furthermore, in view of information available about the quality of its portfolio, agreement was reached on DBP's making adequate provisions for reserves against losses on doubtful accounts, or from possible currency fluctuations on loans on which DBP bears the foreign exchange risk.

Audit

17. An evaluation of DBP's audit was undertaken in conjunction with the appraisal of the Second Industrial Investment Project. The audit, carried out by the Commission on Audit (COA), was found to be thorough as far as the testing of detailed transactions went. However, it was found to lack analytical content and to include no analysis of DBP's portfolio; nor was it sufficiently supported by adequate documentation. Moreover, unqualified audit opinions did not point out: (i) that DBP's financial reporting differed in material respects from "generally accepted accounting principles" as applied in the Philippines; and (ii) that the audit was not conducted fully in accordance with "generally accepted auditing standards". DBP's management and COA staff expressed a willingness to incorporate necessary changes in present auditing practices and appropriate qualifications in audit reports to meet the Bank's requirements. At negotiations of the Second Industrial Financing Project agreement was reached on the following: (i) submission to the Bank of an annual audit report on DBP prepared in accordance with the Bank's "Illustrative Form of Audit Report for Development Finance Companies"; (ii) inclusion of a thorough portfolio analysis in COA audit reports; and (iii) submission to the Bank of a separate audit of DBP's portfolio carried out by CB, within four months of the end of each fiscal year. Implementation of the agreement should materially improve the quality of the COA's audit.

Fisheries Group

18. DBP has only recently become a major source of credit for the fishing industry. Its volume and amount of lending in the fisheries sector has increased substantially since 1972. Excluding the sub-loans under the Bank financed first Fisheries Credit Project (Loan 891-PH), DBP had financed as of June 30, 1975, about P 225 million for fisheries purposes, of which about P 120 million was for a very large number (over 30,000) of small loans in the "foreshore" fisheries sub-sector. Of the P 225 million approved, about

₱ 188 million in principal is outstanding. DBP reports that a total of ₱ 25 million of the outstanding amount is overdue. In addition, as of July 31, 1975, DBP has committed ₱ 35.5 million in the inland sector, and ₱ 9.8 million in the marine sector, under the Bank-financed first Fisheries Credit Project.

19. Although increased supervision staff is needed for proper monitoring and supervision of the rapidly expanding inland fisheries portfolio, and the technical staff in the marine sector needs to be strengthened, the performance of FG has been good. While DBP lending in fisheries has not been a large part of the total lending activity in the fisheries sector in the Philippines in the past, the changes in the structure of the fishing industry which began about 1970 requiring a rapid expansion of the catches of the commercial fleet, would call for DBP to play a far more important role in financing fisheries investments. DBP is in a unique position to develop its institutional and technical capabilities to a greater degree by building on the experience gained in executing the first Fisheries Credit Project.

EAP Projects Department
April 18, 1976

PHILIPPINES

SECOND FISHERIES PROJECT

Development Bank of the Philippines
Loans, Investments and Guarantees Approved
(Pmillion)

	<u>FY72</u>		<u>FY73</u>		<u>FY74</u>		<u>FY75</u>	
	<u>Number</u>	<u>Amount</u>	<u>Number</u>	<u>Amount</u>	<u>Number</u>	<u>Amount</u>	<u>Number</u>	<u>Amount</u>
<u>Loans</u>								
Agriculture	8,840	54.7	12,858	109.5	13,706	120.4	n.a.	551.0
Industry	246	61.4	277	55.2	684	94.9	n.a.	750.0
Real Estate	1,768	21.8	3,437	38.3	3,834	33.7	n.a.	1,100.0
Government	5	8.0	8	4.9	10	13.6	n.a.	34.0
Rural Banks and Private Development Banks <u>1/</u>	<u>143</u>	<u>16.3</u>	<u>429</u>	<u>25.7</u>	<u>338</u>	<u>30.4</u>	<u>n.a.</u>	<u>39.0</u>
Sub-total	<u>11,002</u>	<u>162.2</u>	<u>17,009</u>	<u>233.6</u>	<u>18,572</u>	<u>293.0</u>	<u>n.a.</u>	<u>2,400.0</u>
Equity Investment	<u>2</u>	<u>149.0</u>	<u>-</u>	<u>-</u>	<u>4</u>	<u>78.5</u>	<u>n.a.</u>	<u>212.0</u>
<u>Total</u>	<u>11,004</u>	<u>311.2</u>	<u>17,009</u>	<u>233.6</u>	<u>18,576</u>	<u>371.5</u>	<u>n.a.</u>	<u>2,612.0</u>
<u>Guarantees</u>								
Foreign (US\$million)		\$201.9		\$233.9		\$409.1		\$120.0
Domestic (Pmillion)		P10.4		P16.7		P12.0		P50.0

1/ Includes some equity investments.

PHILIPPINES

ANNEX 10
Table 2

SECOND FISHERIES PROJECT

Development Bank of the Philippines

Summarized Income Statements

(P'000)

Fiscal Years Ended	June 30				
	1971	1972	1973	1974	1975
<u>Income</u>					
Interest on - agricultural loans	28,280	29,691	39,101	61,078	53,126
- industrial loans	115,206	134,887	154,309	191,097	184,253
- real estate loans	15,870	17,874	20,480	22,038	24,579
- PDB redisc. & CMR	3,269	3,824	4,895	6,323	5,643
Sub-total	<u>162,625</u>	<u>186,276</u>	<u>218,785</u>	<u>280,536</u>	<u>267,601</u>
Interest on securities	1,091	2,524	14,220	36,807	63,792
Dividend income	19,588	13,444	7,745	3,228	4,657
Capital gains on sales of securities	-	-	19,428	40,012	1,854
Guarantee fees	30,687	45,835	40,519	54,113	55,578
Administration fees on trust funds	1,118	1,121	1,026	547	228
Others	16,762	18,734	27,594	28,567	187,213 1/
Total	<u>231,871</u>	<u>267,934</u>	<u>329,317</u>	<u>443,810</u>	<u>580,923</u>
<u>Expenses</u>					
Financial expenses	149,335	186,245	228,529	254,219	339,388
Salaries and personnel expenses	45,300	45,571	37,285	38,224	51,261
Other administrative expenses	16,907	17,498	20,533	25,340	78,149 2/
Total	<u>211,542</u>	<u>249,314</u>	<u>286,347</u>	<u>317,783</u>	<u>468,798</u>
Income before tax and provision	20,329	18,620	42,970	126,027	112,125
Less: Income Tax	7,609	6,191	3,724	26,791	25,708
Reserve for contingencies	1,200	1,200	1,200	8,400	15,000
<u>NET INCOME</u>	<u>11,520</u>	<u>11,229</u>	<u>38,046</u>	<u>90,836</u>	<u>71,417</u>
<u>Appropriations</u>					
Transferred to paid-in-capital	2,304	2,246	7,609	18,167	14,283
Transferred to surplus	9,216	8,983	30,437	72,669	51,134
<u>Ratios</u>					
<u>I. As % of average total assets:</u>					
1. Gross income	7.8	7.5	7.8	9.0	8.9
2. Financial expenses	5.1	5.2	5.4	5.2	5.2
3. Gross spread (1-2)	2.7	2.3	2.4	3.8	3.7
4. Administrative expenses	2.1	1.8	1.4	1.3	1.9
5. Income before tax and provision	.7	.5	1.0	2.5	1.7
<u>II. Net Income as % of:</u>					
1. Average equity 3/	2.4	2.2	3.2	4.8	3.6
2. Share capital	3.0	2.8	2.2	5.2	4.1
<u>III. Other ratios</u>					
1. Interest income on loans as % of average loan portfolio	7.2	7.0	7.2	8.9	7.5
2. Cost of debt as % of average debts	6.8	7.2	8.6	9.1	7.5
3. Average interest spread 4/	0.4	- 0.2	- 1.4	- 0.2	0.0

1/ Includes rental income from acquired assets of P134,002,537 and interest income on deposits of P21,109,056.

2/ Includes depreciation on acquired assets of P42,220,154.

3/ Excluding reserve for doubtful accounts from equity.

4/ Average interest spread is low or negative since DBP reported interest income on loans on cash basis and interest expenses on accrual basis.

EAP Projects Department
February 14, 1976

PHILIPPINES

SECOND FISHERIES PROJECT

Development Bank of the Philippines

Summarized Balance Sheets as of June 30, 1971-75
(P Million)

	As of June 30					As of June 30					
	1971	1972	1973	1974	1975	1971	1972	1973	1974	1975	
ASSETS						LIABILITIES AND EQUITY					
Current Assets:						Current Liabilities:					
Cash and due from banks	112.6	86.9	105.6	117.1	406.1	Savings & time deposits (maturing within one year)	61.8	62.3	80.6	152.8	95.9
Marketable securities	20.0	25.2	133.7	400.8	486.6	Short-term borrowings - local	213.0	258.7	112.3	275.8	188.3
Short-term advance	27.9	44.9	58.3	66.3	95.8	- foreign	-	19.6	13.5	-	17.6
Accrued income	5.0	3.4	4.3	10.3	33.0	Accounts payable and accrued expenses	169.2	254.8	119.0	235.2	254.7
Accounts receivable	10.9	49.0	58.0	98.9	130.0	Current maturities of long-term debt 2/	327.5	1,132.7	466.1	280.4	616.6
Current portion of long-term loans 1/	n.a.	329.4	371.9	303.7	392.8	Total current liabilities 2/	771.5	1,728.1	791.5	944.2	1,173.1
Total current assets	176.4	538.8	731.8	997.1	1,544.3	Long-term Debt:					
Long-term Loans:						Foreign currency borrowings					
Agricultural loans	375.0	382.9	611.6	695.0	1,001.9	Local currency borrowings	329.7	607.4	1,087.7	1,005.9	1,458.7
Industrial loans	1,830.2	2,165.5	2,358.9	2,048.3	2,568.6	Total	1,845.8	2,155.6	1,982.9	2,118.8	3,041.9
Real Estate loans	180.9	185.4	178.4	169.8	353.4	Less: Current maturities	327.5	1,132.7	466.1	280.4	616.6
Government and landed estate loans	55.8	54.4	49.7	58.8	69.6	Add: Deposits maturing beyond one year	286.3	274.6	365.8	466.0	1,878.4
Contract Mortgage receivable	20.7	26.2	27.8	28.5	27.0	Total long-term debt (net)	1,804.6	1,297.5	1,882.6	2,304.4	4,303.7
Private development bank (advances and rediscount)	25.6	29.0	31.9	35.2	51.6	Special Funds	171.6	267.9	2.2	1.3	-
Total long-term loans	2,488.2	2,843.4	3,258.3	3,035.6	4,072.1	Deferred Credits	25.8	43.2	43.0	54.2	285.2
Less: Current portion 1/	n.a.	329.4	371.9	303.7	392.8	Equity:					
Total long-term loans (net)	2,488.2	2,514.0	2,886.4	2,731.9	3,679.3	Paid-in share capital	390.3	397.0	1,703.1	1,735.6	1,766.9
of which Advances on Guarantees: (690.1) (919.1) (1,066.6) (786.9) (548.4)						Retained earnings	103.1	113.2	144.5	219.7	276.9
Investments:						Reserve for doubtful accounts	9.6	10.7	11.7	20.0	32.1
Equity - preferred	229.5	247.0	242.1	241.5	253.4	Total equity	503.0	520.9	1,859.3	1,975.3	2,075.9
common	23.0	108.6	148.0	165.1	281.2	TOTAL LIABILITIES AND EQUITY	3,276.5	3,857.6	4,578.6	5,279.4	7,837.9
private development banks	24.8	25.0	24.3	1.8	2.2	Contingencies:					
Bonds	28.3	59.8	74.5	74.0	30.6	Guarantess outstanding					
Total investments	305.6	440.4	488.9	482.4	567.4	Foreign: medium- and long-term (\$million) short-term	332.0	365.5	344.7	400.7	486.4
Fixed assets (net)	53.7	56.8	54.1	61.4	65.1	(P million) short-term	38.1	20.9	29.0	41.1	9.0
Other Assets:						Local: medium- and long-term (P million) short-term	8.6	5.6	5.3	4.3	18.3
Property acquired through foreclosure	140.5	146.2	159.7	724.7	1,143.7	Total - Peso equivalent 3/	2,446.5	2,544.9	2,566.3	2,999.6	3,514.6
(of which on lease)	(-)	(100.2)	(100.3)	(101.5)	(962.7)	Trust funds administered on behalf of the Government:	180.1	186.7	124.3	77.8	85.8
Loans under litigation	50.0	65.6	83.7	82.0	63.5	Ratios:					
Others	62.1	95.8	174.0	199.9	774.6	Current ratio	-	0.3:1	0.9:1	1.1:1	1.3:1
Total other assets	252.6	307.6	417.4	1,006.6	1,981.8	Total debt (including guarantess) to equity 4/	10.4:1	11.5:1	2.8:1	3.2:1	4.6:1
TOTAL ASSETS	3,276.5	2,857.6	4,578.6	5,279.4	7,837.9	Long-term debt (including long-term guarantess) to equity 4/	8.1:1	7.2:1	2.3:1	2.6:1	3.8:1
Trust funds administered on behalf of the Government:	180.1	186.7	124.3	77.8	85.8						

1/ Estimated principal amounts collectible within one year.

2/ These figures are tentative, DBP does not generally have readily available data on current maturities; however an attempt is being made by DBP to provide precise figures shortly.

3/ Exchange Rate: P6.5 to US\$ 1 for 1971 and 1972; P6.76 for 1973; P6.7 for 1974; and P7.02 for 1975.

4/ In these calculations, reserve for doubtful accounts were deducted from equity.

PHILIPPINES

SECOND FISHERIES PROJECT

Cash Flow Projections

New Fishponds 1/
Model 1 of 7

		-----Y E A R S-----		
		1	2-14	15
		-----Peso-----		
I. Cash Inflow				
	Gross Sales 2/	119,880	159,840	159,840
	Less Commission 3/	(5,994)	(7,992)	(7,992)
	Net Sales	113,886	151,848	151,848
	Borrower's Contribution: 10% of (4)	26,420	-	-
	Loan Amount: 90% of (4)	237,780	-	-
	Capitalized Interest: 12% of Loan	28,534	-	-
	Total Inflow (2)	406,620	151,848	151,848
II. Cash Outflow				
Operating Costs				
	Wages, Social Security 4/	5,805		
	Subsistence 5/	1,890		
	Fertilizer 6/	53,640		
	Fry 7/	24,500		
	Fish Feed, Pesticide 8/	5,400		
	Maintenance 9/	3,000		
	Interest on Working Capital 10/	3,012		
	Operating Cost Total (3)	97,247	97,247	97,247
	Investment Cost 11/ (4)	264,200	-	(26,420)
	Debt Service 12/	28,534	41,459	-
	Total Outflow (5)	289,981	138,706	70,827
III.	Net Cash Flow: (2) - (5) (6)	16,639	13,142	81,021
IV. Financial Benefit/Cost				
	Benefit (1)	113,886	151,848	151,848
	Cost (3) + (4)	361,447	97,247	70,827
	Net Benefit (7) - (8)	(247,561)	54,601	81,020
V.	Financial Rate of Return: 20.7%	Rate of Return on Equity: 34.7%	Debt Service Coverage 1.32	

1/ 24 ha model. Input costs and yields are based on 21.6 ha of water surface because 10% of the fishpond area is taken up by dike and water control structures.

2/ Gross sales in the first year are assumed to be 75% of the gross sales at full development which are projected on the basis of a yield of 1,850 kgs of milkfish/ha/yr. sold at a farm gate price of P4.0/kg, which is net of 7% sales tax.

3/ Commission and fees equal 5% of gross sales.

4/ Wages for one man full-time and one man part-time at P350/mo., and social security amounting to 7.5% of wages.

5/ Subsistence amounts to about P3.5/man/day.

6/ Fertilizer consisting of about 200 kg/ha of urea about 275 kg/ha of 18-46-0 phosphate and about 2,000 kg/ha of chicken manure.

7/ Fry are assumed to cost P70/1,000, there are three crops per year and mortality is assumed to be 35% of fry stocked. 5,400 fry/ha are required to provide the 4,000 fingerlings/ha needed per stocking.

8/ 140 kg/ha/yr. of the highest quality rice bran is required at P1.5/kg, and chemicals to poison unwanted species of fish are used 500 ml/ha and cost P200/1.

9/ Maintenance of screens, canals, and dikes.

10/ Approximately 25% of a years' operating costs is required as incremental working capital (P25,100). This appears to be adequate, as on the basis of DBP experience the peak working capital requirements are expected to be financed by materials suppliers. The interest rate is 12% per year.

11/ See Annex 7 Table 1.

12/ The first year interest on the loan (P28,534) is capitalized at 12% interest. For the following thirteen years, the principal and the capitalized interest are amortized at 12% annual interest.

PHILIPPINES

SECOND FISHERIES PROJECT

Cash Flow Projections

Rehabilitated Fishponds 1/
Model 2 of 7

	-----Y E A R S-----			
	1	2-12	13-14	15
	-----Peso-----			
I. Cash Inflow				
Gross Sales 2/	119,880	159,840	159,840	159,840
Less Commission 3/	(5,994)	(7,992)	(7,992)	(7,992)
Net Sales	(1) 113,886	151,848	151,848	151,848
Borrower's Contribution: 10% of (4)	15,520	-	-	-
Loan Amount: 90% of (4)	139,680	-	-	-
Capitalized Interest: 12% of loan	16,671	-	-	-
Total Inflow	(2) <u>285,757</u>	<u>151,848</u>	<u>151,848</u>	<u>151,848</u>
II. Cash Outflow				
Operating Costs				
Wages, Social Security 4/	5,805			
Subsistence 5/	1,890			
Fertilizer 6/	53,640			
Fry 7/	24,500			
Fish Feed, Pesticide 8/	5,400			
Maintenance 9/	3,000			
Interest on Working Capital 10/	3,012			
Operating Cost Total	(3) 97,247	97,247	97,247	97,247
Investment Cost 11/	(4) 155,200	-	-	(15,520)
Debt Service 12/	16,672	26,332	-	-
Total Outflow	(5) <u>269,119</u>	<u>123,579</u>	<u>97,247</u>	<u>81,727</u>
III. Net Cash Flow: (2) - (5)	(6) <u>16,638</u>	<u>28,269</u>	<u>54,601</u>	<u>70,121</u>
IV. Financial Benefit/Cost				
Benefit (1)	(7) 113,886	151,848	151,848	151,848
Cost (3) + (4)	(8) 252,447	97,247	97,247	81,727
Net Benefit (7) - (8)	(9) <u>(138,561)</u>	<u>54,601</u>	<u>54,601</u>	<u>70,121</u>
V. Financial Rate of Return: 39.0% Return on Equity over 100% Debt Service Coverage: 2.07				

1/ 24 ha model. Input costs and yields are based on 21.6 ha of water surface because 10% the fishpond area is taken up by dike and water control structures. DBP experience shows that substantial amounts of additional undeveloped land adjacent to developed fishpond areas is included in many fishpond rehabilitation loans.

2/ Gross sales in the first year are assumed to be 75% of the gross sales at full development which are projected on the basis of a yield of 1,850 kgs of milkfish/ha/yr. sold at farm gate price of P4.0/kg, which is net of 7% sales tax.

3/ Commission and fees equal 5% of gross sales.

4/ Wages for one man full-time and one man part-time at P350/mo., and social security amounting to 7.5% of wages.

5/ Subsistence amounts to about P3.5/man/day.

6/ Fertilizer consisting of about 200 kg/ha of urea about 275 kg/ha of 18-46-0 phosphate and about 2,000 kg/ha of chicken manure.

7/ Fry are assumed to cost P70/1,000, there are three crops per year and mortality is assumed to be 35% of fry stocked. 5,400 fry/ha are required to provide the 4,000 fingerlings/ha needed per stocking.

8/ 140 kg/ha/yr. of the highest quality rice bran is required at P1.5/kg, and chemicals to poison unwanted species of fish are used 500 ml/ha and cost P200/1.

9/ Maintenance of screens, canals, and dikes.

10/ Approximately 25% of a years' operating costs is required as incremental working capital (P25,100). This appears to be adequate, as on the basis of DBP experience the peak working capital requirements are expected to be financed by materials suppliers. The interest rate is 12% per year.

11/ See Annex 7 Table 2.

12/ The first year interest on the loan (P16,671) is capitalized 12% interest. For the following eleven years, the principal and the capitalized interest are amortized at 12% annual interest.

SECOND FISHERIES PROJECT

Cash Flow Projections

90 Gross Ton Fishing Vessel 1/
Model 3 of 7

		Y E A R S		
		1	2-14	15
		P'000		
I. Cash Inflow				
Gross Sales 2/		949	1,266	1,266
Less Commission 3/		(47)	(63)	(63)
Net Sales	(1)	902	1,203	1,203
Borrower's Contribution: 20% of (4)		397	-	-
Loan Amount: 80% of (4)		1,588	-	-
Capitalized Interest: 12% of Loan		191	-	-
Total Inflow	(2)	3,078	1,203	1,203
II. Cash Outflow				
Operating Costs				
Wages, Bonus, Social Security 4/		119		
Subsistence 5/		30		
Fuel and Lube Oil 6/		234		
Ice 7/		66		
Seine Net with Purse Wire 8/		108		
Spare Parts and Fish Tubs 9/		50		
Maintenance and Shore Costs 10/		33		
Insurance 11/		60		
Night Light Fishing Operating 12/		64		
Interest on Working Capital 13/		36		
Operating Cost Total	(3)	800	800	800
Investment Cost 14/	(4)	1,985	-	(200)
Debt Service 15/		191	277	-
Total Outflow	(5)	2,797	1,077	600
III. Net Cash Flow: (2) - (5)	(6)	102	126	603
IV. Financial Benefit/Cost				
Benefit (1)	(7)	902	1,203	1,203
Cost (3) + (4)	(8)	2,705	800	600
Net Benefit (7) - (8)	(9)	(1,883)	403	603

V. Financial Rate of Return: 19.8% Rate of Return on Equity: 25.9% Debt Service Coverage: 1.45

- 1/ The fishing vessel has the outline specifications shown in the drawing (IBRD 15330). There are 25 crew including the captain.
- 2/ Gross sales in the first year are assumed to be 75% of the gross sales at full development, which are projected to be ₱1,226,000 based on an expected catch of 703.5 tons of fish per year. The fish is sold in boxes of about 25 kg (in Bacolod) or in tubs of about 35 kg (in Navotas) at an average wholesale price of ₱1.80/kg, which is net of 7% sales tax.
- 3/ Commission and fees equal 5% of gross sales.
- 4/ Typical monthly wage rates for crew are: captain ₱450; master fisherman ₱450; engineer ₱350; 6 officers ₱350; 16 crew ₱350. Clothing allowances, medical and social security costs, paid by owner, amount to 15% of wages. In addition a bonus of ₱0.025/kg is paid, 60% goes to the master fisherman, the remainder is divided on a graduated share basis to the officers and crew.
- 5/ Owner paid food costs are about ₱3.5/man/day. (₱3.5 x 24 x 30 x 12); excludes the captain.
- 6/ The main engine burns 72 liters of No. 2 diesel oil for about 9 hours/day, for about 276 days, at ₱.97/l. The auxiliary engine burns 15 liters of diesel fuel for about 12 hours/day, for about 276 days, at ₱.97/l. And the main and auxiliary engine use about 18 liters of lubricating oil a day for about 276 days at ₱2.85/l.
- 7/ The vessel uses about 703 tons of ice at ₱93.3/ton (one ton of ice to one ton of fish landed).
- 8/ Based on repairing and/or replacing one new net every four years. Each complete net costs about ₱430,000. A net may last in ordinary use between 5 and 8 years with extensive repairs.
- 9/ Spare parts are about 10% of the engine cost or ₱40,000, the cost of replacing one fourth of 2,400 fish tubs which have an average life of four years is ₱10,000.
- 10/ Repair of engines and winch (₱8,000), dry docking (₱5,000) average cost of marine railway charges, and includes about ₱3,800 for license fees, and ₱4,700 for trucking fees, and ₱7,900 for bookkeeper, and ₱3,600 for office rental and supplies.
- 11/ Insurance rates are about 4% of the loan amount.
- 12/ The light boat costs about ₱18,850 for fuel, and ₱5,850 for labor, and ₱1,600 for repairs, and ₱12,000 for depreciation, the net skiff, which is fairly large, costs about ₱13,000 for fuel, and ₱1,300 for repairs and ₱11,700 for depreciation.
- 13/ Approximately one fourth of a years net sales is required as incremental working capital (₱300,000). This appears to be adequate, as industry experience indicates that peak working capital requirements are expected to be financed by materials suppliers. The interest rate is 12% per year.
- 14/ See Annex 7 Table 3.
- 15/ The first year interest on the loan (₱191,000) is capitalized at 12% interest. For the following thirteen years, the principal and the capitalized interest are amortized at 12% annual interest.

PHILIPPINES

SECOND FISHERIES PROJECT

Cash Flow Projections

45 Gross Ton Fishing Vessel 1/
Model 4 of 7

	-----Y E A R S-----		
	1	2-14	15
	-----P'000-----		
I. Cash Inflow			
Gross Sales 2/	569	758	758
Less Commission 3/	(28)	(38)	(38)
Net Sales (1)	541	720	720
Borrower's Contribution: 20% of (4)	287	-	-
Loan Amount: 80% of (4)	1,148	-	-
Capitalized Interest: 12% of Loan	138	-	-
Total Inflow (2)	2,114	720	720
II. Cash Outflow			
Operating Wages			
Wages, Bonus, Social Security 4/	86		
Subsistence 5/	20		
Fuel and Lube Oil 6/	38		
Nets and Purse Wire 7/	140		
Spare Parts, and Fish Tubs	28		
Maintenance and Shore Costs 9/	20		
Insurance 10/	46		
Night Light Fishing Operations 11/	23		
Interest on Working Capital 12/	24		
Miscellaneous 13/	17		
Operating Cost Total (3)	440	440	440
Investment Cost 14/ (4)	1,435	-	(143)
Debt Service 15/	138	201	-
Total Outflow (5)	2,013	641	297
III. Net Cash Flow: (2) - (5) (6)	101	79	423
IV. Financial Benefit/Cost			
Benefit (1) (7)	541	720	720
Cost (3) + (4) (8)	1,875	440	297
Net Benefit (7) - (8) (9)	(1,334)	290	423
V. Financial Rate of Return: 19.4% Rate of Return on Equity 24.4% Debt Service Coverage: 1.39			

- 1/ The fishing vessel has the outline specifications shown in the drawing (IBRD 15329). There are 17 crew including the captain.
- 2/ Gross sales in the first year are assumed to be 75% of the gross sales at full development which are projected to be about P758,000 based on an expected catch of 300 metric tons of fish per year. The fish is sold at an average wholesale price of P2.53/kg, which is net of 7% sales tax. The catch is expected to be composed of about 20% skipjack tuna 10% yellowfin tuna and 30% mackerel.
- 3/ Commission and fees equal 5% of gross sales.
- 4/ Typical monthly wage rates are: captain P450; master fisherman P450; engineer P350; 4 officers P350; 10 crew P250. Clothing allowances medical, and social security costs, paid by owner, amount to 15% of wages. In addition a bonus of P0.025/kg of catch is paid, 60% goes to the master fisherman, the remainder is divided on a graduated share basis to the officers and crew.
- 5/ Food costs are about P3.5/man/day (P3.5 x 16 x 30 x 12); excludes the captain.
- 6/ The main engine burns 30 liters of No. 2 diesel oil for about 6 hours, for about 207 days, at P.97/l. And the main and auxiliary engines uses about 3.4 liters of lubricating oil a day, for about 207 days, at P2.85/l.
- 7/ Based on repairing and/or replacing one new net every six years. The large net costs about P500,000, the small net P250,000, and wire rope for the two nets P90,000. A net may last in ordinary use between 5 and 8 years with extensive repairs.
- 8/ Spare parts (P15,000) are about 10% of the engine cost and P7,000 for the cost of replacing one fourth of 1,200 tubs whose average useful life is about four years.
- 9/ Includes about P2,700 for license fees, and P4,200 for trucking fees, and P2,000 for part-time bookkeeper, and P1,100 for office supplies, P5,000 for repair of main and auxiliary engine and winch and P8,500 for marine railway charges.
- 10/ Insurance rates are about 4% of the amount of the loan.
- 11/ Anchored raft approximately 8 m² requires maintenance of anchor and provision for lights and watchman P14,000. The skiff, costs about P9,000 mainly for fuel.
- 12/ Approximately 25% of a years' net sales is required as incremental working capital (P200,000). This appears to be adequate, as industry experience indicates that peak working capital requirements are expected to be financed by materials suppliers. The interest rate is 12% per year.
- 13/ Maintenance of deck gear and net handling hardware.
- 14/ See Annex 7 Table 4.
- 15/ The first year interest on the loan (P138,000) is capitalized at 12% interest. For the following thirteen years the principal and the capitalized interest are amortized at 12% annual interest.

PHILIPPINES

SECOND FISHERIES PROJECT

Cash Flow Projections

Converted Fish Carriers 1/
Model 5 of 7

		-----Y E A R S-----			
		1	2-9	10-14	15
		-----P'000-----			
I. Cash Inflow					
Net Income 2/	(1)	571	571	571	571
Borrower's Contribution: 20% of (4)		180	-	-	-
Loan Amount: 80% of (4)		720	-	-	-
Total Inflow	(2)	1,471	571	571	571
II Cash Outflow					
Operating Costs					
Wages, Social Security 3/	45				
Subsistence 4/	13				
Fuel and Lube Oil 5/	216				
Spare Parts and Maintenance 6/	48				
Insurance 7/	30				
Shore Base Costs 8/	15				
Miscellaneous 9/	20				
Operating Cost Total	(3)	387	387	387	387
Investment Cost 10/	(4)	900	-	-	(90)
Debt Service 11/		135	135	-	-
Total Outflow	(5)	1,422	522	387	297
III. Net Cash Flow: (2)-(5)	(6)	49	49	184	274
IV. Financial Benefit/Cost					
Benefit (1)	(7)	571	571	571	571
Cost (3) + (4)	(8)	1,287	387	387	297
Net Benefit (7) - (8)	(9)	(716)	184	184	274
V. Financial Rate of Return: 24.7% Rate of Return on Equity: 42.7% Debt Service Coverage: 1.36					

1/ Purchase renovation and outfitting of a used (4-7 yr. old) fishing vessel hull of about the outline specifications of the new fishing vessel described in the drawing for (IBRD 15330). There are 11 crew including the captain.

2/ The vessel is assumed to make 55 trips/yr. Each trip involves, 48 hrs of full running, 8 hrs. of half running, two days for loading and unloading and one rest day. The vessel capacity is about 42,000 kgs of iced fish in 35 kg tubs. Average loading is assumed to be 840 tubs (70%) or 29.4 ton. In addition the vessel supplies ice and fuel to the fishing vessels and it is assumed that on each trip the vessel carries ice equal in weight to the quantity of fish carried (29.4 ton) and 15 drums (3,000 l) of fuel oil. Income on fish operations would amount to about P485,000 (P10.5/tub/trip), on ice operations about P70,000 (P43/ton/trip), on fuel operations P16,000 (P0.10/l/trip).

3/ Typical monthly wage rates for crew are: captain P450; engineer P350; 2 officers P350; 7 crew P250. Clothing allowances, medical, and social security costs, paid by owner, amount to 15% of wages.

4/ Owner paid food costs are about P3.5/man/day (P3.5 x 10 x 30 x 12); excludes the captain.

5/ The main engine is estimated to burn about 62 l/hr. of No. 2 diesel fuel for 48 hrs. and 36 l/hr. for 8 hrs. for each of 55 trips at P0.97/l. And, the main engine is estimated to use about 2 l/hr. of lubricating oil at full running (48 hrs.) and 1 l/hr. at half running at P2.85/l.

6/ Spare parts are about 10% of the engine cost (P42,500), rigging and hardware (P5,500).

7/ About 4% of the loan amount.

8/ Includes P2,800 for license fees and P11,200 for port charges.

9/ Replacement of broken tubs, other sales related charges, bookkeeping, trucking and incidental labor, and interest of P6,000 on the estimated (P50,000) incremental working capital required for about six trips operating costs, peak requirements are expected to be financed by materials suppliers.

10/ See Annex 7 Table 5.

11/ The principal amount (P720,000) is amortized in nine years at 12% annual interest.

PHILIPPINES

SECOND FISHERIES PROJECT

Cash Flow Projections

Ice Plant with Cold Storage 1/
Model 6 of 7

		-----Y E A R S-----			
		<u>1</u>	<u>2-12</u>	<u>13-14</u>	<u>15</u>
		-----P'000-----			
I. Cash Inflow					
Ice Sales		477	477	477	477
Fish Operating		330	330	330	330
Net Income <u>2/</u>	(1)	807	807	807	807
Borrower's Contribution: 20% of (4)		502	-	-	-
Loan Amount: 80% of (4)		<u>2,013</u>	-	-	-
Total Inflow	(2)	<u>3,322</u>	<u>807</u>	<u>807</u>	<u>807</u>
II. Cash Outflow					
Operating Costs					
Wages, Social Security <u>3/</u>		63			
Fuel, and Lube Oil <u>4/</u>		190			
Maintenance <u>5/</u>		52			
Insurance <u>6/</u>		13			
Office Supplies		25			
Interest on Working Capital <u>7/</u>		18			
Miscellaneous <u>8/</u>		7			
Operating Cost Total	(3)	368	368	368	368
Investment Cost <u>9/</u>	(4)	2,515	-	-	(251)
Debt Service <u>10/</u>		<u>325</u>	<u>325</u>	-	-
Total Outflow	(5)	<u>3,208</u>	<u>693</u>	<u>368</u>	<u>117</u>
III. Net Cash Flow: (2) - (5)	(6)	<u>114</u>	<u>114</u>	<u>439</u>	<u>690</u>
IV. Financial Benefit/Cost					
Benefit (1)	(7)	807	807	807	807
Cost (3) + (4)	(8)	2,883	368	368	117
Net Benefit (7) - (8)	(9)	<u>(2,076)</u>	<u>439</u>	<u>439</u>	<u>690</u>
V. Financial Rate of Return: 19.5% Rate of Return on Equity: 31.5% Debt Service Coverage: 1.35					

- 1/ The model assumes an ice plant having a capacity of 20 tons of ice/day and cold storage facilities for 60 tons of ice and 40 tons of chilled or frozen fish.
- 2/ It is assumed that income would be derived primarily from the sale of ice and the buying and selling of fish. Ice sales at P93.3/ton are assumed to take place on an average of 320 days/yr. and to operate at 80% of plant capacity. The ice price assumed is that of Iloilo, the lowest ice price outside Manila. (Ice ranges in price up to P168/ton in Mindanao). Fish purchases are assumed to equal about half the weight of ice sold or about 2,560 ton/yr. with a sales margin of P0.13/kg which ranges from about 7% of the total price of lower priced fish to 3% for higher priced fish.
- 3/ Assumes 3 shifts/day with a total of 7 workers at P350/man/mo. plus an electrician/mechanic at P850/mo., a manager at P12,000/yr. medical and social security costs, paid by owner amount to 7.5% of wages.
- 4/ 130 hp medium speed (1,800 rpm) diesel electric generator burns about 20 l/hr., 24 hr./day for 350 days, 80% of the time, at P0.97/l. And the diesel electric generator uses about 1 l/hr. of lube oil at P2.85, 24 hrs./day for 350 days, 80% of the time.
- 5/ Maintenance of machinery and equipment including P35,000 for spare parts.
- 6/ Insurance amounts to 0.5% of loan amount.
- 7/ About five months operating costs are required as incremental working capital (P150,000), the interest is P18,000 at a rate of 12% per year.
- 8/ License fees, minor trucking fees and casual labor.
- 9/ See Annex 7 Table 6.
- 10/ The principal amount (P2,013,000) is amortized in twelve years at 12% annual interest.

PHILIPPINES

SECOND FISHERIES PROJECT

Cash Flow Projections

	Slipway 1/ Model 7 of 7	Y E A R S			
		1	2-12	13-14	15
		P'000			
I. Cash Inflow					
Slipway Charges		189	189	189	189
Labor and Repair Charges		220	220	220	220
Spare Parts Sales		200	200	200	200
Space Rental		335	335	335	335
Total Income 2/	(1)	944	944	944	944
Borrower's Contribution: 20% of (4)		426	-	-	-
Loan Amount: 80% of (4)		1,706	-	-	-
Total Inflow	(2)	3,076	944	944	944
II. Cash Outflow					
Operating Costs					
Wages, Social Security 3/			148		
Fuel and Lube Oil 4/			119		
Maintenance 5/			135		
Insurance 6/			68		
Inventory and Expenses 7/			116		
Interest on Working Capital 8/			24		
Operating Cost Total	(3)	610	610	610	610
Investment Cost 8/	(4)	2,132	-	-	(213)
Debt Service 9/		276	276	-	-
Total Outflow	(5)	3,018	886	610	397
III. Net Cash Flow: (2) - (5)	(6)	58	58	334	547
IV. Financial Benefit/Cost					
Benefit (1)	(7)	944	944	944	944
Cost (3) + (4)	(8)	2,742	610	610	397
Net Benefit (7) - (8)	(9)	(1,798)	334	334	547
V. Financial Rate of Return: 16.6% Rate of Return on Equity: 19.8% Debt Service Coverage 1.21					

- 1/ The slipway is assumed to be capable of handling wooden and steel fishing boats of up to 120 ft. in length and about 150 gross tons on a single track marine railway about 400 ft. long with a transverse carriage and space for up to eight 90 to 100 ft. vessels in the yard.
- 2/ Income is assumed to be derived from slipway charges, labor and repair charges, the sale of spare parts and paint, and the rental of shipyard space. The slipway is assumed to be capable of handling at least five 90 to 100 ft. vessels/mo. and is assumed to operate for at least 276 days/yr. With the exception of minor repairs no owner contracted work may be performed in the yard. Labor charges are estimated to be yard cost exclusive of supervision plus 100%. The sale of spare parts and paint is estimated to be equal to twice the inventory cost of about P100,000. The income from the rental of space assumes a mean yard occupancy rate of about 75% for 276 days or 45 vessels/yr. and a mean charge per vessel of P27/day for space.
- 3/ Wages for yard labor amount to 12 men at P240/mo. and 10 men at P315/mo., five machinists and four carpenters at P450/mo., a foreman at P1,000/mo. and a manager at P15,000/yr. Medical and social security costs, paid by owner amount to 7.5% of wages.
- 4/ The 120 hp 90 kw diesel generator burns about 24 l/hr., 16 hrs./day for 276 days at P0.97/l. lube oil. and grease, amount (P20,000).
- 5/ Maintenance of slipway carriage, winch and machine and carpentry tools.
- 6/ Insurance is estimated to be about 4% of the loan amount.
- 7/ Inventory of spare parts, castings, ship fittings cable, timber, hardware and paint amount to about P100,000. Expenditures for casual labor, license fees, trucking charges, and safety equipment amount to about P16,000.
- 8/ About four months operating costs are required as incremental working capital (P200,000), the interest is P24,000 at a rate of 12% per year.
- 9/ See Annex 7 Table 7.
- 10/ The principal amount (P1,706,000) is amortized in twelve years at 12% annual interest.

PHILIPPINESSECOND FISHERIES PROJECTEconomic Analysis

1. The proposed project would assist the Philippine Government in carrying out its program for expansion of fish production and for strengthening DBP's capabilities for fisheries development financing. The principal investment would be for (i) construction of new fishponds, (ii) rehabilitation and expansion of existing fishponds in the inland sector, and (iii) construction of 17 fishing vessels (45 to 90 gross ton class), (iv) refitting of 4 second-hand vessels into fish carrier vessels, (v) construction of 3 ice-plants, and (vi) a slipway to service fishing vessels in the marine sector.

Incremental Fish Production

2. When the fishponds under the projects, with an aggregate area of 9,120 ha, reach full development, they are expected to add 15,000 tons of milkfish per annum to the present annual milkfish production of about 100,000 tons. The 17 fishing vessels would annually harvest an additional 11,000 tons of marine fish. The total incremental fish production facilitated by the project would thus be about 26,000 tons per year, with an estimated value of about \$10.8 million.

Fisheries Supporting Services

3. In addition, the project fish carriers and ice plants would lend important support to efficient utilization of fishing vessels and improved fish marketing. As a result of the increased oil prices, the need for fish carriers is much greater than at the appraisal of the first project. The fish carriers would permit fishing vessels to operate on more distant grounds without having to make frequent trips to the market. These trips consume much oil and reduce the time the vessels can put to actual fishing. With proper coordination between fishing vessels and carriers, the productivity can be greatly increased, and the cost of fish landed considerably reduced. As the near-shore grounds near major markets are almost fully exploited, so that much of the incremental production from commercial fisheries would have to come from more distant grounds, the requirement for carrier vessels would greatly increase in the future. For precisely the same reason, greater quantities of ice would be required for maintaining the quality of fish over the extended average time between harvest and consumption. An adequate supply of ice would be a condition necessary for fishing on distant grounds, especially in the tropical condition, and the three project ice plants would provide very important supporting services to the marine fisheries in general.

Institution Building Effect

4. One of the most important benefits of the project would be its contribution to the strengthening of DBP's capabilities for fisheries development financing. DBP is the only financial institution in the Philippines providing medium and long-term credit in any significant scale for fisheries development. DBP has considerably strengthened its technical capabilities for fisheries development, but it is in need of further strengthening, especially in the technical staff for marine fisheries and supervision standards for inland fisheries. In the coming years, the requirement for medium and long-term credit for marine fisheries is expected to expand rapidly, because much of the additional fish production required to keep the per capita fish consumption from falling would have to come from the commercial fisheries, which cannot be expected to maintain the required level of investment without medium and long-term credit. The project would make a significant contribution in helping DBP to evolve into an institution competent in meeting this important development requirement.

Financial and Economic Viability

5. All of the seven sub-project models have acceptable financial rates of return, ranging from 17% to 39%, with a weighted average rate of return of 27% (see Annex 11 for detailed financial analyses). Since the financial costs and benefits of the project are assumed to approximate the corresponding economic costs and benefits, no adjustments have been made except the deduction of duties and taxes on imported investment goods required for the marine sector. The respective economic rates of return, therefore, are equal to or higher than the corresponding financial rates of return, ranging from 21% to 43%, with a weighted average of 30%. The estimated economic rates of return are relatively insensitive to investment cost overruns and operating cost increases. They are quite sensitive to decreases in the prices of the fish, but the chances of fish prices decreasing are extremely remote. Detailed economic rates of return sensitivity analyses appear in Table 3. Tables 1 and 2 present the details of economic rate of return calculations, which are summarized below:

	<u>Rates of Return (%)</u>	
	<u>Financial</u>	<u>Economic</u>
<u>Inland Sector</u>		
New Fishponds	21	21
Rehabilitated Fishponds	39	39
<u>Marine Sector</u>		
90 g.t. Fishing Vessels	20	28
45 g.t. Fishing Vessels	19	28
Fish Carriers	25	43
Ice Plants	20	23
Slipway	17	n.a. /a
<u>Weighted Average</u>	<u>27</u>	<u>30</u>

/a Much of the economic benefits for the slipway would be external, and no attempt has been made to estimate its economic rate of return.

In the economic analysis financial costs and benefits have been regarded as economic costs and benefits, except that economic costs of investment are estimated by deducting import duties and taxes on the investment goods concerned.

Employment Effect

6. The project would create about 1,000 new jobs directly required for the sub-projects (Table 4). Virtually all of these would be filled by those in the rural poverty target group. In addition, the marketing of the project production of some 15,000 tons of fish per annum is expected to generate about 150,000 man-days of employment per year and the construction of project facilities would require about 4 million man-days of labor.

Distribution of Benefits

7. Although the direct beneficiaries would be some 400 rural entrepreneurs who would borrow funds under the project, about 1,000 persons from the poverty target group would derive major benefits from the permanent employment and an additional 750 from fish marketing job opportunities created by the project. Finally, there would be benefits of a general nature in that the project would help limit the widening deficit of fish, which is a staple in the Filipino diet.

Effects on the Environment

8. Negative environmental effect from the project, if any, would be infinitesimal. The only possible pollution causing elements of the project would be the 17 fishing vessels and the 4 fish carriers projected for financing, which would constitute less than 1.0% of the commercial fishing fleet of the country. On the inland sector, however, the environmental effect would be a positive one. The fishfarmers generally have much to lose by pollution of the environment, and they already constitute an important pressure group against pollution. On the whole, therefore, the project is expected to have a positive environmental effect.

EAP Projects Department
April 15, 1976

PHILIPPINES

SECOND FISHERIES PROJECT

Economic Benefit/Cost Analyses

Inland Fisheries

		-----Y E A R S-----		
		<u>1</u>	<u>2-14</u>	<u>15</u>
A. Inland Fisheries				
(i) New Fishponds per unit (114 units)				
Output (fish in kg)	(1)	29,970	39,960	39,960
Wholesale price per kg (Pesos)	(2)	4	4	4
<u>Less</u> commission on sales (Pesos)	(3)	5,994	7,992	7,992
Economic Benefit (1)x(2)-(3)	(4)	<u>113,886</u>	<u>151,848</u>	<u>151,848</u>
Economic (Financial) Operating Costs	(5)	<u>97,247</u>	<u>54,601</u>	<u>54,601</u>
Economic (Financial) Investment Costs	(6)	<u>264,200</u>	-	-
Net Economic Benefit (4)-(5)-(6)	(7)	(247,561)	54,601	54,601
Economic Rate of Return: <u>20.5%</u>				
(ii) Rehabilitated Fishponds per Unit (266 units)				
Output (fish in kg)	(1)	29,970	39,960	39,960
Wholesale price per kg (Pesos)	(2)	4	4	4
<u>Less</u> commission on sales (Pesos)	(3)	5,994	7,992	7,992
Economic Benefit (1)x(2)-(3)	(4)	<u>113,886</u>	<u>151,848</u>	<u>151,848</u>
Economic (Financial) Operating Costs	(5)	<u>97,247</u>	<u>97,247</u>	<u>97,247</u>
Economic (Financial) Investment Costs	(6)	<u>155,200</u>	-	-
Net Economic Benefit (4)-(5)-(6)	(7)	(138,561)	54,601	54,601
Economic Rate of Return: <u>39.0%</u>				

SECOND FISHERIES PROJECT

Economic Benefit/Cost Analyses

Marine Fisheries

		-----Y E A R S-----		
		1	2-14	15
B. Marine Fisheries and Support Facilities				
(i) 90 Gross Ton Fishing Vessel (14 units)				
Output (Fish in tons)	(1)	528	703	703
Economic Benefit per ton (in pesos)	(2)	1,800	1,800	1,800
Total Economic Benefit (1)x(2)	(3)	<u>950,400</u>	<u>1,265,400</u>	<u>1,265,400</u>
Economic/Financial Operating Costs	(4)	<u>800,000</u>	<u>800,000</u>	<u>800,000</u>
Financial Investment Cost	(5)	1,985,000	-	(200,000)
Less Duties and Taxes: 18% of For. Ex.	(6)	213,840	-	-
Economic Cost of Investment (5)-(6)	(7)	<u>1,771,160</u>	<u>-</u>	<u>(175,000)</u>
Net Economic Benefit: (3)-(4)-(7)	(8)	(1,620,760)	465,400	640,400
Economic Rate of Return: <u>27.9%</u>				
(ii) 45 Gross Ton Fishing Vessel (3 units)				
Output (fish in tons)	(1)	225	300	300
Economic Benefit per ton (in pesos)	(2)	2,530	2,530	2,530
Total Economic Benefit (1)x(2)	(3)	<u>569,250</u>	<u>759,000</u>	<u>759,000</u>
Economic/Financial Operating Costs	(4)	<u>440,000</u>	<u>440,000</u>	<u>440,000</u>
Financial Investment Cost	(5)	1,435,000	-	(140,000)
Less Duties and Taxes: 18% of For. Ex.	(6)	139,500	-	-
Economic Cost of Investment (5)-(6)	(7)	<u>1,295,000</u>	<u>-</u>	<u>(130,000)</u>
Net Economic Benefit: (3)-(4)-(7)	(8)	(1,116,250)	319,000	449,000
Economic Rate of Return: <u>27.7%</u>				
(iii) Converted Fish Carriers (4 units)				
Output (ton km)	(1)	951,667	951,667	951,667
Economic Benefit (per ton/km in Pesos)	(2)	0.6	0.6	0.6
Total Economic Benefit (1)x(2)	(3)	<u>571,000</u>	<u>571,000</u>	<u>571,000</u>
Economic/Financial Operating Costs	(4)	<u>387,000</u>	<u>387,000</u>	<u>387,000</u>
Financial Investment Cost ^{1/}	(5)	700,000	-	-
Less Duties and Taxes: 18% of For. Ex.	(6)	91,800	-	-
Economic Cost of Investment (5)-(6)	(7)	<u>608,200</u>	<u>-</u>	<u>-</u>
Net Economic Benefit: (3)-(4)-(7)	(8)	(424,200)	184,000	184,000
Economic Rate of Return: <u>43.1%</u>				
(iv) Ice Plant with Cold Storage (3 units)				
Output:				
Ice (tons)	(1)	5,113	5,113	5,113
Fish Brokerage (tons)		2,560	2,560	2,560
Economic Benefit per item (in pesos)	(2)			
Ice (P 33.3/ton)	(2a)	477,000	477,000	477,000
Fish (P 130/ton)	(2b)	330,000	330,000	330,000
Total Economic Benefit (2a)+(2b)	(3)	<u>807,000</u>	<u>807,000</u>	<u>807,000</u>
Economic/Financial Operating Costs	(4)	<u>368,000</u>	<u>368,000</u>	<u>368,000</u>
Financial Investment Cost	(5)	2,515,000	-	(250,000)
Less Duties and Taxes: 18% of For. Ex.	(6)	226,260	-	-
Economic Cost of Investment (5)-(6)	(7)	<u>2,288,740</u>	<u>-</u>	<u>(228,000)</u>
Net Economic Benefit: (3)-(4)-(7)	(8)	(1,849,740)	439,000	667,000
Economic Rate of Return: <u>22.5%</u>				

^{1/} Does not include cost of second-hand hull.

PHILIPPINES
SECOND FISHERIES PROJECT
Economic Rates of Return Sensitivity Tests

<u>Project Components</u>	<u>Rates of Return at Best Estimates</u>	<u>Rates of Return Based on Varying Assumption</u>					
		<u>Investment Cost</u>		<u>Operating Cost</u>		<u>Net Sales</u>	
		<u>Increase</u>	<u>Increase</u>	<u>Increase</u>	<u>Increase</u>	<u>Decrease</u>	<u>Decrease</u>
		<u>10%</u>	<u>15%</u>	<u>10%</u>	<u>15%</u>	<u>10%</u>	<u>15%</u>
1. New Fishponds	21	18	17	15	12	13	-
2. Rehabilitated Fishponds	39	35	32	30	23	26	-
3. 90 G.T. Fishing Vessels	28	25	24	21	18	18	13
4. 45 G.T. Fishing Vessels	28	24	22	21	19	18	14
5. Converted Fish Carriers	43	38	35	31	25	25	17
6. Ice Plants with Cold Storage	23	20	18	20	19	17	14

EAP Projects Department
April 12, 1976

PHILIPPINES
SECOND FISHERIES PROJECT

Project Production 1/

	<u>Fish Production per Unit</u>		<u>Number of Units</u>	<u>Total Fish Production</u>	
	<u>m.t.</u>	<u>Value (\$)</u>		<u>m.t.</u>	<u>Value (\$'000)</u>
<u>Fish Production</u>					
<u>Inland Sector</u>					
New Fishponds	40.0	21.3	114	4,560	2,432
Rehabilitated Fishponds	40.0	21.3	266	10,640	5,675
Sub-total			380	15,200	8,107
<u>Marine Sector</u>					
90 g.t. Fishing Vessels	703.5	168.8	14	9,849	2,363
45 g.t. Fishing Vessels	300.0	101.2	3	900	304
Sub-total			17	10,749	2,667
<u>Total</u>				25,949	10,774
<u>Fish Transportation</u>					
	<u>'000 ton-km</u>			<u>'000 ton-km</u>	
Fish Carrier	952.0	76.1	4	3,808	304
<u>Ice Production</u>					
	<u>m.t.</u>			<u>m.t.</u>	
Ice Production	5,100.0	63.6	3	15,300	191
<u>Grand Total</u>			404		11,269

1/ Excludes the slipway component.

PHILIPPINES

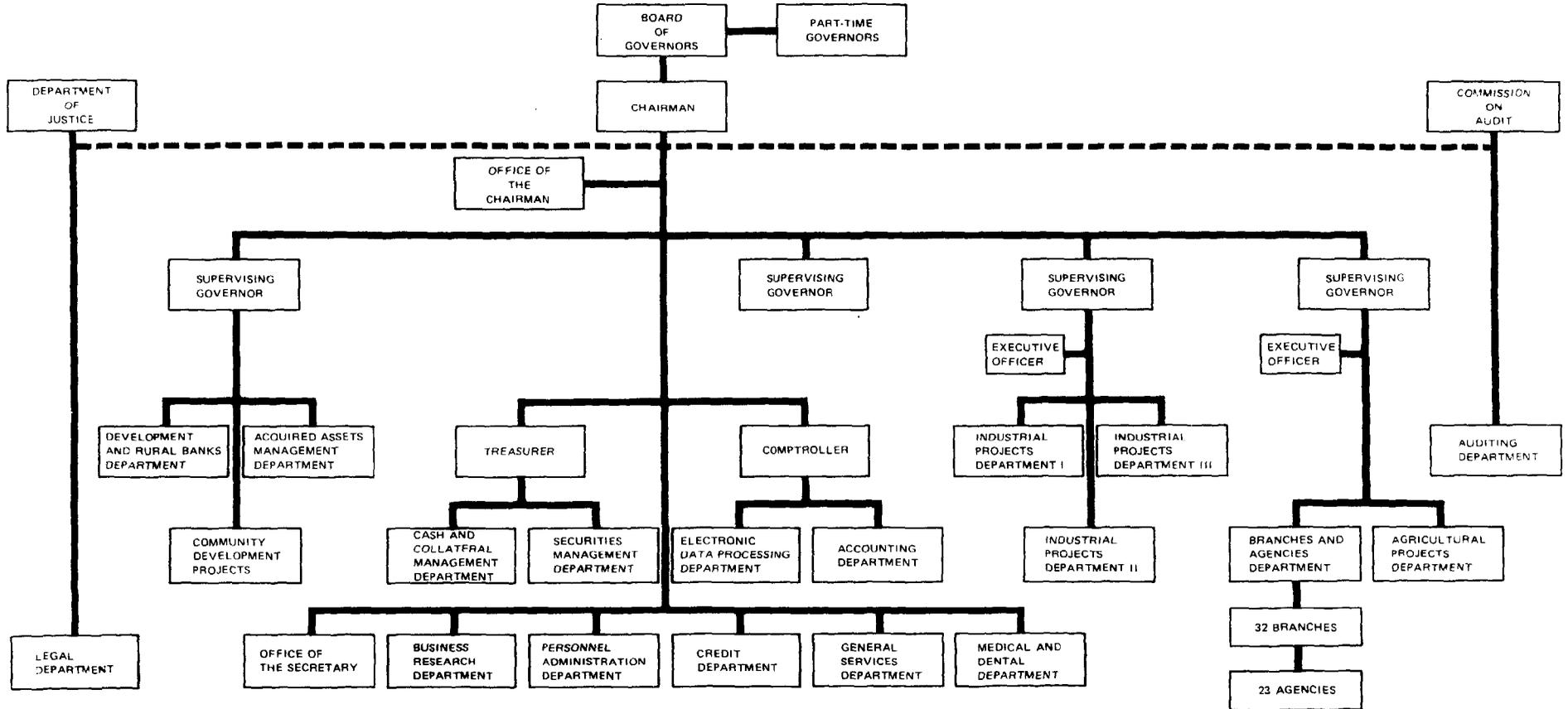
SECOND FISHERIES PROJECT

Employment Effect of the Project 1/

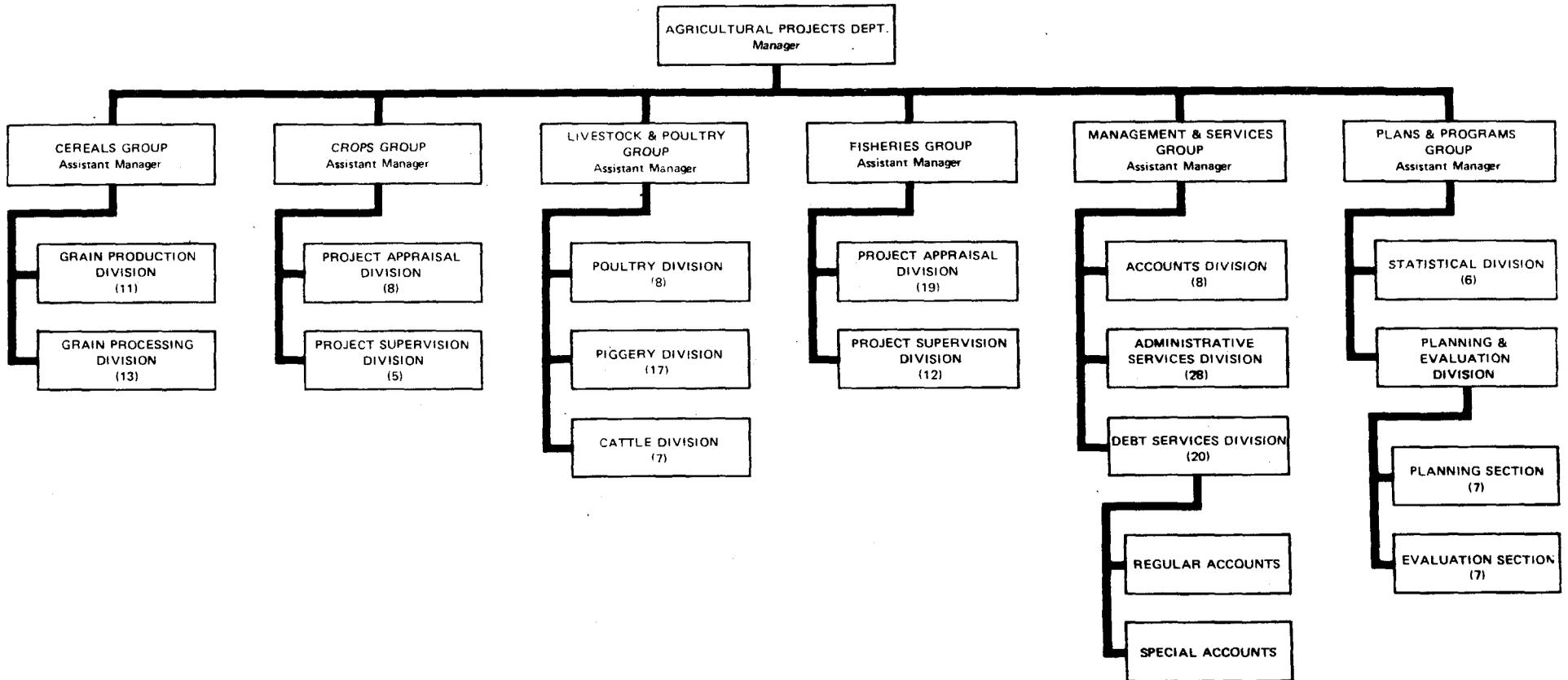
	<u>Employment per Unit</u>		<u>Number of Units</u>	<u>Component Employment</u>	
	<u>Number</u>	<u>Wages (\$)</u>		<u>Number</u>	<u>Wages (\$'000)</u>
<u>Inland Sector</u>					
New Fishpond	1.5	1,026	114	171	117
Rehabilitated Fishpond	1.5	1,026	266	399	273
Sub-total			380	570	390
<u>Marine Sector</u>					
90 g.t. Fishing Vessels	25.0	19,867	14	350	278
45 g.t. Fishing Vessels	17.0	14,113	3	51	42
Fish Carriers	11.0	7,733	4	44	31
Ice Plants	9.0	8,400	3	27	25
Slipway	33.0	19,733	1	33	20
Sub-total			25	505	396
<u>Total</u>			405	1,075	786

1/ For details, see Annex 11, Tables 1 - 7.

**PHILIPPINES
DEVELOPMENT BANK OF THE PHILIPPINES
ORGANIZATION CHART**

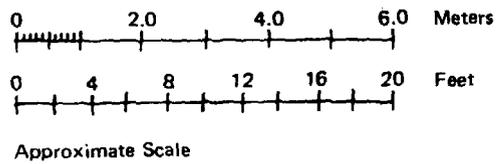
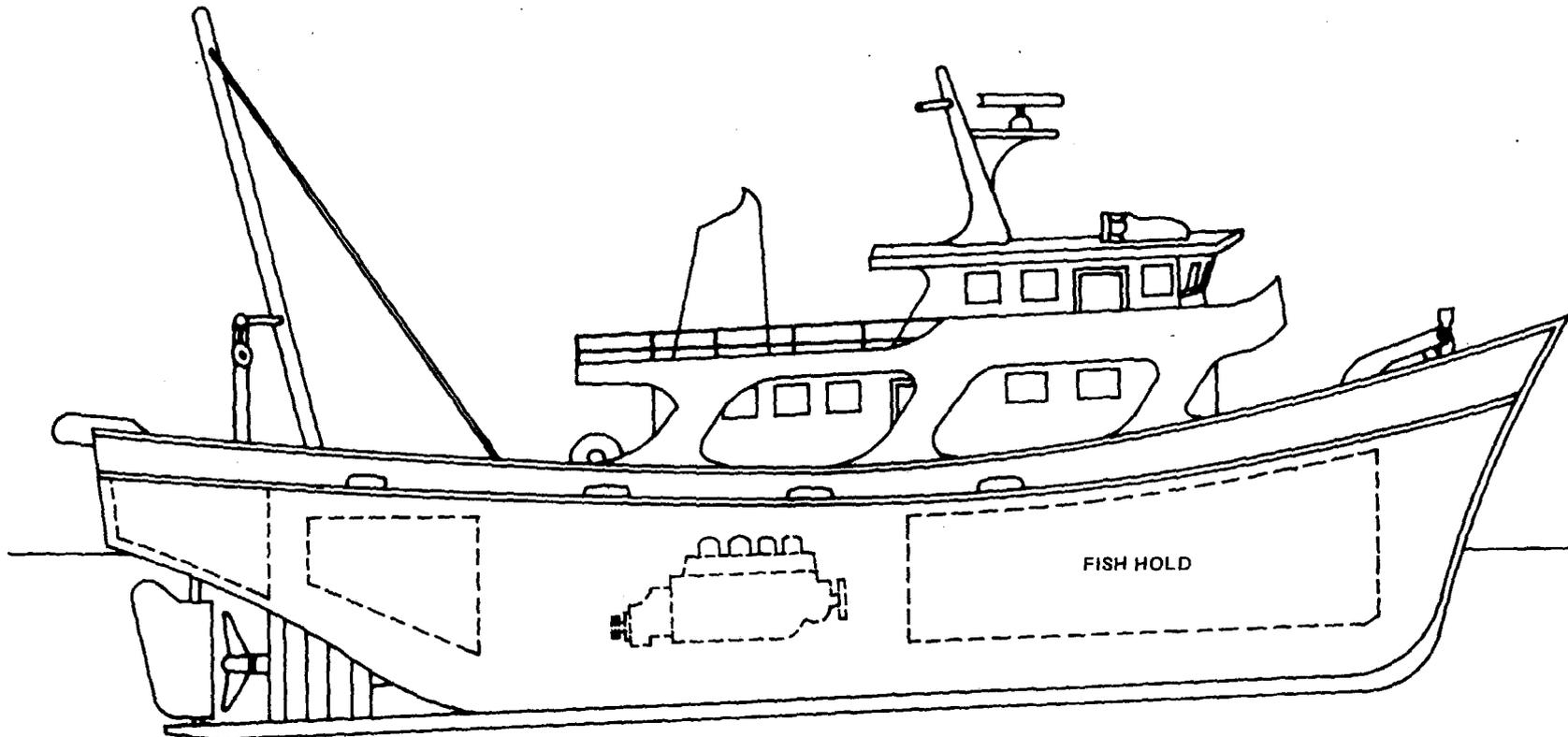


**DEVELOPMENT BANK OF THE PHILIPPINES
AGRICULTURAL PROJECTS DEPARTMENT
ORGANIZATIONAL CHART**



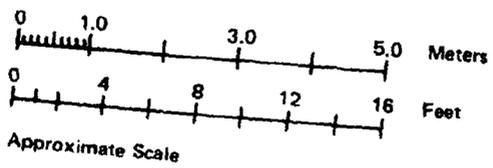
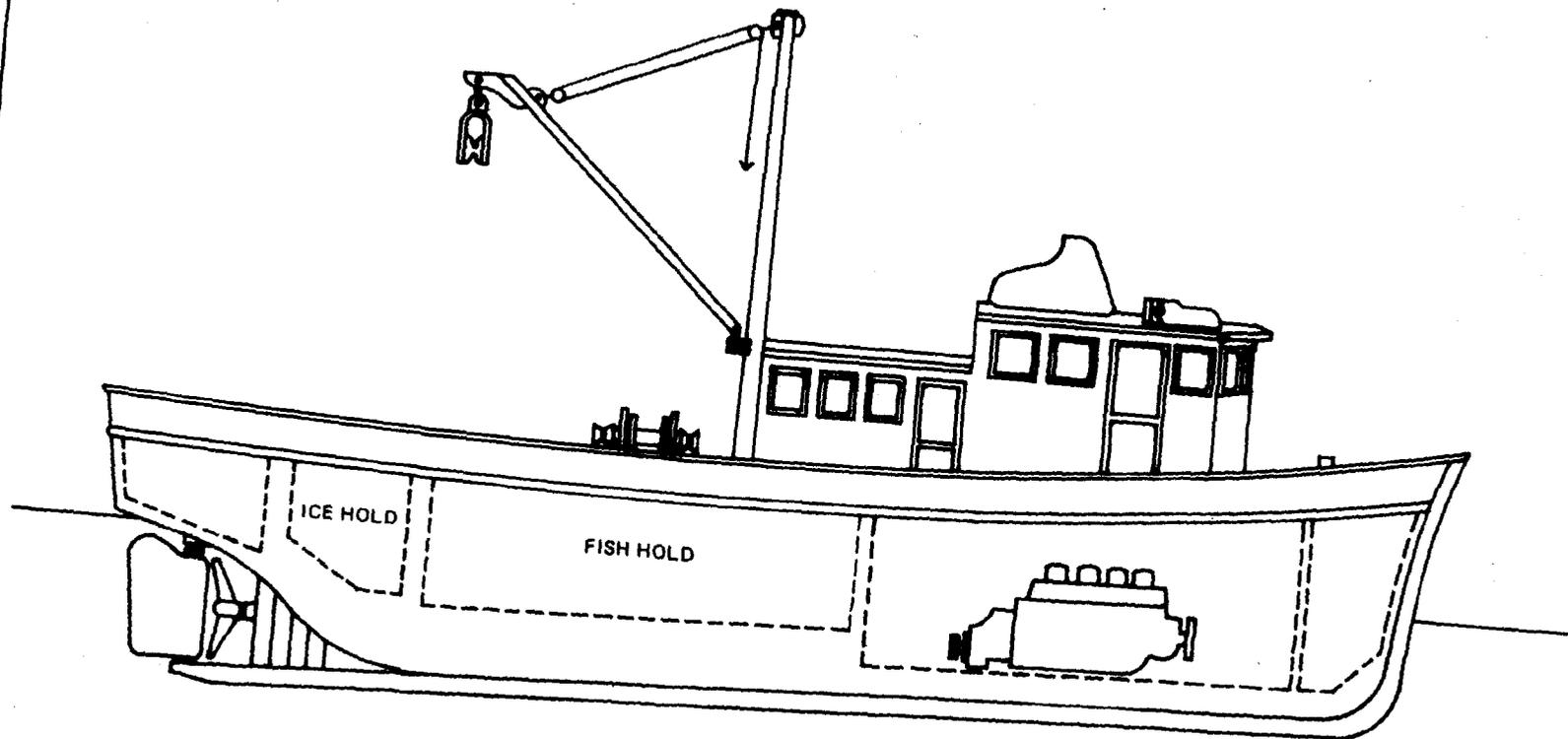
Note: Numbers in parentheses refer to approved staff positions.

PHILIPPINES
SECOND FISHERIES PROJECT
Schematic Drawing of 90 Gross Ton Fishing Vessel



MAIN PARTICULARS	
Length over all	24.5 m (80 ft 6 in)
Beam over all	6.1 m (20 ft 2 in)
Depth moulded	3.2 m (10 ft 6 in)
Main engine	350 - 380 hp

PHILIPPINES
SECOND FISHERIES PROJECT
Schematic Drawing of 45 Gross Ton Fishing Vessel



MAIN PARTICULARS	
Length over all	18.2 m (60 ft)
Beam over all	6.1 m (18 ft)
Depth moulded	2.4 m (8 ft)
Main engine	100 - 150 hp

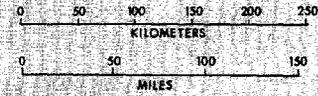
PROVINCES

- | | |
|------------------------|-------------------------|
| 1. PANGASINAN | 35. MASBATE |
| 2. ILOCOS NORTE | 36. SORSOGON |
| 3. ILOCOS SUR | 37. CAVITE |
| 4. ILAGA | 38. AKLAN |
| 5. MT. PROVINCE | 39. ILOILO |
| 6. BENGUET | 40. ANTIQUE |
| 7. LA UNION | 41. NEGROS OCCIDENTAL |
| 8. BATAAN | 42. CEBU |
| 9. CAGAYAN | 43. NEGROS ORIENTAL |
| 10. IFUGAO | 44. BOHOL |
| 11. ISABELA | 45. EASTERN SAMAR |
| 12. KALINGA APAYAO | 46. NORTHERN SAMAR |
| 13. NUEVA VIZCAYA | 47. SAMA |
| 14. QUIRINO | 48. LEYTE DEL NORTE |
| 15. NUEVA ECUIA | 49. LEYTE DEL SUR |
| 16. ZAMBALES | 50. SULU |
| 17. TARLAC | 51. ZAMBOANGA DEL NORTE |
| 18. PAMPANGA | 52. ZAMBOANGA DEL SUR |
| 19. BULACAN | 53. AGUSAN DEL NORTE |
| 20. BATAAN | 54. AGUSAN DEL SUR |
| 21. BATANGAS | 55. BUKIDNON |
| 22. CAVITE | 56. HIMPAS OCCIDENTAL |
| 23. RIZAL | 57. HIMPAS ORIENTAL |
| 24. QUEZON | 58. SURIGAO DEL NORTE |
| 25. LAGUNA | 59. SURIGAO DEL SUR |
| 26. MINDORO OCCIDENTAL | 60. LANAO DEL NORTE |
| 27. MINDORO ORIENTAL | 61. LANAO DEL SUR |
| 28. PALAWAN | 62. CAMIGUIN |
| 29. ROMBLON | 63. NORTH COTABATO |
| 30. MARINDUQUE | 64. SOUTH COTABATO |
| 31. ALBAY | 65. DAVAO DEL NORTE |
| 32. CATANDUANES | 66. DAVAO DEL SUR |
| 33. CAMARINES SUR | 67. DAVAO ORIENTAL |
| 34. CAMARINES NORTE | 68. DAVAO |

PHILIPPINES
SECOND FISHERIES PROJECT

- COMMERCIAL FISHERIES
- MUNICIPAL FISHERIES
- BRACKISH WATER FISHERIES
- - - PROVINCIAL BOUNDARIES

NOTE: EACH SYMBOL REPRESENTS 10,000 METRIC TONS OF FISH



The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.

