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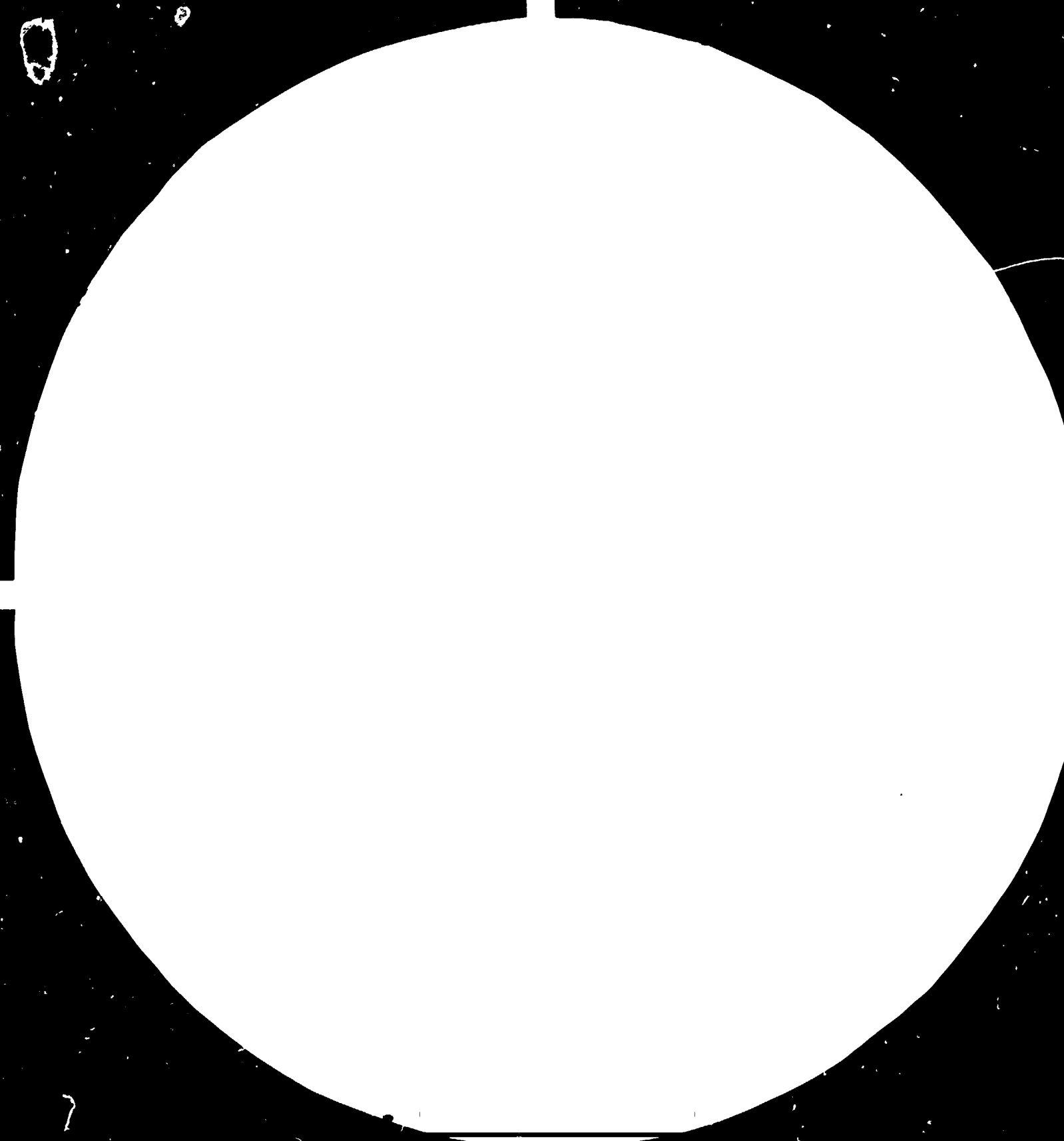

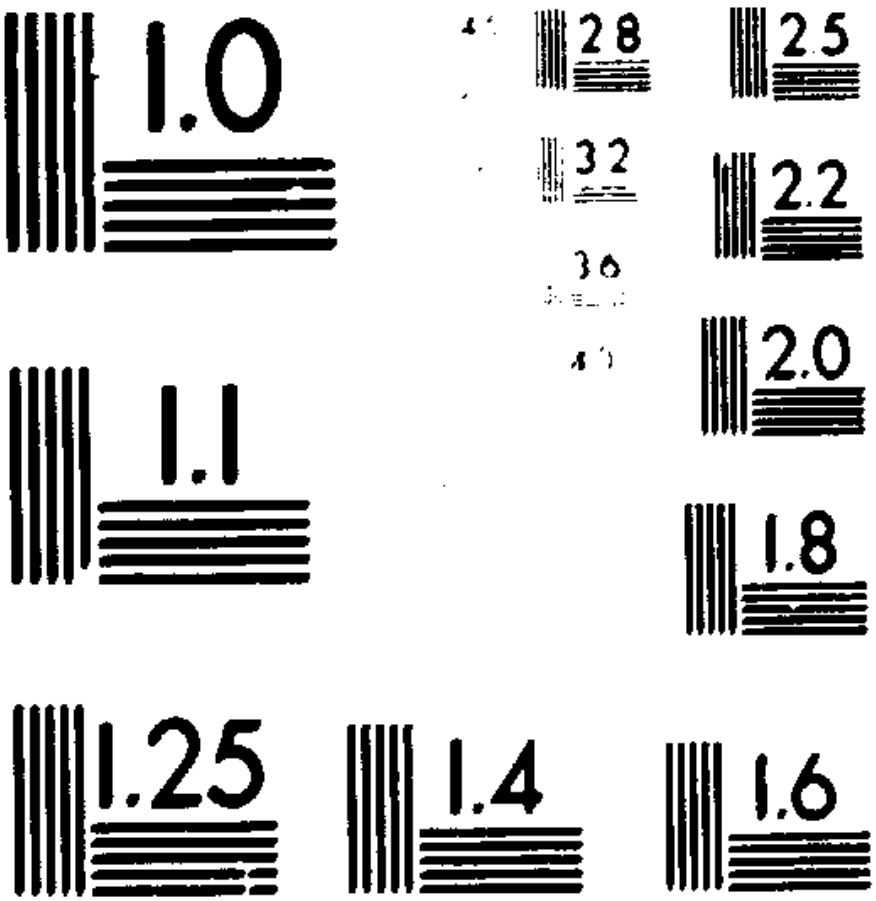

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THE FISHING INDUSTRY IN PERU *

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INTRODUCTION

In recent years the Peruvian fishing industry has been characterized by a phase of expansion, as witnessed by the performance of the canning sector, which in the period 1980-1981 produced some 8.5 million cans, of which it sold approximately 7.5 million in the domestic and external markets. However, since 1982 this boom has slowed for reasons which include the severe world economic recession, a fall in the prices of the principal fish export products, the resurgence of other international fishing industries and the resultant large unsold supply of finished fish products, and finally a certain decline in domestic production levels. Additional contributing factors have been the limited international demand for non-traditional fish products and the competition of lower-priced and better-quality products from other countries.

On the other hand, it should be pointed out that from the 1960s to the beginning of the 1970s Peru was one of the world's leading fishery nations and that for a time it even held first place in international fishing activity, ahead of Japan, Russia and Norway, all countries with highly developed fishing industries. However, at the beginning of the 1980s Peruvian fishing fell to sixth place in world ranking.

We should also mention that at the present time fishing in Peru is the fourth-largest sector of the economy in terms of the generation of foreign exchange revenue, a fact which has prompted the Peruvian Government to adopt policy measures aimed at developing the country's fisheries through the use of new resources and to lay claim to a territorial zone of 200 nautical miles. The production system of this important economic sector is also to be reorganized and rationalized.

I. THE FISHING INDUSTRY IN THE NATIONAL ECONOMY

The fisheries sector has constituted one of the mainstays of the national economy. Over the last three years, however, there has been a progressive contraction in the principal macro-economic indicators, the basic explanation for which lies in the existence of a number of structural and cyclical problems. Chief among these are:

Unsatisfactory industrial growth;

Insufficient dynamism in the marketing of fish products;

Inadequate use of natural resources;

The financial crisis within the industry.

In addition, another cyclical factor that should be noted has to do with the climatic changes that have occurred and the incursion of warm currents into Peruvian waters (the so-called "El Niño" phenomenon), the basic effect of which was a marked reduction in the availability of the fish resources, for both direct and indirect human consumption, which supply this industry, and this despite the appearance, albeit in smaller quantities, of other species, for which however the existing fishing equipment was not suitable.

The gross domestic product (GDP) of the sector during the period 1975-1982 was fairly variable. Thus, there was a decrease of 25 per cent in 1977 in comparison to the previous year as a result of the decline in fishing activities caused by the "El Niño" phenomenon of 1975-1976. Subsequently, the GDP for both catches and processing increased gradually, but, from 1980, there was a substantial and constant decline, above all in terms of the catch (conversely, processing increased slightly in 1982). It should also be emphasized that in 1979 the GDP recorded its highest percentage with respect to the national total (2.3 per cent), particularly because of the gains achieved in the capture phase (see table 1).

The generation of foreign exchange is an important indicator of the nation's economic ability to meet its own development needs and to finance its international commitments. In this area also, the fishing industry in recent years has become one of the country's most important ecoromic sectors.

Generally speaking, the trend in the generation of foreign exchange has been upward, although there were slight declines in 1980 and 1982. During

the period 1975-1982 there was a significant increase in the export of canned fish products as the result of the Government's policy of tax, customs, financial and other incentives.

It is worth noting that the fishing industry's largest share in the generation of foreign exchange revenue occurred in 1975 (17.1 per cent) as the result of the heavy volume of fish meal exports.

With respect to employment, the fisheries sector was a major supplier of jobs during the period 1970-1980, when it provided direct employment for some 70,000 workers. However, during the years 1980 to 1982, because of the decline in fishing activity for the reasons already mentioned, this level dropped by about 30 per cent.

Finally, special mention should be made of the fishing industry as one of the domestic market's main sources for the supply of meat, satisfying 41.7 per cent of the total demand in 1979. As is generally known, fish is one of the foods with the highest protein and calorie value, in addition to being the cheapest form of meat consumed in Peru. For this reason, the fisheries sector is pledged to contribute to solving the problems of malnutrition which today affect the Peruvian people.

In this context, the Ministry of the Fishing Industry has periodically conducted campaigns for cheaper fish for mass consumption, and has publicized the use and consumption of fish through the Office of Consumer Education. It should be noted that during the last decade there was a sizeable decline in the consumption of red meat and, in parallel, an increase in the consumption of poultry and fish meat. For example, between 1975 and 1979 there were increases in the consumption of hydrobiological products. Moreover, it is interesting to note that as one means of encouraging the consumption of fish in the domestic market there is a programme to promote family-size (1 lb) cans at reasonable prices.

II. INSTITUTIONAL ORGANIZATION AND INFRASTRUCTURE OF THE FISHING INDUSTRY

Up until the time the military Government took office in 1968, the public fisheries sector was characterized, in institutional terms, by a decentralization of administrative functions and the lack of any coherent development policy instruments.

In the year 1970, as part of the administrative reform of public sector activities, the fishing industry was formally established as an independent production sector.

A. Institutional organization of the fishing sector

The public institutional character of the fishing sector was established by Decree Law No. 18,026 of 16 December 1969, which set up the Ministry of the Fishing Industry (Ministerio de Pesquería). The scope and structure of this Ministry were defined under Decree Law No. 18,121 of 27 January 1970, which remained in force until the enactment of Legislative Decree No. 94 of 26 May 1981, according to which the fishing sector consists of the following:

(a) The Ministry of the Fishing Industry as the central and regulatory body;

(b) Decentralized public organizations;

(c) State enterprises over whose actions the State, as owner, has direct control;

(d) Natural and juristic persons engaged in fishing activities.

Since its creation, changes have been made in the organization of the public fishing sector to make it more dynamic and efficient, in line with the Government's policies in this area. The organizational structure, as it now stands, may be seen in the diagram (annex II).

The principal functions and scope of the agencies which make up the fishing sector are described briefly below.

(a) Ministry of the Fishing Industry. The Ministry is the central and regulatory agency of the fishing sector, its role being: (i) to formulate and direct the policy of the sector in harmony with government planning, and (ii) to plan, standardize, evaluate and promote the appropriate activities in the sector.

As part of the Ministry's organizational structure and in conformity with the State's policy of administrative deconcentration and decentralization, a number of Regional Fisheries Directorates have been created. The actual number of these Directorates and the delimitations of their territorial jurisdiction have changed to respond to developments in the fishing sector, budgetary considerations and specific rulings by the Supreme Government.

At the present time, there are 13 such Regional Fisheries Directorates.

(b) Decentralized public organizations. These are organizations which are governed by their own laws, but are subject to the policies, objectives and goals approved by the Ministry of the Fishing Industry. Three such organizations exist:

The Peruvian Institute of the Sea (IMARPE);

The Peruvian Institute of Fisheries Technology (ITP);

The Peruvian Public Enterprise for Fisheries Certification (CERPER).

IMARPE. The Peruvian Institute of the Sea was created through the merger of two former organizations, the Council for Hydrobiological Research and the Institute of Marine Resources Research (Supreme Decree No. 021 of 6 September 1963) and was incorporated into the fisheries sector by Decree Law No. 18,121 which was superseded by Legislative Decree No. 94.

Under the Institute's new organic law (Legislative Decree No. 95 of 26 May 1981), IMARPE has been granted scientific, technical, economic and administrative autonomy in order better to perform its functions in accordance with the fisheries sector policy. Its mission is to carry out scientific and technological research in the sea and the continental waters and to study the resources of both with a view to their rational exploitation. In addition, in performing its tasks, the Institute is to co-ordinate its work in an adequate and appropriate manner with other similar institutions in order to avoid any duplication or overlapping of effort.

IMARPE has nine regional research laboratories, three fisheries inspectorates and four scientific research vessels which it owns, in addition to one which it charters and another which is used by the Ministry of the Navy.

ITP. The Peruvian Institute of Fisheries Technology was established under Decree Law No. 22,642 of 15 August 1979. Its new organic law (Legislative Decree No. 92 of 26 February 1981) gives it technical, economic and administrative autonomy in carrying out its functions. Its mission is to conduct scientific and technological research connected with the handling, processing and preservation of the hydrobiological resources of the sea and continental waters with a view to achieving the comprehensive and rational use of these resources and to promoting the

best possible quality in the derivative products; further, to contribute to raising the nutritional standards of the Peruvian population through the development of highly nutritious products. In performing its tasks, the Institute is to co-ordinate its work in an adequate and appropriate manner with other similar institutions in order to avoid any duplication or overlapping of effort.

CERPER. The Peruvian Public Enterprise for Fisheries Certification was established under Decree Law No. 18,745 of 26 January 1981, and under Decree Law No. 18,829 it received its organic law, amended by Legislative Decree No. 93 of 26 May 1981, under which the enterprise has been granted administrative, economic and technical authority. Its mission is to act as the fisheries sector's sole health authority and the sole official state agency with responsibility for the inspection, control and certification of the quality of hydrobiological products in general, whether produced in the country or not, for the purpose of protecting the consumer, and in addition, in the case of domestically produced traditional or non-traditional hydrobiological products, of ensuring their commercial reputation by maintaining high quality standards. The Enterprise will also perform these same functions in connection with the full range of meal and oil products obtained from fish and cetaceans as well as such other products as may be submitted to it. Further, it is to provide general warehousing facilities.

CERPER has six Regional Offices and six stations, in addition to its main office at Callao and its warehouse at Pisco at Port General San Martín.

(c) State enterprises. In the commercial fishing area, the State is active in various entrepreneurial forms which are defined in the Law on the Business Activity of the State (Legislative Decree No. 216). Accordingly, one finds:

Enterprises under public law: CERPER;

State enterprises under private law: PESCA PERU, EPSER and PEPESCA;

Mixed enterprises: COPES.

PESCA PERU (National Fisheries Enterprise S.A.) was established under Decree Law No. 19,999 of 7 May 1973 as a public decentralized organization with the title Public Enterprise for the Production of Fish Meal and Oil and with the exclusive right to fish for anchoveta (an activity which under Decree Law No. 21,556 was to be carried out by the Small Anchoveta-Fishing Enterprises, or PEEA, alone) and to the processing of this species

for the production of meal and oil. These functions have undergone changes as the Government's policy in this area has evolved. Under Legislative Decree No. 54 of 20 March 1981, this public enterprise was transformed into an enterprise under private law in the form of a stock company sectorally subordinate to the Ministry of the Fishing Industry and with its current name. Moreover, with its scope of action expanded and more precisely defined, PESCA PERU was granted autonomy in its operations, which it is to carry out in accordance with the policies, goals and objectives approved by the sector's main regulatory agency, i.e., the Ministry. It is the only enterprise with the right to produce fish meal and oil for indirect human consumption from species which it is authorized to process, and also products for direct human consumption through the use, mainly, of hydrobiological species, along with still other products based on the by-products and derivatives of its activities, plus the inputs required for its work. Further, it is authorized: to recover, process and/or industrialize island guano and to market it on order; to market, internally and externally, the products, by-products and derivatives which it produces, except in the fresh and refrigerated state; and, finally, to carry out such other activities as may be entrusted to it, including diversification.

EPSEP (Peruvian Fisheries Services Enterprise) was established by Decree Law No. 18,212 of 18 April 1970 under the name Public Fisheries Services Enterprise. Under Legislative Decree No. 53 of 20 March 1981, this public enterprise was transformed into an enterprise under private law in the form of a stock company sectorally subordinate to the Ministry of the Fishing Industry. With its scope of action expanded and more precisely defined, EPSEP operates autonomously and in accordance with the policies, goals and objectives approved by the Ministry. Its mission is to provide services in the fisheries sector and to participate in the supply and marketing of hydrobiological products for direct human consumption for the purpose of regulating their supply and pricing in accordance with Ministry policy. It is also responsible, among other things, for the capture of hydrobiological species for direct human consumption, for the marketing of hydrobiological products for direct human consumption both in the domestic market at the wholesale level and in the external market, and for providing unloading, handling, preservation and other services connected with the activity of fishing for direct human consumption. Further, it is authorized to set up branch enterprises of a mixed nature and in association with the State.

EPSEP has three terminals, 14 cold-storage warehouses, three wholesale markets, one fisheries production centre and one Zonal Fisheries Office.

PEPESCA (Peruvian Fisheries Enterprise S.A.) began its canning and freezing operations on 29 May 1975. It is currently in liquidation.

COPES (Estrella Fishing Company of Peru) began canning and freezing operations in November 1973. The State participates in this company with 51 per cent of the equity capital, the remainder being contributed by Star-Kist of the United States of America (46.9 per cent) and by Panama (2.1 per cent).

(d) Natural and juristic persons. These carry out their activities in an indiscriminate manner, being involved in one or more phases of the production process and operating under one of the following forms:

Private sector

Private reformed enterprise;

Small enterprise;

Ship owner-operators.

Social sector

Fishing co-operatives;

Socially-owned enterprises.

Reformed private enterprises. This is the most representative group in the sector, 64.7 per cent of which (86 operating enterprises) are engaged in canning, 27.8 per cent (37 enterprises) in freezing, and 7.5 per cent (10 enterprises) in the production of cured products.

Small enterprises producing for human consumption

For direct consumption. Engaged in the catching, processing and/or marketing of fish for direct human consumption, there being all told 35 enterprises of this kind;

For indirect consumption. Represented by the Small Anchoveta-Fishing Enterprises (or PEEA), which are involved in the fishing aspect only. There are 252 of these enterprises.

Ship owner-operators. Owners of fishing vessels who operate on a small-scale non-industrial basis.

Fishing co-operatives. Basically engaged in the recovery of marine resources and their marketing. There are eight co-operatives in operation.

Socially-owned enterprises. Engaged in fishing, processing (canning) and marketing. There are five of them in operation.

B. Fishing infrastructure

The country has the following fishing infrastructure:

(a) Fleet

1.1 For direct human consumption

Coastal

Owner-operated: 4,489 vessels with a cargo capacity of between 0.25 and 30 gross registered tonnage;

Coastal fleet using seines: 305 vessels

With RSW 1/ and CSW 2/ preservation system and "cremolada":	158
With isothermic hold and ice-filled compartments:	11
With isothermic hold and bulk ice:	52
With non-isothermic hold and ice:	41
With no system of preservation:	43

Trawler coastal fleet: 200

High-seas

Trawler factory ships: 19 units flying the national flag (six with permanent permit)

Tuna boats - 1 vessel.

1.2 For indirect human consumption

Seine coastal fleet (PEEA): 344 vessels, 288 of them operational.

1.3 For non-food purposes

Hunter ships: 3 units.

1/ Refrigerated sea water.

2/ Chilled sea water.

(b) Unloading, support and service points

2.1 Unloading points

Along the Peruvian coast there are more than 180 points at which hydrobiological resources may be unloaded. Of these, 23 are ports, 77 are coves and the rest are beaches, generally characterized by the lack of any kind of port infrastructure or facilities for fish handling, refrigeration and preservation.

2.2 Wharfs

Some 39 operating wharfs have been identified, most of which were built for commercial loading and unloading purposes and which are used by the industrial and owner-operated non-industrial fishing fleets and present serious limitations.

A total of 12 wharfs have been built by the fishing sector, of which only two are for the owner-operated fishing fleet - in marked contrast to the large number of sites where these vessels operate.

2.3 Fishing complexes

There are three fully operational fishing complexes located at Paita (Piura), Samanco (Ancash) and La Puntilla (Ica). These complexes offer unloading, storage and distribution services, and - in the case of La Puntilla - ice supplies, freezing facilities and warehousing.

2.4 Support and services

ESEP, the Peruvian Fisheries Service Enterprise, operates a national fisheries infrastructure which provides support services to the crews of fishing vessels in the areas of unloading, preservation, distribution and production, as described below:

Zonal fishing terminals: nine terminals with a total preservation capacity of 140 tonnes for fresh fish, 40 tonnes for frozen fish, and 122 tonnes for ice, in addition to an ice plant producing 81.6 tonnes a day;

Zonal cold-storage plants for fish: 14 operational cold-storage plants with an average reception capacity for hydrobiological products of 810 tonnes a day;

Fish wholesale markets: three in operation, two in Lima and one at Chiclayo;

Fish production centres: three centres with an average reception capacity for fish products of 1,380 tonnes a day.

2.5 Other support and service facilities

Landing places for private operators and fish handling facilities at Cancas, Vila Vila, El Chaco, Quilca, Ancón, Chorrillos, Zorritos and Talara.

2.6 Fishing enterprises

On an industrial basis, fish production activity is organized as follows:

96 operational canneries with a processing capacity of 178,620 cans/day (shift);

37 operational freezing plants with a processing capacity of 1,874 tonnes/day;

10 plants engaged in salting, drying, etc., with a processing capacity of 1,025 tonnes/month;

36 fish meal plants with a normal production capacity of 3,745 tonnes for PESCA PERU. This is in addition to 58 meal-processing plants at the enterprises producing for direct human consumption (canneries and refrigeration plants), which have a raw material processing capacity of 796 tonnes/hour.

III. THE PERUVIAN FISHING INDUSTRY AND THE 200-MILE LIMIT

One of the fundamental purposes of the Peruvian fishing sector is to ensure the adequate exploitation of the country's territorial sea, which under current legislation extends out to 200 nautical miles. Accordingly, within this zone there are three kinds of fleet in operation, namely:

(a) The owner-operated non-industrial fleet;

(b) The industrial coastal fleet using seines;

(c) The deep-sea factory and tuna trawler fleet.

(a) The owner-operated fleet. Because of its structural and equipment characteristics, this fleet, whose principal function is to supply the Peruvian population with fresh and frozen fish, operates as far out as 15 nautical miles, this being the area of Peruvian waters with the greatest concentration of fish with a high food value.

The fleet itself consists of some 4,489 vessels of different types, which are distributed along the coast and are engaged in actual fishing. Not included in this number are supporting craft, such as flat boats, rafts, dinghies, reed vessels, etc., which all told total approximately 2,300 units.

(b) The industrial coastal fleet using seines. This fleet is the most important element in Peruvian fishing since the purpose of its activities is to supply industry with canned and frozen fish and fish meal. The composition of the fleet is as follows:

Industrial fleet	Number of vessels
For direct human consumption	305
For indirect human consumption	360

In general terms, the fleet operates according to the distribution and concentration of the basic resources of the Peruvian fishing industry, such as the anchoveta and the sardine, which are found close to the shore and in any case not more than 60 miles out. Accordingly, the fleet is technically designed and equipped for operations within this radius.

(c) The deep-sea fleet. Peruvian deep-sea fishing is still in its earliest stages, there being at the present time six factory trawler vessels with permanent operating permits and 13 with temporary permits. These vessels are engaged in fishing for demersal species and under current legislation operate from 30 nautical miles out from the shore.

It should also be noted that for the purpose of exploiting certain currently under-used fish resources, such as the horse mackerel, the mackerel and other demersal species, the Ministry of the Fishing Industry has signed contracts authorizing the operation of at least 17 deep-sea fishing vessels.

Peru has one tuna-fishing vessel flying the national flag.

In general, it will be seen that the Peruvian fishing industry relies primarily on the country's rich coastal waters, although there is evidence of an abundance of deep-sea species, such as the horse mackerel, the mackerel, etc. Accordingly, one of the industry's medium-term objectives is to make available sufficient means to permit fishing throughout the

entire width of the 200-mile zone so as to ensure the exercise of our right to sovereignty as a riparian State and, with it, the protection of our legitimate interests. These interests, in the case of the fishing sector, involve the present and future food supply of the Peruvian people and, in the case of other sectors, the exploitation of the various resources to be found on and below the seabed in this geographic region.

In summary, the best way to exercise sovereignty over this area of the sea is to fish in it and by so doing to promote the development of the national fishing industry.

IV. UTILIZATION OF RAW MATERIAL BY THE FISHING INDUSTRY

There have historically been two major stages in the development of the Peruvian fishing industry: the first stage, which includes the period up to the end of the 1960s, and the second, which began in the years following 1970 and has continued up to the present. During the first of these periods, the activities of the fishing sector were based on the abundant resources of anchoveta (Engraulis ringens), which was present in sizeable quantities from 10 to 20 miles off the Peruvian coast. At that time, Peru was considered the "world's first fishing power", producing fish meal and oil from a species the unrestricted exploitation of which, however, ultimately led to a decline in the available stocks. Towards the middle of the 1970s, there was a significant expansion in Peru of the industry producing for direct human consumption because of the appearance of large volumes of such species as the sardine, hake, mackerel and horse mackerel. Attracted by a number of unusual oceanographic factors, these species altered the ecological pattern and their use as a production resource change the situation in the industry, specifically by ushering in significantly higher levels of canning and freezing.

A. Canning

Canning has been of major importance since 1976 thanks to the extremely abundant presence in Peruvian waters of the sardine. This resource, which compensated for the disappearance of the anchoveta as a result of ecological changes, was the mainstay of the fishing industry and provided the basis for the very rapid growth of its production infrastructure, to the point that, at the outset of the 1980s, some 85 canneries had been built all along the coast.

Initially, the use of this resource for the manufacture of canned products was based on the heavy demand for these products by the external market, which in fact absorbed about 75 per cent of total production.

Later, external factors - mainly, the recession in the international market and the diminished availability of raw material for industrial processing - led to changes in fish resource utilization, with the catches used to produce fish meal, a product which has a far more rapid production cycle, brings a high price and is in heavy demand on the international market. The result, as can be seen in table 2, has been the under-utilization of this resource as a raw material for the sake of turning out a more profitable and more easily produced product.

The canning sector has relied basically on the use of the sardine and the horse mackerel, which over the last three years have accounted for 98 per cent of the total raw material received by the canneries located along the Peruvian coast, and which are followed, although in lesser amounts, by the machete (Ethmidium chilicae), the mackerel and the bonito.

B. Freezing

This sector, which until 1972 was marked by slow growth, began in 1973 to take on considerable importance as a result of the presence of usable fish volumes, especially of hake, the availability of which was to some degree responsible for the conclusion of fishing agreements aimed at maximizing the use of this resource. It should be emphasized that the utilization rate for resources in this sector during the period 1978-1982 did not exceed 30.0 per cent of the total volume of raw material delivered for freezing. The table below shows the utilization of raw material for the production of frozen products according to the principal species:

Species	Utilization (%)		
Hake	35	Filet	18
		Dressed HG	30
Horse mackerel	20		
Mackerel	15		
Others	10		

C. Curing

This is an activity which has historically been carried out by small-scale private operators, whereby the family has played a predominant role

in the production of salted, salt-preserved and dry-salted products. The volumes of raw material channelled to this activity fluctuated between 10,000 and 15,000 tonnes a year during the decade of the 1970s. Nevertheless, it is important to point out that it was not until 1979 that a significant increase in production could be observed, along with a trend towards the greater use of fish for the industrial production of dry-salted products.

Traditionally, the main species used for curing have been the mackerel, the tope and the ray, which in recent years have accounted on the average for 75 per cent of the raw material used in this emerging sector. In addition, mention should also be made of the use, although in smaller quantities, of other species, such as the guitarfish and the whitefish.

D. Fish meal

This sector flourished during the decade of the 1960s due to the abundance of the anchoveta, which at that time was the principal species to be found in Peruvian waters because of the ecological conditions in that area. The excessive exploitation of the anchoveta led to the destruction of the species' reproduction potential, a fact which had the effect of disrupting the marine food chain, since the anchoveta is part of the diet of such species as the bonito and others. In addition to this, the marine eco-system was affected by anomalous oceanographic changes which contributed to depressing even further the availability of the anchoveta. In compensation for this loss, the sardine made its appearance in great numbers and from 1976 became the principal raw material for the fish meal industry.

It is noteworthy that while the anchoveta remained available as a raw material the Peruvian fish meal industry was regarded as the world leader, but that later, at the time of the adverse ecological changes, production in this industry went into a period of crisis from which it has yet to emerge. For although it is true that the sardine provided an initial substitute for the anchoveta in fish meal production, because of the shifts in the ecology the sardine itself was also required by the industry producing for direct human consumption, especially the canning industry, which is facing constantly increasing external demand for tinned sardine.

V. THE FISHING INDUSTRY: PROCESSING CAPACITY AND ITS UTILIZATION

There have been two quite distinct periods in the development of the Peruvian fishing industry. The first of these was characterized by the predominance of the anchoveta as a raw material, the processing of which into fish meal and fish oil for indirect human consumption led to Peru being regarded as the world's leading producer of fish products. The second period arose out of the new biological composition of the Peruvian waters as a consequence of changes in the ecological pattern, changes which resulted in the appearance in large volumes of such commercial species as the sardine, the hake, the mackerel and the horse mackerel, the availability of which made possible the development of an industry producing for direct human consumption.

As far as the production sector for indirect human consumption is concerned, the developments in this area were conditioned by such factors as the existence of heavy demand from a broad and reliable external market and the abundance of raw material offering low processing costs and a high rate of return, both considerations which led businessmen to turn their economic and financial attention to the production of fish meal. In this situation, the installed capacity in this industry amounted in 1970 to a total of 123 processing plants with an hourly processing capacity of 7,920 tonnes, generating pressure for over-fishing of the available resources and leading to internal competition as producers sought to maintain their market positions.

These factors, coupled with the financial weakness of most of the enterprises, made it impossible for these firms to pay off their debts despite the extension by the State of loans to enable them to strengthen their financial position as part of an effort whose results proved to be unsatisfactory and which later led to the State's assuming control of the industry through the establishment of PESCA PERU.

In parallel to these developments, the industry producing for direct human consumption (mainly canned goods) has emerged as a production sector which has gained from the collapse throughout the world of a number of fishing industries exploiting such species as hake, herring, sardines, etc., as well as from the promotional incentives which the Peruvian Government has made available as part of the programme to further the export of non-traditional products.

A. Canning

Since 1976, the production base of the canning industry has expanded in a highly dynamic manner as a consequence of the greater availability of appropriate raw material, the opening of new export markets, and its access to tax, customs and credit benefits. These factors have contributed to disproportionate growth in this industry and, with it, to the over-scaling of its installed capacity, the result at the present time being an imbalance between permissible capture levels and the processing capacity.

This evolution of the canning industry has been in response to the large-scale utilization of the sardine for processing, a resource whose stocks have declined in recent years as a result of the "El Niño" phenomenon already alluded to. Added to this have been such factors as the contraction of the world market for Peruvian canned fish because of the imposition of severe tariff barriers, which in 1981 led to the over-stocking of some 2 million cans; the availability from Japan of the same products under more attractive sales conditions; and the resurgence of South African fishing. The result of all of this has been the channelling of the raw material by the industry to the production of fish meal. Thus, in the future development of the canning sector there will be fewer opportunities for greater utilization of installed production capacity.

B. Freezing

Developments in the freezing sector have paralleled those in the canning sector. The expansion of the installed freezing capacity was based on the appearance in large quantities of hake, the exploitation of which for production purposes was promoted in large measure through the award of the CERTEX certification to a number of different product types. In addition, as this sector acquired preponderant importance within the fishing industry, a number of fishing agreements were concluded in 1980 for the purpose of maximizing the capture of hake through the use of factory trawlers.

The subsequent reduction of the population stocks, especially of hake, the financial deficit making it impossible to operate the trawlers, and the under-supply of raw material for lack of suitable vessels were to lead to a significant decrease in the utilization of the installed freezing capacity and thus to a sizeable idle capacity, the latter being particularly evident during the last three years of the 1970s (table 5).

C. Curing

An exception in the historical evolution of the Peruvian fishing industry producing for direct human consumption may be seen in the curing sector, the production capacity of which has developed on the basis of small-scale owner-operated facilities and is, because of the very nature of this kind of operation, difficult to gauge in real terms. As an activity, curing begins to take on the appearance of a genuine industry when the business community allocates enough money to introduce and apply suitable technical means for the processing of these products, the fact being that current market requirements call for industrial-scale production.

At present, the curing sector has a production capacity of about 14,000 tonnes a year, with which it hopes to meet the potential demand of the external market (table 6).

D. Fish meal

The fish meal boom of the 1960s resulted in the establishment of a large-scale production infrastructure, which accelerated the over-exploitation of the anchoveta, then the principal raw material for the fish meal and fish oil industry.

Later on, because of oceanographic factors, such as the "El Niño" phenomenon, which caused ecological changes of major importance principally affecting the reproduction cycle of the anchoveta, an unstable situation developed in the supply of the raw material and thus in the industry itself, which at one time had been regarded as one of the country's principal sources of foreign exchange and in fact its leading source.

From 1976, the outlook for this industry was a bleak one: the sardine, which had emerged as a substitute for the anchoveta as the basic raw material, had become a major requirement of the canning industry, where production was directly related to external demand. The result was competition in the capture of this species.

In that same year of 1976, fish meal production totalled 849,800 tonnes, requiring the utilization of 12.0 per cent of the industry's installed capacity and aggravating the financial crisis within it. The result has been a rationalization programme affecting both the number of plants and their production capacity, and also a trend towards greater production diversification through the development of new products for human consumption.

At present, the production capacity has been restructured, whereby the number of production units has been reduced with a view to promoting the decentralization of production (table 7).

VI. FISH EXPORTS AND THE POSSIBILITIES IN THIS AREA

Ever since its beginnings, the Peruvian fishing industry has been oriented towards the external market, a phenomenon that started with the production of fish meal, which during that product's boom years constituted a major plus factor in the national balance of payments. With the disappearance of the anchoveta and the crisis in the fishing sector, both factors with a considerable impact on the industry producing for indirect human consumption, great attention began to be directed towards fishing for direct human consumption, initially for the domestic market.

However, beginning in 1977, the appearance of new industrially exploitable species, the favourable international market situation, the tax incentives granted by the State, and the credit support available from the State and private banks encouraged the establishment and expansion of the canning and freezing industries, and to a lesser degree the curing industry. These industries acquired considerable importance in the export of non-traditional fish products and boosted the sector to second place in this area, contributing a constant 15 per cent over the last three years.

In this context, although it is true that on an annual average the fishing sector contributes only 20 per cent of the country's GDP, its contribution to the national economy is more significant in other aspects, such as the generation of foreign exchange revenue, which during the 1977-1982 period increased at an average annual rate of 10.0 per cent, mainly due to the canning boom, which continued until 1981. Since then, the combined effect of a number of factors has been to shrink the country's export markets, thereby leading to a backing up of stocks at national producers who, because of their ignorance of the international market situation and its opportunities, have not been able to find alternative markets. As a consequence, fish exports react very sensitively to any changes in the market, especially considering that sales depend on traditional consumer markets.

The quantitative information for this analysis is given in tables 8 and 9.

A. Canning

The favourable conditions which developed beginning in 1977 for the sale of canned fish in major markets, conditions which arose principally out of the collapse of the South African canning industry and the under-supply of fish of the tuna family in the western part of the United States, led to canned products becoming the principal production and export line in the non-traditional fishing sector. The importance of this line was based almost exclusively on the exports of canned sardine, which alone accounted for 94.0 per cent of total exports. Contributing to a lesser degree to this total, at 4 per cent, were canned bonito, horse mackerel and tuna (the latter in its "tall", whole and grated forms), which accounted for approximately 34 per cent of the total value of fish exports and whose most important markets were South Africa, the United States and Great Britain, which together absorbed some 60 per cent of the export volume from among more than 30 purchaser countries.

However, since mid-1981 export sales have fallen off in countries where they had formerly reached outstanding growth levels. The reasons for this decline were of an external nature, namely:

The severity of the recession, which has had international repercussions and has made it difficult to sell products in various markets;

The saturation of the principal consumption centres which were former customers;

The reappearance of the sardine off the coasts of South Africa;

Heavy tuna catches by countries like Mexico, the United States, Thailand and others, with the result that the sardine has disappeared from the market in countries that had been importing it as a tuna substitute;

The lack of a common marketing strategy.

B. Freezing

In the same way as the canning industry, the frozen fish sector also experienced in 1981 a reduction in its export business, to which it earmarks more than 60 per cent of production.

The main species exported were the hake (dressed), the sardine and the horse mackerel (whole), which all told accounted for 95 per cent of the total export volume, the principal markets for these products being Poland,

the United States, the Federal Republic of Germany and Colombia, which between them absorbed 79 per cent of the frozen fish exported.

Among the causes which have limited the growth of this activity, the following may be mentioned:

Political problems in Poland, a major export market;

Continuing tariff problems in the Federal Republic of Germany and in the European Economic Community in general.

C. Dry-salting

Dry-salted fish are a product which is processed in most cases on a small-scale non-industrial basis and for which the supply is at this time limited.

The principal species processed in this way are the mackerel, the ray and the tope, and to a lesser degree the hake, the horse mackerel and the sardine.

We should note that there are a number of factors which affect and limit the supply of dry-salted fish products, among them the following:

Lack of knowledge on the part of the small-scale non-industrial operators regarding the proper processing techniques for producing a product of marketable quality;

Lack of knowledge and information regarding many of the external markets;

Fewness of the producers with the ability to develop the product in accordance with the requirements of the international market or to market it appropriately.

The main countries to which these products have traditionally been exported are Brazil, Ecuador, Bolivia, among others.

D. Fish meal

Fish meal exports, the major item in fish exports, were marked during the period 1976-1981 by a downward trend at a mean annual rate of -3.3 per cent. This can be explained by the lower supply available as a result of declining production levels, while among the factors that have led to lower demand for this principal export product the following also might be mentioned:

The drop in prices in the international market;

The strengthening of the dollar vis-à-vis other currencies;

The competition of soya meal;

The large world stocks of fish meal and keen competition by Chilean producers.

Finally, we should point out that it will be difficult to overcome this situation as long as restrictive conditions in the international market and in the availability of fishing resources continue to exist. The opening up of new markets and the consolidation of those which have already been penetrated are imperative requirements for the continued existence of the national fishing industry and principally its canning sector, which has been underutilizing its installed production capacity, with all the inevitably related socio-economic consequences.

On this point, the Non-Traditional Export Fund has, as part of its work of promotion and orientation, analysed a number of international markets offering opportunities for Peruvian non-traditional export products, and has pointed out that, generally speaking, the prospects in these markets are good and can be exploited, provided there is effective business management and that producers design their products to meet the preferences and the quality and variety requirements of these markets.

Among the countries with the best export potential are:

Europe

France, Great Britain and Italy, where a greater effort must be made for our canned products, especially canned tuna and canned sardines in tomato sauce, "buffet" style and in other forms, and also canned mackerel.

Andean Group

Colombia represents an attractive market for Peruvian canned fish, especially for sardines in tomato sauce.

Africa

There are possibilities for canned and frozen products (sardines and horse mackerel) in Nigeria, Egypt and Zaire.

South-East Asia and the Pacific

There are promising market prospects in the Philippines, Papua New Guinea, Singapore and Hong Kong.

VII. THE QUESTION OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH

Because scientific and technological research is of such importance to the development of the fishing sector, our country pays particular attention to work in this area. The responsibility for scientific studies, both in maritime and continental waters, lies with the Peruvian Institute of the Sea, while technological research is conducted by the Institute for Fisheries Technology. It should further be mentioned that the Peruvian University (Universidad Peruana) is involved in a variety of research programmes at the national level both independently and on the basis of special agreements.

In recent years there have been significant advances in the scientific and technological study of maritime and continental waters. These include: the determination of the biomass and the permissible capture levels for the principal fish resources; the commissioning of the research ship Humboldt, which to date has carried out four pelagic and demersal resource research programmes; the operations of the EUREKA programme; the development of new products for direct human consumption; and positive advances in the breeding and reproduction of fish species in continental waters.

However, despite these important advances, Peruvian research in this area is still in its infancy, especially considering the immense volume and variety of fish resources of maritime and continental origin. One reason for this being inadequate scientific and technological knowledge of the hydrobiological species. Through these research programmes it will become possible to establish the cause and effect relationships underlying these marine and continental fish resources and in this way to formulate the necessary guidelines for their rational exploitation.

At the present time, many of the research projects which have been undertaken are in response to the requirements of the fisheries sector, but a sizeable number of these projects have had to be limited in their scope. These limitations or interruptions have generally been due to the lack of money, specialized personnel and also the specialized and sophisticated equipment without which the goals and objectives laid down in these research programmes, which are scheduled for a specific period, cannot be properly achieved.

It should be noted that the physical facilities and the equipment for fisheries research are concentrated at Lima and Callao, a fact which makes it difficult to conduct studies at the national level. An exception here is represented by the fish-breeding ponds, which are located in regions of special importance to the fisheries industry.

Furthermore, in many instances the scheduling of the research programmes is poor and too short for their proper execution, in addition to which the programmes themselves are frequently formulated without the necessary planning and/or co-ordination, resulting in the dispersal of already scarce human, material and financial resources.

Finally, it should be pointed out that the studies undertaken have been aimed principally at the maritime environment, although in recent years there has been an increased number of projects dealing with the country's continental waters, the intention being to give added impetus to the development of an integrated and comprehensive fishing industry in various regions of the country.

VIII. INVESTMENTS IN FISHERIES FACILITIES

Despite the occurrence in recent years of economic and financial factors which have had a negative effect on the fishing sector, principal among them being:

The world economic recession;

The decrease in Peruvian exports of non-traditional products;

The availability from other countries of lower-priced and better-quality products;

Inadequate working capital in the industry; and

Austerity in public spending,

major investments have been made in the Peruvian fishing industry as a result of the committed support the Government has made available to the sector, particularly during the period 1980-1982, when investments totalled an estimated 50,950 million soles. These investments, it should be noted, have been made by agencies of the public and private sector for the purpose of improving the production structure and promoting the more rational use of fish resources.

A. Public sector

In 1980-1982, the Peruvian Government, representing the public sector, invested, through its agencies and offices connected with the fishing industry, a total amount of 24,102 million soles in support of continental and maritime fishing, both industrial and non-industrial by small-scale operators. In the area of maritime fishing, the most important projects were concerned with the construction and equipping of fishery complexes, as well as terminals, cold-storage warehouses, and wholesale markets, all of which contributed to the optimal exploitation of fish resources and to the reliable supply of the public with fish products. In addition, wharfs, landing stages and markets for small-scale individual operators were built, their basic purpose being to provide fishermen with unsophisticated service facilities under their own direct management (see chapter II). A further purpose of the investments made in the area of maritime fishing was to encourage scientific and technological research, particularly with reference to fish population assessments, oceanography and new ways of using fishing resources.

Similarly, in the area of continental fishing, there has been a programme to promote the consumption of fish at the regional level through the construction and equipping of egg and fry supply centres, such as those at Aguashillacu (San Martín), Totarani (Arequipa), Curibaya (Tacna), Namora (Cajamarca) and Coina (La Libertad), and the building of fish farms in the interior of the country for the commercial breeding of high-value species, such as trout in the sierra highlands and the paiche and tilapia in the jungle, in a programme that is currently producing encouraging results.

It is further worthwhile noting that, with respect to the investing agencies, about 65 per cent of the public monies invested during the period in question was put up by the Ministry of the Fishing Industry, with the balance (35 per cent) financed by decentralized institutions and agencies of the public fisheries sector.

B. Private sector

As far as private investment is concerned, during the period with which we are concerned this investment totalled 26,848 million soles and was directed basically, on the one hand, at the actual fishing process (upgrading of ship storage holds and fishing gear and also of industrial vessels designed for fishing for direct human consumption, as called for in the

rationalization plan which has been in effect since 1980), and on the other, at the erection of new production units for fish canning, freezing and dry-salting.

During the period in question, the investment for the actual fishing phase totalled approximately 13,418 million soles, thereby making it possible to increase the number of vessels with some system of on-board preservation from only 28 in July 1980 to 260 in December 1982, and in the case of vessels equipped with nets suitable for fishing for direct human consumption - again from 28 to 239. The investments made were primarily for the purchase of equipment for RSW (Refrigerated sea water) and CSW (Chilled sea water) cooling systems for the on-board preservation of fish, the insulation of holds using synthetic materials, the purchase of compartments for the on-board stowage of fish, and also the gradual replacement of nets by more suitable types.

As for private investment in processing activities, it totalled, during the 1980-1982 period, some 13,430 million soles, which were mainly used for the installation of new production facilities and resulted in an increase, during those years, of 20 canneries, seven freezing plants and eight dry-salting establishments; this was reflected in an increase in the daily installed production capacity in these three branches of 49, 11 and 96 per cent, respectively. In addition, this investment was also used for the purchase of capital goods and for civil construction work at already existing enterprises.

C. Investment financing

The investment of the public sector in the Peruvian fishing industry was financed through contributions by the State, by internal and external borrowing and out of the actual income of the State agencies. The financial sources for the private investment in this sector were internal borrowing, reinvestment of profits and contributions by the business community. It is worthwhile noting that the fishing industry in Peru has no financial agent of its own to effectivly promote investment in fishing.

Fishing industry investment
(millions of soles)

Sector	Period 1980-1982	
	Absolute	Relative (%)
Total	50,970.8	100.0
A. Public	24,102.8	47.3
- Central Government and institutions	17,672.9	34.7
- Public agencies	6,429.9	12.6
B. Private	26,848.0	52.7
- Fishing	13,418.0	26.3
- Processing	13,430.0	26.4

IX. OPPORTUNITIES FOR INTERNATIONAL, REGIONAL AND SUBREGIONAL CO-OPERATION

The implementation of the medium- and long-term national development process requires, among other things, technology, training and material resources. Given the situation in our country, none of these factors is available to the necessary degree.

For this reason, international technical co-operation plays a very important role in supplementing the national socio-economic development effort, all the more when one considers the limitations of the Peruvian economy at this time of crisis in comparison with the magnitude of the country's needs.

We believe that international technical co-operation represents a way of materially supporting the transfer and generation of technology and the basic and advanced training of national personnel in the various sectors of the fishing industry. We further believe that this co-operation should be supplemented by donations to facilitate the execution of projects and activities undertaken within the co-operative framework.

At the regional level, despite some achievements, primarily in the southern region, international technical co-operation has not yet met all the expectations that have been placed in it, and the hope is that it

will be significantly increased in the future through greater success in achieving the objectives of national decentralization and regionalization, with the establishment and operation of the Departmental Development Corporations and the execution of a larger number of economic and social development projects in depressed zones located in central regions, such as Huancavelica and Ayacucho, in southern regions, such as Apurimac, Puno and Madre de Dios, in the north in Amazonas and Cajamarca, and in other departments as well.

In the area of regional planning, international technical co-operation is contributing to the improvement of methods for rural extension work through the systematizing and integration of the experiences of various rural and micro-regional development projects currently in progress and through the resumption of training courses in this subject.

In addition, technical co-operation activities are directly linked to the policy objectives and activities laid down in the National Development Plan, both with respect to support for rural settlement and internal development programmes, and in the effort to formulate an integrated development policy for rural areas through the encouragement of micro-regional projects and programmes.

In 1982, the value of the international technical co-operation secured by our country totalled an estimated 64,033,000 United States dollars, which represented an increase of 1.3 per cent over the year before, when it had been 13 per cent over the year before that. This was due to a realignment of technical co-operation funding by major contributing sources to areas regarded as less developed, and also to the adjustments made in the contributions of the industrialized countries, in both their bilateral and multilateral assistance programmes, as a result of the international economic crisis. Still, countries like the Federal Republic of Germany, Japan, the United States, the Netherlands, Switzerland and Canada are continuing to sponsor a number of important technical co-operation projects in various priority sectors of the Peruvian economy through the work of the mixed commissions which are responsible for generating new technical co-operation offers.

With respect to regional co-operation projects, there are currently in progress some 50 such projects in various economic sectors, the co-operating organization in each case being the United Nations. It should be pointed out that this Organization's technical co-operation projects are designed

for a five-year period and are distinguished by the fact that normally the country does not directly participate in them, i.e., the country is assigned an amount, but the project may take place in another country. The next international technical co-operation programme with the United Nations will take place in 1986 and it is hoped that in the light of the experience gained it will produce greater results for Peru.

Finally, it should be mentioned that subregional co-operation has not developed in a totally uniform way in our country, for the reason that the interest in a given project depends on the interest displayed by the member countries of the Cartagena Agreement. Thus, we find that production projects have achieved unexpectedly good results, to the degree that many of them have become examples for Asia and Africa, whereas the social projects, because not all of the countries were interested in them, have not been particularly successful.

X. PROSPECTS FOR THE PERUVIAN FISHING INDUSTRY (FISHERIES POLICY)

The fishing sector, whose historical evolution with respect to production and economics has been marked by two clearly defined stages, which, as explained in previous chapters, at a given point in time contributed to and encouraged the technological development of this industry, is currently, because of cyclical factors, facing a situation of economic and financial crisis and is in danger of collapsing.

In these circumstances, the contribution of the fishing sector to the attainment of national objectives has been diminished, with structural problems at different phases of the production process providing the explanation for the disparate and unco-ordinated structure of the sector.

In the face of these facts, what is required is the redirection of the national fishing policy towards the search for equilibrium between the various elements which make up this sector and towards the creation of a climate of agreement based on the various economic factors for the purpose of channelling efforts towards the regularizing and rationalizing of the entire production apparatus and the setting of its priorities.

If these purposes are to be achieved, a major role will have to be accorded to planning for this industry, and through it to the formulation

of specific development programmes aimed at overcoming the possible structural and cyclical limitations which may be affecting the direction of the Peruvian fishing industry.

Of necessity, any new fisheries policy will have to pursue the following medium-term objectives, the purpose of which is to secure for this sector an increasingly large share in the economic life of the country:

To ensure that fish products play an important role in satisfying the food requirements of our people;

To encourage balanced regional development on the basis of a rational production structure with sectoral and intersectoral linkages;

To improve significantly the role of the sector in the economy of the country, by ensuring the more effective use of hydrobiological, human, financial, infrastructural and equipment-related resources;

To raise considerably employment levels in all phases of the fish production process, and to seek the just and rational distribution of income;

To increase substantially foreign exchange revenue;

To rescale the production infrastructure of the fishing industry, with a view to gradually increasing production and productivity.

These objectives, for all their apparent abstractness, are definitely within our grasp. Their attainment will require an altogether clear understanding of the limitations and potential of the fishing sector so as to make possible the formulation of a new dynamic and interdependent fisheries policy which, in addition to assigning this sector its proper place within the country's overall economic policy, will also lay the foundation for its own evolution as short-term goals are gradually achieved and in turn become transitional stages on the way towards the ultimate and invariable objectives.

In specific terms, the new fisheries policy to be designed will have to provide for a highly individual and separate approach to all those components which make up the production processes in the fisheries sector and affect each of its phases, so as to identify the limitations and also the actions that need to be taken in pursuit of the objectives discussed above.

ANNEXES

Contribution of the Fisheries Sector to the National Economy

Table 1

Categories	1970	1975	1978	1979	1980	1981	1982
GDP (millions of soles in 1973 prices)							
National	352,596	441,073	447,470	465,939	483,848	502,604	504,670
Fisheries sector	22,093	8,460	9,694	10,678	9,699	9,149	9,023
- Capture	7,673	3,186	4,141	4,640	4,538	4,309	3,960
- Processing	14,420	5,274	5,553	6,038	5,161	4,840	5,063
Participation of the sector in the national GDP (%)	6.2	1.9	2.2	2.3	2.0	1.8	1.8
Foreign Exchange (millions of $US)							
National	998.3	1,493.3	1,885.9	3,641.7	4,240.8	3,678.1	3,453.1
Fisheries sector	298.4	256.0	262.9	364.4	328.8	383.3	370.9
Participation of the sector in foreign exchange revenue (%)	29.8	17.1	13.9	10.0	7.8	10.4	10.5

Sources: National Institute of Statistics (INE)
Office of Economic Affairs/Office of Budget and Planning
of the Ministry of the Fishing Industry.

Distribution of Raw Material for the Canning Industry
(thousands of long metric tons)

Table 2

Use	1978	1979	1980	1981	1982
Raw material received	476.3	1,080.2	1,024.2	875.3	1,291.5
For canning	237.8	345.3	567.0	565.8	352.1
For fish meal	238.5	734.9	457.2	309.5	939.4
% for canning	49.9	32.0	55.4	64.6	27.3
% for fish meal	50.1	68.0	44.6	35.4	72.7

Distribution of Raw Material for Freezing
(thousands of tonnes)

Table 3

Use	1978	1979	1980	1981	1982
Raw material received	225.4	279.4	265.5	120.9	55.4
For freezing	190.7	200.5	219.8	105.7	49.0
For fish meal	34.7	78.9	45.7	15.2	6.4
% for freezing	84.6	71.8	82.8	87.4	88.4
% for fish meal	15.4	28.2	17.2	12.6	11.6

Installed capacity, production and degree of utilization of the production infrastructure of the canning industry

Table 4

Years	Number of canneries	Installed capacity Cans/day	Installed capacity Cans/year	Can production	Capacity utilization %
1976	34	48,784	9,756,800	2,123,879	21.8
1977	37	51,467	10,293,400	2,933,971	28.5
1978	44	66,591	13,318,200	3,518,809	26.4
1979	63	91,504	18,300,800	4,779,486	26.1
1980	72	122,963	24,592,600	8,122,686	33.0
1981	87	176,588	35,317,600	7,938,470	22.5
1982	92	183,279	36,655,800	3,837,860	10.5

Installed capacity, production and degree of utilization of the production infrastructure of the freezing industry

Table 5

Years	Number of plants	Installed capacity Tonnes/day	Installed capacity Tonnes/year	Production tonnes	Capacity utilization %
1976	12	587	117,400	15,179	12.9
1977	14	747	149,400	13,785	9.2
1978	10	753	150,600	26,716	17.7
1979	24	1,601	320,200	33,324	10.4
1980	30	1,686	337,200	30,603	9.1
1981	29	1,762	352,400	21,384	6.1
1982	37	1,879	375,800	11,207	3.0

Installed Capacity, Production and Degree of Utilization of the Production Infrastructure of the Curing Sector

Table 6

Years	Number of plants	Installed capacity Tonnes/month	Tonnes/year	Production tonnes
1978	6	64	768	6,965
1979	8	146	1,752	16,949
1980	12	586	7,032	13,861
1981	16	824	9,888	13,896
1982	20	1,152	13,824	15,168

Installed Capacity, Production and Degree of Utilization of the Production Infrastructure of the PESCA PERU Fish Meal Industry

Table 7

Years	Installed capacity Tonnes/hour	Tonnes/year	Production tonnes	Capacity utilization Per cent
1976	4,443	7,108,800	849,726	12.0
1977	4,388	7,020,800	447,384	6.4
1978	3,805	6,088,000	585,896	9.6
1979	3,805	6,088,000	485,140	8.0
1980	3,805	6,088,000	272,143	4.5
1981	3,805	6,088,000	345,706	5.7
1982	3,745	5,992,000	428,475	7.2

Exports of Fish Products by Product Types
Period: 1975-1980
(long metric tonnes)

Table 8

Headings	1975	1976	1977	1978	1979	1980	1981	1982
Direct human consumption	36,095	53,795	83,145	105,790	79,722	163,816	133,634	79,279
- Canned fish and shellfish	4,470	9,589	21,926	43,036	43,721	86,306	105,746	58,120
- Frozen fish and shellfish	28,441	41,412	59,813	60,553	32,315	72,510	24,392	13,565
- Frozen cetaceans	1,799	1,579	815	1,325	548	1,419	1,296	1,129
- Cured products	1,385	1,215	591	876	3,138	3,581	2,200	6,465
Indirect human consumption	923,023	600,806	444,833	479,044	590,690	475,762	323,732	710,777
- Fish meal	780,660	591,784	440,033	472,039	529,861	463,744	314,575	615,571
- Cetacean meal	2,836	2,362	2,218	1,400	1,007	- -	351	309
- Crude oil	88,877	- -	- -	- -	14,969	- -	- -	72,968
- Semirefined oil	40,337	- -	- -	- -	17,934	- -	- -	15,480
- Hydrogenated oil	- -	22	- -	155	14,404	4,501	- -	- -
- Fatty acids	10,263	6,638	2,582	5,450	12,515	7,517	8,806	6,449
Non-food consumption	4,102	4,220	2,788	2,931	1,886	1,650	842	503
- Whale oil	1,345	2,880	1,249	1,076	314	- -	330	410
- Sperm oil	2,613	1,123	1,539	1,798	1,572	1,650	512	93
- Other products from cetaceans	144	217	ø	57	ø	ø	- -	- -

Note: ø - insignificant figure.

Source: Office of Budget and Planning of the Ministry of the Fishing Industry.

Foreign exchange revenue by economic headings (millions of $US)

Table 9

Headings	FOREIGN EXCHANGE REVENUE											
	1977		1978		1979		1980		1981		1982	
	US$	%	US$	%	US$	%	US$	%	US$	%	US$	%
Totals	1,633.8	100.0	1,885.9	100.0	3,641.7	100.0	4,240.8	100.0	3,678.1	100.0	3,453.1	100.0
Fishing	230.0	14.1	262.9	13.9	364.4	10.0	328.8	7.7	383.3	10.4	370.9	10.7
. Meal	195.6	12.0	183.0	9.7	222.4	6.1	192.0	4.5	193.5	5.3	226.3	6.5
. Oil	2.5	0.1	2.2	0.1	22.0	0.6	3.5	0.1	0.9	Ø	10.6	0.3
. Freezing	12.6	0.8	36.1	1.9	33.1	0.9	30.2	0.7	21.8	0.6	30.4	0.9
. Canning	17.8	1.1	38.3	2.0	80.0	2.2	89.5	2.1	139.7	3.8	88.3	2.6
. Other	1.5	0.1	3.3	0.2	6.9	0.2	13.6	0.3	27.4	0.7	15.3	0.4
Agriculture	331.7	20.3	273.6	14.5	395.4	10.9	290.7	6.9	191.1	5.2	283.4	8.2
. Wool	16.8	1.0	27.2	1.5	37.0	1.0	34.6	0.8	39.9	1.1	38.1	1.1
Mining	896.9	54.9	903.6	47.9	1,626.4	44.7	2,068.5	48.8	1,777.5	48.3	1,380.9	40.0
Petroleum	37.6	2.3	177.0	9.4	553.9	15.2	768.9	18.1	674.8	18.3	763.6	22.1
Manufacturing	113.0	6.9	229.9	12.2	648.0	17.8	732.9	17.3	595.0	16.2	605.9	17.6
Miscellaneous	7.8	0.5	11.7	0.6	16.6	0.4	16.4	0.4	16.5	0.5	10.3	0.3

Note: Ø - insignificant figure.

Source: Central Reserve Bank of Peru.

ORGANIZATIONAL DIAGRAM OF THE MINISTRY OF THE FISHING INDUSTRY