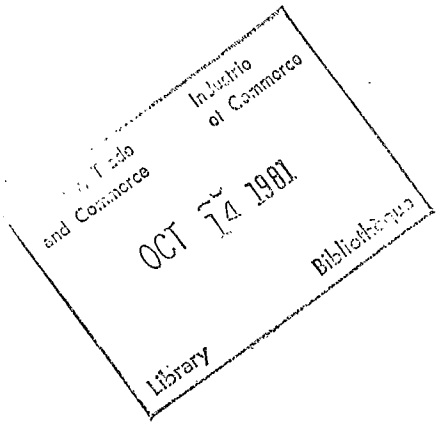
ANNEX TO THE **WORLDWIDE FISHERIES MARKETING STUDY:** PROSPECTS TO 1985

BRAZIL

Government of Canada
Gouvernement du Canada

Fisheries and Oceans
Pêches et Océans

(This report is one of a series of country and species annexes to the main study - entitled the Overview)



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Annex to the
Worldwide Fisheries Marketing Study:
Prospects to 1985

BRAZIL

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The views expressed in this Study, however, are ours alone and reflect the Canadian perception of worldwide markets.

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E. Wong
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FOREWORD

As a consequence of global extension of fisheries jurisdictions, a radical shift has taken place in the pattern of worldwide fish supply and demand. This change is still going on and will continue for many years before a new dynamic equilibrium situation is reached. However, in the midst of this re-adjustment, a new trade pattern is emerging -- some net exporting countries are now importing and vice versa. In the longer term, some countries will experience shortages of supply and others will have a surplus. Fortunately, Canada is amongst the latter group.

The implications for the marketing of Canadian fisheries products arising from the worldwide introduction of the 200-mile limit are extensive. With our vastly improved supply position relative to world demand, government and industry are understandably concerned about ensuring that the bright promise of increased market opportunities are real and can be fulfilled. One of the steps in this process is the publication of the Worldwide Fisheries Marketing Study which assesses the global potential on a country and species basis.

Specifically, the purpose of the Study is to identify the longer term market opportunities for selected traditional and non-traditional species in existing and prospective markets and to identify factors which may hinder or help Canadian fisheries trade in world markets. To date, over 40 country markets and 8 species groups have been analyzed. It should be noted that while the information contained in the Reports was up-to-date when collected, some information may now be dated given the speed with which changes are occurring in the marketplace. In this same vein, the market projections should be viewed with caution given the present and still evolving re-alignment in the pattern of international fisheries trade, keeping in mind the variability of key factors such as foreign exchange rates, energy costs, bilateral fisheries arrangements and GATT agreements which have a direct effect on trade flows.

Notwithstanding, the findings contained in these Reports represent an important consolidation of knowledge regarding market potential and implications for improvements in our existing marketing and production practices. The results of the Study should, therefore, usefully serve as a basis for planning fisheries development and marketing activities by both government and industry in order to capitalize on the identified market opportunities.

This draft report is published for discussion purposes and as such we invite your critical comments.

Ed Wong

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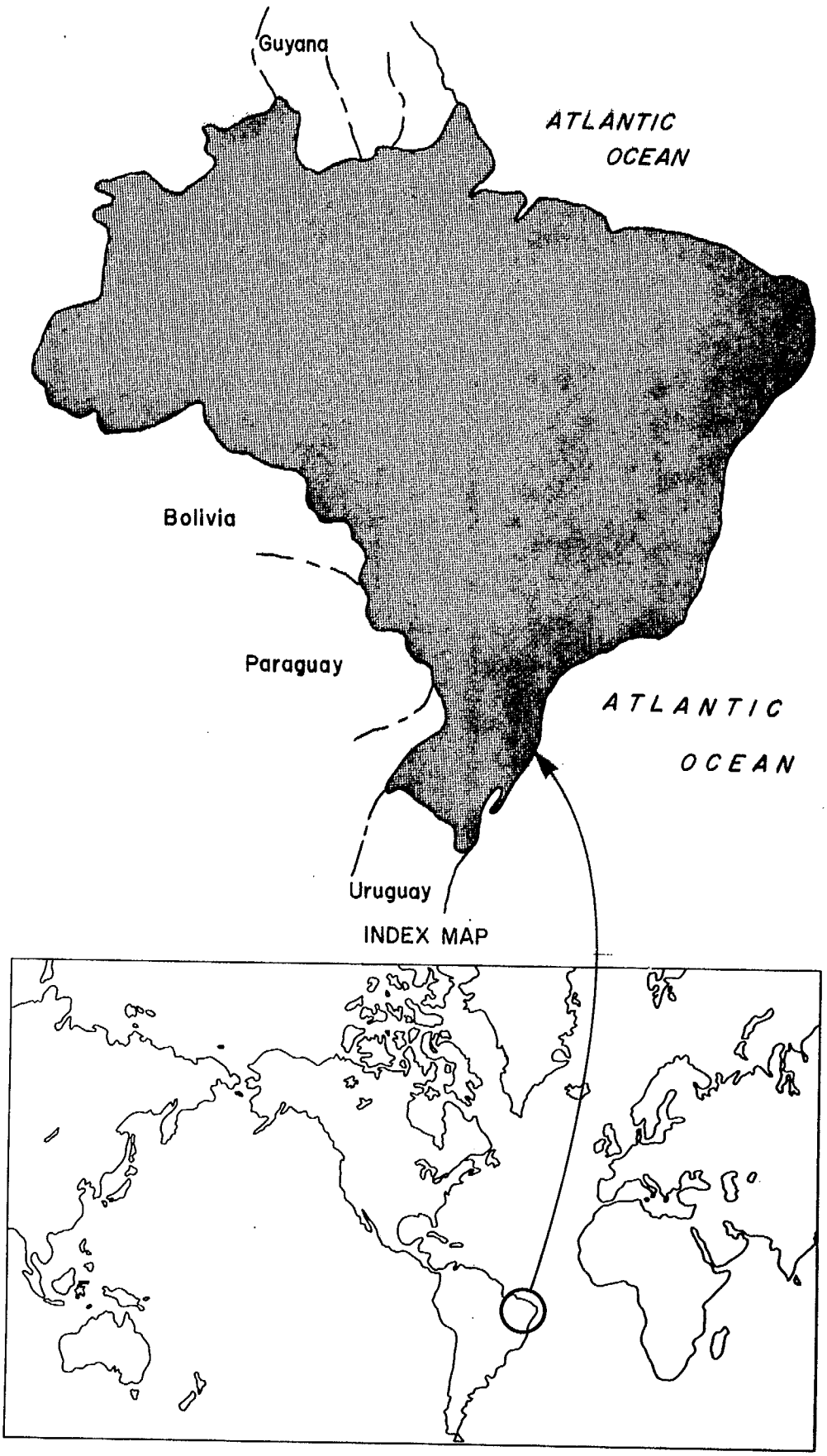
WORLDWIDE FISHERIES MARKETING STUDY

BRAZIL

Table of Contents

BRAZIL


Guyana
ATLANTIC
OCEAN
Bolivia
Paraguay
ATLANTIC
OCEAN
Uruguay
INDEX MAP

A. INTRODUCTION

With an area of 8.5 million square kilometres, Brazil is the largest country in Latin America. Its population, 123 million in 1981, has one of the most rapid rates of growth in the world, 2.8% annually. By 1985, the population is expected to reach 145 million.

With a coastline over 8 000 kilometres long and huge river basins inland, Brazil has the potential to become virtually self-supporting in fish. Some of the traditional stocks are already being exploited at their maximum level, but there are indications of the existence of various underexploited or unexploited resources. It has been estimated that the marine and estuarine fishery production could be increased up to somewhere within a range of 1.4 to 1.7 from the current 0.8 million tonnes annually, considering the resources available up to 200 miles offshore.

The Brazilian fishing industry comprises both artisanal and industrial fisheries, which each account for about one half of the catch. The industrial fleet is widely diversified while the artisanal fleet consists of nearly 50 000 vessels of less than 20 gross tons, of which about one eighth is motorized.

Industrial fisheries are operated by some 400 companies spread along the coast. In recent years there has been a significant increase in the production and marketing of frozen fish, particularly close to urban areas, with a consequent reduction in sales of fresh fish.

In 1977, the production from inland fisheries was about 140 000 tonnes of which approximately two-thirds was caught in the Amazon basin and most of the remainder in the north-east. Production could be increased from rivers but the best prospects lie in fresh water aquaculture, taking advantage of large areas of low-cost land, the abundance of water, the climate and the occurence of a large number of native species of high value suitable for culture.

The Superintendency for the Development of Fisheries, SUDEPE - the federal fishery institution of the Ministry of Agriculture - is responsible for the national fisheries development policy. The third stage of a fisheries development plan has recently been begun to strengthen some sectors of the national fisheries. A loan has been secured from the Inter American Development Bank for US$ 66 million to be matched by an equal amount from the Brazilian government. The industrial fleet is gradually being developed, particularly in the southern and southeastern regions. The development of fisheries in the northern region is promising but hesitant. In the long run, it will certainly become the main fishing area of the country.

The fishing industry, although locally important, is not of great significance in the Brazilian economy. The value of fish production at 1970 producer prices during the period 1970-77 represented 0.20% of the Gross Domestic Product. The balance of Brazil's fisheries international trade has recently become favourable, although the net contribution to foreign exchange earnings is small.

B. DEMAND

1. Present Consumption of Fish

Brazilian fish consumption per capita in 1978 was 7.7 kilograms. This figure hides wide divergencies in regional consumption levels which are shown in Table 1. The southernmost regions are consuming approximately three kilograms per capita while in the southern most regions consumption is much higher. The west-central region consumes less than one kilogram per capita, due to inadequate inland transportation and higher prices. Consumption of salted fish is highest in the north and northeastern regions.

TABLE 1

Estimated regional per capita consumption of fish products - Brazil (kg)

TYPE OF PRODUCT	SOUTH 1976	SOUTH-EAST 1976	NORTH-EAST 1976	NORTH 1976	CENTRAL-WEST 1976
Fresh/chilled	1.372	2.005	2.194	3.398*	0.410
Frozen	0.865	0.353	0.842	0.236	0.169
Salted	0.304	0.372	1.561	2.333	0.084
Canned	0.329	0.557	0.308	0.462	0.124
TOTAL	2.870	3.289	5.005	7.429	0.790

Source: SUDEPE (Estimates are rough only and attempt to include estimates of catches used for own consumption or of unrecorded sales. Hence statistics are not necessarily compatible with national statistics).

2. Trends in Consumption of Fish Products to 1985

Fish consumption in Brazil has been growing, mainly as a result of an increased domestic catch of edible species. Over 90% of the total catch is consumed by Brazilians, more than half after some form of processing, in particular, salting/drying or canning. The largest market is for sardines, both fresh and canned, and there is a growing institutional business which uses whiting and hake fillets from Argentina and Uruguay.

Over the decade between 1968 and 1978, per capita consumption grew from 6.1 kilograms to 7.7 kilograms per annum (see Table 2). By 1981, it is expected to be approximately 8.0 kilograms and by 1985, it could be as high as 8.6 kilograms. In contrast, beef consumption is at present over 20 kilograms per capita per annum and is expected to exceed 25 kilograms by 1985.

In spite of the gradual increase, however, consumption levels of fish and fisheries products remain relatively low, mainly because of the relatively high cost of fish, which is due to the long distances over which much of the supplies have to be trucked, and to inefficient handling and marketing methods which have a serious effect on quality.

However, distribution systems are improving. A very modern system has been set up in the state of Sao Paulo (25 million population) to handle the distribution of foodstuffs including fish products. The system is based on 16 food distribution depots throughout the state, the largest located in the city of Sao Paulo. The system is supplied primarily from three ports. Both fresh and frozen products are handled, and all distribution throughout the system is by refrigerated truck. The system will serve as a model for other areas in the country and fish consumption can be expected to increase as these improvements in handling make the products more accessible and attractive to consumers.

The rapid growth of Brazil's population is also bound to generate increased demand for fish and fish products. Assuming that present trends continue, the total volume of seafood consumption in 1981 could reach 1 million tonnes and by 1985 approximately 1.25 million tonnes for a potential increase of 33% over the 900 000 tonnes consumed in 1978 (see Table 2).

TABLE 2

Brazil: Apparent* consumption of fish and fish products 1968-1978

ACTUAL	POPULATION (MILLIONS)	PER CAPITA CONSUMPTION (kg)	APPARENT CONSUMPTION (t)
1968	88.1	6.12	539 158
1969	92.7	5.85	542 742
1970	93.5	6.12	578 393
1971	96.0	6.46	619 656
1972	97.0	6.56	636 264
1973	101.5	7.27	737 718
1974	104.0	7.35	764 190
1975	106.2	7.31	776 396
1976	109.2	6.62	723 733
1977	112.2	7.11	795 335
1978	115.4	7.71	889 430
PROJECTED			
1981	125.0	8.0	1 000 000
1985	145.0	8.6	1 250 000

Source: - Apparent and per capita consumption by Superintendência do Desenvolvimento da Pesca (hereinafter referred to as SUDEPE).
- Population projections by Worldcasts, Issue # 54, June 1979.
* Apparent domestic consumption is based on the formula - domestic production plus imports less exports - sometimes referred to as "domestic disappearance" of product.

The estimated increase in overall consumption, as noted above, is in line with projections made by SUDEPE based on a study carried out in 1976. That study estimated a total consumption of 1.25 million tonnes by 1985, divided regionally as follows: north, 245 378 tonnes; northeast, 464 446; southeast, 396 044; central-west, 11 238; and south, 124 663.

A point worth noting here is that the north and north-eastern regions, where some Canadian salted cod has penetrated, are expected to account for over 55% of total fish consumed in Brazil in 1985. The metropolitan areas of Rio de Janeiro and Sao Paulo are expected to account for 200 000 and 145 000 tonnes respectively 'together summing to' 25% of total fish consumption.

3. Competition with Other Products

Brazilians have a strong preference for beef products, even though beef has generally been more expensive than most fish products. Table 3 shows the prices of fish on April 1, 1980 in large supermarkets in Sao Paulo. This table is not based on scientific sampling - it is rather meant to be an indicative comparison. Beef prices have recently declined by over 30% in some large Brazilian centres due to a consumer boycott. Fish prices were fixed by the government in March 1980 for a one-week period to prevent over-pricing during the Easter season when there is a heavy demand. Similar measures are expected in 1981.

The most popular and available fish products, fresh merluza (hake) and canned sardines, compete in a price range with better grades of hamburger at 110 to 140 cruzeiros per kilogram. Frozen fish fillets, either I.Q.F. or 500 gram retail pack (skinless, boneless) compete in the price range of more expensive beef and pork products at over 180 cruzeiros per kilogram. Fresh sardines and corvina are among the lowest priced foods in the range of 40-45 cruzeiros which accounts for the large sales of these species.

In terms of potential Canadian export, the most striking point is the price of salted cod which, at 395 to 400 cruzeiros has been well above the price of any competing product. Because it is so expensive, demand has been limited to "special occasions". Christmas and Easter together account for over 85% of consumption of cod and related species. The elimination in 1980 of the 80% "import deposit" may bring the price of these salted cod products down significantly, leading to an increase in consumption. This point will be followed up in a later section.

TABLE 3

Brazil: Comparative retail market prices for fish products and substitutes
April 1, 1980

FISH PRODUCTS		OTHER COMMODITIES	
PRODUCT	Cruzeiro*/ Kilogram	PRODUCT	Cruzeiro*/ Kilogram
Fresh Merluza (hake)	130	Veal Cutlet	195
Fresh Corvina	45	Filet Mignon	180
Fresh Sardines	40	Hamburger - first grade	123
Fresh Bonito	76	Hamburger - second grade	87
Fresh Catfish	56	Liver	94
Fresh Grouper	180	Kidney	24
Fresh Shrimp	150		
Canned Sardines-oil sauce (260 gr)	144	Pork Chop	198
Canned Sardines-soya (260 gr)	160	Pork Roast (frozen)	215
Canned Sardines-tomato (260 gr)	112	Pork Cutlet	109
Banned Bonito-solid from Peru, 7 oz.	34	Pork Butt	92
		Bacon	110
		Weiners	134
Frozen Merluza IQF (1 kg)	170	Chicken	59
Frozen Merluza-skinless, boneless (500 gr)	180	Turkey (frozen)	80
Frozen Corvina-skinless, boneless (500 gr)	136	Pheasant	295
Frozen Pescadina-skinless, boneless (500 gr)	170	Ducks	97
Salted Cod - top quality	440	Goat	110
Salted Cod	398	Lamb	72
Salted Ling	245		
Salted Cusk	195		

* Note: Exchange rate April, 1980 was US $ 1.00 - 46.6 Brazilian Cruzeiros.

SOURCE: Investigations by Study Group.

C. SUPPLY
CURRENT AND EXPECTED SUPPLY PICTURE TO 1985

1. Domestic Harvest

Brazil's fishing industry accounts for more than 90% of fish products consumed in the country and the fishing industry is going through a period of expansion. Between 1968 and 1978, catches increased at an average annual rate of 5.5%, reaching 856 000 tonnes in 1978 (see Table 4) which is over 10% of the total South American catch. The increased landings were of sardines, weakfish and hake. (see Table 5) At the current annual rate of growth, catches would be 1 million tonnes in 1981 and 1.25 million tonnes in 1985.

These projected figures for the increased catch parallel exactly the estimates quoted earlier for total domestic consumption. Thus if the catch does continue to increase at the current rate, it would appear that Brazil could become self-sufficient in fish and fish products. However, the industry is attempting to increase export sales, which will leave room in the Brazilian market for some foreign products. It can be expected also that there will be continuing demand for species that cannot be supplied by the domestic fishery.

It has been estimated by the Food & Agriculture Organization (FAO) that, in the long run, Brazil's 8 000 kilometres of coastline could produce an annual catch of 2 000 000 tonnes. It was with this potential in view that the government created the agency SUDEPE in 1962 to provide incentives for investment in fishing, fish processing and marketing. SUDEPE has the responsibility for conservation of stocks, issuance of fishing licences within the 200-mile limit, and managing an incentive program funded through an income tax scheme. In terms of stock assessment and management, SUDEPE has been optimistic about future catch potentials, forecasting a doubling of the overall catch. However, these predictions are based on little scientific information and the initial optimism is now more tempered. Fishing effort is controlled mainly by limits on the number of boats that harvest major species like sardines and shrimp.

The total stock of demersal fish has been roughly estimated at between 1.1 million and 1.6 millon tonnes, distributed as follows: 45% in the north, 36% in the south, 14% in the south-central region and 5% in the north central region. Based on these parameters, the estimates of the potential demersal fish yield run between 500 000 and 800 00 tonnes per year, considering only species found at depths of up to 200 metres and taking 50% of the biomass as a national fishing volume. On the other hand, the inventory of pelagic fish is estimated at 900 000 tonnes, but the harvesting of these species along the Brazilian coastline has yet to reach half the estimated allowable catch of 560 000 tonnes annually.

TABLE 4

Brazil: Growth of fisheries production
1938-1978

PERIOD	TONNES	INDEX
1938	103 278	100.0
1948	144 767	140.2
1958	214 899	208.1
1968	500 387	484.5
1969	501 197	485.3
1970	526 292	509.6
1971	591 543	572.8
1972	604 673	585.5
1973	698 802	676.6
1974	731 383	708.2
1975	759 792	735.7
1976	658 847	637.9
1977	752 607	732.5
1978*	855 970	828.7
1981**	1 000 000	1 168.2
1985**	1 250 000	1 460.2

SOURCE: SUDEPE/IBGE
(includes both marine and inland fisheries)

* Estimated
** Projected

TABLE 5

Brazil: Fisheries production by species
1967-1977
(tonnes)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
A. MARINE	341 051	393 100	388 104	391 815	493 175	521 717	580 572	563 238	586 340	513 832	584 169
Sardines	88 421	92 050	110 039	95 492	132 027	158 980	171 291	189 376	136 099	97 287	165 926
Mullet	22 372	23 915	23 935	23 875	23 980	27 301	29 534	14 124	16 925	35 511	29 947
Corvina	46 188	47 766	35 861	40 148	49 243	49 133	57 800	39 662	93 998	58 706	60 386
Hake	100	7 828	8 008	16 724	18 245	24 047	27 753	6 329	6 731	39 090	31 888
Catfish	22 439	17 731	17 498	16 003	26 185	22 575	25 449	16 697	18 858	16 115	18 078
Anchovy	5 775	13 250	14 423	16 097	27 752	13 510	9 821	16 910	4 946	9 329	12 068
Weakfishes	13 221	20 339	16 423	13 357	20 659	18 778	53 357	26 139	27 750	47 940	46 068
Shrimp	34 512	39 507	36 689	35 311	36 392	52 543	44 516	42 873	43 488	37 658	51 237
Hermit Crab	12 333	14 848	14 955	12 885	16 965	15 255	17 443	5 321	6 334	6 139	6 637
Lobster	2 541	3 237	6 332	3 253	11 053	11 847	10 592	6 462	4 654	7 155	7 379
Crabs	2 613	3 804	4 051	3 154	2 103	2 669	4 789	4 677	5 442	3 716	4 259
Whales	6 796	8 400	7 540	8 020	9 750	3 055	7 320	5 388	6 631	5 816	4 120
Shellfish	3 769	3 051	2 219	2 722	3 550	3 777	6 265	3 261	3 060	2 657	4 682
Others	79 971	97 374	90 131	104 774	115 271	118 247	114 642	186 019	211 424	146 713	141 494
B. INLAND	88 371	107 287	112 261	103 477	97 368	82 956	88 230	168 145	173 452	144 829	168 438
Fresh Water Fish	84 601	97 678	103 649	93 548	87 899	77 838	81 947	156 284	164 320	135 839	158 468
Crustaceans	3 515	9 380	8 336	9 441	9 179	4 949	6 199	11 841	9 104	8 937	9 958
Turtles	207	168	209	434	227	155	29	20	28	53	12
Mammals	48	61	67	54	63	14	55	-	-	-	-
TOTAL	429 422	500 387	500 365	495 292	590 543	604 673	668 802	731 383	759 792	658 661	752 607

SOURCE: Estatistica da Pesca - SUDEPE/IBGE - 1968-78

2. Imports

Imports account for less than 10% of fish products consumed in Brazil. In 1978, Brazilian imports of all fish products amounted to 67 000 tonnes which was slightly higher than the average of 62 000 over the prior decade 1968-1978. There are however wide fluctuations in imports from one year to the next as Table 6 indicates. In 1979, for instance, the Brazilian sardine catch was down and this product, normally exported, had to be imported to meet the domestic demand.

According to SUDEPE statistics, the bulk of fishery imports currently falls into two main categories:

(i) fresh, chilled and frozen fish; and

(ii) salted codfish products.

The former has shown very rapid growth, especially during the last five years, while the latter has shown a steady decline.

The rapid growth of imports of fresh, chilled and frozen fish primarily reflects the abundant catches of hake in neighbouring Uruguay and Argentina. Both countries pay reduced (or no) tariffs under the Latin American Free Trade Agreement (LAFTA). As Table 6 shows, imports in this category grew from 3 000 tonnes in 1968 to 45 000 tonnes in 1978. If predictions for continued catches of hake in these countries are realized, it can be expected that Brazil will continue to import this relatively cheaper variety of fish at the expense of more costly varieties from more distant suppliers, at least until the domestic fishery expands its own capacity to harvest hake.

A significant part of these imports come in fresh round, or headed and gutted. Many Argentinian and Uruguayan vessels land fish caught in their waters, at the Brazilian port of Rio Grande do Sul to be processed in Brazilian plants. Brazilian policy is to lessen this dependency and develop a domestic fleet to fish hake in Brazilian waters and beyond their 200-mile zone. The main interest is in freezer vessels, which would supply domestic plants rather than factory vessels.

TABLE 6

Brazilian fish importers, by product category and main supplying country in tonnes

PRODUCT CATEGORY	MAIN SUPPLY COUNTRIES	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Fish, fresh, chilled or frozen	Total	3 012	4 498	5 826	6 635	2 494	15 754	12 312	74 113	53 299	47 071	45 112
	Argentina						14 690	19 159	70 744	51 572	40 002	
							866	1 842	3 307	5 230	6 935	
Salted Cod (and related products)	Total	40 240	45 071	47 222	32 234	32 444	33 001	24 252	24 818	18 962	14 173	16 395
	Spain						9 371	3 833	5 310	1 715	251	
	Iceland						2 725	1 380	1 308	2 284	711	
	Canada						327	381	139	645	306	
	Norway						24 985	18 252	17 979	14 054	12 902	
Bonito (canned)	Total	357	229	190	610	344	1 067	936	820	612	2 148	3 056
Fish Meal	Total	7 784	8 983	7 060	10 157	2 496	-	842	8 219	250	-	91
Other	Total	2 798	3 001	2 267	2 963	3 272	2 781	2 582	2 012	5 331	1 335	2 908
TOTAL		54 191	61 782	62 565	52 599	41 050	52 603	40 924	109 982	78 454	64 727	67 562

SOURCE: SUDEPE

There has been a comparatively large but declining market in Brazil for the second category, salted codfish and related species. The market is now being supplied by Norway (90% in 1977), Finland, Iceland and Canada. Canadian products are primarily destined for northern Brazil. The main Norwegian supply consists of ling, a species distinct from cod but generally accepted by consumers and some retailers as true bacalhau, the local name for salted codfish.

Table 6 shows how the volume of Brazilian imports of salted fish had declined significantly, but the increase in domestic supplies of fish is not seen as a significant factor in the decline. Rather there are several causes:

(i) abundant and relatively inexpensive supplies of fresh hake are available from neighbouring countries;

(ii) Spain, as a result of decreased catches, has ceased to be a supplier of quality salted fish at prices attractive to Brazil. Imports from Spain dropped from 9 371 tonnes in 1973 to 251 tonnes in 1977;

(iii) imports from Norway have become more expensive. The average CIF value of imports of all species of salted fish has increased from US $1 600 in 1975 to US $2 330 per tonne in 1978;

(iv) until recently, under a government policy of "national similars" (i.e. no imports of goods that can be produced domestically), it was difficult for importers to obtain licences to import their full requirements of salted cod even though salted cod is not ostensibly part of the concern about balance of trade in fish. The law of national similars was rescinded in December 1979 and it is now easier for importers to obtain licenses; and

(v) most importantly, a government regulation to discourage imports had required an "import deposit". For every purchase, importers were required to make a one-year deposit of 80% of the invoice value in the central bank. The fact that (a) no interest was

paid on this deposit and (b) that inflation of over 40% depreciated the real value of the deposit, together accounted for a significant increase in the cost to be passed on to the consumer (possibly as much as 50%).

The Brazilian government completely removed the deposit requirement in December 1979. It is believed that this action has appreciably reduced prices at the retail level to the point where codfish can compete with other products (see Table 3) on a year-round basis.

3. Exports

The volume of locally caught fish available for domestic consumption will also be affected by the quantities exported. Obviously, if more of the catch is aimed at export markets then less will be available for home markets. As a result of increased efforts by Brazilian exporters, growth of exports is expected to continue. Exports in 1978 amounted to 33 000 tonnes and, accepting the most optimistic projection, an annual growth rate* equal to that experienced over the decade 1968-1978 (close to 18%) then export volumes would be approximately 55 000 tonnes by 1981 and over 100 000 tonnes by 1985. For further details see section F.

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* This growth rate is based on industry and government view of future export potential - the actual growth may be considerably less.

D. DEMAND/SUPPLY BALANCE

Table 7 shows the global demand/supply situation for fisheries products in Brazil for the period 1968-1978 and projected to 1981 and 1985. As noted previously, domestic consumption is projected to increase from 890 000 tonnes in 1978 to 1.25 million tonnes by 1985. Local production is expected to grow by a similar magnitude, from 856 000 tonnes in 1978 to 1.25 million tonnes in 1985. Of this latter amount, 100 000 tonnes are projected for export, thus leaving an import requirement of approximately 100 000 tonnes (see Table 7).

It has been pointed out that imports of fresh, frozen and refrigerated fish have displaced salted cod (and related products) which in 1978 accounted for only 25% of imports (see Table 6). Assuming that there is an opening for 100 000 tonnes of imported fish products and that salted cod can at least retain its traditional share of that market, Brazil can be expected to buy between 20 000 and 25 000 tonnes of cod products. The remainder of the import demand will continue to be met by relatively inexpensive hake from neighbouring South American countries, unless Brazil so successfully develops its own fleet to fish for hake, that it can completely replace these imports.

TABLE 7

Brazil's fisheries products: demand supply balance 1968-1978 and projected 1981-1985
(tonnes)

YEARS	PRODUCTION	IMPORTS	TOTAL SUPPLY	EXPORTS	APPARENT CONSUMPTION	PER CAPITA CONSUMPTION kg.
1968	500 387	44 969	545 356	5 198	539 158	6.12
1969	501 197	51 070	552 267	9 525	542 742	5.85
1970	526 292	54 476	580 768	10 375	570 393	6.12
1971	591 543	39 505	631 048	11 392	619 656	6.46
1972	504 673	50 437	655 110	18 846	636 264	6.56
1973	698 802	57 663	756 465	18 747	737 718	7.27
1974	731 383	49 924	781 307	17 117	764 190	7.35
1975	759 792	109 982	869 774	16 604	776 396	7.31
1976	658 847	79 375	738 222	14 489	723 733	6.62
1977	756 607	64 729	821 336	24 001	795 335	7.11
1978	855 907	66 662	922 569	33 139	889 430	7.71
1981	1 000 000	55 000	1 055 000	55 000	1 000 000	8.0
1985	1 250 000	100 000	1 350 000	100 000	1 250 000	8.6

SOURCE: SUDEPE (NUCEX/CACEX) 1968 TO 1978.

NOTE: SUDEPE makes no apparent distinction in official statistics between landed weight and product weight (i.e. after processing). Hence, in Canadian terms, "production" and "imports" columns are not strictly compatible.

E. POTENTIAL TRADE

1. Market Potential for Canadian Exports

a) Tariffs: The Major Limiting Factor

Any discussion of market potential for Canadian fisheries products in Brazil must immediately focus on the tariff structure. In keeping with its restrictive import trade policies, import tariffs on most fisheries products are prohibitively high. As Table 8 shows, tariffs on all fish products, all crustaceans and molluscs, and all fisheries preparations, generally fall in the range of 145 to 185%. The only exception to this is codfish products (salted, smoked) for which there is no tariff at all.

TABLE 8

Brazilian tariffs on fisheries products

Tariff No.	Classification	Tariff
3.01	fish; fresh, chilled, frozen	155-185%
3.02	fish; cured, smoked, salted	155%
	exception: codfish	0%
3.03	crustacean, molluscs; all forms	145-185%
16.00	other fisheries preparations (includes canned)	185%

Brazil has allowed special preferences worked out under LAFTA (Latin America Free Trade Association)[1] which provide exemptions and temporary tariff suspensions for trading members. As indicated earlier, this explains, to some extent, why most fisheries imports are from other Latin American trading partners.

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(1) The 1980 treaty of Montevideo, created the Latin American Integration Association (LAIA) which was established to replace L.A.F.T.A LAIA provides for a pragmatic approach to the eventual creation of Latin American Common Market. LAIA provides for negotiations between just two or a limited number of countries, in addition to a preferential regional tariff.

The tariff structure offers Canada no potential at all for fisheries exports to Brazil with the sole exception of cured codfish products. Other products, subject to the tariff, are simply not competitive with products supplied from Latin American countries, which escape the full brunt of the tariff and which are also physically closer to the Brazilian market.

b) The Opportunity for Salt Cod Products

Thanks largely to the Portuguese heritage of the Brazilian people, salted codfish is a traditional food. Thus it is reasonable to expect that a basic market for this product will continue to exist, and there is reason also to be optimistic that demand will increase, as noted previously.

We have seen how the demand for salted cod products declined rapidly over the decade 1968-1978, and have examined some of the reasons. Two of the contributing factors to this decline have now been eliminated with repeal of the "law of national similars" and the "import deposit", procedure as of December 1979. The deposit requirement could be restored if Brazil continued to encounter serious overall trade deficits.

If optimistic projections are realized and the market for imported saltfish grows to 20 000 or 25 000 tonnes from the present 15 000, the challenge for Canadian exporters will be to compete with Norway for a share of the increased sales potential. Norway has traditionally accounted for the lion's share of this trade, but given that Norwegian stocks of fish may be limited or declining, there is a possible opportunity for Canadian suppliers to move up to sales of 5 000 to 10 000 tonnes of cod products to Brazil by 1985.

Competition with Norway may be difficult, especially in some parts of Brazil. For example, in the Rio and Sao Paulo areas, imports are virtually restricted to Norwegian saltfish. One traditional importer holds 80 to 90% of the local market and two or three others handle the rest of the import. The largest importing firm is owned by a Norwegian who buys from Norway and Iceland and is also honorary consul for these countries. Other competition may come from Argentinian firms, which are developing local species to compete in the salted products market.

Generally, in the southern states, the market will be for first-quality fish, preferably of large size. While the bulk of imports of this area will likely continue to be supplied by Norway, there is some potential for Canadian sales but only on a very price-competitive basis. During 1979 a Canadian trade mission visited Brazil to investigate the saltfish market. To follow this up, a sample shipment was sent and was considered to be an excellent product with good sales potential.

In the north and northwestern areas, there is good potential for sales of smaller salted fish at lower prices, and this is the area where Canadian products may be most competitive. As previously noted, these areas will account for over 55% of Brazil's fish consumption in 1985. With the recent elimination of the "import deposit" leading to lower retail prices, it can be expected that the market for the less expensive salted cod products will broaden substantially.

There may also be some potential for Canadian firms to gain access to both Brazil's northern and southern markets through joint ventures, particularly if wet salted cod could be imported (via the Canadian partner) into Brazil for further processing and sale as Brazilian bacalhau.

At present, problems could be encountered with assessing continuous shipping service to the Brazilian market. Direct container service to South America from Canada has been discontinued by the large container companies. Hence individual charter arrangements would have to be made and possibly several companies would have to co-ordinate shipments. It has been suggested that returning orange juice reefers could be utilized for Canadian fisheries export shipments.

2. Market Entry Requirements*

a) Product Specifications

Northern Brazil accepts small sized fish and the traditional Atlantic Canadian pack of dried salted cod. Southern Brazil prefers large fish and the Norwegian cure.

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* Further details are given in Appendix IV.

b) Packing Requirements

Pilferage can be a serious problem if packing is not very secure.

c) Legal Requirements

It is recommended that prospective Canadian exporters of salted codfish to Brazil employ a local agent to expedite shipments and promote product acceptance. The agent would also be in a position to deal with technical issues connected with changes in Brazil's import regulations.

F. MARKET IMPLICATIONS FOR CANADIAN TRADE OF BRAZILIAN EXPORTS

1. Export Products

Brazil's exports of fishery products traditionally have consisted of shrimp, lobster (langusta), and catfish bound for the US. The extent of this trade is shown in Table 9. More recently, sardines have also become a significant export item, but its markets tend to change dramatically from one year to the next. Although Table 9 shows the volumes of fish exported by products, these can be somewhat deceiving. The dollar value of these products in 1978 was (US $ million) $38.4; frozen fish, $24.5; shrimp, $26.0; lobster, $38.4; and sardines, $3.8. While export tonnages of sardines are nearly equal to lobster and shrimp, the value is considerably less. Further details of species exported can be found in Appendix V.

2. Major Exporters: Plans for Expansion

As Table 10 shows, the largest eight or nine firms account for two-thirds of seafood exports from Brazil. The two largest firms, Confrio and Ipecea, together account for one-third of exports. Confrio had export sales in 1978 of US $21 million while Ipecea concentrated on shrimp, lobster, red snapper, catfish and scallops. The company employs 2 000 and has 46 boats of its own, of which 38 are used for shrimp fishing and eight for catfish.

The larger companies intend to rapidly expand their fishing of the species preferred by foreign buyers. Increased catches of underutilized species, particularly red snapper, are expected to come from fishing new areas along the coast of Maranhao and Para in the north of Brazil.

Companies are also attempting to further increase shrimp fishing along the shores of Para and Maranhao where abundant stocks of the crustaceans exist. More than 100 vessels, mostly under lease from Barbados, and Trinidad and Tobago are currently fishing these stocks. Little work has been done to estimate the actual extent of the resource or to determine whether it is a part of the stock also fished by the neighbouring Venezuelans and Guyanese. However, the

TABLE 9

Brazilian fish exports by category: 1968 to 1978
(tonnes)

	MAIN MARKETS	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Frozen Fish	Total	2 741	3 631	4 213	4 143	7 792	6 959	7 315	9 158	9 158	16 850	17 920
	United States						5 718	6 485	8 088	8 525	12 386	
	Argentina						989	763	1 426	152	3 827	
Shrimp	Total	1 656	3 206	3 061	4 435	6 783	2 687	2 437	1 787	1 785	3 109	4 925
	United States						1 925	1 273	676	797	1 666	
	Japan						594	868	527	953	1 409	
Lobster	Total	1 683	2 474	2 794	2 514	2 630	2 555	3 069	2 499	2 353	2 796	3 180
	United States						2 492	3 042	2 377	2 257	2 536	
Sardines	Total	-	8	22	509	1 018	1 217	545	927	722	843	3 072
	United States						779	309	3	9	10	
	Zaire						-	-	-	273	546	
	Paraguay						166	153	125	147	222	
	Panama						95	-	279	-	-	
	Dominican Rep.						-	-	178	-	-	
Algi	Total	-	-	-	110	215	1 810	2 230	466	-	-	
Others	Total	167	253	313	434	407	3 510	1 512	1 101	88	356	3 804
	TOTAL	6 247	9 572	10 403	12 145	18 845	18 738	17 108	15 938	14 106	23 954	32 901

SOURCE: SUDEPE/PDP/CACEX

* This category includes fresh and refrigerated fish.

government is encouraging the development of a fleet of up to 250 vessels to fish these stocks.* The projected increase in catch from this expanded fleet is expected to be in the range of 200 to 500% over the next three years.

TABLE 10

Brazil's major exporters of fisheries products
US $1 000

	1976	1977	1978
Cia Nacional de Frigorificos (Confrio)	11 460	17 201	21 901
Industria Pesca Ceara S.A. (Ipecea)	8 970	9 047	8 295
Pesca Importacao e Exportacao S.A. (Peimpex)	3 752	4 672	5 675
Dalmar Productos Del Mar Ltda.	3 737	4 517	5 831
Sociedade de Pesca Ltda (Sopesca)	N/A	1 750	5 488
Amazonica Industria e Comercio de Pesca S.A.	2 494	3 662	4 586
Cia. Amazonica Pesca (Ciapesc)	2 960	4 423	3 689
Cia Pesca Norte do Brasil (Copesbra)	N/A	1 677	3 229
Empresa de Pesca Camalan Ltda	2 039	2 516	N/A

Source: Brazil Trade & Industry, November 1979.

* A major element of the new fisheries development plan to be funded through a loan from the Inter American Development Bank, is to assist in the construction of 160 new vessels; 100 of these vessels are to be used in the northern shrimp fishery to replace Brazil's dependence on foreign vessels. See Appendix II.

While sardine catches have been at about 150 000 tonnes in recent years, SUDEPE estimates that the stocks can be fished at a level of 200 000 tonnes annually. Most sardine harvesting and processing firms have expanded capacity to take advantage of newly accessible foreign markets. However, a large share of increased catches will most likely go to wider domestic markets and hence will pose no major competitive threat to the Canadian sardine industry. Furthermore, the Brazilian product has a bland flavour compared with the Canadian sardine and hence is not expected to compete in the same markets.

As for lobsters, technology is already being developed in an effort to expand the catch in the waters off the states of Alagoas, Sergipe, Bahia and Espiritu Santo and along the ocean banks of the northeastern region. It will be sometime in the early 1980's before the success of this program can be evaluated.

3. Brazilian Arrangements with Foreign Partners

Brazil has no bilateral agreements that allow fishing fleets of other nations to fish in Brazilian waters, nor have any formal arrangements been made for Brazilian vessels to fish in other waters.

Brazil does allow joint ventures in the primary sector but at present only with Barbados and Trinidad and Tobago, under agreement currently being renegotiated. However, joint venture proposals will be entertained in both the primary and processing sectors with emphasis on introducing new technologies especially in canning, freezing, drying and smoking. Energy conserving methods are required. Financial participation is also welcome. All joint ventures, however, must be with Brazilian-controlled companies with Brazilian ownership of at least 60%.

In the primary sector, most dealings with other countries have been through straight leasing arrangements under which domestic firms lease vessels from foreign companies. In the 1960's and early 1970's, fleets from the US, Barbados and Trinidad and Tobago fished for shrimp in Brazil's northern waters, but their catches were not being processed in Brazil. After 1977, these

arrangements were no longer allowed. Domestic companies now can lease vessels from these nations, but they must employ majority Brazilian crews and all processing and exporting must be done through Brazil. Approximately 100 shrimp vessels are currently under lease from firms in the countries mentioned.

Present government policy is to gradually replace all foreign vessels fishing in Brazilian waters with a fleet of majority Brazilian ownership, so leasing arrangements are only allowed to run for three years, at which time the Brazilian company is expected to acquire the vessel.

In the southern waters of Brazil, companies are currently leasing five Japanese longliners for catching tuna. There is a requirement of two-thirds Brazilian labour on these vessels, but this rule is rarely met. Out of a crew of 18 or 20, there may be only five or six Brazilians. There are also three Spanish purse seiners under lease for tuna. These lease operations have demonstrated the presence of tuna in Brazilian waters and, as a result, a small domestic pole-fishing tuna fleet has grown up, using approximately 17 converted sardine vessels.

Brazil also has traditional arrangements with Argentina and Uruguay, which allow their vessels to land catch at Brazilian ports, mainly Rio Grande do Sul. This is fresh or chilled round fish caught in Uruguayan or Argentine waters and provided so that Brazilian processing capacity can be more fully utilized.

Brazilian government policy is to lessen the country's dependence on foreign vessels for supplies to domestic plants by developing a domestic fleet (or at least a Brazilian-controlled fleet) to fish hake and other species both in Brazilian waters and beyond the 200-mile limit. In this context, some discussions have been held concerning joint ventures with other countries, for example, Poland, to fish in Brazil's own waters, but no agreements have been signed to date. However, if this "replacement" policy is successful in any major way over the next five years it could close the Brazilian market to large quantities of Patagonian hake which could potentially compete with Canadian products in new and existing markets.

G. CONCLUSIONS

1. The market for fisheries products in Brazil is expected to expand from approximately 900 000 tonnes in 1978 to 1.25 million tonnes by 1985.

2. By 1985, approximately 100 000 tonnes will be provided by imported products, mostly in the form of fresh, chilled and frozen hake from Argentina and Uruguay, both of which are subject to little or no tariff.

3. Fisheries products imported from outside Latin America are subject to extremely high tariffs thus ruling out Canadian competition.

4. The one exception is salted cod products which have been allowed duty-free status, although until recently the price to Brazilians has been very expensive due to a government requirement for a one-year "import deposit" of 80% of the value of the imported shipment. With the lifting of this requirement in December 1979 by the President, imports could grow to 25 000 tonnes by 1985 from the present 15 000 tonnes.

5. Norway presently supplies 90% of Brazilian salted cod imports. Canada could increase its market share particularly in the north and northeast where there is more tolerance for small salted fish than in the south where consumers prefer large fish with the Norwegian cure. There are some indications that the southern market can be penetrated if prices are competitive.

6. Potential Canadian saltfish exporters should deal with existing importers in Brazil who are familiar with the country's requirements. In the longer term, there may be some potential for joint ventures between Canadian and Brazilian companies to bring in Canadian cod, wet, salted, for further processing in Brazil.

7. The Brazilian government appears optimistic about future catch potentials, forecasting an almost doubling of the overall catch by 1985. The predictions are based on little scientific information, although the industry is making significant investments based on them.

8. In terms of competition with Canada's fisheries exports to existing or potential markets, there is little cause for concern from the Brazilian export sector. The export of sardines has increased rapidly in recent years, but the product is inferior. Expanded exports of tuna, lobster, red snapper and catfish are not expected to be serious competitors in Canadian markets.

9. By law, only Brazilians are allowed to fish within their 200 mile limit. Joint venture proposals are welcomed from other nations, particularly those involving technological advancement. Foreign vessels can fish in Brazilian waters through charter by Brazilian companies for a period of three years, after which time they must be acquired by the Brazilian company or stop fishing.

10. Brazilian government policy encourages import replacement by the domestic fishery and thus Uruguayan and Argentinian hake may no longer have access to their traditional market and become available to compete elsewhere with Canadian groundfish product exports.

APPENDICES

APPENDIX I

KEY INSTITUTIONS INFLUENCING POLICY

The Superintendency for the Development of Fisheries - SUDEPE, the federal fishery institution of the Ministry of Agriculture - is responsible for the national fisheries development policy. In the field of research it co-ordinates programs and provides financial resources to many federal and state institutions and universities. SUDEPE has four research vessels working on an evaluation of the stocks of the main exploited species. It maintains a national system for the collection of statistical and biological data and undertakes studies of marketing, aquaculture and other aspects of fisheries management and development.

APPENDIX II

FISHERIES DEVELOPMENT POLICY AND PROSPECTS

Although some of the traditional stocks are already exploited at their maximum sustainable level, there are indications based on exploratory investigations of the existence of various underexploited or unexploited resources. It has been estimated that the marine and estuarine fishery production could be increased up to somewhere within a range from 1.4 to 1.7 million tonnes annually, considering only the resources available to 200 miles offshore.

Off northern Brazil, the fishery is little developed, except for crustacea, and little is known about the potential of the stocks. The major species appear to be flying fish, catfish, tuna and sharks, while in the mouth of the Amazon - which is rich in nutrients and primary production - the potential of pelagic fish is likely to be considerable and increased catches can be anticipated. Off the northeast coast, the shelf becomes narrower and productivity is low. The inshore stocks are considered to be already overfished and the offshore resources are being increasingly exploited. Excluding oceanic tuna, the potential yield of this area is probably not more than 100 000 tonnes. In the central fishery region, good stocks of pelagic species (notably sardine) are found together with less abundant demersal species, but these are already heavily exploited. In the southern area, between 29°S and 39°S, there could be a potential of perhaps 300 000 tonnes, approximately half demersal and half pelagic. Among the crustacea, the lobster and shrimp are already very heavily exploited but the stocks of crab (particularly in the north) are capable of withstanding more intensive fishing. The squid resource of the southern area might also be quite considerable.

Production from inland fishery resources can be increased in the Amazon and plate basins. Best prospects, however, lie in the field of freshwater aquaculture, taking advantage of large areas of low-cost land, the abundance of water, the climate, and the occurrence of a large number of native species of high value suitable for culture.

The government has recently undertaken the third stage of a fisheries development plan to strengthen some sectors of the national fisheries. A loan has been secured from the Inter American Development Bank for US $66 million to be matched by an equal amount from the Brazilian government. This loan is to be utilized for the following purposes:

(i) establishment of a credit line to increase production, including enlargement of the shrimp fleet (100 vessels) in the northern region;

(ii) renovation of the fleet in the southeastern and southern regions (60 vessels);

(iii) the acquisition of equipment for aquaculture and to upgrade the operations of individuals participating in the artisanal fishery on the coast of the State of Maranhao.

APPENDIX III
PROFILE OF THE DOMESTIC FISHING INDUSTRY*

A. Marine Fisheries

The Brazilian fishing industry comprises both artisanal and industrial fisheries, which each account for about one half of the catch. The industrial fleet, described below, is widely diversified while the artisanal fleet consists of nearly 50 000 vessels of less than 20 gross tons, of which about one in eight is motorized.

While by definition completely motorized, the industrial fleet, which is composed of nearly 1 000 units over 20 gross tons is generally poorly equipped. Shrimp boats fitted with sophisticated fishing and preservations equipment are the most modern units. The trawler fleet (employing double rig, otter, pair and stern trawls) which operates in the southeast and southern regions, comprises 310 boats of an average age of 11 years, the majority (70%) being of wooden hulls. Catches consist mainly of croakers and weakfish Scianids and shrimp Penaeids. The trawler fleet in the northern region comprises 144 boats of an average age of eight years, the majority being of steel hulls; catches are almost exclusively shrimp and catfish.

The fleet of purse seiners is concentrated along the southeastern and south coast and consists of 291 boats, almost all of which have wooden hulls and are of an average age of 18 years. They take sardines, mackerel, bluefish and mullet.

The lobster fleet operates in the northeastern region and consists of 124 boats with wooden hulls and the average age is seven years. The line fleet consists of 116 boats, also with wooden hulls, with an average age of over 10 years; this is located both in the southeastern region (Abrolhos) where a fleet

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* This section is based on FAO, Fishery Country Profile, November 1979, prepared by Getulio de Souza Neiva.

of around 50 boats harvest high quality fish Serranids to supply markets in the State of Rio de Janeiro and Sao Paulo, as well as in the northern and northeastern regions where some 60 boats exploit mainly snappers Lutjanids for export.

At the moment one whale catcher operates from July to December to supply the country's only whale shore plant, in the State of Paraiba. It catches mainly minke whales, in accordance with the quotas established by the International Whaling Commission (IWC). This industry will be closed down indefinitely from January 1981 in order to protect the resource.

With the lapse in December 1977 of Brazil's agreements with other countries covering the exploitation of shrimp in the northern region, the leasing of 140 foreign shrimp boats is now being negotiated. The leasing of these boats will continue until the country can replace them with Brazilian boats. A total of 250 boats, national and leased, will be soon fishing for shrimp in the region.

Thirteen large tuna longliners and trawlers have also been leased from Korea and Japan and are fishing in Brazilian waters. Three large tuna purse seiners have been leased from Spain. Joint ventures are being considered but none has so far been initiated.

B Inland Fisheries

In 1977, the production from inland fisheries was of the order to 140 000 tonnes of which approximately two-thirds was caught in the Amazon basin (mainly catfish) and most of the remainder elsewhere in the northeast, of which 20 000 tonnes were caught in 104 resevoirs administered by the National Department of Drought Control (DNOCS), 10 000 tonnes from the man-made lake of Sobradinho (San Francisco Basin), and the Mearim Basin (Maranhao). Production in the southeastern region is very modest, due mainly to the environmental changes caused by the construction of dams and by industrial pollution. Similarly, the west-central region at present makes only a marginal contribution to total production, but has possibilities of producing even more than the

northeast; at present expansion is constrained by legislation impeding its free development.

Aquaculture has some significance in the northeastern region, where many farmers practise the semi-intensive monosex culture of Tilapia Sarotherodon noloticus and of male hybrids of S. hornorum x S. noloticus producing up to 6 000 kilograms per hectare annually. At the moment production trials of the characin "tambaqui" Colossoma macropomum are being conducted. The problem of its reproduction in captivity has been solved by induced hormonal spawning. Mention should also be made of the substantial production of Artemia salina in the salt works of the State of Rio Grande do Norte; besides attending the national demand the value of the exports of this fish have recently been of the order of US $400 000.

C. Utilization of the Catch

The industrial fisheries are associated with some 400 companies spread along the whole coast. About half of these are in the southeastern and southern regions. Fish is marketed iced (37%), frozen (15%), salted (24%), canned (13%), others (10%). In recent years there has been a significant increase in the marketing of frozen fish, particularly in the large urban areas with the consequent reduction of sales of fresh (iced) fish. For the most part, iced fish - produced mainly by the artisanal fleet - is not gutted, resulting in more rapid deterioration in quality. About half of the frozen fish is from the southern region and consists mainly of hake, croakers and weakfish. The southern region is also the largest producer of salted products, which are consumed mainly in the northeastern region. The canneries are located in the southeast with a capacity to pack 2.5 million cans of 200 grams in eight hours, mainly of sardines.

D. Economic Role of the Fishing Industry

The fishing industry, although locally important, is not of great significance in the overall context of the Brazilian economy. The value of fish production at 1970 producer prices, during the period 1970-77 represented 0.20% of the Gross Domestic Product and 2.59% to 3.22% of the agricultural product. The balance of trade has recently become favourable, although the net contribution to foreign exchange earnings is small.

APPENDIX IV

MARKET ENTRY REQUIREMENTS

(a) Product Specifications

Northern Brazil will accept the traditional Atlantic Canadian pack of dried salted cod and related species and there is a tolerance for fish of small sizes. Southern Brazil prefers large and extra large fish (1 200-1 800 grams) dried to 38% or drier according to cura corrente, or the Norwegian cure, which requires that the fish be naped (to ensure whiteness) and be free of blood stains.

(b) Packing requirements

Norwegian imports of salt cod are, at present, shipped in two container sizes - a 50-kilogram well constructed wooden crate and a 25 kilogram heavy cardboard carton. The wooden crates are used for larger fish and are an absolute necessity for the product to arrive in first-class shape. The cardboard cartons generally contain 10 to 20 small and medium sized fish and are adequate for the job. Pilferage can be a serious problem if packing is not adequate and secure.

(c) Legal Requirements

It is recommended that prospective Canadian exporters of salted codfish to Brazil employ a local agent to expedite shipments and promote product acceptance. To open a letter of credit (L/C) to import codfish, a Brazilian importer has to:

i obtain an import licence;
ii deposit 100% of the value of the letter of credit with Banco do Brasil (this deposit is returned to the importer when the L/C is paid); and
iii have, of course, in his current account the necessary funds to open the L/C or ask the bank for a loan.

Since codfish imports have to be made under a L/C, documents are not sent on a collection basis, although usual documentation is included. Twenty

percent of the value of the shipment is retained and can only be paid after the merchandise is accepted by the importer. The acceptance by the importer requires the approval of the merchandise by an inspector whom the importer is required to name in the L/C. A sanitary certificate issued by an official department of the country of origin is also required.

APPENDIX V

BRAZILIAN EXPORTS' BY SPECIES

1. Shrimp are classified by size, colour and type. They are then usually sent abroad headless and unpeeled, although shipments of peeled shrimp are occasionally made. Those in greatest demand for export are the white and pink (rosa) shrimp, still found in both northern and southern waters. Most of the shrimp are found in northern waters and account for close to 75% of shipments. Heads and viscera are removed aboard the vessel. Once on land, they are classified into eight different sizes, varying from 10 shrimps per pound (large and medium sized shrimp), to 90 per pound (for smaller sizes), then packaged into kilogram crates.

2. Lobster (langusta) is normally exported boiled and frozen, headless and in the shell., However, some orders for live lobsters are filled for European importers. Lobster fishing trips last an average of 60 days and the lobsters are frozen on board. When the boats return to port the viscera are removed and the cavities cleaned. The lobsters are then individually celophane wrapped, classified by weight and packed in five kilogram boxes.

3. Catfish are taken mainly around the mouth of the Amazon River, to be exported mostly to the United States. The processing of the catfish is done entirely in local plants because of the quantity captured and the proximity of the fishing grounds to processing facilities. The catfish heads and viscera are removed first and then the fish is sliced and packed in plastic bags. Most companies use catfish to keep their processing plants busy because the shrimp catch, while considerably more valuable, is much smaller.

4. Sardine exports from Brazil have expanded rapidly in recent years, due largely to an FAO decision in 1973 that allowed Brazil to label its product as "sardines". Prior to that, there had been a distinction made between the Brazilian sardine sardina aurita and the sardine from the Mediterranean region sardina pilchardus, which for some time prevented Brazilian processors from using the name "sardine" and blocked their effective entry into the international market. Before 1973, Brazil had been exporting less than 500 tonnes annually, but in 1978, exports reached 3 072 tonnes.

Over four-fifths of the sardine catch is absorbed by the 53 sardine processing companies located in the states of Rio de Janeiro, Sao Paulo, and Santa Catarina. Of these companies, 29 have salting lines, 22 have canning lines, 12 produce sardine meal and 12 process frozen sardines. Five firms dominate the market and are responsible for 70% of output. These firms, when buying from fishermen, pay about 15 to 20 cruzeiros per kilogram (30 to 40 cents US) for sardines. Wages in plants are, on average, about 3 000 cruzeiros per month (US$ 65).

Sardine processing is basically for domestic consumption. Total production in 1978 was between 150 000 and 180 000 tonnes of which about 3 000 tonnes of finished canned products, primarily sardines in soybean oil or tomato sauce in 135,200, 350 gram cans, were exported. Many of the large companies are beginning to focus attention on the US market (developing packaging with the United Product Code on the label) while others are focusing on the Middle East, Africa and other parts of South America. However, as in 1979, when there was a failure in the domestic catch, product normally destined for export markets is sold domestically.