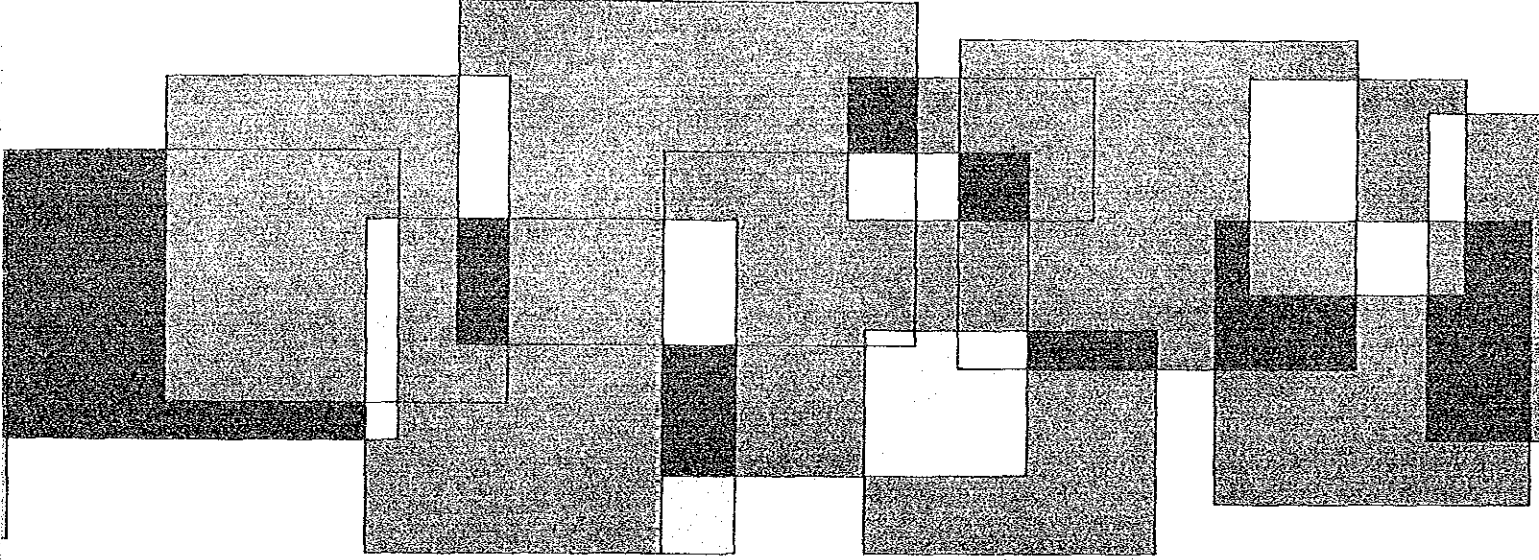


THE REPUBLIC OF THE PHILIPPINES
THE FEASIBILITY STUDY
ON
FISH TRANSPORT SYSTEM
VOLUME II
REGIONAL MASTER PLAN
AND
FEASIBILITY STUDY



FINAL REPORT

AUGUST, 1989

JAPAN INTERNATIONAL COOPERATION AGENCY

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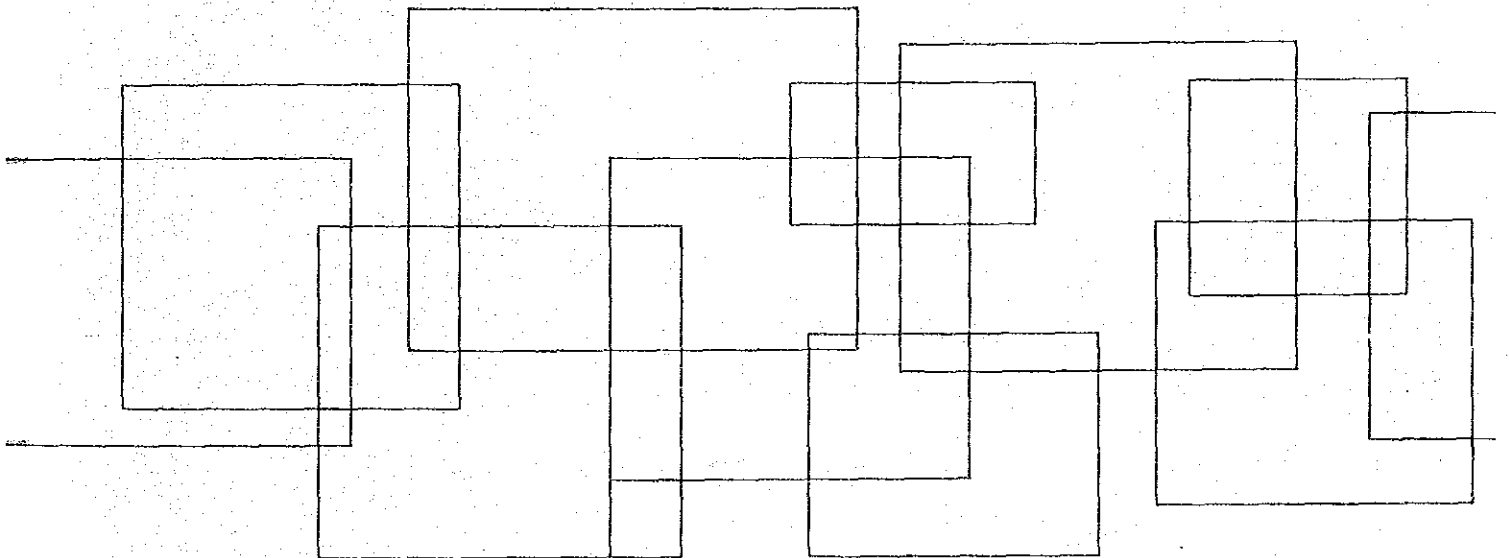


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THE REPUBLIC OF THE PHILIPPINES

**THE FEASIBILITY STUDY
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VOLUME II
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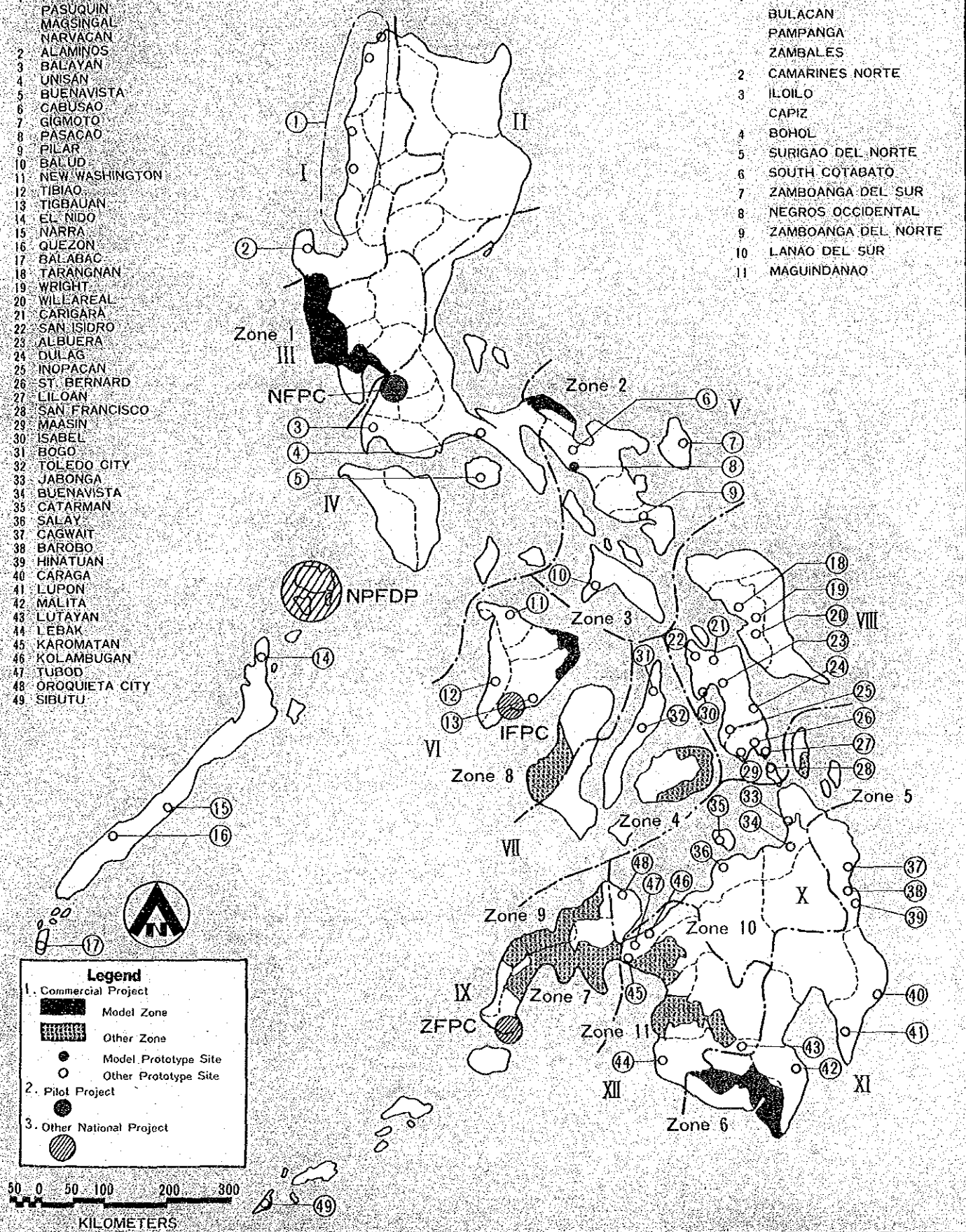
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Prototype Sites

- 1 PAGUDPUD
- 2 PASUQUIN
- 3 MAGSINGAL
- 4 NARVACAN
- 5 ALAMINOS
- 6 BALAYAN
- 7 UNISAN
- 8 BUENAVISTA
- 9 CABUSAO
- 10 GIGMOTO
- 11 PASACAO
- 12 PILAR
- 13 BALUD
- 14 NEW WASHINGTON
- 15 TIBIAO
- 16 TIGBAUAN
- 17 EL NIDO
- 18 NARRA
- 19 QUEZON
- 20 BALABAC
- 21 TARANGNAN
- 22 WRIGHT
- 23 WILLAREAL
- 24 CARIGARA
- 25 SAN ISIDRO
- 26 ALBUERA
- 27 DULAG
- 28 INOPACAN
- 29 ST. BERNARD
- 30 LILOAN
- 31 SAN FRANCISCO
- 32 MAASIN
- 33 ISABEL
- 34 BOGO
- 35 TOLEDO CITY
- 36 JABONGA
- 37 BUENAVISTA
- 38 CATARMAN
- 39 SALAY
- 40 CAGWAIT
- 41 BAROBO
- 42 HINATUAN
- 43 CARAGA
- 44 LUPON
- 45 MALITA
- 46 LUTAYAN
- 47 LEBAK
- 48 KAROMATAN
- 49 KOLAMBUGAN
- 50 TUBOD
- 51 OROQUIETA CITY
- 52 SIBUTU

Zone Province

- | Zone | Province |
|------|---------------------|
| 1 | BATAAN |
| | BULACAN |
| | PAMPANGA |
| | ZAMBALES |
| 2 | CAMARINES NORTE |
| 3 | ILOILO |
| | CAPIZ |
| 4 | BOHOL |
| 5 | SURIGAO DEL NORTE |
| 6 | SOUTH COTABATO |
| 7 | ZAMBOANGA DEL SUR |
| 8 | NEGROS OCCIDENTAL |
| 9 | ZAMBOANGA DEL NORTE |
| 10 | LANAO DEL SUR |
| 11 | MAGUINDANAO |



LOCATION OF SELECTED ZONES AND PROTOTYPE SITES OF FTS

THE REPUBLIC OF THE PHILIPPINES
 THE FEASIBILITY STUDY ON
 FISH TRANSPORT SYSTEM
 JAPAN INTERNATIONAL COOPERATION AGENCY

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ABBREVIATIONS

1. Public Agencies and Organizations

(1) Government of the Philippines

DA	: Department of Agriculture
DPWH	: Department of Public Works and Highways
BFAR	: Bureau of Fisheries and Aquatic Resources, DA
FIDC	: Fishery Industry Development Council
FNRI	: Food and Nutrition Research Institute
NCSO	: National Census and Statistics Office
NEDA	: National Economic and Development Authority
PFDA	: Philippine Fisheries Development Authority

(2) Government of Japan

OECD	: Overseas Economic Cooperation Fund
JICA	: Japan International Cooperation Agency

(3) International Organization

IBRD	: International Bank of Reconstruction and Development, World Bank
------	---

(4) Internal Units of PFDA

IFPC	: Iloilo Fishing Port Complex
NFPC	: Navotas Fishing Port Complex
ZFPC	: Zamboanga Fishing Port Complex

2. Plans / Programs / Projects

FTS	: Fish Transport System
IFDP	: Integrated Fisheries Development Program
IPCS	: Nationwide Ice Plants and Cold Storages Network System
NPFDP	: Northern Palawan Fisheries Development Project
FDCP	: Fisheries Development and Conservation Plan 1987-1992
MTPDP	: Medium-Term Philippine Development Plan 1987-1992

3. Technical Terms

EEZ	: Exclusive Economic Zone
EIRR	: Economic Internal Rate of Return

FIRR	: Financial Internal Rate of Return
F/S	: Feasibility Study
GDP	: Gross Domestic Product
GRDP	: Gross Regional Domestic Product
MFP	: Municipal Fishing Port
M/P	: Master Plan
NCR	: National Capital Region
O/D	: Origin and Destination
RFP	: Regional Fishing Port

TERMINOLOGY

1. Municipal Fisheries:

Fishing utilizing fishing boats of three gross tons or less or using gear not requiring the use of boats (P.D. No. 704)

2. Commercial fisheries

Fishing utilizing fishing boats more than three gross tons (P.D. No. 704)

3. Brokers - Merchants who sell fish for commercial and municipal fishermen and pond operators, receiving a commission of 5-7%. They do not own the fish, but rather it is given on consignment basis.

4. Viajeros - Transporters who buy and bring fish catch from fish landing sites/wholesale markets to other wholesale or retail markets by land and/or marine transport; may also be called shippers or truckers.

5. COD : Cash on Delivery

6. O A : Offset Account

7. CAT : Cash After Trading

1. INTRODUCTION

1. INTRODUCTION

The report on the "Feasibility study on the Fish Transport System" is comprised of three volumes including the summary report. Volume I is concerned with the basic policy for the development of a FTS which covers all the municipal fishing ports in the Philippines. Volume II contains the regional master plan and the feasibility study which was carried out in four selected zones and one prototype site. The feasibility of the proposed master plan was also evaluated.

Volume II is composed of the following chapters. In chapter 2, the relationship of the fisheries sector to regional socio-economic progress was determined by analyzing the general socio-economic background of the respective regions in which the four selected zones and prototype site are located. In chapter 3, the characteristics, future potentiality, and future problems which may hinder further development in the fisheries sector were analyzed and clarified. In chapter 4, fish demand and supply were projected by zones/prototype site for the respective years from the base year 1986, the midterm target year 1995, and the long term year 2010. Fish demand and supply by area was estimated by dividing the projected national volume in the basic plan, into each zone or prototype site. Therefore the aggregated volume by area will coincide with the national volume.

In chapter 5, the present conditions which exist in the fish marketing and transport system are pinpointed and future prospects for improvement are projected based on data collected through a interview survey using questionnaire in the respective areas. This data, together with the projected volume of fish demand and supply by zones/prototype site were used to estimate fish distribution and volume for the base and target years. Fish distribution patterns for locally consumed fish, external flow of fish from each production area to another, and export to foreign countries are shown. In this study, the fish distribution structure including the fish marketing system, marketing cost, fish prices, and related socio-economic background as well as O/D volume of fish were defined by kinds of fish. Satisfaction of the local demand within each zone or prototype site was made importance in projecting future fish supply and demand balance. Future O/D volume, based on

marketability and domestic demand or export by kinds of fish was projected "without the project" (that is without new significant investment for FTS and with gradual growth in its development as shown in the past).

In chapter 6, FTS network within the zones/prototype site and from these areas to Metro Manila is shown. Location maps showing the major components of FTS, and the distribution system of fish are included. The layout plan was formulated accommodate the size and the capacity of individual components and facilities. In chapter 7, construction costs have been estimated for the pilot project and commercial projects which will be established in the respective zones and prototype site.

In Chapter 8, economic evaluation was conducted from a national economic point of view. In Chapter 9, financial viability was assessed to determine the effectiveness of the management body of FTS. The feasibility of the project was determined based on this evaluation.

In Chapter 10, the master action plan was formulated to develop a FTS management system and its organization after the completion of the project.

Chapter 11 contains the recommended measures to be undertaken by the Government of the Philippines.

2. REGIONAL ECONOMIC BACKGROUND

2. REGIONAL ECONOMIC BACKGROUND

The objective four (4) zones and one (1) prototype of FTS are located in the following administrative regions

Zones/Prototype Site	Region
Zone 1	Central Luzon Region (Region III)
Zone 2	Bicol Region (Region V)
Zone 3	Western Visayan Region (Region VI)
Zone 6	Southern Mindanao Region (Region XI)
Prototype site Pasacao	Bicol Region (Region V)

(1) Regional Economic Condition of Central Luzon Region

GRDP in 1987 was 8,530 million pesos at a constant price in 1972 as shown in Table 2.1. Value added by sector was 2,664 million pesos in the agriculture, forestry and fishery sector, 2,802 million pesos in the industry sector and 3,064 million pesos in the services sector, showing the balanced development of each sector. GRDP, according to MTPDP is estimated to increase with the annual growth rate of 7.3% and expected to reach 12,152 million pesos in 1992, mainly due to the development of the industry sector. The annual growth rate of the agriculture, forestry and fishery sector was estimated to be 5.4% during 1987 and 1992, owing to the development of livestock, poultry and fisheries instead of the stagnation of crop production during 1982 and 1985.

Total population in 1987 was $5,730 \times 10^3$. Per capita GRDP in 1987 was 1,490 pesos at a constant price of 1972, slightly lower than the national average of 1,690 pesos and far below 3,836 pesos in Metro Manila. According to MTPDP, the population will be $6,420 \times 10^3$ and per capita GRDP will be 1,892 pesos in 1992, and a steady growth of income is anticipated.

The share of the fishery sector was about 7.1% of the total GRDP in the agriculture, forestry and fishery sector in 1985. It was still a minor contribution sector with only 177 million pesos compared to the poultry sector with 741 million pesos and the livestock sector with 322 million pesos.

TABLE 2.1 GRDP, POPULATION, AND PER CAPITA GRDP IN CENTRAL LUZON REGION

	1982	1985	1987	1992	Average Annual Growth Rate (%) (1987/92)
1. GRDP (10 ⁶)	8,795	8,016	8,530	12,152	7.3
1) Agri. Fishery, & Forestry	2,567	2,509	2,664	3,457	5.4
Crops	1,452	1,267	-	-	-
Livestock	307	322	-	-	-
Poultry	631	741	-	-	-
Fishery	170	177	-	-	-
Forestry	7	2	-	-	-
2) Industry	3,255	2,641	2,802	4,322	9.1
3) Service	2,973	2,866	3,064	4,373	7.4
2. Population (10 ³)	-	-	5,730	6,420	2.3
3. Per Capita GRDP (Peso)	-	-	1,490	1,892	4.9

Remarks 1: GRDP at a constant price in 1972

2: Projections in 1987 and 1992 were estimated by NEDA

Source : Medium-Term Central Luzon Regional Development Plan, 1987-1992
Regional Development Council, Central Luzon (Region III),
December 1986

(2) Regional Economic Condition of Bicol Region

GRDP in 1987 was 3,296 million pesos at a constant price of 1972 as shown in Table 2.2. GRDP by sector was 1,869 million pesos in the agriculture, forestry and fishery sector, 282 million pesos in the industry sector and 1,145 million pesos in the services sector, indicating unbalanced development reflected in the small contribution of the industry sector and the higher share of the agriculture, forestry and fishery sector. GRDP, according to MTPDP, is estimated to increase with the annual growth rate of 7.6% and expected to reach 4,753 million pesos in 1992, mainly due to the development of industry sector. However, the agriculture, forestry and fishery sector will still be maintained as the most important sector.

Total population in 1987 was 4,100 x 10³ and per capita GRDP in 1987 was 803 pesos at a constant price of 1972, less than half the national average of 1690 pesos. This region and the Eastern Visayan Region are the

most depressed areas in this country. According to MTPDP, population will be $4,580 \times 10^3$ and per capita GRDP will be 1,038 pesos in 1992, lower than the national 2,106 pesos of national average. This region will continue to be a depressed area. Therefore FTS will be important from an industrial development point of view in this depressed area.

TABLE 2.2 GRDP, POPULATION, AND PER CAPITA GRDP IN BICOL REGION

	1982	1985	1987	1992	Average Annual Growth Rate (%) (1987/92)
1. GRDP (10^6)	2,773	3,070	3,296	4,753	7.6
1) Agri. Fishery, & Forestry	1,435	1,723	1,869	2,319	4.4
2) Industry	414	288	282	736	21.2
3) Service	924	1,059	1,145	1,698	8.2
2. Population (10^3)	-	-	4,105	4,580	2.2
3. Per Capita GRDP (Peso)	829	783	803	1,038	5.3

Remarks 1: GRDP at a constant price in 1972

2: Projections in 1987 and 1992 were estimated by NEDA

Source : Medium-Term Bicol Regional Development Plan, 1987-1992
Regional Development Council, Bicol Region (Region V),
December 1986

(3) Regional Economic Condition of Western Visayan Region

GRDP in 1987 was 7,755 million pesos at a constant price of 1972 as shown in Table 2.3. GRDP by sector is 3,130 million pesos in the agriculture, forestry and fishery sector, 1,980 million pesos in the industry sector and 2,645 million pesos in the services sector. This reflects development in each sector and indicates an agro-based development region. GRDP, according to MTPDP was estimated to increase with the annual growth rate of 7.1% and expected to reach 10,923 million pesos in 1992 especially due to the development of the industry sector. The annual growth rate in the agriculture, forestry and fishery sector was estimated to be 5.3% during 1987 and 1992, owing to the development of livestock, poultry and fisheries with an annual growth rate of about 6% instead of the stagnation of crop production.

Total population in 1987 was $5,320 \times 10^3$ and per capita GRDP in 1987

was 1,457 pesos at a constant price of 1972, slightly lower than the national average of 1,690 pesos and far below the 3,836 pesos in Metro Manila. According to MTPDP, the population will be $5,910 \times 10^3$ and per capita GRDP will be 1,850 pesos in 1992. On the average, a 4.9% high growth rate in income is expected during these five years.

The share of the fishery sector was about 22.7% of the agriculture, forestry and fishery sector based upon the GRDP by sector in 1987. It was a major, important sector contributing to the supply of protein with 710 million pesos, compared to the poultry sector with 282 million pesos, and the livestock sector with 213 million pesos. FTS will function to achieve this fishery development.

TABLE 2.3 GRDP, POPULATION, AND PER CAPITA GRDP IN WESTERN VISAYAS REGION

	1982	1985	1987	1992	Average Annual Growth Rate (%) (1987/92)
1. GRDP (10^6)	6,730	7,241	7,755	10,923	7.1
1) Agri. Fishery, & Forestry	2,600	2,926	3,130	4,047	5.3
Crops	-	-	1,922	2,433	4.8
Livestock	-	-	213	283	5.8
Poultry	-	-	285	384	6.1
Fishery	-	-	710	947	6.0
Forestry	-	-	0	0	-
2) Industry	1,846	1,850	1,980	3,211	10.2
3) Service	2,284	2,465	2,645	3,665	6.7
2. Population (10^3)	4,372	5,092	5,323	5,905	2.1
3. Per Capita GRDP (Peso)	1,539	1,422	1,457	1,850	4.9

Remarks 1: GRDP at a constant price in 1972

2: Projections in 1987 and 1992 were estimated by NEDA

Source : Medium-Term Western Visayas Regional Development Plan, 1987-1992 Regional Development Council, Western Visayas (Region VI), December 1986

(4) Regional Economic Condition of Southern Mindanao Region

GRDP in 1987 was 6,689 million pesos at a constant price of 1972 as shown in Table 2.4. GRDP by sector is 3,076 million pesos in the agriculture, forestry and fishery sector, 1,060 million pesos in the

industry sector, and 2,553 million pesos in the services sector, and indicates a region based on agriculture, forestry and fishing. GRDP, according to MTPDP, was estimated to increase with an annual average growth rate of 7.3% and is expected to reach 9,452 million pesos in 1992, mainly due to the development of the industry sector. The annual growth rate of the agriculture, forestry and fishery sector was estimated to be 5.0% during 1987 and 1992. There is no indication of a significant change in the position of the agriculture, forestry, and fishery sector as a basic industry, but there will be a stronger dependence on the services and industry sectors.

Total population in 1987 was $4,030 \times 10^3$ and per capita GRDP in 1987 was 1,659 pesos at a constant price of 1972, nearly equivalent to the national average of 1,690 pesos. This income is at the highest among regions in Mindanao Island. According to MTPDP, the population will be $4,540 \times 10^3$ and per capita GRDP will be 2,083 pesos in 1992, and is expected to continue as the second highest income Region after the Southern Tagalog Region in this country with the exception of Metro Manila.

TABLE 2.4 GRDP, POPULATION, AND PER CAPITA GRDP IN SOUTHERN MINDANAO REGION

	1986	1987	1992	Average Annual Growth Rate (%) (1987/92)
1. GRDP (10^6)	6,206	6,689	9,452	7.3
1) Agri. Fishery, & Forestry	2,969	3,076	3,977	5.0
2) Industry	936	1,060	1,949	13.3
3) Service	2,301	2,553	3,526	7.4
2. Population (10^3)	-	4,030	4,540	2.4
3. Per Capita GRDP (Peso)	-	1,659	2,083	4.7

Remarks 1: GRDP at a constant price in 1972

2: Projections in 1987 and 1992 were estimated by NEDA

Source : Medium-Term Southern Mindanao Development Plan, 1987-1992
Regional Development Council, Southern Mindanao Region (Region XI),
December 1986

3. PRESENT CONDITIONS OF THE FISHERIES SECTOR

3. PRESENT CONDITIONS OF THE FISHERIES SECTOR

Present conditions of the fisheries sector in the 4 zones and one prototype site have been estimated and compiled with fish production in 1986 as the base year of projection used for the basic plan in this study. The number of fishing vessels/fishermen in 1980 and fish pond area in 1983 were some of the factors taken into consideration.

(1) Present Condition of the Fisheries Sector in Zone 1

Total fish production in 1986 was 90,355 tons in this zone. Fish production was 7,975 tons in the commercial fisheries sector, 18,111 tons in the municipal fisheries sector, and 64,849 tons in the aquaculture sector, with a high production of aquaculture development.

Fish produced by aquaculture was mainly harvested from the inland fish pond. The fish pond area was 46,370 ha according to BFAR data in 1983. It is concentrated in a swamp flooded area and a river transport system of fish products has been developed because of unfavorable conditions of an overland transport system.

The use of a fish collection system from the fish pond by way of the river will continue to be important in reducing fish transport cost and maintaining good fish quality because fish landing sites are located along the river.

Municipal fisheries whose activities are mainly on the sea, are concentrated on the catch of yellowfin tuna near the coast in Zambales province and on that of anchovies in Manila Bay. Fish collection on the sea and a handling system to meet the specific needs and characteristics of these kinds of fish should be developed in this fisheries sector.

According to NCSO census in 1980, the number of municipal fishing vessels less than 3 tons were 7,521 non-motorized vessels and 4,278 motorized vessels. This reflects the low level of motorization. There were 140 vessels above 3 tons, of which only one vessel was above 50 tons. It seems that the size of a fishing boat is still fairly small. The number of fishermen engaged in municipal fisheries were 29,933 and

fishermen in commercial fisheries were 1,571. These figures of fishing vessels and fishermen show that scale of marine fishing activities is still at a primitive level.

(2) Present Condition of the Fisheries Sector in Zone 2

Total fish production in 1986 was 29,242 tons in this zone. Fish production was 8,902 tons in the commercial fisheries sector, 19,768 tons in the municipal fisheries sector and 572 tons in the aquaculture sector. These figures show that this zone is mainly a fish landing area for municipal fisheries.

There are many kinds of fish caught by the commercial and municipal fisheries sectors including small fish such as anchovies, roundscad and slipmouth. There is not much difference in production according to species. These are major reasons why the comprehensive system, which provides the services covering fish collection, handling and transport, has not been developed for the special kinds of fish in this zone.

It is clear that fish production seriously decreased from 1982 to 1986. It was caused mainly by the steady reduction of production in the municipal fisheries sector especially along the coast, whereas fish production in the commercial fisheries sector increased steadily from 1982 to 1986. It seems to have shifted from municipal fisheries to commercial fisheries. In fisheries exploitation in the entire marine fishing industry, it is important to control the coastal fishery resources and to develop the new fishing grounds by upgrading fishing vessels and introducing fishing carrier vessels.

According to NCSO census in 1980, the number of municipal fishing vessels less than 3 tons were 1,147 non-motorized vessels and 2,039 motorized vessels, and only 17 vessels were above 3 tons. The number of fishermen engaged in municipal fisheries were 3,191 and 435 fishermen were engaged in commercial fishing. These figures show that fishing activities are maintained at a primitive level on a small scale.

(3) Present Condition of the Fisheries Sector in Region 3

Total fish production in 1986 was 65,088 tons in this zone. Fish production was 14,781 tons in the commercial fisheries sector, 26,011 tons in the municipal fisheries sector and 24,296 tons in the aquaculture sector. This zone is characterized by a balanced development in marine fisheries and aquaculture on a very high level.

Fish production decreased from 1982 to 1986. This decrease is attributed to the political and economic depression of the entire country. This condition has affected not only the fishing activities in the marine fisheries sector, but also all fishery sectors. Fish production in the aquaculture sector increased steadily from 1982 to 1986. Many fish ponds were converted for the culture of prawn from milk fish, and this has led to remarkable structural change in this sector.

Fish production in the municipal fisheries sector had decreased until 1984. Thereafter in 1986, its production recovered to approximately the same production levels attained in 1983, and fish production will recover to the production levels achieved in 1982. It will increase in the future if the existing growth trend is maintained. In the commercial fisheries sector, fish production plummeted in 1983. Since then it has recovered to current favorable levels.

The major sub-sector of aquaculture was inland aquaculture with 16,220 ha. of fish pond area in 1983 according to BFAR's statistics. There are no significant constraints on the physical infrastructure from the fish ponds to the commercial ports and airports in this zone. However, there will be a pressing need to establish fish processing, marketing, a collection system, and development of a marine transport system from this zone to Metro Manila to keep up with a structural change in this sector from milkfish to prawn culture. A fish processing system by local small scale manufacturers has been developed for popular/cheaper kinds of fish like roundsad, slipmouth and mackerel produced in the municipal and commercial fisheries sector. Improvements in the fish collection system from isolated islands to Panay Island are keen issues in promoting marine fishing, because there are so many fishermen in these islands.

According to the NCSO census in 1980, the number of municipal fishing vessels weighing less than 3 tons were 4,283 non-motorized vessels and 4,203 motorized vessels. There were 47 vessels weighing above 3 tons, of which 5 vessels were between 100 tons to 500 tons and 11 vessels between 50 and 100 tons. It can be deduced that the scale of commercial fisheries is comparatively large. The number of fishermen engaged in municipal fisheries were 7,253 and fishermen in commercial fisheries were 911. A significant numbers of municipal fishermen were organized under big fishing boat operators who are also traders/processors. These figures reflect the complex fishing activities and structure.

(4) Present Condition of the Fisheries Sector in Zone 6

Total fish production in 1986 was 80,050 tons in this zone. Fish production was 49,150 tons in the commercial fisheries sector, 30,464 tons in the municipal fisheries sector and 436 tons in aquaculture sector. Emphasis is placed on the development of commercial fisheries sector.

Marine production increased significantly from 1982 to 1986. It was caused mainly by rapid growth in the commercial fisheries sector from 1982 to 1986. The municipal fisheries sector was depressed. It appears that this zone has been developed by the rapid growth in the fishing industry. Contribution from the aquaculture sector will continue to be small without a future expansion plan.

Much of the major larger sized fish such as skipjack and yellowfin tuna are produced in both the commercial and municipal fisheries sectors. This zone is the most advanced landing site for these fish in the Philippines. In order to the meet the demands of a rapid structural change in marine fishing by the private sector, it is important to develop the fish collection, handling and transport system and to develop quality control in skipjack and yellowfin tuna for export. Such a system should be instituted for the effective utilization of fish resources as well.

According to the NCSO census in 1980, the number of municipal fishing vessels weighing less than 3 tons were 1,479 non-motorized vessels and 970 motorized vessels. There were 65 vessels weighing above 3 tons, of which one vessel was more than 500 tons, 2 vessels between 100 to 500 tons and

11 vessels between 50 to 100 tons. The boat capacity is the largest within all selected zones.

The number of fishermen engaged in municipal fisheries were 2,445 and fishermen in commercial fisheries were 1,581. The figures of fishing vessels and fishermen show that fishing activities are at an advanced level in comparison to other zones.

(5) Present Condition of the Fisheries Sector in Prototype Site Pasacao

Total fish production in 1986 was 9,452 tons in this zone. Fish production was 140 tons in the commercial fisheries sector, 9,312 tons in the municipal fisheries sector. These figures reflect the emphasis on the municipal fisheries sector.

Much of the species of fish caught in the municipal fisheries sector are small sized fish such as roundscad, anchovies, and sardine. There is no significant difference in fish production by species.

Fish production decreased from 1982 to 1986. This reduction was caused by the steady decline of fish production in coastal fishing. In fishery resources exploitation in the entire marine fishing industry, it is important to control coastal fishery resources and to develop the new fishing grounds by upgrading fishing vessels and introducing fish carrier vessels.

4. PROJECTION OF FISH DEMAND AND SUPPLY

4. PROJECTION OF FISH DEMAND AND SUPPLY

The projected volumes of fish demand and supply by zone are shown in Tables 4.1 to 4.5.

4.1 Projection of Fish Demand and Supply in Zone 1

Total demand for fish was 60,968 tons in 1986, while fish supply was 91,862 tons. The surplus of fish was 30,894 tons in 1986. This surplus will increase from 30,894 tons in 1986 to 53,013 tons in 1995 and to a 94% increase of 102,912 tons in 2010.

In terms of fish demand, the growth of per capita fish consumption is very small and fish export grows rapidly because of sharp increases in shrimp export. As a result, the share of export to fish demand was 16.7% in 1986. It is projected to 21.8% in 1995 and 30.0% in 2010. This zone will serve as a fish supply base to Metro Manila. However more emphasis will be placed on its function as the export base of fish products.

In fish supply, the share of the aquaculture sector was 70.6% to total fish supply of 91,862 tons in 1986. Its share is expected to be 80.3% to total supply of fish of 132,886 tons in 1995 and 84.9% of 216,160 tons in 2010. Fish production in this zone will continue to rely heavily on the aquaculture sector.

TABLE 4.1 POPULATION AND FISH DEMAND/SUPPLY IN ZONE 1 (1986, 1995 AND 2010)

	1986	1995	2010	Average Annual Growth Rate(%)	
				1986-1995	1995-2010
Population	1,468,352	1,778,461	2,208,470	2.2	1.5
Demand (tons)	60,968	79,873	113,248	3.0	2.4
Domestic					
Consumption	50,816	62,473	79,311	2.3	1.6
Export	10,152	17,400	33,937	6.2	4.6
Frozen Tuna	6	7	9	1.7	1.7
Fresh Tuna	3	10	27	14.3	6.8
Canned Tuna	42	69	104	5.7	2.8
Shrimp	9,174	16,132	32,267	6.5	4.7
Milkfish	392	945	1,289	10.3	2.1
Others	535	237	241	-8.6	0.1
Supply (tons)	91,862	132,886	216,160	4.2	3.3
Domestic					
Production	90,935	131,772	214,641	4.2	3.3
Commercial					
Fisheries	7,975	8,267	9,872	0.4	1.2
Municipal					
Fisheries	18,111	16,787	21,180	-0.8	1.6
Aquaculture	64,849	106,718	183,589	5.7	3.7
Import	927	1,114	1,519	2.1	2.1

Remarks: 1) Seaweed and fish meal are excluded. Volume of fish demand and supply is projected according to the provided data, but it is not adjusted with data collected through the interview survey for O/D of fish in this study. The aggregate volume by zone is equivalent to the national volume.

Source: 1) Philippines Population Projections 1980-2030, 1985, NEDA
 2) Fisheries Profile 1986, Regional Office BFAR
 3) Fisheries Statistics 1981-1986, BFAR
 4) Foreign Trade Statistics of the Philippines 1986, NEDA

4.2 Projection of Fish Demand and Supply in Zone 2

Total demand for fish was 9,275 tons in 1986, while total supply of fish was 29,399 tons. The surplus of fish was 20,124 tons in 1986 and will increase to 21,448 tons in 1995. It will grow at 23.5% from 1986 to 2000 and will be 26,491 tons in 2010. The surplus of fish in this zone will be directed to meet the domestic demand and not the export demand. This situation is expected to continue even in the future.

The share in municipal fisheries was 67.4% to total fish supply of

29,399 tons in 1986. It will be 70.3% of 32,535 tons of total fish supply in 1995 and 70.9% of 41,519 tons in 2010. Fish production in this zone will rely more on municipal fisheries sector.

TABLE 4.2 POPULATION AND FISH DEMAND/SUPPLY IN ZONE 2 (1986, 1995 AND 2010)

	1986	1995	2010	Average Annual Growth Rate(%)	
				1986-1995	1995-2010
Population	249,295	308,225	401,246	2.4	1.8
Demand (tons)	9,275	11,087	15,028	2.0	2.0
Domestic					
Consumption	8,627	10,686	14,553	2.4	2.1
Export	648	401	475	-5.2	1.1
Frozen Tuna	5	6	8	2.0	1.9
Fresh Tuna	0	1	2	-	4.7
Canned Tuna	39	64	97	5.7	2.8
Shrimp	11	21	43	7.4	4.9
Milkfish	5	12	16	10.2	1.9
Others	588	297	309	-7.3	0.3
Supply (tons)	29,399	32,535	41,519	1.1	1.6
Domestic					
Production	29,242	32,341	41,240	1.1	1.6
Commercial					
Fisheries	8,902	8,497	10,146	-0.5	1.2
Municipal					
Fisheries	19,768	22,871	29,440	1.6	1.7
Aquaculture	572	973	1,654	6.1	3.6
Import	157	194	279	2.4	2.5

Remarks: 1) Seaweed and fish meal are excluded. Volume of fish demand and supply is projected according to the provided data, but it is not adjusted with data collected through the interview survey for O/D of fish in this study. The aggregate volume by zone is equivalent to the national volume.

Source: 1) Philippines Population Projections 1980-2030, 1985, NEDA
 2) Fisheries Profile 1986, Regional Office BFAR
 3) Fisheries Statistics 1981-1986, BFAR
 4) Foreign Trade Statistics of the Philippines 1986, NEDA

4.3 Projection of Fish Demand and Supply in Zone 3

Total demand for fish was 19,808 tons in 1986, while total supply of fish was 65,375 tons. The surplus of fish was 45,567 tons in 1986. It is projected to increase by 39.4% from 45,567 tons in 1986 to 63,519 tons in 1995 and by 54.1% to 97,903 tons in 2010.

In terms of fish demand, the growth of per capita fish consumption is very small and fish export has grown rapidly due to the promotion of shrimp export. The share of export to total fish demand was be 20.7% in 1986, and will be 23.7% in 1995 and 27.7 % in 2010. It is expected to further strengthen its function as a fish export base.

In the area of fish supply, fish production by capture fisheries was more than the harvested volume by the aquaculture sector in 1986. In 1995, the proportion of fish production will be nearly equal in the aquaculture and capture fisheries sectors. However, the aquaculture sector is expected to contribute more in production than the capture fisheries sector in 2010.

TABLE 4.3 POPULATION AND FISH DEMAND/SUPPLY IN ZONE 3 (1986, 1995 AND 2010)

	1986	1995	2010	Average Annual Growth Rate(%)	
				1986-1995	1995-2010
Population	453,996	555,165	706,631	2.3	1.6
Demand (tons)	19,808	25,576	35,209	2.9	2.2
Domestic					
Consumption	15,712	19,524	25,456	2.4	1.8
Export	4,096	6,052	9,753	4.4	3.2
Frozen Tuna	221	255	323	1.6	1.6
Fresh Tuna	9	29	80	13.9	7.0
Canned Tuna	1,590	2,595	3,921	5.6	2.8
Shrimp	1,249	2,258	4,322	6.8	4.4
Milkfish	190	486	664	11.0	2.1
Others	837	429	443	-7.2	0.2
Supply (tons)	65,375	89,095	133,112	3.5	2.7
Domestic					
Production	65,088	88,747	133,112	3.5	2.7
Commercial					
Fisheries	14,781	14,220	16,980	-0.4	1.2
Municipal					
Fisheries	26,011	31,070	40,012	2.0	1.7
Aquaculture	24,296	43,457	75,632	6.7	3.8
Import	287	348	488	2.2	2.3

Remarks: 1) Seaweed and fish meal are excluded. Volume of fish demand and supply is projected according to the provided data, but it is not adjusted with data collected through the interview survey for O/D of fish in this study. The aggregate volume by zone is equivalent to the national volume.

Source: 1) Philippines Population Projections 1980-2030, 1985, NEDA
 2) Fisheries Profile 1986, Regional Office BFAR
 3) Fisheries Statistics 1981-1986, BFAR
 4) Foreign Trade Statistics of the Philippines 1986, NEDA

4.4 Projection of Fish Demand and Supply in Zone 6

Total demand for fish was 41,612 tons in 1986, while total supply of fish was 80,376 tons in this year. The surplus of fish was 38,764 tons in 1986. The surplus of fish will increase by 3.9% from 38,764 tons in 1986 to 40,279 tons in 1995 and decrease 5.3% to 36,701 tons in 2010.

In terms of fish demand, the growth of per capita fish consumption is very small, but fish export grows rapidly owing to sharp increases in tuna export. The share of fish export to total fish demand was 57.0% in 1986, and will be 62.8% in 1995 and 67.2% in 2010. It is anticipated to further strengthen its function as a tuna export base.

In the area of fish supply, fishing activities of the municipal fisheries sector will also be encouraged by the promotion of tuna export. Though fish production of the municipal fisheries sector in 1986 was less than that of commercial fisheries in 1986, it is anticipated that fish production in the municipal fisheries sector will be roughly equal to production in the commercial fisheries sector in 1995. By the year 2010, production will rely more heavily on the municipal fisheries sector than on the commercial sector.

TABLE 4.4 POPULATION AND FISH DEMAND/SUPPLY IN ZONE 6 (1986, 1995 AND 2010)

	1986	1995	2010	Average Annual Growth Rate(%)	
				1986-1995	1995-2010
Population	516,594	644,138	855,898	2.5	1.9
Demand (tons)	41,612	60,715	92,979	4.3	2.9
Domestic					
Consumption	17,878	22,566	30,515	2.6	2.0
Export	23,734	38,149	62,464	5.4	3.3
Frozen Tuna	2,522	2,906	3,681	1.6	1.6
Fresh Tuna	1,423	4,681	13,047	14.1	7.1
Canned Tuna	18,151	29,612	44,745	5.6	2.8
Shrimp	1	1	3	0.0	7.6
Milkfish	4	10	14	10.7	2.3
Others	1,633	939	974	-6.0	0.2
Supply (tons)	80,376	100,994	129,680	2.6	1.7
Domestic					
Production	80,050	100,591	129,096	2.6	1.7
Commercial Fisheries	49,150	51,834	61,895	0.6	1.2
Municipal Fisheries	30,464	47,940	65,811	5.2	2.1
Aquaculture	436	817	1,390	7.2	3.6
Import	326	403	584	2.4	2.5

Remarks: 1) Seaweed and fish meal are excluded. Volume of fish demand and supply is projected according to the provided data, but it is not adjusted with data collected through the interview survey for O/D of fish in this study. The aggregate volume by zone is equivalent to the national volume.

Source: 1) Philippines Population Projections 1980-2030, 1985, NEDA
 2) Fisheries Profile 1986, Regional Office BFAR
 3) Fisheries Statistics 1981-1986, BFAR
 4) Foreign Trade Statistics of the Philippines 1986, NEDA

4.5 Projection of Fish Demand and Supply in Prototype Site Pasacao

Total demand for fish was 1,273 tons in 1986, while the total supply of fish was 9,471 tons this year. The surplus of fish was 8,198 tons in 1986. This surplus will grow by 7.0% from 8,148 tons in 1986 to 8,774 tons in 1995 and 27.4% to 11,176 tons in 2010. Fish is sold only to domestic markets and fish supply is dependent on fish production in the municipal fisheries sector. This structure will continue to be maintained in the future.

TABLE 4.5 POPULATION AND FISH DEMAND/SUPPLY IN PROTOTYPE SITE PASACAO
(1986, 1995 AND 2010)

	1986	1995	2010	Average Annual Growth Rate(%)	
				1986-1995	1995-2010
Population	30,894	40,287	56,453	3.0	2.3
Demand (tons)	1,273	1,537	2,182	2.1	2.4
Domestic					
Consumption	1,068	1,420	2,048	3.2	2.5
Export	205	117	134	-6.0	0.9
Frozen Tuna	1	2	2	8.0	0.0
Fresh Tuna	0	0	1	-	-
Canned Tuna	10	17	25	6.1	2.6
Shrimp	0	0	0	-	-
Milkfish	0	0	0	-	-
Others	194	98	106	-7.3	0.5
Supply (tons)	9,471	10,311	13,358	0.9	1.7
Domestic					
Production	9,452	10,286	13,319	0.9	1.7
Commercial					
Fisheries	140	134	160	-0.5	1.2
Municipal					
Fisheries	9,312	10,152	13,159	1.0	1.7
Aquaculture	0	0	0	-	-
Import	19	25	39	3.1	3.0

Remarks: 1) Seaweed and fish meal are excluded. Volume of fish demand and supply is projected according to the provided data, but it is not adjusted with data collected through the interview survey for O/D of fish in this study. The aggregate volume by zone is equivalent to the national volume.

Source: 1) Philippines Population Projections 1980-2030, 1985, NEDA
 2) Fisheries Profile 1986, Regional Office BFAR
 3) Fisheries Statistics 1981-1986, BFAR
 4) Foreign Trade Statistics of the Philippines 1986, NEDA

**5. PRESENT CONDITIONS AND FUTURE PROSPECTS
OF FISH DISTRIBUTION SYSTEM**

5. PRESENT CONDITIONS AND FUTURE PROSPECTS OF FISH DISTRIBUTION SYSTEM

The O/D volume of fish product by zone is projected on the following methodology based on the projected fish demand/supply and fish distribution pattern.

1) Fish Consumption in the Zone

Fish consumption by fish group (Table 5.1) was basically allocated in proportion to the fish production of each zone by fish group and it was adjusted to the O/D volume provided by the interview survey.

2) Export Volume

Export volume by fish group which is transported to the primary collection point and processing area, was adjusted to the O/D pattern provided by the interview survey.

3) Distribution Volume to Areas Outside the Zone

After determining fish production, fish consumption in each zone, and export volume by fish group, the remaining fish were proportionally allocated to each destination as indicated in the results of the survey.

5.1 Fish Distribution System in Zone 1

Of the total catch of 90,935 tons, 54.9% is consumed within the zone. the distribution of this portion of the fish products is done almost entirely through brokers. In case of common fish, however, there are also frequent instances where fishermen bring their catches directly to the public market. 21.7% of the catch is destined for Manila; of which transactions involving the entire volume of aquaculture products are handled through brokers, and the catch of fish caught in the open seas being in small lots, fishermen rely nearly equally on bringing in the products directly, going through a broker or letting transporters handle them directly. Further, 13.3% of the catch is destined for Luzon Island, with the handling being equally divided between brokers and transporters.

10.1% of the catch is allotted for export, but the entire amount is cultivated black tiger prawns, with all distribution being handled by brokers. Local refrigerated processing of prawns amounts to only about 30% of the amount allotted for export, with the bulk of the processing being done at factories in Manila.

(1) Fish O/D Distribution Pattern

1) Fish Consumption in the Zone

a. Distribution Volume by Fish Group

Total volume consumed in this zone is 49,889 tons, of which the volume of cultured fish is 34,541 tons or 69.2% of the total volume. Marine fish is 15,348 tons or 30.8% of the total volume. Consumption patterns define this zone as a production area for cultured fish. Marine fish in the lower priced fish group A and B are popularly consumed. 83.9% of consumed marine fish, i.e. 12,876 tons, include major species of fish such as anchovies and round shad. The remaining 16.1% or 2,472 tons are high grade fish such as yellowfin tuna and groupers. 84.8% of cultured fish are milkfish and its consumption is 29,286 tons. Prawn and tilapia consumption is 3,044 tons and is 8.8% of the fish cultured. This tonnage is projected to increase by 23%, from 49,889 tons in 1986 to 61,307 tons in 1995. Due to small increases in the production of marine fish, the increment of fish consumed in this zone is offset by the rapid increase of cultured fish, mainly milkfish. Milkfish consumption is expected to increase from 29,286 tons to 41,749 tons in 1995, reflecting a 43% growth or 12,463 tons during this period.

b. Fish Distribution Channel

The marine fish distribution channel for approximately 70% of fish consumed in this zone are handled by fish brokers. The balance is sold directly by fish producers to the retailers in the public market. 99% of cultured fish is sold predominantly through fish brokers.

2) Fish Distribution to the Neighboring Areas

a. Distribution Volume by Fish Group

The volume of fish distribution to the neighboring areas, including Region I, II, and III located in the central and northern part of Luzon Island, was 12,114 tons in 1986. 72.5% of this volume or 8,779 tons is cultured fish. Marine fish comprises only 27.5% or 3,335 tons of this volume. 50.8% of the fish distribution volume to the Pangasinan province is comprised by 1,696 tons of yellowfin tuna. Popular fish including anchovies and roundscad in group A and B is 36.4% of the volume with 1,213 tons. High priced fish such as groupers are only a small portion of the distribution volume at 427 tons. Milkfish is 50.8% of the volume of cultured fish distributed to these areas. Prawn is 43.6% with 3,834 tons and Tilapia is 5.6% with 494 tons.

Fish distribution volume to these adjacent areas is expected to increase by 74% from 12,114 tons in 1986 to 21,065 tons in 1995. The increase stems from a rapid growth of aquaculture production in milkfish and black tiger prawn.

b. Fish Distribution Channel

There is no distribution channel of marine fish for fish producers to deliver directly to the marketing areas. The share of fish distribution by fish brokers is 43% and the share by transporters is 57%. Fish brokers also dominate all fish distribution channels in the aquaculture sector to the outer areas of this zone as well as within the zone.

3) Fish Distribution to Metro Manila

a. Volume of distribution by fish group:

Total volume distributed to Metro Manila is 19,768 tons. The share of cultured fish is 73.7% with 14,576 tons and the share of marine fish 26.3% with 5,192 tons. This indicates Zone I as the major supply base of cultured fish to Metro Manila.

60% of marine fish distributed or 3,114 tons are the popular/cheaper fish in group B such as roundscad. 21.8% of the distribution volume are the yellowfin tuna captured in the Zambaldas province at 1,131 tons and 18% of the fish volume are the high priced fish including white shrimp at 933 tons. The distribution volume of aquaculture products to Metro Manila is 5,360 tons of prawn or 36.8% of the volume of cultured fish, and 4,974 tons of milkfish or 34.1% of cultured fish volume; the remainder is tilapia.

The distributed volume of fish to Metro Manila increased by 37% from 19,768 tons in 1986 to 27,119 tons in 1995. It was caused by the increase of cultured fish whereas that of marine fish remained extremely low.

b. Fish Distribution Channels

The participation of brokers in marine fish is extremely low in comparison to broker participation within the zone and in its neighboring areas, with the exclusion of Metro Manila. Its share is only 9.2%. However, the share of fish viajeros is 47.8% and a system of direct transportation by fish producers is 43%. This system is popular with commercial fishing boat operators of yellowfin tuna from Masinloc. In contrast, distribution of cultured fish is exclusively controlled by fish brokers as seen in fish distribution patterns within the zone and its outer neighboring areas.

4) Fish Distribution for Export

Fish for export is black tiger prawn which is mainly frozen in Metro Manila. The share processed in Metro Manila is 6,351 tons or 70% of the total exported prawn from this zone and the remaining 30% or 2,813 tons is processed for export within the zone. These transactions are mostly conducted through brokers. Export of black tiger prawn is expected to increase by 31% from 9,164 tons in 1986 to 12,032 tons in 1995. This increased volume will be processed in Metro Manila in the event the prawn processing capacity in this zone will be not expanded.

(2) Fish Price and Marketing Cost

Fish price and marketing cost are shown in Table 4.6 by O/D and fish group/species. The brokers' fee of the sales price is fixed at 5% of the wholesale price in consumption areas. Fish marketing costs include fish transportation charges, ice price, and other service costs such as the depreciation costs of insulated boxes and labor cost. These service costs are usually constant at 0.7 pesos/kg. Marketing costs of milkfish and popular fish in group A and B are 3 to 5% of the fish sales price in short distance trips and 10 to 12% in long distance trips for distribution to neighboring areas outside the zone, with the exception of Metro Manila. The gross income of fish marketing for viajeros is about 10-14% or 2 pesos/ kg of fish on the average.

The marketing costs of fish distribution to Metro Manila ranges from 5 to 14% of the fish sales price and differs according to the transport distances in both milkfish and popular fish. The gross income of fish transporters is about 3 pesos/kg of fish. The share of fish marketing costs of black tiger prawn is comparatively lower. 1% to 2% of its wholesales price in the domestic market is due to a high price which differs according to size. However, the gross income of transporters is 5 to 10% of the sales price which is 7 pesos/kg of fish and is extremely high. Black tiger prawn for export is collected directly at MFP by fish processors/exporters. Therefore the marketing cost is their internal cost and cannot be calculated.

(3) Financing Method for Fish Trading

In culture fish trading, brokers pay producers by COD or by credit which is paid from brokers to producers after receipt from exporters or transporters through verbal promise. There is no written contract. The financing method in Orani is the most accepted by producers because of payment by COD.

Producers are paid by brokers and transporters by COD in marine fish trading. In Hagonoy and Guagua, the traders pay producers by OA, i.e. traders pay the producers the fishing operation charge and that charge is deducted from the buying price by traders in fish unloading. Retailers

pay transporters by one day credit and producers by COD.

(4) Fish Transportation Means and Equipment

Open trucks and jeepneys, owned or hired, are used in fish transportation. For short distance trips, tricycles and jeepneys for public use are popular in transporting small lots. Insulated boxes are utilized in long distance trips and baskets or baneras are used in short distance trips and transporting small lots.

5.2 Fish Distribution System in Zone 2

Of the total catch of 29,242 tons, 29.0% is consumed within the zone, with distribution being mediated almost entirely by brokers. Fish distributed to Metro Manila is handled mainly by fish brokers, but transporters also frequently purchase fish products directly from the fishermen and then transport them to Manila. Approximately the same volume of fish transported to Metro Manila is distributed to the neighboring areas and exclusively controlled by brokers and only partly by fish transporters. There is almost no fish export.

(1) Fish O/D Volume and Distribution Patterns

1) Fish Consumption in the Zone

a. Distribution Volume by Fish Groups

Total fish consumption in this zone is 8,469 tons and limited to only marine fish which is almost fresh. Popular fish including round scad is 54.2% or 4,594 tons. Cheaper fish including small size shrimp, anchovies and slipmouth is 19.9% or 1,688 tons. The remainder is 13% or 1,109 tons of high price fish like groupers. The volume of processed fish is only 341 tons or 4% of the total fish consumption in this zone, despite the fact it is popular area for fish processing.

Fish consumption within the zone will increase by 19%; from 8,469 tons in 1986, to 10,059 tons in 1995. Increment of marine fish production will be distributed to outer areas of the zone. Therefore the shortage in

fish supply will be covered by cultured fish.

b. Fish Distribution Channel

About 93.5% of fish consumed within this zone are distributed through fish brokers.

2) Fish Distribution to the Neighboring Areas

a. Distribution volume by fish group

The volume of fish distributed to the neighboring areas is 10,113 tons, comprising of 8,586 tons of fresh fish and 1,527 tons of processed fish. About 58.4% of fresh fish or 5,003 tons is distributed to the Bicol Region and 41.6% or 3,573 tons to Pangasinan province and Lucena. The distribution volume of processed fish to the Bicol region is 54.8% or 837 tons and 45.2% or 690 tons to the Pangasinan province.

Major species of fresh fish distributed to these areas are small shrimp, anchovies, slipmouth, roundscad and frigate tuna which are in fish group A and B. The total volume distributed to these areas will increase by 18% from 10,113 tons in 1986 to 11,917 tons in 1995.

b. Fish Distribution Channel

About 90% of the total distribution volume of all fish is through fish brokers, and 10% are distributed directly by fish viajeros.

3) Fish Distribution to Metro Manila

a. Distribution volume by fish group

Fresh fish distributed to Metro Manila is 10,365 tons or 99% of the total volume of 10,250 tons. Processed fish is only 1% or 115 tons.

Popular kinds of fish like roundscad are 47% of the total distribution volume to Metro Manila or 4,811 tons. High price fish like groupers is 30% or 3,046 tons. The cheaper fish such as anchovies are

18% of the distribution volume or 1,870 tons. The distribution volume of black tiger prawn is 218 tons.

Fish distributed to Metro Manila was 10,365 tons in 1986 and will increase by only 4% or 10,748 tons in 1995.

b. Fish Distribution Channel

About 72% of the total distribution volume to Metro Manila are dealt through fish brokers. The rest which mainly includes high price fish is distributed directly by fish viajeros.

4) Export

Fish for export is limited only to high price marine fish. Extremely small quantities are distributed and processed in Metro Manila at present.

(2) Fish Price and Marketing Cost

Broker's fee and service charge are the same as those of Zone 1. Marketing cost of popular/cheaper kinds of fish is 7 to 8% of the wholesales price in the consumption area. The share in high price fish is 3% due to the high wholesale price. Traders, especially viajeros, earn a high income of 13 to 27% of the sales price or an average of 3 to 4 pesos/kg. The marketing cost to Metro Manila is expensive due to long distance transport costs and ice cost in comparison to the outlying areas of the zone. It is 11 to 15% of sales price.

The gross income of fish traders in high priced fish is 10 to 27% of the sales price or 4 to 10 pesos/kg. The share is 10% of the sales price or 2 pesos/kg in low priced fish.

(3) Financing Methods for Fish Trading

Financing is conducted in nearly the same way as in Zone 1. However, financing between producer and broker/transporter is dominantly conducted by OA method.

(4) Transport Means and Equipment

Generally speaking, the means of transport and equipment are the same as in Zone I. However, insulated trucks are used by some commercial fishermen as brokers.

5.3 Fish Distribution System in Zone 3

Of the total catch of 65,088 tons, 23.7% is consumed within the zone, with the largest share being brought to the public markets directly by the fishermen and a relatively small portion being handled through brokers. That 51.3% of the catch is destined for Manila shows how dependent they are on the Manila market. The Manila trade is divided almost equally between the brokers and viajeros. It can be said that securing the means for sea transportation is the key to the distribution of fish products in this area. 27.0% of the catch is destined for various areas in Panay Island, including the area intermediate to Manila (that is, from Iloilo City to Manila). Compared with direct shipment from the zone to Manila, the amount mediated by brokers is overwhelmingly large. 4.4% of the catch is allotted for export (mainly cultivated black tiger prawns). Based upon the ease with which the means of transportation can be secured, it is by far most common for viajeros to bypass the brokers and buy directly from aquaculture operators and then ship them to Manila. The intervention of brokers is limited to only those instances when the freezing process of the products is done locally, with the volume being only 24% of the black tiger prawns for export. A large proportion of the prawns are shipped to Manila as fresh fish to undergo the freezing process there, which raises many problems related to maintaining product freshness.

(1) Fish O/D Volume and Distribution Pattern

1) Fish Consumption in the Zone

a. Distribution Volume by Fish Group

Volume of fish consumption is 15,421 tons. Marine fish is 83.1% or 12,822 tons and cultured fish is only 16.9% or 2,599 tons.

About 84.6% or 10,855 tons of marine fish are fish group A and B including anchovies, slipmouth and roundscad. The remaining which corresponds to 15.4% or 1,967 tons, is composed of high class fish like groupers. About 71% or 1,874 tons of consumed cultured fish which is 2,599 tons, are milkfish.

Local fish consumption in this zone will increase by 24% from 15,421 in 1986 to 19,160 tons in 1995.

b. Fish Distribution Channel

About half of marine fish is distributed directly by fish producers and the other half is distributed by fish brokers. Direct sales of milkfish by fish producers is dominant in the aquaculture sector, and is 84% of the total volume distributed, 16% of which is through brokers.

2) Fish Distribution to Areas Outside the Zone (mainly in Panay Island)

a. Volume of Fish Distribution by fish group

Fish volume which are distributed to the other areas except this zone in Panay Island is 16,823 tons, of which marine fish is 13,051 tons or 78%. Cultured fish is 3,772 tons or 22%. The major kinds of marine fish which are distributed are the cheaper fish group A including anchovies and slipmouth at 10,026 tons or 76.8%, of which the share of processed fish is very high at 37% or 3,715 tons. The share of popular fish group B such as roundscad and high class fish such as groupers, is very low for Panay Island, because the major market is in Metro Manila. The distribution volume of cultured fish is 3,772 tons. Milkfish accounts for 58% or 2,196 tons of this volume and the remainder is tilapia at 42% or 1,576 tons.

Total distributed volume to the neighboring areas outside the zone will increase by 43% from 16,823 tons in 1986 to 24,117 tons in 1995.

b. Fish Distribution Channel

About 84% of the distributed volume of marine fish and 93% of the volume in cultured fish is distributed by fish brokers.

3) For Metro Manila

a. Volume of Fish Distribution by Fish Group

Volume of fish distributed to Metro Manila is 29,973 tons. Cultured fish is 53.1% or 15,924 tons of this volume and marine fish is 46.9% or 14,049 tons. A major share of marine fish is fresh and there is very little processed fish. Marine fish distribution share of popular/cheaper fish like roundscad is 60.6% or 8,514 tons and high class fish like groupers is 34.1% or 4,783 tons. About 99.7% of cultured fish or 15,857 tons is milkfish.

Fish distribution to Metro Manila will increase by 43% from 29,973 tons in 1986 to 42,783 tons in 1995.

b. Fish Distribution Channel

Fish brokers control 62% of marine fish distribution to Metro Manila, 33% by fish viajeros and 5% by fish producers. In contrast about 50% of cultured fish distribution is controlled by fish viajeros. About 30% are handled by brokers and 10% are distributed by producers.

4) Processed fish for domestic market

The processing method is drying and 7% or 4,540 tons of the total fish catch is used for processing. Fish in fish group A are commonly used in processing and constitute 85% or 3,829 tons of total processed fish which is equivalent to 23.3% of its landing volume.

5) For Export

a. Volume of fish exported by fish group

Fish exported is black tiger prawn. About 43% of the total export volume of black tiger prawn or 1,234 tons are transported fresh to be processed in Metro Manila. The remaining 680 tons or 23.7% are processed within this zone, and 956 tons or 33.3% are transported to Iloilo City for

processing. Prawn export will increase by 70% from 2,870 tons in 1986 to 4,872 tons in 1995.

b. Fish Distribution Channel

With the exception of prawn processed within the zone, the fish viajeros play a dominant role.

(2) Fish Price and Marketing Cost

Marketing costs such as the fish broker's fee and the service fee, with the exception of Manila, are almost the same as in Zone 1.

Marketing costs in popular/cheaper fish and milkfish, with the exception of high class fish like groupers, are 10% of the fish sales price when transporting to areas outside the zone (Iloilo City). The gross income of fish viajeros is 23% of fish sales price or 5.0 pesos/kg.

If the brokers' fee in consumption areas is included, income of fish traders is very high and nearly 30% of the sales price or 6 pesos/kg. In high class fish, the marketing cost is 6% of the sales price and the gross income of fish traders is 10% or 4 pesos/kg.

In transport to Metro Manila, the gross income of fish traders is 3 pesos/kg in popular/cheaper fish, 10 pesos/kg in high class fish like spanish mackerel and milkfish, and it is large for viajeros at 19 pesos/kg for exported prawn.

(3) Financing Methods in Fish Trading

Financing methods in fish trading is nearly the same as in Zone 1. However, financing between the broker at the fish landing site and the broker in Manila is exclusively by credit.

(4) Fish Transport Means and Equipment

The means of fish transport in overland transport is the same as zone 1.

Fresh fish with the exception of prawn is transported to Metro Manila via Iloilo by ship and while prawn is transported by air from Roxas City. However due to limits in the loading capacity of the plane, only a limited volume can be transported and is a constraint.

Frozen prawn processed within the zone is transported to Metro Manila by refrigerated vessels owned by large processors.

5.4 Fish Distribution Pattern in Zone 6

21.9 % of the total catch of 80,050 tons is consumed within the zone, of which, with the exception of a small portion that is carried out directly by the fishermen, almost all of the transactions are done through brokers. The products for domestic consumption are not shipped to Manila; in fact, 62.7% of the zone's production flows to various locations throughout Mindanao Island, of which with the exception of a small portion handled by viajeros, the vast majority is mediated by brokers. 15.4% of the catch is destined for export (primarily yellowfin tuna), of which an amount equivalent to 15% is fresh tuna, all of which is handled through brokers. The remaining 85% is locally frozen, canned, or otherwise processed. Thereafter, the products are either transported directly from General Santos City or via Davao City to Manila; and from Manila they are exported to various countries. The unique feature of this zone is that all processing of fish products for export is done locally.

(1) Fish Distribution Pattern

1) Fish Consumption in the Zone

a. Distribution Volume by Fish Group

About 80% or 14,046 tons of the total zone consumption of 17,552 tons are the popular/cheaper fish such as skipjack and roundscad. High class fish such as yellowfin tuna and spanish mackerel constitute the remaining 20% of consumption. Consumption of high price fish is only 4.3% or 741 tons of total fish consumption in this zone. Zone consumption will increase by 26% from 17,552 tons in 1986 to 22,145 tons in 1995.

b. Fish Distribution Channel

About 84% of the fish distributed in this zone are controlled by fish brokers and the remainder is distributed by fish producers.

2) Fish Distribution to Inland Areas of Mindanao Island Outside the Zone

a. Distribution Volume by Fish Group

Fish distribution volume is 50,192 tons, of which 77.6% or 38,966 tons are popular/cheaper kinds of fish like skipjack and roundscad and about 21.5% or 10,774 tons are yellowfin tuna.

Total volume distributed will increase by 11% from 50,192 tons in 1986 to 56,161 tons in 1995.

b. Fish Distribution Channel

Fish viajeros play an important role and handle 54% of the distributed volume due to transporting mass volumes of fish to inland areas. The remaining 44% are managed by brokers and only 2% are distributed by fish producers.

3) For Export

a. Distribution Volume by Fish Group

Fish for export is yellowfin tuna. About 97% or 11,956 tons are processed in the zone and transported to Metro Manila or directly transported fresh from General Santos airport to Metro Manila. Only 3% of the export is exported to Japan fresh through exporters in Davao City.

About 9,322 tons or 78% of the total processed and fresh fish exported from this zone are exported to the U.S.A as canned tuna. About 1,148 tons or 10% are exported to Italy and other European countries; and 1,486 tons of fresh tuna or 12% are exported to Japan.

It is estimated that export of yellowfin tuna will increase rapidly by 93% or 11,417 tons from 12,306 tons in 1986 to 23,723 tons in 1995.

b. Fish Distribution Channel

About 81% of fresh tuna for export is sold to local exporters exclusively through fish brokers and 9% is handled by viajeros going to Davao. In case of canned and frozen tuna, nearly all fish processors provide their own raw materials from their own fishing vessels and buy tuna through brokers only in the case of fish shortage. Though canned and frozen tuna is exported mainly through Metro Manila, frozen tuna is also directly exported by refrigerated vessels arriving once every two months.

(2) Fish Price and Marketing Cost

Marketing costs involving the fish broker's fee and service fee are the same as in Zone 1.

In a short trip to Davao, the marketing cost of popular and cheaper fish is on the average 12% of the wholesale price and the gross income of fish traders is 7% or 1.0 pesos/kg. In long trips to Misamis Oriental, the marketing cost is 23% of the wholesale price and the gross income of fish viajeros is 4.0 pesos/kg or 28% of the wholesale price.

The marketing costs of yellowfin tuna is 6% of the wholesale price for transporting short distances and 10% for long distances because of the high price of tuna. The gross income of fish transporters is 5% or 1.5 pesos/kg of fish for short distances and 10% or 3.6 pesos/kg for long distances.

The wholesale price of exported fresh yellowfin tuna is on the average 40.3 pesos/kg at the landing site, and the marketing cost is on the average 8%. The cost of ice is 3 times more than in distribution to the inland areas in Mindanao. It is 1.4 pesos/kg. This is due to the use of a lot of ice for rapid cooling of the fish after auctioning. Though FOB price in Metro Manila is influenced by the market price in Japan, it is approximately 90 pesos/kg. This includes the marketing cost of 28.2 pesos/kg and the gross income of 21.5 pesos/kg or 23.8% of FOB price.

(3) Financing Method for Fish Trading

The financing for fish trading is nearly the same as in Zone 1. However, financing between producer and broker/viajeros is mainly by COD.

(4) The Means of Fish Transportation and Equipment

The means of transport for the domestic market is the same as in Zone 1, excluding the transportation for exports. The core temperature of the fish body of yellowfin tuna is kept at 2 oC before packing. Then they are packed in a vinyl bag and carton box without ice and transported by air.

5.5 Fish Distribution Pattern in Prototype Site Pasacao

All fish unloaded at this site, i.e. 9,452 tons is consumed in the domestic market. About 11.2% of the fish consumed within this site, 9.8% is distributed to Metro Manila, and 79.0% of the total catch is consumed in the Bicol Region. All trading activities are controlled by fish brokers and trade by fish viajeros is limited.

(1) Fish O/D Volume and Distribution Pattern

1) Fish Consumption at the Site

a. Distribution Volume by Fish Group

About 1,049 tons are consumed at the site. Popular fish such as eastern little tuna and roundsad are only consumed fresh, while consumption of processed fish is limited. Fish consumption at this site will increase by 8% from 1,049 tons in 1986 to 1,131 tons in 1995.

b. Fish Distribution Channel

Approximately 73% of the total consumption volume of this zone is distributed through fish brokers and the remaining 17% is directly brought in by fishermen.

2) Fish Distribution to the Neighboring Areas

a. Fish Distribution Volume by Fish Groups

Fish distribution is concentrated in the three provinces of Camarines Sur, Camarines Norte, and Albay in the Bicol Region. The distribution volume is 7,473 tons. The total transported volume of popular fish such as eastern little tuna, roundscad, and frigate tuna is 64.3% of this volume or 4,807 tons. High class fish such as grouper constitute 18.1% or 1,353 tons.

Fish distributed to other areas with the exception of Metro Manila, will increase by 13% or 947 tons from 7,473 tons in 1986 to 8,420 tons in 1995.

b. Fish Distribution Channel

About 87.6% of all fish is distributed through fish brokers and the remaining 12.4% is directly distributed by fish viajeros.

3) For Metro Manila

a. Fish Distribution Volume by Fish Group

Volume distributed to Manila is only 930 tons and there are no foreseeable changes for the future.

b. Fish Distribution Channel

Brokers play a dominant role and constitute 98% of the distribution share. Fish viajeros comprise only 2.0%.

(2) Fish Price and Marketing Cost

The marketing costs of high class fish such as grouper and squid are 6% of the wholesale price and the gross income of fish transporters is about 2 pesos/kg or 10% of the sales price. The sales price of popular

fish such as frigate tuna is low. Therefore the share marketing costs is rather high at 10%. The transport cost of fresh fish to Metro Manila is approximately 2 pesos/kg. The percentage share of popular fish and high class fish are 16% and 11% respectively, of the total marketing cost and is therefore rather high.

(3) Financing Method in Fish Trading

The financing method in fish trading is nearly the same in Zone 1. However, financing between transporters and wholesalers/retailers is normally by CAT.

(4) Means of Fish Transport and Equipment

Distribution means and equipment are the same as in Zone 1.

TABLE 5.1 CLASSIFICATION OF FISH GROUP

Group	Characteristics	Species
GROUP A	Fishes mainly used for processing	Acetes, Anchovy, Sardine, Slipmouth
GROUP B	Low-medium grade fishes	Croaker, Eastern little tuna, Flying fish, Frigate tuna, Goatfishes, Mackerels, Mullet, Roundscad, Other scads, Sillago whiting, Snappers, Threadfin bream, Other fishes
GROUP C	High grade fishes	Blue crab, Cavalla/Crevalle, Groupers, Spanish mackerel, Squids, White shrimps
GROUP D		Bigeyed/yellowfin tuna
GROUP E		Black tiger prawn
GROUP F		Milkfish
GROUP G	Freshwater fishes	Tilapia, Other fishes
OTHERS		Mangrove crab, Mussels, Oysters, Others

TABLE 5.2 O/D OF FISHERY PRODUCTS IN ZONE 1, (1986)

UNIT : Tons

Group	Form	Trader	For Domestic Consumption				For Export			Total			
			In Zone	In Region	Manila	Others	S-total	In Zone	In Region		Manila	S-total	
A	Fresh	Producer	0	0	0	0	0	0	0	0	0	0	0
		Broker	3,245	250	14	0	3,509	0	0	0	0	0	3,509
		Viajeros	0	0	0	0	0	0	0	0	0	0	0
		S-total	3,245	250	14	0	3,509	0	0	0	0	0	3,509
B	Fresh	Producer	3,245	250	14	0	3,509	0	0	0	0	0	3,509
		Broker	3,303	0	2,231	0	6,746	0	0	0	0	0	6,746
		Viajeros	6,328	105	87	831	4,944	0	0	0	0	0	4,944
		S-total	9,631	105	795	858	13,708	0	0	0	0	0	13,708
C	Fresh	Producer	9,631	105	3,114	858	13,708	0	0	0	0	0	13,708
		Broker	57	0	0	0	57	0	0	0	0	0	57
		Viajeros	623	195	376	63	1,257	0	0	0	0	0	1,257
		S-total	681	195	933	232	2,040	0	0	0	0	0	2,040
D	Fresh	Producer	681	195	933	232	2,040	0	0	0	0	0	2,040
		Broker	759	0	0	0	759	0	0	0	0	0	759
		Viajeros	1,031	0	1,131	1,696	1,031	0	0	0	0	0	1,031
		S-total	1,791	0	1,131	1,696	4,618	0	0	0	0	0	4,618
E	Fresh	Producer	1,791	0	1,131	1,696	4,618	0	0	0	0	0	4,618
		Broker	454	0	0	0	454	0	0	0	0	0	454
		Viajeros	1,163	2,609	5,360	91	9,223	2,813	0	6,351	9,164	0	18,387
		S-total	1,617	2,609	5,360	1,225	10,811	2,813	0	6,351	9,164	0	19,975
F	Fresh	Producer	1,617	2,609	5,360	1,225	10,811	0	0	0	0	0	10,811
		Broker	29,286	2,207	4,974	2,247	38,714	0	0	0	0	0	38,714
		Viajeros	0	0	0	0	0	0	0	0	0	0	0
		S-total	29,286	2,207	4,974	2,247	38,714	0	0	0	0	0	38,714
G	Fresh	Producer	29,286	2,207	4,974	2,247	38,714	0	0	0	0	0	38,714
		Broker	0	0	0	0	0	0	0	0	0	0	0
		Viajeros	1,427	415	297	76	2,215	0	0	0	0	0	2,215
		S-total	1,427	415	297	76	2,215	0	0	0	0	0	2,215
Other	Process	Producer	1,427	415	297	76	2,215	0	0	0	0	0	2,215
		Total	2,211	3,945	6,156	6,156	6,156	0	0	0	0	0	6,156
Grand total			49,889	5,780	19,768	6,334	81,771	2,813	0	6,351	9,164	90,935	

TABLE 5.3 O/D OF FISHERY PRODUCTS IN ZONE 1, (1995)

UNIT : Tons

Group	Form	Trader	For Domestic Consumption					For Export			Total	
			In Zone	In Region	Manila	Others	S-total	In Zone	In Region	Manila		S-total
A	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	3,245	250	14	0	3,509	0	0	0	0	3,509
		S-total	3,245	250	14	0	3,509	0	0	0	0	3,509
B	Fresh	Producer	3,245	250	14	0	3,509	0	0	0	0	3,509
		Broker	2,937	133	2,816	0	5,753	0	0	0	0	5,753
		S-total	5,627	133	1,049	1,004	6,918	0	0	0	0	6,918
C	Fresh	Producer	8,564	133	3,929	1,082	13,708	0	0	0	0	13,708
		Broker	8,564	133	3,929	1,082	13,708	0	0	0	0	13,708
		S-total	8,564	133	3,929	1,082	13,708	0	0	0	0	13,708
D	Fresh	Producer	57	0	0	0	57	0	0	0	0	57
		Broker	623	195	376	63	1,257	0	0	0	0	1,257
		S-total	681	195	557	169	1,602	0	0	0	0	1,602
E	Fresh	Producer	581	195	933	232	2,040	0	0	0	0	2,040
		Broker	759	0	0	0	759	0	0	0	0	759
		S-total	1,031	0	0	0	1,031	0	0	0	0	1,031
F	Fresh	Producer	1,791	0	1,131	1,696	4,618	0	0	0	0	4,618
		Broker	1,791	0	1,131	1,696	4,618	0	0	0	0	4,618
		S-total	1,791	0	1,131	1,696	4,618	0	0	0	0	4,618
G	Fresh	Producer	839	0	0	0	839	0	0	0	0	839
		Broker	2,151	4,826	9,913	168	17,057	2,813	0	9,219	12,032	29,089
		S-total	2,990	4,826	9,913	2,266	19,995	2,813	0	9,219	12,032	32,027
H	Fresh	Producer	2,990	4,826	9,913	2,266	19,995	0	0	0	0	19,995
		Broker	41,749	4,757	10,722	4,843	62,071	0	0	0	0	62,071
		S-total	41,749	4,757	10,722	4,843	62,071	0	0	0	0	62,071
I	Fresh	Producer	41,749	4,757	10,722	4,843	62,071	0	0	0	0	62,071
		Broker	2,288	665	476	122	3,551	0	0	0	0	3,551
		S-total	2,288	665	476	122	3,551	0	0	0	0	3,551
J	Fresh	Producer	2,288	665	476	122	3,551	0	0	0	0	3,551
		Broker	2,288	665	476	122	3,551	0	0	0	0	3,551
		S-total	2,288	665	476	122	3,551	0	0	0	0	3,551
K	Fresh	Producer	61,307	10,824	27,119	10,241	109,492	2,813	0	9,219	12,032	121,524
		Broker	61,307	10,824	27,119	10,241	109,492	2,813	0	9,219	12,032	121,524
		S-total	61,307	10,824	27,119	10,241	109,492	2,813	0	9,219	12,032	121,524

TABLE 5.4 O/D OF FISHERY PRODUCTS IN ZONE 1, (2010)

UNIT : Tons

Group	Form	Trader	For Domestic Consumption					For Export			Total	
			In Zone	In Region	Manila	Others	S-total	In Zone	In Region	Manila		S-total
A	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	4,198	141	9	0	4,349	0	0	0	0	4,349
		Viajeros	0	0	0	0	0	0	0	0	0	0
		S-total	4,199	141	9	0	4,349	0	0	0	0	4,349
B	Fresh	Producer	4,199	141	9	0	4,349	0	0	0	0	4,349
		Broker	3,799	0	3,236	0	7,035	0	0	0	0	7,035
		Viajeros	7,279	152	126	1,205	8,763	0	0	0	0	8,763
		S-total	11,078	152	1,153	39	16,990	0	0	0	0	16,990
C	Fresh	Producer	11,078	152	4,515	1,244	16,990	0	0	0	0	16,990
		Broker	74	0	0	0	74	0	0	0	0	74
		Viajeros	806	236	456	76	1,574	0	0	0	0	1,574
		S-total	881	236	1,131	281	2,528	0	0	0	0	2,528
D	Fresh	Producer	881	236	1,131	281	2,528	0	0	0	0	2,528
		Broker	982	0	0	0	982	0	0	0	0	982
		Viajeros	1,334	0	1,363	2,044	3,407	0	0	0	0	3,407
		S-total	2,317	0	1,363	2,044	5,724	0	0	0	0	5,724
E	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	1,086	7,588	15,588	264	26,221	0	0	0	0	26,221
		Viajeros	2,782	0	1,363	2,044	3,299	7,964	0	17,980	0	25,944
		S-total	3,868	7,588	15,588	3,563	30,606	7,964	0	17,980	0	56,550
F	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	3,868	7,588	15,588	3,563	30,606	7,964	0	17,980	0	56,550
		Viajeros	54,010	13,012	29,331	13,248	109,600	0	0	0	0	109,600
		S-total	54,010	13,012	29,331	13,248	109,600	0	0	0	0	109,600
G	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	2,960	1,744	1,248	319	6,271	0	0	0	0	6,271
		Viajeros	2,960	1,744	1,248	319	6,271	0	0	0	0	6,271
		S-total	2,960	1,744	1,248	319	6,271	0	0	0	0	6,271
Other												
Grand total			79,311	35,503	53,185	20,699	188,698	7,964	0	17,980	25,944	214,642

TABLE 5.5: O/D OF FISHERY PRODUCTS IN ZONE 2, (1986)

UNIT : Tons

Group	Form	Trader	For Domestic Consumption						For Export			Total		
			In Zone	Manila		Others	S-total	In Zone	Manila		S-total			
				In Region	In Region				In Region	In Region				
A	Fresh	Producer	187	0	0	0	187	0	0	0	187	0	0	187
		Broker	1,501	2,926	1,606	19	6,052	0	49	0	49	0	49	6,102
		Viajeros	0	223	264	5	492	0	0	0	0	0	0	492
		S-total	1,688	3,149	1,870	25	6,732	0	49	0	49	0	49	6,781
B	Process	Total	1,200	638	97	515	1,370	0	0	0	0	0	0	1,370
		Total	1,808	3,787	1,967	540	8,102	0	49	0	49	0	49	8,151
C	Fresh	Producer	54	0	0	0	54	0	0	0	0	0	0	54
		Broker	4,540	566	4,189	3,241	12,536	0	42	0	42	0	42	12,577
		Viajeros	0	57	623	31	711	0	0	0	0	0	0	711
		S-total	4,594	623	4,811	3,272	13,299	0	42	0	42	0	42	13,341
D	Process	Total	221	199	18	175	613	0	0	0	0	0	0	613
		Total	4,815	822	4,829	3,447	13,912	0	42	0	42	0	42	13,954
E	Fresh	Producer	0	0	0	0	0	0	0	0	0	0	0	0
		Broker	1,002	898	1,165	22	3,087	0	0	0	0	0	0	3,087
		Viajeros	107	333	1,881	256	2,577	0	0	0	0	0	0	2,577
		S-total	1,109	1,231	3,046	278	5,664	0	0	0	0	0	0	5,668
F	Process	Total	0	0	0	0	0	0	0	0	0	0	0	0
		Total	1,109	1,231	3,046	278	5,664	0	0	0	0	0	0	5,668
G	Fresh	Producer	0	0	0	0	0	0	0	0	0	0	0	0
		Broker	26	3	4	0	33	0	0	0	0	0	0	33
		Viajeros	0	0	26	1	27	0	0	0	0	0	0	27
		S-total	26	3	30	1	61	0	0	0	0	0	0	61
H	Process	Canned	0	0	0	0	0	0	0	0	0	0	0	0
		Frozen	0	0	0	0	0	0	0	0	0	0	0	0
I	Total	Total	0	0	0	0	0	0	0	0	0	0	0	0
		Total	26	3	30	1	61	0	0	0	0	0	0	61
J	Fresh	Producer	0	0	0	0	0	0	0	0	0	0	0	0
		Broker	0	0	0	0	0	0	0	0	0	0	0	0
		Viajeros	4	4	218	0	226	0	0	0	0	0	0	226
		S-total	4	4	218	0	226	0	0	0	0	0	0	226
K	Process	Total	0	0	0	0	0	0	0	0	0	0	0	0
		Total	4	4	218	0	226	0	0	0	0	0	0	226
L	Fresh	Producer	0	0	0	0	0	0	0	0	0	0	0	0
		Broker	0	0	0	0	0	0	0	0	0	0	0	0
		Viajeros	0	0	0	0	0	0	0	0	0	0	0	0
		S-total	0	0	0	0	0	0	0	0	0	0	0	0
M	Process	Total	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0
N	Fresh	Producer	0	0	0	0	0	0	0	0	0	0	0	0
		Broker	0	0	0	0	0	0	0	0	0	0	0	0
		Viajeros	0	0	0	0	0	0	0	0	0	0	0	0
		S-total	0	0	0	0	0	0	0	0	0	0	0	0
O	Process	Total	0	0	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0	0	0
P	Other	Total	707	0	275	0	982	0	0	0	0	0	0	982
		Total	8,469	5,847	10,365	4,266	28,947	0	0	0	0	0	0	29,242

TABLE 5.6 O/D OF FISHERY PRODUCTS IN ZONE 2, (1995)

UNIT : Tons

Group	Form	Trader	For Domestic Consumption					For Export			Total	
			In-Zone	In Region	Manila	Others	S-total	In Zone	In Region	Manila		S-total
A	Fresh	Producer	161	2,527	1,387	17	161	0	0	0	0	161
		Broker	1,297	192	228	5	5,227	0	0	43	43	5,269
		Viajeros	1,458	2,719	1,615	21	5,813	0	0	43	43	5,856
		S-total	285	1,515	230	1,223	3,253	0	0	0	0	3,253
B	Process	Total	1,743	4,234	1,845	1,244	9,066	0	0	43	43	9,109
		Producer	61	0	0	0	61	0	0	0	0	61
		Broker	5,099	635	4,704	3,940	14,078	0	0	47	47	14,125
		Viajeros	5,159	699	5,404	3,674	14,937	0	0	47	47	14,983
C	Fresh	Total	5,380	897	5,421	3,849	15,547	0	0	47	47	15,594
		Producer	0	0	0	0	0	0	0	0	0	0
		Broker	1,120	1,003	1,302	25	3,450	0	0	228	228	3,678
		Viajeros	120	372	2,102	286	2,880	0	0	0	0	2,880
D	Process	Total	1,240	1,376	3,404	311	6,330	0	0	228	228	6,558
		Producer	0	0	0	0	0	0	0	0	0	0
		Broker	29	4	4	1	38	0	0	0	0	38
		Viajeros	29	0	29	1	30	0	0	0	0	30
E	Fresh	Total	29	4	33	2	68	0	0	0	0	68
		Producer	0	0	0	0	0	0	0	0	0	0
		Broker	0	0	0	0	0	0	0	0	0	0
		Viajeros	1	1	44	0	46	0	0	0	0	46
F	Process	Total	1	0	44	0	46	0	0	0	0	46
		Producer	0	0	0	0	0	0	0	0	0	0
		Broker	956	0	0	0	956	0	0	0	0	956
		Viajeros	956	0	0	0	956	0	0	0	0	956
G	Fresh	Total	956	0	0	0	956	0	0	0	0	956
		Producer	0	0	0	0	0	0	0	0	0	0
		Broker	236	0	0	0	236	0	0	0	0	236
		Viajeros	236	0	0	0	236	0	0	0	0	236
Other	Grand total	Total	474	0	0	0	474	0	0	0	0	474
		Producer	0	0	0	0	0	0	0	0	0	0
		Broker	10,059	6,512	10,748	5,405	32,724	0	0	317	317	33,041
		Viajeros	10,059	6,512	10,748	5,405	32,724	0	0	317	317	33,041

TABLE 5.7 O/D OF FISHERY PRODUCTS IN ZONE 2, (2010)

UNIT : Tons

Group	Form	Trader	For Domestic Consumption				For Export					
			In Zone	In Region	Manila	Others	S-total	In Zone	In Region	Manila	S-total	Total
A	Fresh	Producer	202	0	0	0	202	0	0	0	0	202
		Broker	1,618	3,154	1,731	21	6,523	0	0	53	53	6,577
		Viajeros	0	240	285	6	531	0	0	0	0	531
		S-total	1,820	3,394	2,015	27	7,256	0	0	53	53	7,309
Process	Total	0	356	1,891	287	4,060	0	0	0	0	4,060	
		2,175	5,285	2,303	1,553	11,316	0	0	53	53	11,369	
		76	0	0	0	76	0	0	0	0	76	
B	Fresh	Producer	6,364	793	5,872	4,543	17,571	0	0	58	58	17,630
		Broker	0	80	873	44	996	0	0	0	0	996
		Viajeros	6,440	873	6,744	4,586	18,643	0	0	58	58	18,702
		S-total	275	247	22	218	762	0	0	0	0	762
Process	Total	6,715	1,120	6,767	4,804	19,405	0	0	58	58	19,464	
		0	0	0	0	0	0	0	0	0	0	
		1,398	1,252	1,625	31	4,306	0	0	284	284	4,590	
C	Fresh	Producer	150	465	2,623	357	3,595	0	0	0	0	3,595
		Broker	1,548	1,717	4,248	388	7,901	0	0	284	284	8,185
		Viajeros	0	0	0	0	0	0	0	0	0	0
		S-total	1,548	1,717	4,248	388	7,901	0	0	284	284	8,185
D	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	37	5	5	1	48	0	0	0	0	48
		Viajeros	0	0	36	1	37	0	0	0	0	37
		S-total	37	5	41	2	85	0	0	0	0	85
Process	Total	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	
		37	5	41	2	85	0	0	0	0	85	
E	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	0	0	0	0	0	0	0	0	0	0
		Viajeros	1	1	55	0	57	0	0	0	0	57
		S-total	1	1	55	0	57	0	0	0	0	57
Process	Total	0	0	0	0	0	0	0	0	0	0	
		1	1	55	0	57	0	0	0	0	57	
		1,193	0	0	0	1,193	0	0	0	0	1,193	
F	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	1,193	0	0	0	1,193	0	0	0	0	1,193
		Viajeros	0	0	0	0	0	0	0	0	0	0
		S-total	1,193	0	0	0	1,193	0	0	0	0	1,193
Process	Total	0	0	0	0	0	0	0	0	0	0	
		1,193	0	0	0	1,193	0	0	0	0	1,193	
		0	0	0	0	0	0	0	0	0	0	
G	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	295	0	0	0	295	0	0	0	0	295
		Viajeros	0	0	0	0	0	0	0	0	0	0
		S-total	295	0	0	0	295	0	0	0	0	295
Process	Total	0	0	0	0	0	0	0	0	0	0	
		295	0	0	0	295	0	0	0	0	295	
		592	0	0	0	592	0	0	0	0	592	
Other												
Grand total			12,555	8,127	13,415	6,747	40,844		336	336	41,240	

TABLE 5.8 O/D OF FISHERY PRODUCTS IN ZONE 3, (1986)

UNIT : TONS

Group	Form	Trader	For Domestic Consumption					For Export			Total	
			In Zone	In Region	Manila	Others	S-total	In Zone	In Region	Manila		S-total
A	Fresh	Producer	2,206	253	0	0	2,459	0	0	0	0	2,459
		Broker	3,363	5,685	24	0	9,072	0	0	0	0	9,072
		Viajeros	0	301	711	72	1,084	0	0	0	0	1,084
		S-total	5,569	6,239	735	72	12,615	0	0	0	0	12,615
Process	Total		97	3,715	17	0	3,829	0	0	0	0	3,829
			5,666	8,954	752	72	16,444	0	0	0	0	16,444
B	Fresh	Producer	2,732	114	497	0	3,343	0	0	0	0	3,343
		Broker	2,181	1,352	5,420	0	8,953	0	0	0	0	8,953
		Viajeros	0	181	2,548	27	2,757	0	0	0	0	2,757
		S-total	4,913	1,647	8,466	27	15,053	0	0	0	0	15,053
Process	Total		276	338	48	0	662	0	0	0	0	662
			5,189	1,985	8,514	27	15,715	0	0	0	0	15,715
C	Fresh	Producer	1,111	343	164	0	1,618	0	0	0	0	1,618
		Broker	856	544	3,169	0	4,569	0	0	0	0	4,569
		Viajeros	0	31	1,450	80	1,561	0	0	0	0	1,561
		S-total	1,967	918	4,783	80	7,748	0	0	0	0	7,748
Process	Total		0	15	0	0	15	0	0	0	0	15
			1,967	933	4,783	80	7,763	0	0	0	0	7,763
D	Fresh	Producer	0	0	0	0	0	0	0	0	0	0
		Broker	0	0	0	0	0	0	0	0	0	0
		Viajeros	0	0	0	0	0	0	0	0	0	0
		S-total	0	0	0	0	0	0	0	0	0	0
Process	Total	Canned	0	0	0	0	0	0	0	0	0	0
		Freezed	0	0	0	0	0	0	0	0	0	0
		S-total	0	0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0	0
E	Fresh	Producer	20	11	0	0	31	0	0	0	0	31
		Broker	21	12	0	0	33	680	0	0	0	680
		Viajeros	0	32	0	8	40	0	956	1,234	0	2,190
		S-total	41	55	0	8	104	680	956	1,234	0	2,230
Process	Total		0	0	0	0	0	0	0	0	0	
			41	55	0	8	104	680	956	1,234	0	2,974
F	Fresh	Producer	1,596	170	1,201	0	2,967	0	0	0	0	2,967
		Broker	248	1,936	6,756	0	9,000	0	0	0	0	9,000
		Viajeros	0	0	7,899	0	7,899	0	0	0	0	7,899
		S-total	1,844	2,166	15,856	0	19,866	0	0	0	0	19,866
Process	Total		3	30	1	34	0	0	0	0	34	
			1,847	2,196	15,857	0	19,900	0	0	0	0	19,900
G	Fresh	Producer	218	0	0	0	218	0	0	0	0	218
		Broker	68	512	67	10	657	0	0	0	0	657
		Viajeros	0	0	0	0	0	0	0	0	0	0
		S-total	286	512	67	10	875	0	0	0	0	875
Process	Total		0	0	0	0	0	0	0	0	0	
			286	512	67	10	875	0	0	0	0	875
Difer	Total		425	884	107	1,416	0	0	0	0	0	1,416
			15,421	16,519	29,973	304	62,217	680	956	1,234	2,870	65,087
Grand total			15,421	16,519	29,973	304	62,217	680	956	1,234	2,870	65,087