

Japan International Cooperation Agency(JICA)

Ministry of Natural Resources
Government of Solomon Islands

**THE DEVELOPMENT STUDY ON
IMPROVEMENT OF NATIONWIDE FISH MARKETING SYSTEM
IN
SOLOMON ISLANDS**

FINAL REPORT

MARCH 1994

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SYSTEM SCIENCE CONSULTANTS INC.

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PREFACE

In response to a request from the Government of Solomon Islands, the Government of Japan decided to conduct the Development Study on Improvement of Nationwide Fish Marketing System in Solomon Islands and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Solomon Islands a study team headed by Mr. Tateo Kusano, System Science Consultants Inc. four times between March 1993 and February 1994.

The team held discussions with the officials concerned of the Government of Solomon Islands, and conducted field surveys at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the promotion of the Project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of Solomon Islands for their close cooperation extended to the team.

March 1994



Kensuke Yanagiya
President
Japan International Cooperation Agency

March 1994

Mr. Kensuke Yanagiya
President
Japan International Cooperation Agency
Tokyo, Japan

Dear Mr. Kensuke Yanagiya

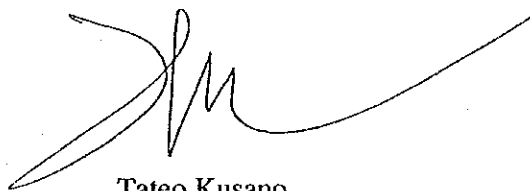
Letter of Transmittal

We are pleased to submit the report on the Development Study on Improvement of Nationwide Fish Marketing System in Solomon Islands. The report contains the advice and suggestions of the relevant authorities of the Government of Japan and the Government of the Solomon Islands as well as the formulation of the above mentioned project.

This study was conducted by System Science Consultants Inc. based on a contract with JICA, from March 29, 1993 to March 28, 1994. In this study, we formulated a nationwide master plan and prefeasibility study of the selected model zones in the country.

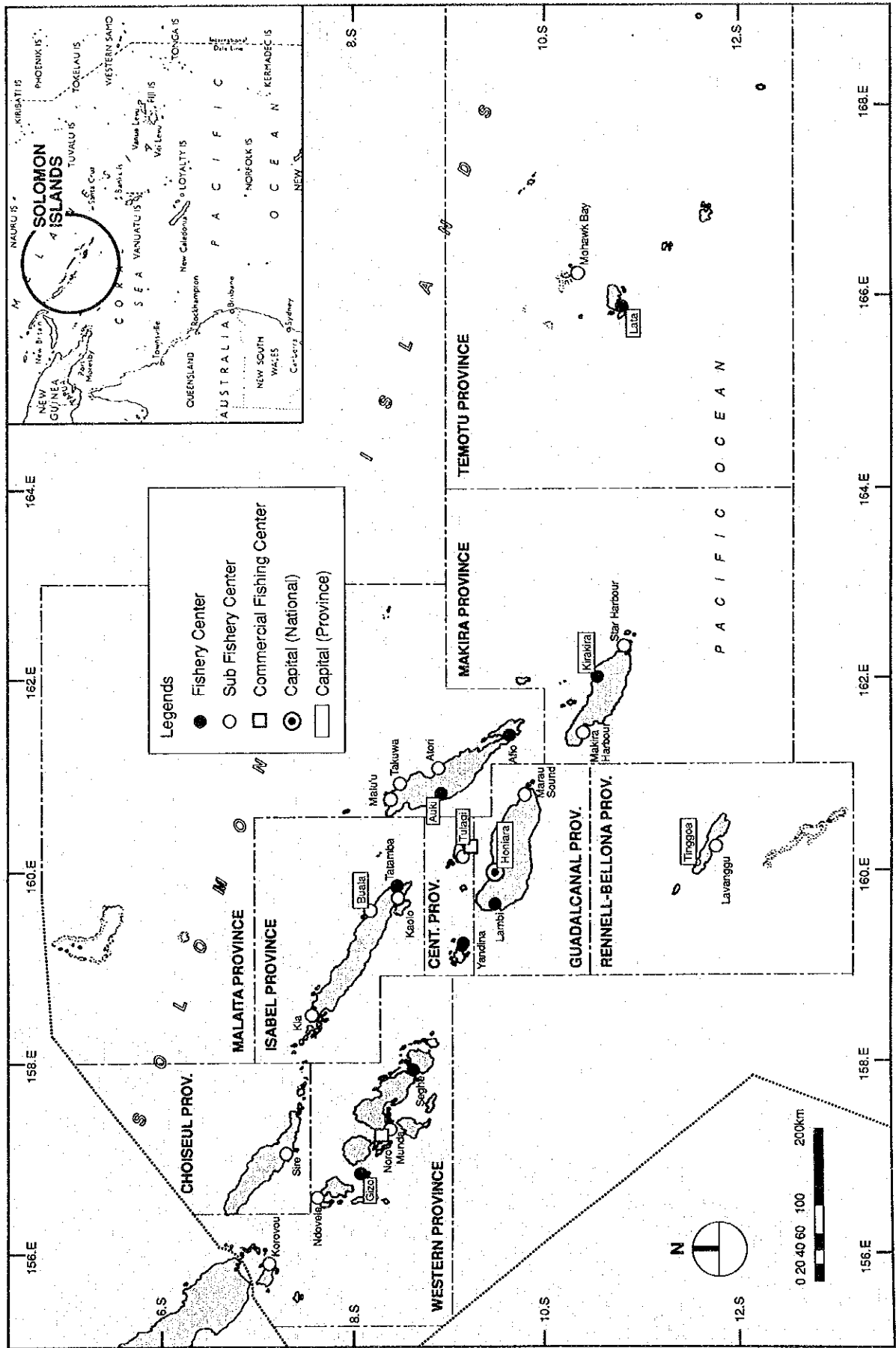
In view of the urgency of improving the fish marketing system in the Solomon Islands, we recommend that the Government of Solomon Islands implement this Project as a priority.

We wish to take this opportunity to express our sincere gratitude to the relevant officials of JICA, the Ministry of Foreign Affairs, and the Ministry of Agriculture, Forestry and Fisheries in Japan. We also wish to express our deep gratitude to the concerned officials of MNR, MOFA, FD and Provincial Governments, and the Embassy of Japan, and STL in Solomon Islands for their close cooperation and assistance extended to the team during the study.

A handwritten signature in black ink, consisting of a large, stylized 'T' followed by a series of loops and a long horizontal stroke extending to the right.

Tateo Kusano
Team Leader

The Development Study on Improvement of Nationwide
Fish Marketing System in Solomon Islands
System Science Consultants, Inc.



Map of Solomon Islands



1. Honiara Central Market
(Fish Market)



2. Honiara Central Market
(Fish Market)



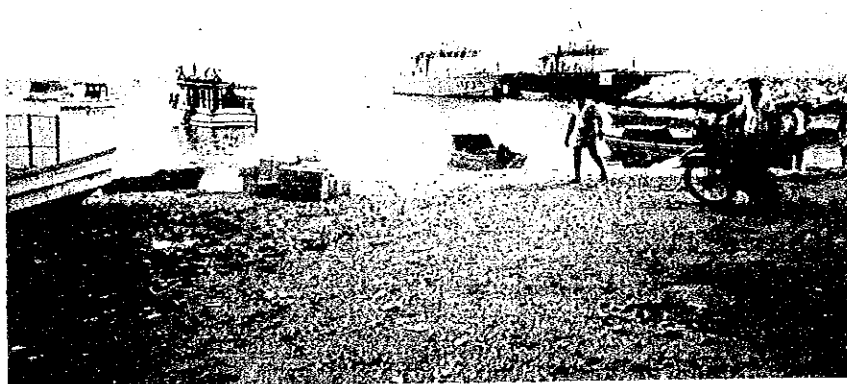
3. Honiara Central Market
(Vegetable Selling Area)



4. Kukum Market



5. Rove Market



6. Side of Yacht Club



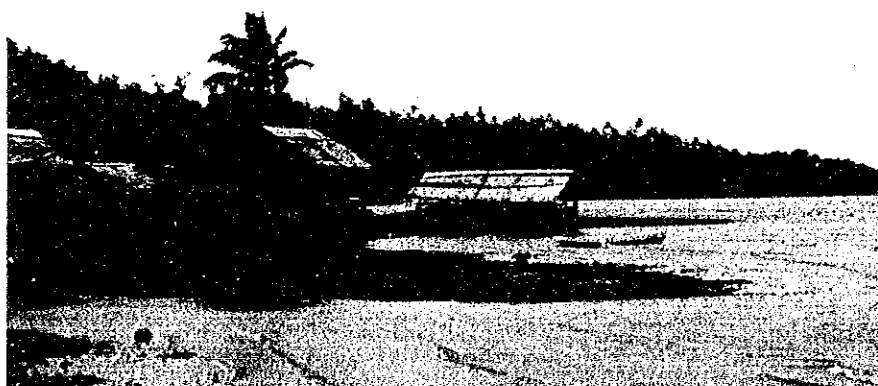
7. Cold Storage of Tulagi
NFD Co.



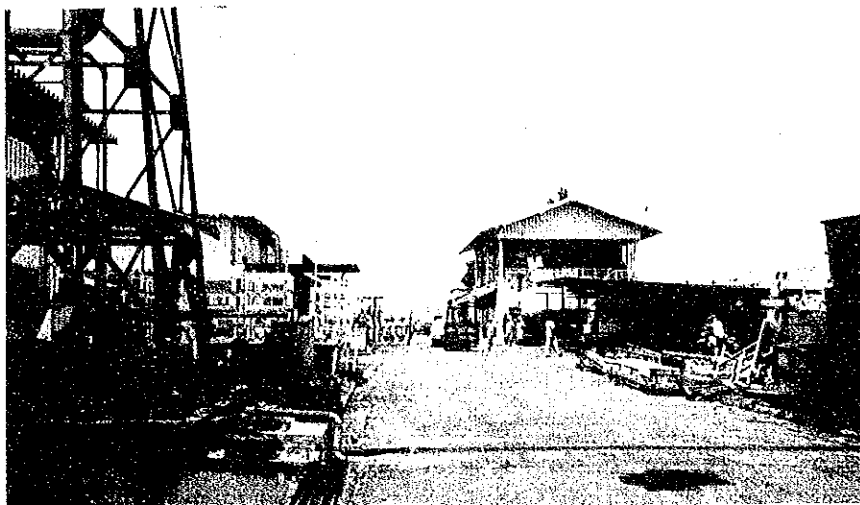
8. Interview Survey of
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9. Interview Survey of
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13. Gizo Fishery Center
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14. Vatro Fishing Village
(Western Province)



15. Mburi Fishing Village
(Western Province)



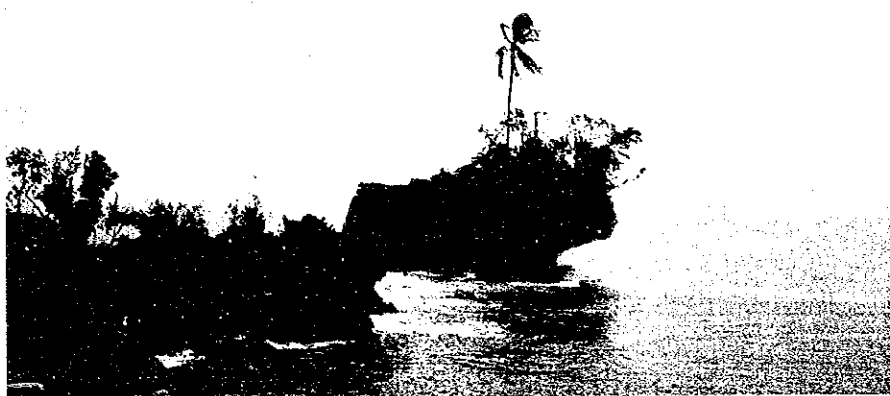
16. Ralumara Fishing Village
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(Rennell Island)



20. Public Transportation
of Rennell Island

SUMMARY

1. BACKGROUND AND OUTLINE OF THE STUDY

(1) Background of the Study

The Government of the Solomon Islands is striving to develop its economy through exploitation of its rich and varied fishery resources. In line with this goal, the "Rural Fisheries Development Project" was drawn up in 1981. Under the auspices of this project, Fisheries Centers and Sub-Centers have been established throughout the country through Japanese and other foreign aid to promote local fisheries, and in particular small-scale fisheries.

In spite of these measures, efforts to improve fishermen income and to secure a stable supply of fishery products have been curtailed, due to an under-developed fish marketing system. In order to solve this major setback, it has become necessary to improve the current fish marketing system to include measures which will effectively utilize the existing Fisheries Centers.

In order to undertake the aforementioned, the Government of the Solomon Islands requested the Government of Japan to formulate a master plan to improve its nationwide fish marketing network, centered on small-scale fisheries. Upon receiving the request, the Government of Japan dispatched a preliminary survey team to the Solomon Islands in January 1993 and the Scope of Work (S/W) for the master plan study was agreed upon between both governments in February 1993.

(2) Outline of the Study

1) Objective of the Study

The objective of the study was to formulate a master plan for a nationwide fish marketing network for the Solomon Islands, in order to secure a stable fish supply for the consumers in the capital and to raise the income level of small-scale fishermen. Another objective was to conduct a pre-feasibility study for model areas where the fish marketing plan could be enacted.

2) Study area

The study area covered the entire nation of the Solomon Islands.

3) Study approach

The study was carried out in two phases and the scope of work covered in each phase is delineated below.

- a. Phase I study: Based on existing data and field surveys, an assessment of the existing fish marketing system was undertaken. Based on these survey findings, the inherent issues and problems were analyzed and alternative plans to improve the fish marketing system were formulated. Model areas were selected.
- b. Phase II study: A pre-feasibility study of the project was carried out in the selected model areas.

2. ANALYSIS OF PRESENT CONDITIONS

2.1 National Development Plan and Socio-economic Structure

- 1) National and provincial development plan: The Provincial Development Plan (1988-1992) was formulated succeeding the Third National Development Plan (1985-1989).
- 2) The national economy is based on the agriculture, forestry, and the service industries; and the economic growth rate remains low. Major export commodities are agricultural and forestry products which have been strongly affected by the fluctuating international market.
- 3) Although a monetary economy is not prevalent in the rural, outlying areas and islands, it is gradually spreading due to the influence of international socio-economic factors.
- 4) Lagging improvements in the transport infrastructure between the numerous islands of the nation have impeded national economic development. Therefore, the positive effects of projects scattered throughout the islands will require a lengthy period of time before they are realized.
- 5) The central and provincial governments suffer from a lack of financial resources and a shortage of manpower. Subsequently, the management and operation of projects will continue to rely on foreign assistance.

2.2 Major Fisheries Policies

Current plans to promote fisheries is supported by the policies set forth in the Third National Development Plan (1985-1989). The major policies pertaining to fisheries are outlined below.

- 1) Achieve and maintain self-sufficiency in fish supply.
- 2) Improve cash income through a developed fisheries sector.
- 3) Increase employment opportunities in fisheries and related industries.
- 4) Promote participation of Solomon Island nationals in commercial fisheries and related activities.
- 5) Improve foreign currency earning activities.

2.3 Fishery Resources and Fish Production

- 1) Fisheries in the Solomon Islands is divided into the following three categories.
 - a. Large scale commercial fisheries for skipjack and tuna funded by foreign capital.
 - b. Traditional, subsistent, petty fisheries in the coastal areas.
 - c. Recently introduced small-scale commercial fisheries by FRP boats harvesting pelagic and reef fish
- 2) The reefs which comprise the coastal waters surrounding the Solomon Islands are abundant in non-migratory demersal fish and its offshore waters are the world's foremost fishing grounds for migratory such as skipjack and tuna.
- 3) The export volume of non-migratory fish species (beche de mer, trochus, giant clam) has rapidly fallen due to overfishing, and hence urgent resource management measures are required. In addition, measures to strengthen fish production strain resources and preventive resource management is needed for fish species whose ecology is threatened.

2.4 Fish Marketing System

- (1) Flow of general cargo and passengers

The Solomon Islands is a nation comprised of numerous islands surrounded by the ocean and transport of passengers and cargo rely mainly on ships.

There are approximately 180 registered vessels which mainly operate along the established navigational routes that connect the capital, Honiara to the other islands. Among these vessels, there are only ten which provide regular transport services. The majority of the private shipping and passenger lines operate along the economically advantageous routes

where there is a high demand for cargo and passenger transport. Transport services to the remote and outer islands are provided by a public transport network.

The personnel, maintenance, and management costs of public transport services are higher than those of private transport services utilizing the same navigational routes; and this has undermined the profits of public transport services. Economically viable routes are limited even for private shipping lines. Subsequently, public services are irregular and they are available only when a demand to transport some cargo arises.

In particular, circular navigational routes are unprofitable. On such routes, the transport network should be divided between main line navigational routes and inner island access routes; and deliberations on implementing a management and transport system in accordance with the area's transport demand and scope are required.

Fish transport will rely on existing ocean cargo services due to the very low fish volume per trip in comparison to general cargo and passengers. However, it should be noted that transport of fish products by the producers' cooperative in Choiseul Province has proven to be economically viable. Revision of navigational routes and measures to restructure transport management are the key to improved ocean shipping services.

The commercial zone which service the capital Honiara will be generally limited to Guadalcanal Province and its adjacent islands if the present transport constraints prevails. In future, the establishment of an increased number of economically viable routes to Honiara, will enable areas like Western and Malaita provinces access to the commercial zone of Honiara.

The general passenger/cargo transport services which define the commercial zone will also regulate and limit fish transport.

(2) Fish distribution volume

1) Fish demand/supply

Fish supply/demand in 1992 is delineated below.

a. Fish demand

The per capita fish consumption was estimated based on fish consumption survey, fish inflow volume by marketing routes, and population. The estimated per capita fish consumption volume is at approximately 47kg in Honiara and 65kg in all other areas. The domestic fish consumption volume is about 21,600mt of which approximately 8.8 percent or 1,897 mt is estimated to have

been consumed within Honiara. About 19,703 mt or roughly 90 percent of the domestic fish consumption volume was produced by artisanal fisheries.

The total fish export volume of 33,166 mt was mainly produced by large-scale commercial fisheries. In a breakdown of this export volume, fresh fish comprised a mere 54 mt, with frozen fish taking up the greatest share at 21,357 mt, followed by canned fish at 11,609 mt. The export volume rose to 1,848 mt of loin. Recently, frozen fish has decreased and canned fish exports have increased slightly.

b. Fish supply

The total production of fish was 54,569 mt of which an equivalent of 34 percent or 18,670 mt were produced for subsistence by artisanal fisheries. Although the total marketed volume was 35,899 mt, only 517 mt of fresh fish was sold through the market with the exception of fish produced by large-scale commercial fisheries. The fish import volume was 197 mt which was mainly comprised of canned fish.

Type of Fish	Supply				Unit: mt (whole weight equivalent)					
	Subsistence	Marketed Fish	Import	Total	Demand			Export	Total	Balance
					Hon	Prov.	Sub-total			
1) Fresh	18,670	517	0	19,187	369	18,764	19,133	54	19,187	0
2) Frozen	0	22,107	15	22,122	765	0	765	21,357	22,122	0
2) Canned	0	11,427	182	11,609	763	939	1,702	9,907	11,609	0
3) Smoked	0	1,848	0	1,848	0	0	0	1,848	1,848	0
Total	18,670	35,899	197	54,766	1,897	19,703	21,600	33,166	54,766	0
Remarks :	1) Fresh fish caught by small scale fishermen. 2) Frozen fish produced by commercial fisheries. 3) Per capita fish consumption of 47.9 kg/year in Honiara. 4) Per capita fish consumption of 65 kg/year in provinces.									
Source :	1) FD, MNR 2) RFEP, EC 3) Statistics Office, MOF 4) STL/NFD									

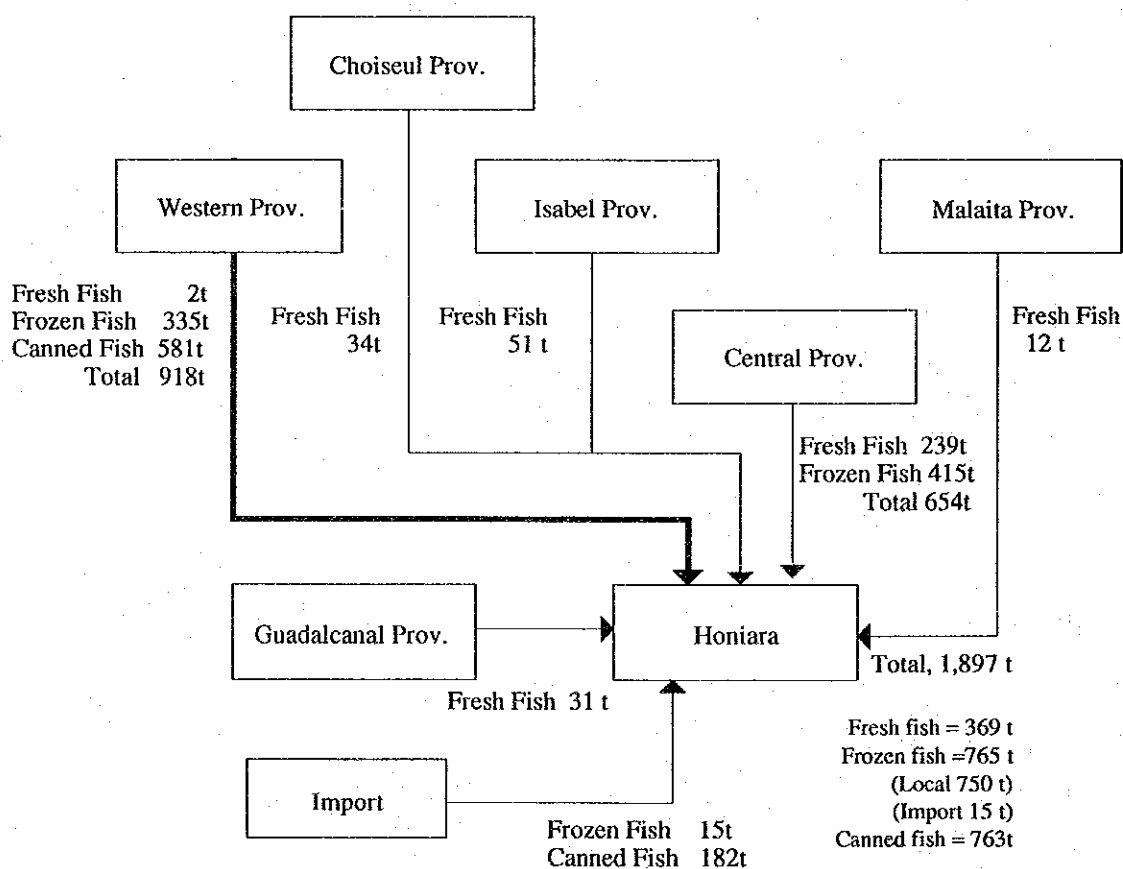
2) Origin/destination of fish

Of the total fish distribution volume of 54,766 mt, 33,166 mt were exported and 21,600 mt were domestically consumed. The preponderance of the fish export volume was processed by Solomon Taiyo Limited (STL) in Western Province and by National Fisheries Development Limited (NFD) in Central Province. With the exception of Central and Western provinces, fish produced in all the remaining provinces were locally consumed.

a. Fish inflow to Honiara: The total inflow volume of fish products to Honiara originated overwhelmingly from Western Province (STL), with 581 mt of

canned fish (whole weight equivalent), 335 mt of frozen fish, and 2 mt of fresh fish. This was followed by fresh fish of 239 mt and frozen fish of 415 mt brought in from Central Province on the opposite shore. Fresh fish originating from the remaining provinces of Guadalcanal, Malaita, Isabel, and Choiseul was brought in through Fisheries Centers and totaled about 10-50 mt from each province. In addition to this, 182 mt of canned fish and 15 mt of frozen fish were imported and consumed in Honiara.

- b. Fish outflow from Western Province: The outflow volume to other provinces totaled 1,702 mt and it is estimated that 918 mt were shipped to Honiara and the remaining 784 mt were processed as canned fish.
- c. Fish outflow from Central Province: The outflow volume of fish from Central Province totaled approximately 654 mt which were all shipped to Honiara; of this volume 239 mt were fresh fish and 415 mt were frozen fish of NFD.



Source: Field Survey (The Development Study on Improvement of NFMS in Solomon Islands, 1993)

Supply of Fish Products for Domestic Consumption in Honiara in 1992

(3) Fish marketing system

1) Fish marketing patterns

a. Fish marketing patterns to Honiara

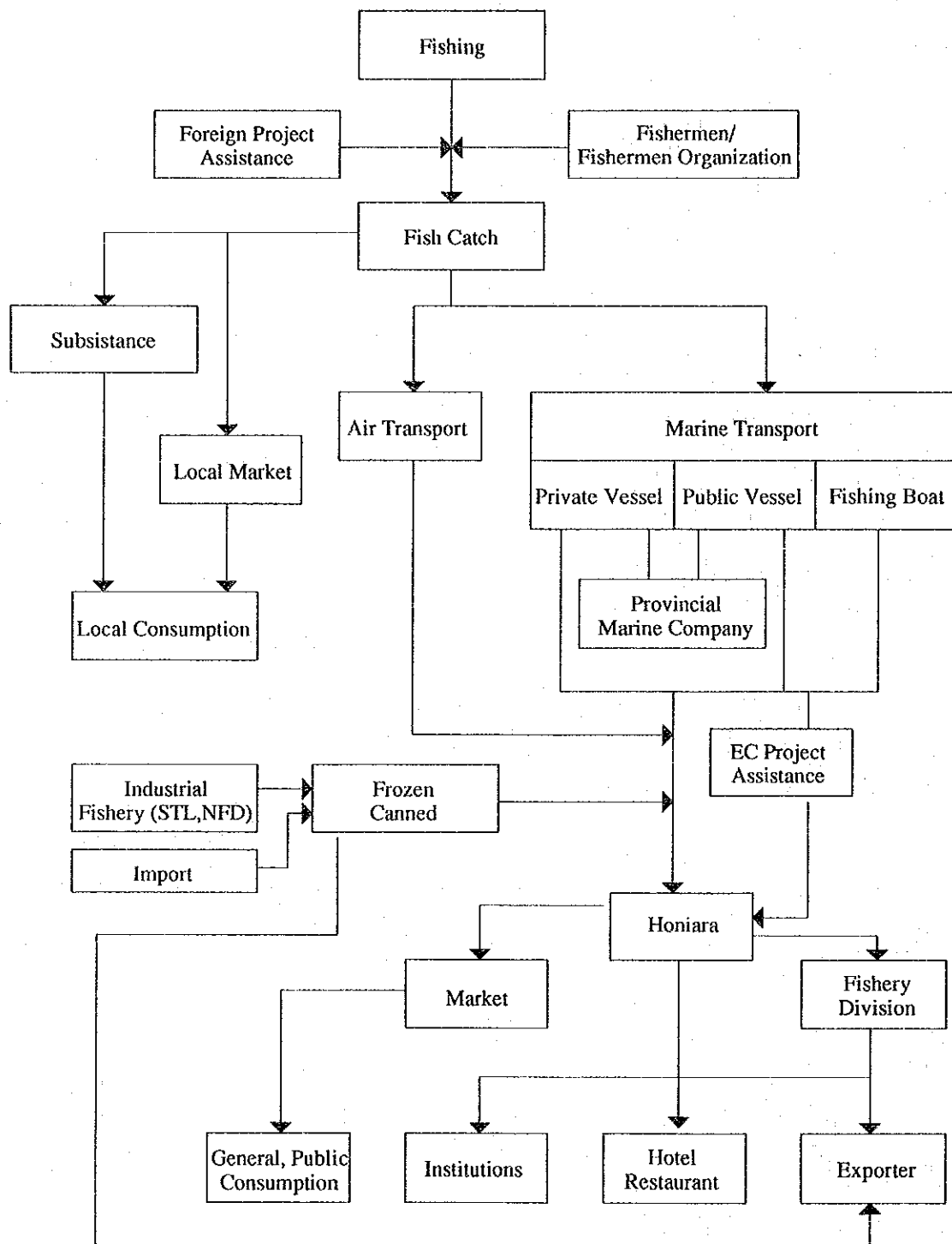
The bulk of fish product outflow from the provinces target the markets of Honiara. In addition to the Central Market run by the Honiara Town Council, there are two smaller markets where fish products are sold.

Frozen fish earmarked for the Honiara market are all produced by STL and NFD; and they are the smaller skipjack and tuna which are unsuitable for export, amounting to approximately 750 mt per year. Much of the fresh fish is usually brought in directly by fishermen from Florida Island on the opposite shore in Central Province. In addition to this, a comparatively large volume of fish is produced and shipped to Honiara from Malaita, Isabel, Guadalcanal and Choiseul. The fishermen of Malaita, Choiseul, and Guadalcanal Provinces bring in their fish directly either by cargo/passenger shipping lines or through fishermen associations.

Of the Fisheries Centers and Sub-Centers which are the mainstay in promoting coastal fisheries, those centers involved in the Rural Fisheries Enterprise Project (RFEP) to promote fisheries in Tatamba and Yandina of Isabel and Central provinces are engaged in fish marketing activities using cargo/passenger vessels. Fish which is brought in by RFEP is purchased by exporters as well as the Fisheries Division and sold in Honiara.

b. Characteristics of fish marketing routes

The presence of professional fish traders is nearly nonexistent; and in addition to fishermen and exporters, public agencies (through Fisheries Centers & Sub-Centers, Fisheries Division, provincial governments, foreign assistance projects, etc.) are often either directly or indirectly involved in fish marketing activities.



Marketing System of Fish Products in Solomon Islands

2) Fish pricing mechanism

In fiscal 1992, the fresh fish marketing volume was 517 mt, a mere one percent of the total fish landing volume of 54,569 mt. Of this volume, 94 mt were consumed locally in the production area and 423 mt (including 54 mt of export) were shipped to Honiara (in addition to 750 mt of frozen and 581 mt of canned fish).

Due to the extremely small volume of locally consumed fish, the market pricing mechanism can not be applied. As a result, fish is purchased from fishermen by the FCs at a set price and it is marketed to the local markets at a price which includes the provincial government handling fee.

The purchase price differs according to fish species and they are categorized into the three grades. The average purchase price is SI\$2.00-SI\$3.00/kg. The retail price of these fish at the fish production area is marked up SI\$0.50-1.00/kg.

Although the retail price of fish at the Honiara market differs according to grade, it is approximately SI\$6.00-8.00/kg. Approximately 210 mt or about 50 percent of the total fresh fish volume earmarked for the Honiara market originates from Florida Island; and fish price fluctuates according to the volume of fish brought into the market.

Another factor which contributes to price fluctuations is the volume of frozen skipjack and tuna brought in by STL and NFD. This inflow volume of frozen skipjack and tuna to the Honiara markets is about two times the volume of fresh fish brought to Honiara; and it competes with fresh fish supplied by artisanal fisheries.

(4) Quality control of fresh fish

Fish quality during the production stage of RFEP was satisfactory due to technical supervision as well as removal of internal organs immediately after harvesting. Although a decline in fish freshness stemming from rising temperatures was not often observed, due to the adequate use of ice throughout the entire marketing process, deterioration in fish quality occurred when a time loss over a period of several days was experienced during the transport or waiting stages. In order to eliminate deterioration in fish quality, the entire fish handling process, from fish harvesting to consumption area (handling on board the fishing boats, chilling, shipping, storage), is a major issue to be resolved under a irregular transport system.

(5) Fish marketing information system

The EC project office is located in the Fisheries Division in Honiara and communicates with the project's three fisheries centers scattered throughout the islands by wireless radio. By effectively utilizing this central to local communication network, fish harvest and shipping methods based on the departure and arrival schedules of transport vessels and the present conditions of the Honiara and export markets are supervised.

For example, in the shipment of fish products from Choiseul to Honiara by transport ship, the chairman of VDA who is based in Honiara, advises his member fishermen (including part-time fishermen) of the appropriate timing for fish shipment by wireless radio, and thereby keeps the loss in fish harvest and shipment to a minimum, in addition to raising profits for the transport ship as well.

With the exception of these two cases, a fish marketing information system utilized on a commercial basis is nonexistent.

2.5 Socio-economy

(1) Population distribution

- 1) With the exception of the area in and around Honiara, northern Malaita, and Western provinces, the entire population of the nation is uniformly dispersed among its islands. Due to the poor traffic conditions that exist between the islands, each island has evolved its own independent lifestyle.
- 2) The population is concentrated in the capital of Honiara which has the highest population growth rate in the nation. Excluding Honiara, the population in the remaining areas of Guadalcanal Province is declining; and the trend in depopulation of the outlying areas, in contrast to population convergence in Honiara and its surrounding environs, is prominent.
- 3) The population of Malaita Province is particularly high. An extreme drop in population over a short period of time has occurred in a few wards due to limited employment opportunities.
- 4) Although Western Province has a large population, the land area of its capital, Gizo, is narrow and its population growth rate has been relatively moderate. However, the population growth rate is comparatively high in Munda where the airport, roads, and other related infrastructure are rather well developed. It is anticipated that in Noro where urban infrastructure such as a diesel power station, city roads, etc. is

well developed, in addition to the presence of STL and the new development area between Noro and Munda, this area will continue to increase in population.

- 5) In view of its socio-economy, certain areas such as Malaita Island have reached their limits. Subsequently, the population flow to Honiara and other areas is anticipated to become more prominent.

	Population 1986 (Actual)	Population 1992 (Est.)	AAGR (1986-92)
Solomon Islands	285,263	342,732	3.06%
Honiara Town	30,413	39,600	4.40%
Others	254,850	303,132	2.89%

Remarks: AAGR; Annual Average Growth Rate.

1) Population Census (1986), Statistics Office, MOF

2) Provincial Development Plans (1992)

(2) Socio-economic activities

1) Village structure

The village is made of clans centered around a traditional chief. Its infrastructure development is based on obligatory communal work carried out by the villagers.

2) Village lifestyle and food

Electricity is available in Honiara and the provincial capitals, whereas the majority of the villages utilize kerosene oil. Water is supplied from a communal water tap. The staple food of the villages is a variety of root crops and fish products are the side dish. Reef fish is the preferred species of fresh fish. Root crop cultivation is the main activity of the coastal villages, succeeded by subsistent reef fisheries.

3) Monetary economy

Although a monetary economy is still in its initial stages of development, it is slowly growing. The demand for cash is rising in order to pay for education, medicine, and daily commodities. A major source of cash income is the sale of cash crops such as copra, cocoa, etc. Another source is the sale of fruits, vegetables and fish products.

4) Fishing activities

Although FRP and engine-driven canoes are becoming prevalent, traditional fishing methods are still predominant.

(3) Land ownership system

Land ownership is based on a system of registered land (12 percent) and customary land (88 percent). Customary land is owned by the clans and the community according to a traditional system of land ownership which contains inherent problems. As land area and ownership rights among the clan and community are not clearly defined, negotiations concerning government development projects, etc. are lengthy and time-consuming. A traditional system of ownership rights also exists for ocean areas such as reefs, lagoons, etc. In northern Malaita, reef rights of the clans and families of the same village are strictly enforced. In particular, inner and inter-clan disputes arise over reefs containing bait fish for skipjack/tuna fishing.

2.6 Fish Marketing Facilities

(1) Fisheries Centers and Sub-centers

There are a total of 27 Fisheries Centers and Sub-centers nationwide which are engaged in fish marketing and actively promoting the fishing industry. Of this number, two are large-scale commercial fishery bases while the remaining 25 serve as artisanal fishing and small-scale commercial fishing bases. Of the 25, six are under construction and of the remaining 19 centers, only nine are in full operation. The rest are completely or partly non-operational due to mechanical breakdowns of the ice-making machines or difficult access to fishing grounds or markets.

The Fisheries Centers are owned by either the central or provincial governments, but their operation and management are carried out by the provincial governments. On the whole they are inefficiently managed. Faced with a shortage of skilled managers, difficulty in obtaining timely appropriation of funds, undeveloped management and maintenance systems, etc., the government is forced to rely on foreign assistance to manage the majority of the centers.

(2) Honiara and provincial markets

The markets in Honiara and in each province generally sell fish, meat, fruits and vegetables, but a segment of the Honiara Central and the Gizo markets carry daily commodities as well.

Market facilities have been installed at the Honiara Central, Gizo, Auki, and Honiara Kukum markets, but there are no facilities at the Honiara Rove market.

However, although essential facilities such as a fresh fish landing jetty, waste water treatment, and interior paving exists at the Honiara Central Market, they are either small in capacity or damaged and require renovation or replacement.

(3) Improvements in infrastructure

1) Electricity

The Solomon Island Electricity Authority (SIEA) has nine power stations under its jurisdiction. The total power capacity is 17,000kw, of which the power stations of Honiara and Noro generate 90 percent of the total capacity. The electricity supply capacity in the provinces is extremely low, in view of their population. The energy consumption is about half the power available in the nation. In contrast, there is a surplus of electricity generated in the large cities, while an extreme shortage exists in the rural areas.

Plans to supply electricity to the provinces will be carried out according to the following two methods. One is to reroute the surplus electricity of Noro in Western Province to the outlying areas. The other is to implement an increase in the electricity power supply to the other rural areas at a minimum cost and loss, although there is no guarantee of its profitability. A deficit in either case is unavoidable, but increasing the operation ratio of the Honiara and Noro power stations would help the SIEA operation to become self-supporting.

2) Water supply and drainage

Although water supply system is found throughout the provincial capitals, water supplied by rainwater tanks is common in the rural areas. Waste water treatment facilities for flushed toilets are available in the provincial capitals, but public drainage facilities are nonexistent.

3) Transport infrastructure

a. Airport: There are five international and two domestic airlines servicing 27 airports.

b. Port: There are 21 ports with wharves capable of accommodating inter-island transport vessels

c. Roads: About 87 percent of the total national road length of 1,300km is concentrated in areas with a developed economy and large population such as Guadalcanal, Malaita, and Western provinces.

4) **Tourism: Resort development**

The number of tourists is on the rise and the length of their visit (number of days) is increasing, an indication of a growing tourist demand. As a nation of many islands blessed with reef resources, it is important to consider the ecological impact of fisheries development and tourism on these resources.

2.7 Survey on Fishery Related Laws and Organizations

(1) **Fisheries Act**

The Fisheries Act was enacted in 1972 and revisions have been made several times. In addition, supplementary regulations such as the Fisheries Regulation (pertaining to local fishing vessels and foreign fishing vessels) exist. The Fisheries Act was initially enacted to regulate the joint commercial fisheries and processing activities with foreign companies. This act also included measures to oversee fishing licenses, prohibited fishing methods, processing industry, fishing rights, penalties, etc.

However, it did not contain measures to regulate small-scale commercial and subsistent fisheries; and revisions by the FAO were submitted in 1987. These revisions contain measures to promote future small-scale commercial fisheries. If they are approved, further enactment of new laws and regulations will not be required.

(2) **Fish marketing system**

A nationwide fish marketing system does not exist. The Honiara markets are regulated by By-Laws and they are managed by the Honiara Town Council (HTC).

(3) **Financial support programs**

A specific system of financing for small-scale commercial fishermen has not evolved due to the minimal demand for capital. Although Development Bank of Solomon Islands (DBSI) loans are available for the small-scale agriculture and forestry sector, loans for the fishery sector are concentrated in the provinces of Western, Central, and Malaita, which indicate a high level of fishery activities in these three provinces. In view of the nation's manpower shortage, weak institution, and financial difficulties, it has been concluded that the introduction of an institutional financing system will not be possible in the near foreseeable future.

(4) Fishermen associations/regional organizations

- 1) There are no specific laws pertaining to fishermen associations. However, fishermen organizations are registered under the Cooperative Societies Act. At present, there are approximately 109 cooperatives which are registered, of which only six are fishermen cooperatives (mainly in Malaita Province).

There are about 50 to 100 members in the Fisheries Cooperative Society; and its activities include the marketing of fresh fish and sales of fishing gear, communal use of fishing gear, etc.

- 2) Cooperative in Malaita Province: Technology transfer to small-scale commercial fishermen in the cooperative is being carried out and realized under OFCF assistance and guidance. However, fish marketing activities are still in their initial stages.

Much more effort will be required to maintain and develop this technology by the cooperative after Overseas Fishery Cooperation Foundation (OFCF) assistance terminates.

- 3) Cooperative in Western Province: This cooperative was established with the assistance of Canada's International Center for Ocean Development (ICOD). Comprehensive economic activities targeting all the inhabitants of the province have been carried out. The ICOD manager is responsible for project management and operations. When the project ends in the near future, the problems to be solved are anticipated to arise over the transfer of operations.

- 4) EC project: The objective of this project is to organize, foster, and transfer fishing technology to a group of small-scale commercial fishermen, while implementing improvements in fish marketing facilities and activities. The project manager of the EC project is based in the Fisheries Division in Honiara and maintains contact with the project centers and directly supervises marketing activities by radio. After completion of EC managerial and financial assistance, the fishermen would not be able to carry out these activities without their active participation for EC.

2.8 Foreign Assistance

Much of the fishery development activities of the Solomon Islands are greatly dependent on foreign capital and technology. Promotion of small-scale commercial fisheries has been carried out by JICA, FDAPIN, OFCF, EC, USAID, AIDAB, and other foreign agencies in the form of fishery related facilities and technology transfer in production and marketing.

(1) System of foreign aid

The Ministry of Development Planning (MDP) is the central coordinating body for all national development programmes and projects proposed for financial assistance by ministries and statutory bodies. Development projects requiring financial assistance are submitted to MDP which will scrutinize for consistency with government plans, policies and priorities. They are then submitted to the National Development Planning Council (NDPC) for formal approval. Projects approved by NDPC will then be further developed and documented by the initiating agencies and further appraised by MDP for financial, economic and technical viability. Approved projects will be forwarded and negotiated with the funding agencies.

(2) Evaluation of foreign assistance

In the area of small-scale commercial fisheries and artisanal fisheries, foreign aid projects have been successful in developing and introducing fishing and quality control technology on a trial basis.

However, in order for the successful results of these projects to become rooted throughout the entire region, it is necessary to solve social and cultural issues (work volition, traditional social customs, etc.), problems in fish transport, human resources, organizational system, and finance.

2.9 Environmental Assessment

Presently, a draft of the Environmental Act is under deliberation by the National Cabinet. Existing laws which are relevant to environmental planning and assessment are the Town and Country Planning Act, Investment Act, Research Act, Honiara Town Council Building By-Laws, Western Province Building Ordinance, Western Province Environmental Policy, etc.

3. FUTURE PROJECTION

(1) Volume of fish demand/supply

Fish demand was projected based on per capita consumption, population growth and changes in the type of processed fish exported. Fish supply volume was estimated on such factors as protection measures of coastal resources, limitations in the economic growth of the fishing industry, etc. and was determined at a level which did not differ greatly from current fishing capabilities.

Supply/Demand Balance of Fish Products (1995 & 2010)

(1) 1995	Unit: mt								
	SUPPLY				DEMAND				
	Self	Marketed		TOTAL	Domestic Consumption			Export	TOTAL
	Consumption	Fish	Import		Hon	Prov.	Sub-total		
1) Fresh Fish	20,218	509	0	20,727	435	20,218	20,653	74	20,727
2) Frozen Fish	0	21,901	0	21,901	901	0	901	21,000	21,901
3) Canned Fish	0	10,865	0	10,865	887	978	1,865	9,000	10,865
4) Smoked Fish	0	3,000	0	3,000	0	0	0	3,000	3,000
Total	20,218	36,275	0	56,493	2,223	21,196	23,419	33,074	56,493

(2) 2010

Unit: mt

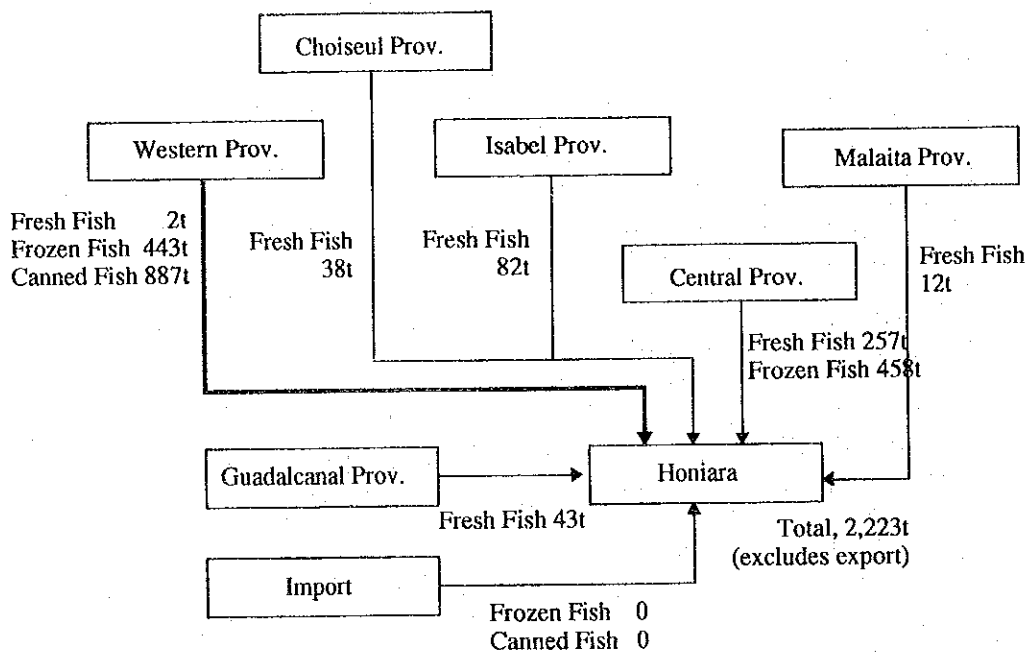
	SUPPLY				DEMAND				TOTAL
	Self	Marketed	Import	TOTAL	Domestic Consumption			Export	
	Consumption	Fish			Hon	Prov.	Sub-total		
1) Fresh Fish	29,995	989	0	30,984	861	29,995	30,856	128	30,984
2) Frozen Fish	0	23,620	0	23,620	1,120	0	1,120	22,500	23,620
3) Canned Fish	0	14,767	0	14,767	1,315	1,452	2,767	12,000	14,767
4) Smoked Fish	0	5,000	0	5,000	0	0	0	5,000	5,000
Total	0	44,376	0	74,371	3,296	31,447	34,743	39,628	74,371

Remarks: 1) Fresh fish caught by small scale fishermen.
 2) Frozen fish produced by commercial fisheries.
 3) Per capita of fish consumption of 47 kg/year in Honiara.
 4) Per capita of fish consumption of 65 kg/year in provinces.
 5) All volumes are whole weight equivalent.

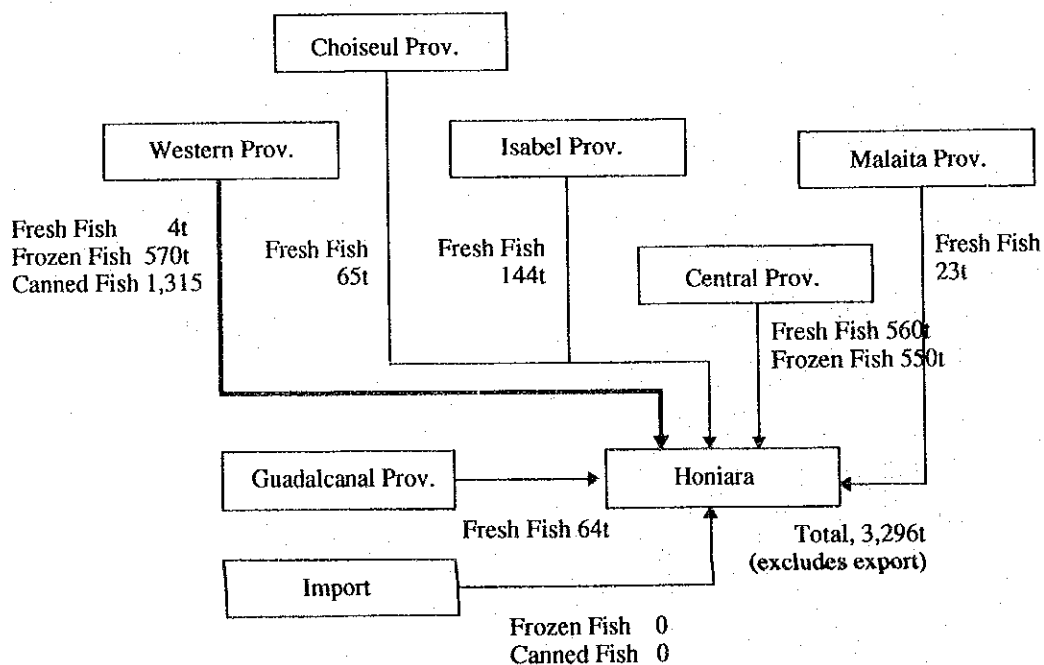
Source: 1) Statistics Office, MOF (1995 Population estimates)
 2) World Bank Population Estimates (2000 & 2010 Population)
 3) Fisheries Division, MNR

(2) Origin/destination volume of fish products

The proposed origin/destination pattern of fish products is based on the existing origin/destination pattern and future supply and demand of fish products. The future inflow volume of fish consumed in Honiara from each province (excluding export fish) is shown below.



Supply of Fish Products to Honiara (O/D Volume) in 1995



Supply of Fish Products to Honiara (O/D Volume) in 2010

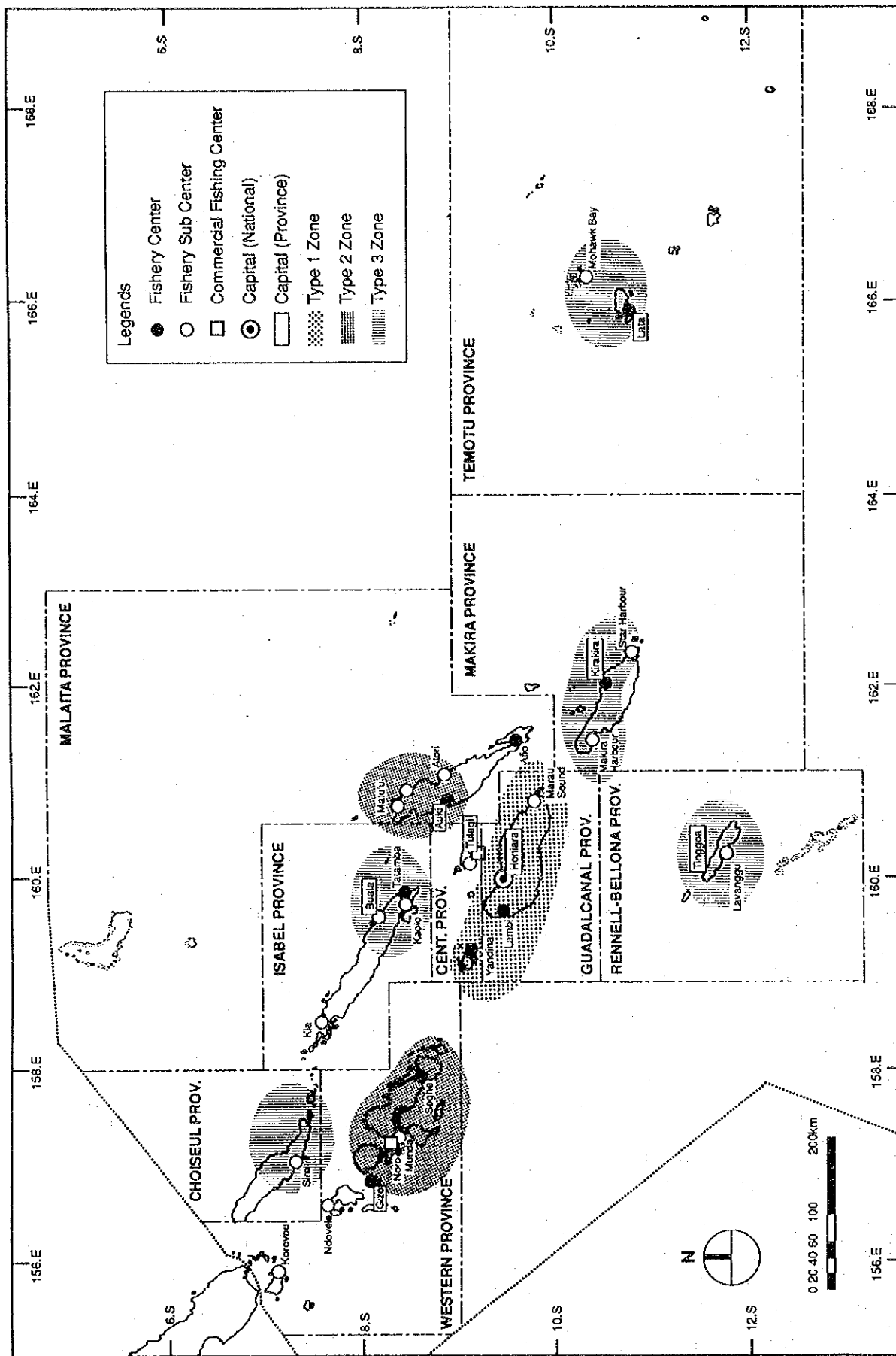
4. ZONING AND SELECTION OF MODEL AREAS

4.1 Zoning

Zoning will be based on natural conditions, socio-economic factors, infrastructure, fish production, cargo/passenger transport structure, fish transport and marketing structure, etc. Based on the prevailing conditions in the fish marketing system and its future potential, the following three types of zones are proposed.

- (1) Type 1: Commercial zone of Honiara
 - a. Development zone 1 (the capital, Honiara and its suburbs)
 - b. Development zone 2 (Florida Islands)
- (2) Type 2: Regional development
 - a. Development zone 3 (Western Province)
 - b. Development zone 4 (north Malaita Province)
- (3) Type 3: Development of remote islands (southern part of Isabel Province, northern and eastern parts of Makira Province, Rennel, Temotu, southern part of Choiseul Province)

The proposed zones are shown in the following figure.



Location of Proposed Zones

4.2 Zone Characteristics

(1) Development Zone 1 (Honiara town and its outlying areas)

The capital town of Honiara is the nation's foremost consumption area; and improvements in its marketing system are closely interrelated to rural fisheries development. As a result, it is strategically important as a major distribution point. Presently, the Honiara Central Market functions as a small-scale public retail market, but it is important to upgrade the market in order to fulfill marketing functions which will provide stable, large volume of fish, produce, and daily commodities.

(2) Development Zone 2 (Florida Island): Comprehensive coastal villages development projects

Florida Island is the major supplier of fresh fish to Honiara; and it is estimated that it will be supplying 470 mt of fish in the year 2010. This is equivalent to 55 percent of total marketed fish landing volume by small-scale fisheries in the nation. Therefore, in order to ensure a stable fresh fish supply to Honiara in future, it is important to introduce a comprehensive improvement plan in this area.

(3) Development Zone 3 (Western Province): Comprehensive coastal villages development projects

This zone contains Noro, an area with the second largest infrastructure following Honiara, and the export base for large-scale commercial fisheries. It is important to foster small-scale commercial fisheries and promote exportation by utilizing this infrastructure and the existing marketing facilities.

(4) Development Zone 4 (north Malaita Province): Comprehensive coastal villages development projects

North Malaita is one of the most densely populated areas of the nation and the regional demand for fish products is high. Although fishing technology is being transferred through the OFCF project, a major issue in future will be implementing improvements in fish marketing functions.

(5) Plan to develop remote islands (Isabel, Makira, Rennell, Temotu, Choiseul)

- 1) The Fisheries Center on each outer island has either been completed or is still under construction. The operational expertise of the fish marketing and transport system employed in Tatamba (Isabel Province) by the RFEP (EC Project) and the fishermen cooperative in Choiseul Province will be introduced after completion of the facilities.

- 2) Improving the living standards of the coastal inhabitants on the under-developed islands will be the focal point of the development plan.

4.3 Selection of Model Areas

Of the three types of development zones, areas with the highest achievement potential and effect were selected.

(1) Type 1: Honiara economic zone

Zone 1 (Honiara and its outlying areas) and Zone 2 (Florida Islands) are closely interrelated and cannot be separated in terms of project implementation. Therefore, both zones have been selected.

- 1) Model Zone 1: Development zone 1 (Honiara and its outlying areas)
- 2) Model Zone 2: Development zone 2 (Florida Islands)

(2) Type 2: Regional development

Zones 3 (Western Province) and Zone 4 (northern Malaita Province) are categorized as Type 2. Fish is regionally distributed within northern Malaita province and very little fish is marketed to Honiara.

In contrast, there are fish processing and marketing facilities in Noro and shipping and transport vessels in Gizo in Western Province mainly for the external market. By effectively utilizing these facilities, improvements in fish marketing over a wide area can be anticipated. As a result, Zone 3 (Western Province) was selected as a model area.

Model Zone 3: Development zone 3 (Western Province)

(3) Type 3: Remote island development

The five provinces of Isabel, Makira, Rennell, Temotu, and Choiseul are categorized as Type 3. Rennell Province is the newest and the most undeveloped of the five provinces. In order to effectively utilize the Fisheries Center currently under construction and to improve the living standards of its inhabitants, this most undeveloped outer island was selected as a model area for the project.

Model Zone 4: Rennell Island

5. PRESENT CONDITIONS OF MODEL ZONES

5.1 Model Zone 1 (Honiara Town And Its Outlying Area)

(1) Fish marketing structure and town market

Nearly 82 percent of the fresh fish volume supplied to the capital of Honiara originates from islands other than Guadalcanal Island. In particular, a large volume of fresh fish is brought in from Florida Islands on the opposite shore from Honiara Town. Generally, fresh fish is transported to the town by the fishermen themselves. Fishermen are disadvantaged by a loss of fishing opportunities, since they must carry out collection and fish transport activities and the consumers are always confronted by an unstable quantity and inferior quality of fish supply.

In addition to the Honiara Central Market, there are two other markets in the town where produce, daily commodities, as well as fish are sold. Of the three, the Honiara Central Market functions as a distribution center for all goods coming into Honiara. However, its facilities are inadequate, general market equipment has broken down, and sanitary conditions are unsatisfactory. Nearly the entire town populace utilizes this market and it plays an important role in their daily lives. The market is constantly congested with people, cars, and a flow of goods. Subsequently, it has become necessary to review its functions, scope, and use.

(2) Related plans

The Honiara Central Market has been pinpointed as the cause of traffic congestion in the town's central area. As a result, immediate plans to move the Central Market to another location or to expand its current land space have been proposed in the Five Year Development Plan of Honiara Town (1988-1992) drawn up by the Town Council. Following this, a Four Year Development Plan of Honiara Town (1990-1992) was devised which included reforms in the handling methods of produce and fishery products of the Central Market, renovations of its parking area, and improvements in both the Rove and Kukum markets.

5.2 Model Zone 2 (Florida Islands)

(1) Geographical Conditions

The Florida Islands are located approximately 50km northeast of Honiara Town in Central Province. They are composed of the islands of Big Gela, Small Gela, Sandfly Island, Buena Vista, Tulagi Island containing the provincial capital, and about 50 other large

and small islands. The topography of the principal four islands consists of low hills, but the smaller islands are elevated flat atolls.

The majority of the 70 villages scattered throughout the islands are located along the coast and are within a 90 to 180 minute radius of Honiara by FRP boat.

(2) Population and industry

Tulagi Island is blessed with a good natural harbor equipped with wharf facilities and easy access to Honiara. Due to the presence of the NFD and Sasape Marina's shipbuilding yard, the island has a large population of salaried workers. However, the scope of consumption is modest, due to a small population of approximately 2,400 (1992). The total population of the islands, excluding Tulagi Island, was estimated to be about 10,000 in 1992.

(3) Social structure

Villages are usually composed of one to eight clans; and land is jointly owned by these clans.

Nearly all of the villages are located on the coast and their livelihoods are divided between fishing and farming. Excluding rice, canned food, and other imported or processed foods, the staple and supplementary diets are subsistent. Due to their close proximity to the capital of Honiara, a monetary economy is widespread.

(4) Fisheries and fish marketing structure

Soso on the southern coast of Buena Vista Island has many reefs which are good fishing grounds of shallow water fish. The waters of Naghotano Island contain many shoals and seaweed abundant in demersal fish which make it ideally suited as a fishing base. The western coast of Sandfly Island is protected from the winds by inland hills. Although there are no reefs, there are rich fishing grounds for deep sea demersal fish (30m-50m), due to numerous shoals and seaweed in its offshore waters. Sandfly Channel bordering the east coast contains numerous reefs and a large volume of reef fish are harvested. Big Gela Island faces an open sea fishing ground. Its offshore waters contain numerous shoals and seaweed and they are an ideal fishing ground for deep sea bottom dwelling fish. Large volume of high-priced fish are also harvested there. It is the nearest production area to Honiara and its development potential is high. The western half of Small Gela Island contains rocky reefs, but its offshore waters to the west are large fishing grounds containing many shoals and seaweed.

Due to its proximity to Honiara Town, the fishermen of Florida Islands are able to easily market fresh fish which is an effective means of earning cash revenue. As a result, the fishing activities of its inhabitants are the most active among all the other provinces. Joint fishery activities between different family groups are the source of disputes, particularly when money is involved, and for the present such activities are difficult to implement.

Although fisheries is not a full-time occupation, it is a means of earning cash revenue. A few fishermen purchase the fish catch of others and transport it to Honiara, in addition to their own. It is anticipated that with a developed fish market in Honiara, fish production, collection, transport, and marketing functions will become specialized.

Currently, NFD, the large-scale commercial fisheries company in Tulagi, produces frozen tuna and skipjack; and a segment of its production volume is marketed for consumption in Honiara.

Regular transport services running between Tulagi and Honiara are available three times a week on alternate days by one passenger/cargo ship. Although there are two passenger/cargo ships plying this route, one stops only once a week via Auki. These ships are generally fully booked and their cargo volume is normally 80 percent of their capacity, indicating a high utilization ratio.

(5) Issues in fresh fish marketing and transport

- 1) The tidal current between Honiara and the Florida Islands is swift at its midway point and FRP boats are unable to navigate this distance for many days when the sea conditions are rough and life threatening.
- 2) Individuals or groups that do not possess a FRP boat usually charter one. However, chartering costs are expensive and lower profits derived from fresh fish sales.
- 3) The passenger/cargo ship arrives and departs from Tulagi and it is capable of accommodating four to five eskys per trip. However, its departure time is unpredictable and it has been known to leave at midnight, which has made it difficult to utilize. In addition, fishermen must charter an FRP boat to transport their fish catch to Tulagi.

(6) Fish marketing facilities

The only fish marketing facility on Florida Island is the Fisheries Center in Tulagi and the NFD fishing base. The Fisheries Center was built by the provincial government in 1978. However, its ice making equipment is currently out of order and it remains

unrepaired. As a result, fish marketing activities have ceased. The NFD fishing base was established in 1973 and possesses 14 fishing boats. Its land facilities consist of a brine freezing facility, a refrigeration facility, and an ice-making machine. Due to a water shortage in Tulagi, 50 mt of water per day is transported in by tanker.

(7) Related infrastructure

Electricity is available only in Tulagi. Although tap water facilities are also available in Tulagi, the province faces a water shortage and the provincial government is currently applying for a budget from the central government to develop new water resources.

Although water pipes have been installed in villages in other areas, many of the pipes are damaged and the water source has dried up.

Although wharves are available at Tulagi for the passenger/transport ships, there are no jetties at the coastal villages.

5.3 Model Zone 3 (Western Province)

Based on fishery resources, geographical location, socio-economic conditions, fish marketing system, facilities, and related infrastructure, this zone was divided into three sub-zones according to their respective role in fish marketing and transport.

(1) Sub-zone 1 (contains the provincial capital of Gizo and its surrounding area)

This sub-zone is composed of Gizo, Ranonga, Vella Lavella, and Vona Vona islands.

1) Socio-economy and fishery resources

Gizo Island is the provincial capital and the socio-economic center of the province. The island is narrow in area and due to a high population density, its population growth rate has been low and it has limited the economic development. Coral reefs are scattered widely around the island and comprise fishing grounds rich in reef fish resources. Due to the use of large, motorized fishing boats, fishing grounds have extended to the midway point between Gizo and Ranonga Islands.

Ranonga Island is located approximately 40km west of Gizo Island. The entire island is steep and hilly with very little level land along its coasts. There are very few reefs along the shore and its coastal waters are deep. There are many small and medium rivers and the island possesses abundant water resources.

Vella Lavella Island is located about 20km southwest of Gizo Island. There are many small and medium rivers and water resources are abundant. A comparatively large number of villages have tap water facilities. Its coastal reefs are well developed and are rich in fishery resources. Communal work is important for villages on both islands and voluntary church activities, cleaning activities, school related activities, etc. are given priority over individual work. As a result, villages tend to be tightly knit communities.

Vona Vona Island is located about 20km southeast of Gizo Island and it is located midway between the provincial capital of Munda and Gizo Island. It can be reached in about 90 minutes by FRP boat from Gizo. The island is surrounded by reefs and lagoons; and STL bait fish operations are actively carried out in Vona Vona Lagoon in the northern part of the island.

Vona Vona and Robiana Lagoons are two of the foremost fishing grounds in the entire nation. They contain numerous flat and low islands which are surrounded by reefs. These reefs contain lobsters and other shellfish, in addition to being the breeding grounds for demersal fish such as sardines and blue sprats which are used as bait fish in harvesting skipjack and yellowfin. They are the most ecologically important marine areas of the Solomon Islands.

2) Fresh fish marketing structure

The basic fresh fish marketing structure of this area are characterized by the following two types of distribution patterns.

- a. Fresh fish is directly marketed to the consumer by the producer: Fishing operations are carried out in large canoes with outboard engines and FRP boats. They provide nearly all of the fresh fish supply of Gizo and mainly skipjack and reef fish are marketed.
- b. Fish is distributed to the consumer via the provincial Fisheries Center or fishermen organizations: Fresh fish is sold by professional fishermen in Gizo, by transporters who purchase fish from the villagers in Ranonga, Vella Lavella, and Vona Vona islands, and by the provincial Fisheries Center transporting fresh fish. Unfortunately, the marketed volume of fish is small due to the limited number of fresh fish transporters on each island and the transport ship of the Fisheries Center which has been inoperable for the past two years.

Subsequently, the Fisheries Center is mainly engaged in marketing high priced fish such as grouper, snapper, coral trout, kingfish, and lobster whereas fishermen associations are limited to marketing blue sprats and beche de mer.

3) Issues in fish marketing

- a. The market and distribution: The market scope of fresh fish from Gizo Island in Sub-zone 1 is small; and measures to expand and rationalize the scope of the marketing system for consumer convenience are limited.
- b. Marketing and transport: Although fishery resources are abundant, inferior fishing boats have made efforts to increase fishing and production volume difficult. Direct transport of fish to the large market in Honiara is not viable economically. The volume of fresh fish shipped from the other islands to Gizo has been drastically reduced, due to the mechanical breakdown of the transport ship belonging to the Fisheries Center. The ability of fishermen to maintain fish quality is poor; and there is no ice-making or ice storage facility to maintain fish quality.
- c. Safe navigation: The sea between Ranonga and Vella Lavella islands to Gizo are often rough and dangerous for FRP boats transporting fish.

4) Fish marketing facilities

The Gizo Fisheries Center was established in 1984 and it has implemented fish marketing activities, outboard engine repairs, and fishermen training programmes. Its ice-making and refrigeration facilities, workshop and jetty are in operation. Its fish collection vessel (Kuarao) will be repaired in 1994. In addition, there is an ice-making facility, repair dock, etc. in Dobel.

5) Related infrastructure

Electricity is available only in Gizo for lighting and industrial use, but electrical cables are badly deteriorated. Although there are tap water facilities, the water is often turbid and is in short supply. Coastal villages have tap water facilities, but problems have arisen stemming from broken pipes, and water source locations. The western coastal area of Vella Lavella Island uses river water and it is unaffected by turbid water, since water resources are abundant.

Wharves and jetties are available for inter-island transport services, the petroleum company, the Fisheries Center, and the hotel in Gizo. In addition, there are numerous wooden jetties for small boats. There are one to two regular daily flights, operating between Honiara and Gizo. There are also roads capable of accomodating vehicles running from Gizo Town to the neighboring villages. There are only foot paths between villages on the other islands.

(2) Sub-zone 2 (Munda/Noro)

1) Socio-economy

A passenger/cargo ship stops in Munda three times a week during its regular service between Gizo and Honiara. There are daily flights to Honiara and transportation services between Munda and Honiara are good. In addition, it is a popular tourist spot since the area contains both Vona Vona and Robiana lagoons which have the foremost reefs of the nation. The population of this district is growing in conjunction with the development of Noro, the commercial fisheries base, and the local tourist industry.

Noro is located approximately 40 kilometers northwest of Munda by overland route; and it is a new industrial town. It is the base of operations for STL, a large-scale commercial fisheries company and the largest firm in the Solomon Islands. Freezing, canning, and smoking factories are in operation. At the initial start of STL operations in Noro in 1985-1986, the population was small. But with the start of full operations, it has rapidly increased and as of 1992, there were about 4,500 people, including employees and their families, provincial government workers, their families, and neighboring villagers.

The road between Munda and Noro is paved and the supply of electricity is good. In future, it is anticipated that Noro will become the nation's largest industrial city in the west.

2) Fishery resources and production

The waters of the Hawthorn Straits are relatively calm and serve as fishing grounds for the villages surrounding Noro, although they contain very few reefs. Munda is located in the Robiana Lagoon and Vonavona Lagoon is also nearby. The reefs, rocks, and banks of this lagoon provide excellent fishing grounds.

3) Fresh fish marketing structure of Noro/Munda districts

Noro and Munda districts have not been able to keep pace with the rising demand in fresh fish, due to an undeveloped marketing network for fresh fish. Presently, the fresh fish of Munda District is supplied by the nearby coastal inhabitants, Munda Fisheries Center, and by the Puga Project. Noro District is supplied with frozen fish from STL and fresh fish from the nearby coastal villages where fishing is carried out by ten dugout canoes. A segment of the fresh fish of Munda Fisheries Center and the Puga Project is sold to the residents of Noro District. In addition, STL frozen skipjack is also supplied to the retailers in Honiara via wholesalers.

4) Fish marketing facilities

The STL fishing base in Noro is a fish landing and processing center for skipjack and bonito. The company possesses a total of 27 ships including skipjack fishing boats, purse seiners, transport ships, fish landing wharf, freezer, refrigerator, ice-making equipment, canning, smoked fish, and fish meal factories. The town of Noro is adjacent to the STL base and the Noro Fisheries Center was constructed from 1988 to 1990 under Japanese government assistance; and a part of its facilities have been leased to the private sector. Facilities include fueling equipment, a freezer, refrigerator, ice-making equipment, wharf, community center, etc. The Fisheries Center in Munda was equipped with an ice-making machine and refrigerator by the provincial government in 1986. An Australian fisheries firm located adjacent to the center utilizes a five ton refrigerator (-15°C) and a freezer (-35°C) to process fish for export. It is currently operating on a trial basis.

5) Related infrastructure

The power station in Noro has a 3,000kw capacity and there is a large surplus after the electricity demand of existing industries and homes has been supplied. The Munda power station has a 160kw capacity, but its 40kw capacity power generator is under repair. However, the total electricity demand of Munda is being sufficiently met.

The water supply facility of Noro is presently balanced in its supply/demand. However, there is a water shortage in the hospital, school, and villages in Munda, due to the low pressure of the water supply pump.

Noro is an international port and fishing base with a large cargo handling capacity.

In Munda there is one wooden jetty capable of accomodating a small boat of 10 tons; and there is an international airport. Presently, there are irregular flights between Munda and Townsville in Australia. In addition, there are one to two regular daily flights between Munda and Honiara. Although a road exists between Noro and Munda districts, the road conditions are poor.

(3) Sub-zone 3 (Seghe area)

1) Fishery resources and fish marketing system

Seghe is located in the eastern area of New Georgia Island, near the south entrance of Marovo Lagoon. It is located in the largest lagoon of the nation and has excellent fishing grounds. This lagoon contains numerous small islands dispersed

throughout and the reefs are spawning and rearing grounds of sardines and blue sprats.

Fishing is mainly subsistent in Seghe and there is no outflow of fish to other areas due to the lack of a neighboring fish consumption area and an inoperable ice making machine. However, Seghe has been selected as one of the sites for the second phase of the RFEP project. Consequently, it is expected that fish will be marketed to either Noro or Honiara in future.

2) Fish marketing facilities

The Seghe Fisheries Center was built in 1983 under Japanese government assistance and it has a refrigerator, power generator, ice-making equipment, and freezer. In addition, there is a SDA ice-making facility.

3) Related infrastructure

Electricity: Electricity is not available throughout the Seghe area and the Fisheries Center possesses the only power generator.

Water: Although the coastal villages have tap water facilities, a water shortage occurs when the water level of the dam drops and water pressure disappears.

Airport: There is an airport with a 600m runway and the two regular weekly flights which are available between Honiara and Gizo lands in Seghe as well.

Roads: Although there is a tractor road running between the Seghe airport, hospital, and church, the common means of travel is by boat.

5.4 Model Zone 4 (Rennell Island)

(1) Socio-economy and fisheries

Rennell/Bellona Island is located about 200km south of the capital, Honiara. It separated from Central Province in March 1993. Subsequently, it has the most undeveloped infrastructure among the provinces of the Solomon Islands.

In January 1993 the province was hard struck by Cyclone Nina which destroyed schools, clinics, and other basic facilities. An emergency project was formulated and implementation has been partially approved.

The majority of the Rennell Island inhabitants are Polynesians with an estimated population of about 1,056 people in 1992. Recently, the population has shown signs of decreasing.

Tinggoa, located in the central western part of the island near the airport, has been the acting capital for this new province.

Although there are four villages located near Tinggoa, the remainder of the island's villages are scattered along the road running through the center of the island. There are four villages along the west coast of Lake Te Nggano in eastern Rennell.

The villages are comprised of blood related clans with one chief for each clan and one elected chief to represent all the chiefs of the village, to coordinate and oversee its communal activities. The position of chief is hereditary for clans and villages.

The livelihood of its inhabitants is supported by subsistent cultivation of root crops, fruits, vegetables and fishing along the coast or at Lake Te Nggano. However, due to the lack of soil suitable for cultivation, the island suffers from a constant food shortage.

Lavanggu village bordering Kanggava Bay and its small neighboring villages are the only areas of Rennell Island which are actively engaged in fishing; and its fishery resources are abundant. In addition, shark fishing for fins is also carried out. Lobster, beche de mer, and shellfish are also harvested by diving. Lavanggu village provides an important source of protein for the entire island of Rennell.

However, due to the lack of basic infrastructure such as electricity, maintaining fish quality is difficult. In addition, regular ocean transport services between Honiara and Rennell Island arrive once every five to seven weeks, which has made transport of fish to other islands unfeasible. Inland transport services are dependent on only one trailer tractor operated by the provincial government. Subsequently, plans to develop fisheries must include measures to improve the island's transport services.

(2) Improving the social foundations

Presently, there are no harbor facilities on the island. Lughughi Bay, Kanggava Bay, and Tuhunggango Bay are used as anchorage sites for boats, but there are no jetties or wharves. Cargo is landed from ships moored outside the barrier reefs using small boats, canoes, and at times swimmers moving between the shore and the ships.

Currently, daily commodities are transported by passenger ships or government passenger/cargo ships which arrive once every five to seven weeks. It normally requires five days to navigate the distance from Honiara to Bellona to Rennell.

The width of the island's major arterial road is sufficient to accommodate only one tractor; and it passes through swampland and is steeply inclined in some areas.

In the eastern area of the island, a road which runs from Lavanggu to Lake Te Nggano is presently under construction with EC assistance. Upon its completion, it will cut across the island from east to west, eliminating the need to depend on the coastal route between Kanggava Bay and Tuhunggango.

There are two government owned tractors and three dump trucks currently in use on the road construction project, but at the time of this survey only one tractor was in operation. Due to the late arrival of the transport ship and a shortage of fuel, operation of the other vehicles had been halted.

The only public transport facility connecting the inland areas of the island was one trailer tractor. Suffering from a shortage of spare parts and wear and tear, its use was greatly limited.

(3) Renovation plan for damages incurred by Cyclone Nina

Plans to regenerate the island have been proposed by the disaster committee established by the Solomon Island government and two medical clinics will be constructed under British assistance. Construction capital has been given to the Solomon Island government and construction is expected to commence soon. In addition, a plan to rebuild seven elementary schools under EC assistance is underway.

However, due to insufficient provincial government finances, quick regeneration of the agricultural and fisheries sector, and infrastructure such as roads, homes, government buildings, etc. is difficult.

A development and regeneration plan that targets an improved lifestyle for its inhabitants is desired.

6. PLANNING

6.1 Basic Policy

The objective of this plan is to promote small-scale commercial fisheries through an improved fish marketing network, in order to improve the living standards of the village inhabitants engaged in fishing activities. Project target years are set for 1995, 2000 and 2010, and the project will consider the following factors to achieve the objective.

- (1) Formulate a project that is suited to national economic growth.
- (2) Effectively utilize the existing transport system.
- (3) Promote private sector participation in stages, in order to achieve continuous operations.
- (4) Adequately reflect the requirements and opinions of the inhabitants.
- (5) Avoid abrupt transitions in fish marketing patterns.
- (6) Utilize the existing fish marketing facilities and related infrastructure as much as possible.
- (7) Improve the overall management and operations which unite the central and rural areas.

6.2 National Plan

Institutional improvements in fish marketing system will be the focal point of the national plan. It will be effectively coordinated with regional projects.

- (1) Effective use of private sector participation : Fish production, consumption, and exportation will reflect the requirements of the private sector. There will be no direct government intervention and efforts will be centered on fostering the private sector. Public agencies, private companies and fishery related personnel will make direct investments, and share the responsibilities and the profits through the fish marketing and transport service that connects the production to the consumption areas.
- (2) Operational organization : A "committee to improve fish marketing/transport" will be set up at the national level as an inquiry board of the MNR. Members of the committee will include the representatives of MNR/FD, MPGRD, shipping companies (private and public), fishermen cooperatives, and DBSI. The committee will solicit the cooperation of relevant parties in all aspects of fish marketing and transport.

- (3) In order to accelerate investments in the fish marketing, transport, and export sectors, the introduction of a preferential tax system, in addition to a system of financial assistance will be studied.
- (4) Revisions of the Fisheries Act: The 1987 FAO revisions pertaining to the Fisheries Act and Regulations will be implemented.

6.3 Regional Plan

6.3.1 Model Zone - 1 (Honiara)

- (1) Development objective

The development objectives of Model Zone - 1 which is centered around the Honiara Central Market are given below.

- 1) Establish the market as a national distribution point for the nation's produce and fishery products in the country's largest domestic consumption area.
- 2) Establish the market as a commercial base of Honiara.
- 3) Establish a multi-market system which will enable the market to cope with a future increase in population.

- (2) Project development strategy

The project development strategies are given below.

- 1) Improve comprehensive market functions.
- 2) Strengthen both wholesale and retail activities of fresh produce, fishery products, and livestock in the consumption area.
- 3) Strengthen the market's landing, cargo handling, and trading activities of goods coming in by sea transport.
- 4) Make full use of an advantageous market location which borders a major road as well as the sea.
- 5) Coordinate its functions with other related projects.
- 6) Introduce effective market use and functional operations.
- 7) Renovations and operational changes will be carried out in stages, in order to avoid disrupting the market's existing functions.
- 8) Establish the public's awareness of the market as a commercial facility and take into account its degree of commercial development.
- 9) Due to the market's limited land area, access ways will be rationally planned.
- 10) Maintain sanitary conditions of the market environment.

(3) Scope of development

The scope of development was determined according to an effective utilization rate of an improved market, the estimated population growth rate of the town, and 1993 statistics on the market volume of produce and fishery products, the number of vehicles and customers (purchase/ or other objective) at the market. It is estimated that expanding the present area of the Central Market by reclaiming the land in front of it, would still be insufficient to meet its needs in 2000. Therefore, it is necessary to implement the following measures to improve the Central Market's functions and to allocate a segment of these functions to the other markets.

- 1) Change the Central Market to include wholesale as well as retail functions.
- 2) Divide its functions according to production and consumption markets.
- 3 Limit the general functions of the Central Market and expand the functions of the neighboring markets of Rove and Kukum.
- 4) Improve the efficiency of the market utilization.
- 5) Change the general use of the market to exclusive marketing operation.

(4) Zoning and route plan

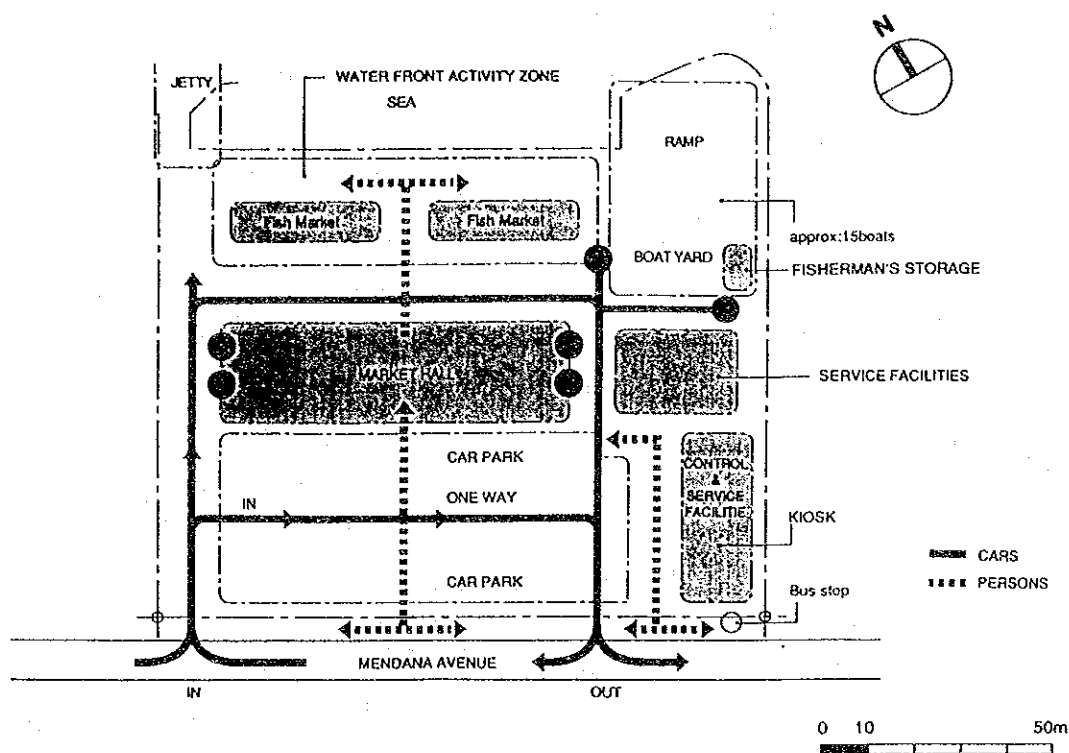
1) Route plan

- a. Separate vehicle access to the market according to customers, transport, and service vehicles.
- b. Separate the access way between incoming and outgoing vehicles.
- c. Coordinate market renovations with the Mendana Avenue construction and the traffic signal installation plans.
- d. Handling of fish brought in by boat will be centered in the coastal area and its functions will be organized.

2) Zoning

- a. The market and service areas will be clearly demarcated and an open zone comprised of roof-covered enclosures and a closed zone comprised of roofed and walled structures will be set up.
- b. Market access ways used by transporters will be located in the service zone, removed from the customer entrance way which will be placed near the market zone.
- c. The parking area of the market will be allocated as an open zone to enable its use as a market hall for events or as an open market area by closing off half of the parking area

The proposed route plan and zoning of Honiara Central Market is shown below.



Zoning and Route Plan of Honiara Central Market

(5) Facility improvement

1) Summary of major facilities

Market hall, fish market, ice-making machine, refrigerator, esky storehouse, temporary storehouse for produce, cargo unloading space, office for workers, toilet, utility room for storing cleaning equipment, temporary storage room for boat engines and other equipment, garbage collection area, administrative office, water supply and drainage facilities, indoor washing area, electricity and sewage treatment facility, washing area for garbage cans, outdoor lighting and related equipment, and fresh fish transport vessel.

2) Planned capacity of major facilities

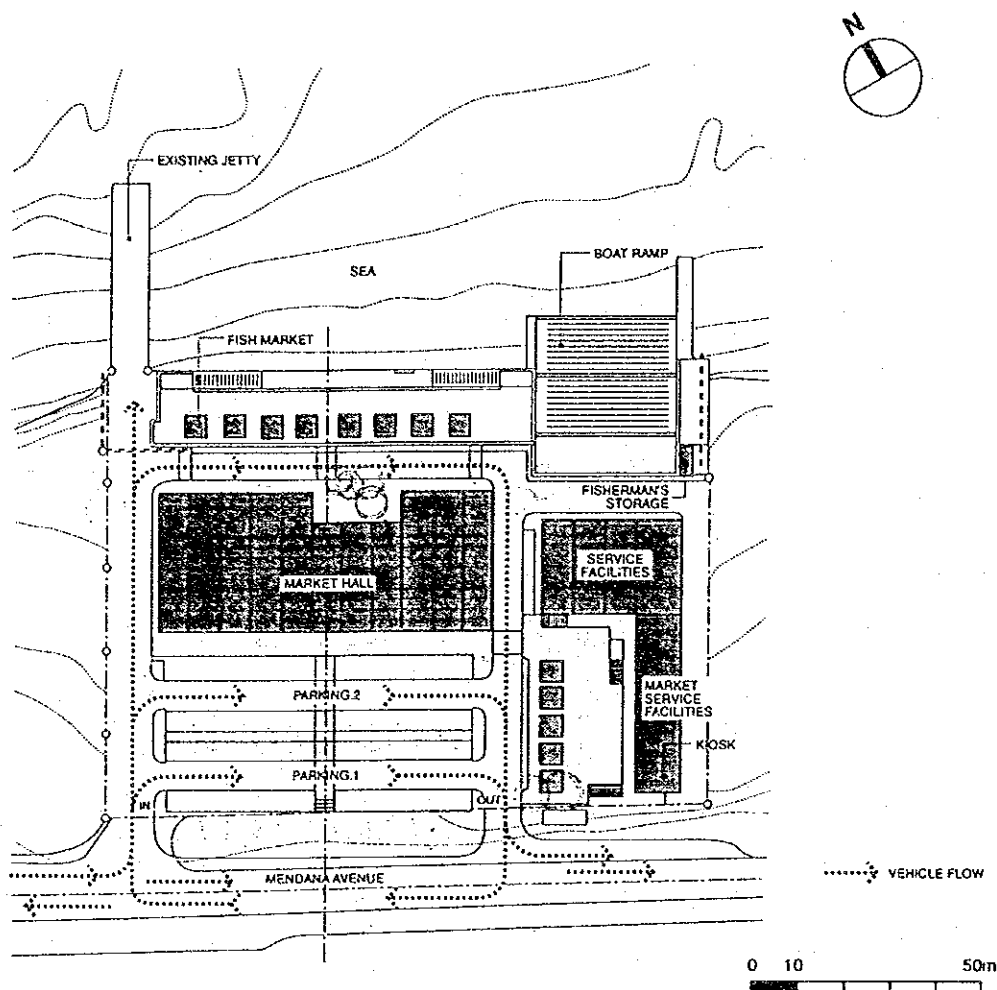
The scope and structure of major facilities for the Honiara Central Market is shown in the following table.

Planned Capacity of Honiara Central Market in 2000 (1/2)

	Present- 1993		Plan - 2000		Remarks
(1) Market Hall					
1) Handling volume of foliage, fruits, etc.	Peak (Sat.)	82 MT/day	Peak (Sat.)	110 MT/day	The peak demand will be met by satellite markets in 2000
	Normal	21 MT/day	Normal	28 MT/day	
	Average	42 MT/day	Average	56 MT/day	
Retailers	Peak (Sat.)	480 per/day	Peak (Sat.)	500 per/day	The number of roofed stalls will be increased from 120 to 350. The road on the north side will be closed off during peak hours and 150 stalls will be set up under a tented area
	Normal	200 per/day	Normal	270 per/day	
	Average	300 per/day	Average	400 per/day	
Sales area & walkway	Markedly congested		Organized zoning		Surplus demand will be met by a marketing network which utilizes satellite markets.
Walkways	Overall low usage		Organized access ways		
2) Handling volume of fish products	Fresh fish	299 MT/year	Fresh fish	414 MT/year	The year 2000 will be the first target year. Facilities will be able to cope with market demands by 2010.
	Frozen fish	507 MT/year	Frozen fish	705 MT/year	
	<u>Peak</u>		<u>Peak</u>		A maximum of 64 eskies can be accommodated under the roofed stalls.
	Fresh fish	3.2 MT/day	Fresh fish	4.3 MT/day	
	Frozen fish	4.0 MT/day	Frozen fish	5.4 MT/day	
	<u>Average</u>		<u>Average</u>		20-ton capacity refrigerator will allow the market to cope with inflow volume during peak hours. Ice making facility will be installed (1.0 ton) to meet the demand for ice and future improvements in marketing methods. An improved fish marketing system will be gradually implemented by setting up a fresh fish marketing organization.
	Fresh fish	0.9 MT/day	Fresh fish	1.3 MT/day	
	Frozen fish	1.6 MT/day	Frozen fish	2.2 MT/day	
	<u>No. of eskies (Average)</u>		<u>No. of eskies (Average)</u>		
	Fresh fish	10 eskies	Fresh fish	13 eskies	
	Frozen fish	20 eskies (30 eskies in total)	Frozen fish	28 eskies (41 eskies in total)	

Planned Capacity of Honiara Central Market in 2000 (2/2)

	Present- 1993		Plan - 2000		Remarks
(2) Fish landing Facilities	Peak (FRP)/day Ave.	16 boat 9 boat (FRP)/day	Peak (FRP)/day Ave. 11 boat (FRP)/day	20 boat 1 boat/day	Fish landing facilities (wharf, slipway) will be constructed under Japanese government grant aid. Transport mode will change due to development of model zones 1 & 2.
(3) Fresh fish transport vessel		-		Carrying capacity 20 eskies	
(4) Service Facilities					
1) Car park		Optimum no.: 60 vehicles Congestion at the main gate and Mendana Avenue as the vans, pick-up trucks, taxis and cars use the main gate as entrance and exit.		Planned parking area for 100 vehicles. Separate entrance and exit ways for vehicles are also planned.	Presently, 350 vehicles are estimated to be at the market during peak hours but traffic congestion will be alleviated due to measures which will be taken. Bus stop will be installed and incoming and outgoing traffic will be separated.
2) Rest area		Rest area is currently being used as sales area		Rest area will be allocated along the beach area.	The market is located in a commercial zone and stores which reflect market characteristics will be introduced.
3) Stalls/stores		There are stalls for ice cream, fish & chips and fast food, and 8 stores for daily sundry goods		Area for about the same number of stall and stores will be allocated.	
4) Management & operation		About 6 m ² space is being used for market master		Sufficient space will be allocated of efficient operation and management.	A market system which includes satellite markets will be the focal point of improvements.
5) Toilet		Rest rooms for men and women are available		Rest rooms to accommodate two times the present will be planned.	
6) Waste/garbage	Peak Average	18 m ³ /day 10 m ³ /day	Peak Average	23 m ³ /day 13 m ³ /day	
7) Others		Sanitary facilities		Lighting and water treatment facilities	



Proposed Layout Plan of Honiara Central Market

(6) Operational method

A Honiara Fish Marketing Authority (HFMA) will be established to set up fresh fish retail, wholesale, and transport activities. The HFMA will carry out fresh fish transport and marketing activities in place of fishermen to allow them to expand their production activities and to provide a higher quality of fishery products which are in demand by consumers and exporters, as well as a stable fish supply.

Concretely, HFMA invest in a transport vessel to transport fish mainly produced in the Florida Islands, to Honiara Town. Fresh fish collection and transport activities will be rationally implemented in stages, in conjunction with improvements carried out at each facility. Fish will continue to be transported by fishermen until HFMA operations are started and a transport ship is purchased.

6.3.2 Model Zone - 2 (Florida Islands)

(1) Development objective

The development objectives of Florida Islands, located opposite to Honiara, are given below.

- 1) Provide a stable supply of fishery products to Honiara, the nation's largest consumption area.
- 2) Introduce an effective fresh fish collection and transport system and establish separate functions in fish production and collection.
- 3) Decrease the risk of sea accidents of fishermen by introducing large vessels for fish collection and transport.

(2) Development strategy

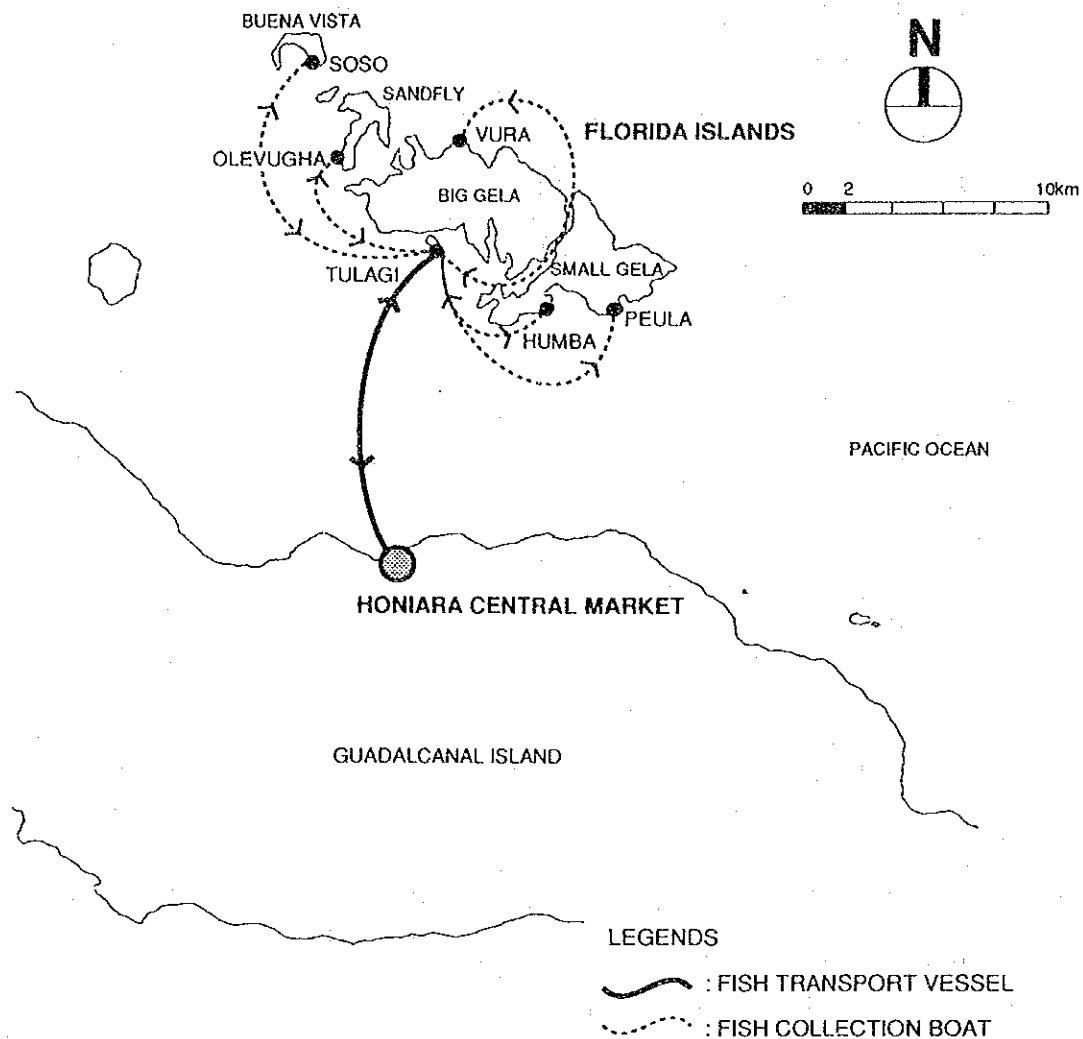
- 1) Improvements in regional facilities, organization, and system will be implemented in conjunction with development measures carried out at the Honiara Central Market.
- 2) The existing marketing and transport system carried out by fishermen will be modified in stages to a more effective system.
- 3) The fish transport vessel, Daula, belonging to the Fisheries Division will be used on a trial basis to test the feasibility of the new fish collection and transport system proposed in this project.

(3) Scope of development

The volume of fresh fish supply targeted from the Florida Islands to Honiara is 217mt in 1995, 251 mt in 2000, and 470 mt in 2010. However, since the production frequency of fishermen will rise, it is anticipated that the actual supply volume will be higher than the targeted estimates.

(4) Route plan

The route plan of fish collection and transportation is shown in following page.



Fish Collection and Transportation Route Plan in Model Zone 2 (Florida Islands)

(5) Facility plan

- 1) Satellite stations: Building, communication facilities, rainwater tank
- 2) Tulagi collection base: Building, communication facilities, rainwater tank, electricity and tap water facilities, cargo handling area, water supply facility and water for washing fish, jetty, coastal equipment, and access road
- 3) Fish collection boats

(6) Operational method

The HFMA branch will carry out fresh fish collection, marketing, and transport activities from the Florida Islands to Honiara. It will implement fresh fish transport, collection, and marketing activities of the Florida Islands, transport and sell fishing equipment and ice to the villages and manage and operate the rural fish collection base.

The fresh fish marketing and transport activities of the HFMA branch will be implemented in gradual stages. In the initial stages of its operations, the base will purchase and transport fresh fish brought in by fishermen. Collection and purchasing activities from each island will commence when facilities (rural collection bases, etc.) and equipment (FRP collection vessel, etc.) have been installed.

6.3.3 Model Zone - 3 (Western Province)

(1) Development objectives

The development objectives of Model Zone 3 are given below.

- 1) Effectively utilize existing fish marketing facilities to increase fish landing volume and improve fish quality.
- 2) Supply fresh fish to deficient areas.
- 3) Raise fishermen incomes through increased fish marketing activities.
- 4) Promote fish export in conjunction with improved fish quality and stable collection activities.

(2) Development Strategy

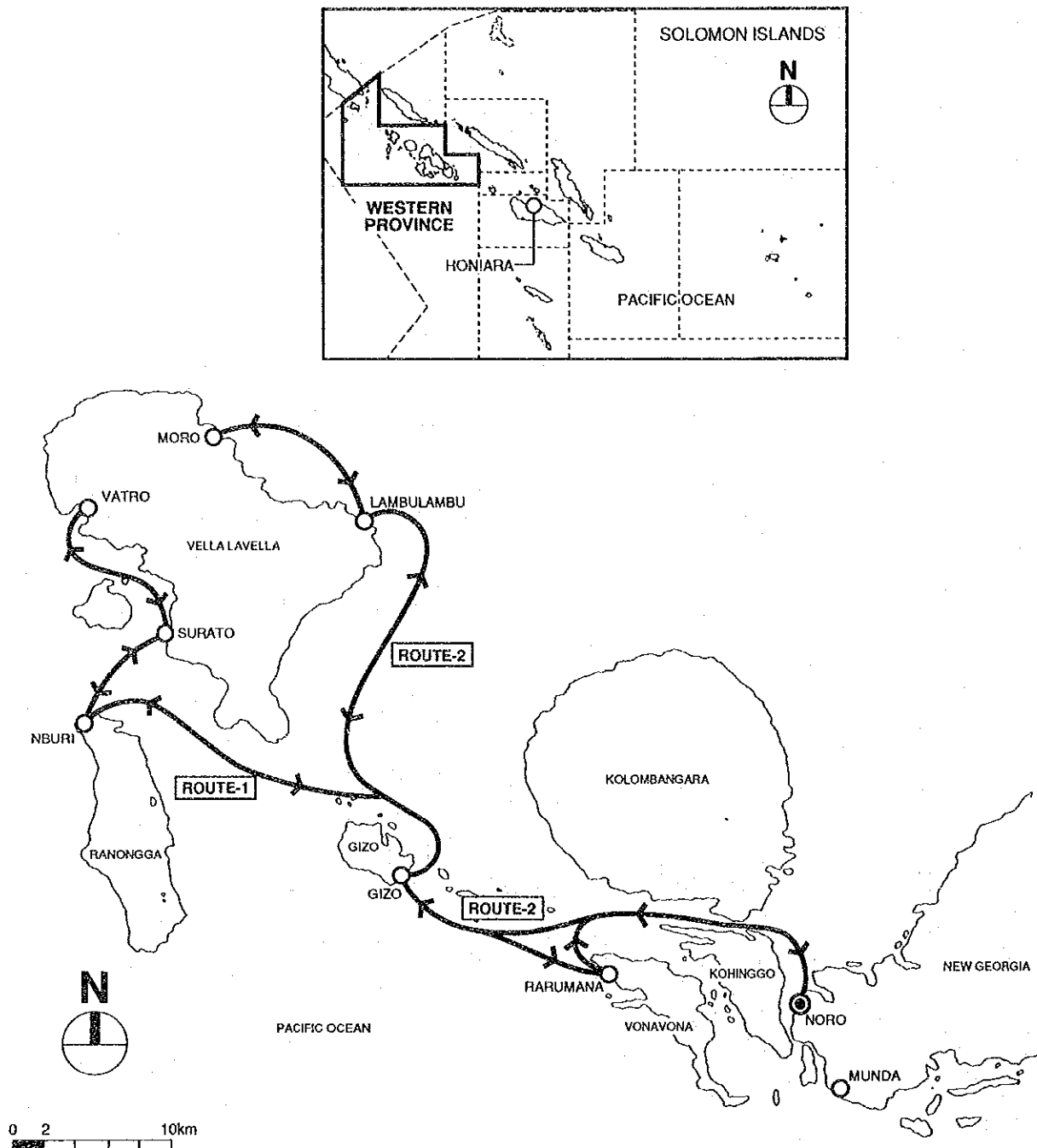
- 1) Establish Sub-zone 2 as the headquarters for fish collected from Sub-zones 1 and 3 for marketing.
- 2) Improved fresh fish collection and transport activities will be implemented in stages; and during the initial period, the provincial government vessel, Kuarao, will be used to collect and transport fish. A new collection and transport vessel will be purchased after the results of this activity are known and the Kuarao has depreciated.

(3) Scope of development

The fresh fish supply volume from Sub-zone 1 to Sub-zone 2 is estimated to be 48 mt in 1995, 87 mt in 2000, and 165 mt in 2010.

(4) Route plan

The headquarters of the fish marketing plan will be Sub-zone 2 in Noro; and Sub-zone 1 in Gizo will be designated as a support center. In addition, a satellite station (RFCB) will be located in Sub-zone 1. The fish collection and transportation plan is shown below.



Fish Collection and Transportation Route Plan in Sub-Zones 1 & 2 of Model Zone 3

(5) Facility plan

- 1) Noro center: Construct building, cargo handling area, esky storage area, refrigerator, office, communication facilities, install electricity and water, drainage facilities, etc.
- 2) Gizo support center: Utilize existing Fisheries Center.
- 3) Satellite station: Cargo handling area, esky storage, office, warehouse, communication facilities, rainwater tank, etc.
- 4) Collection/transport vessel: Trial basis, Kuarao; Full operation:, new FRP vessel

(6) Operational method

A public corporation called the Western Province Fish Marketing Authority (WPFMA) will be established to improve the fish transport and marketing network between headquarters, support center, and satellite station.

Activities of WPFMA will be to establish a fish marketing center in Noro and support centers in Gizo, Munda, and Seghe, to implement fresh fish transport, collection, and marketing activities, to market fishing gear and ice and to implement fish processing activities.

6.3.4 Model Zone - 4 (Rennell Island)

(1) Development objective

The Rennell Island development plan was formulated with the idea of developing the remote islands and preserving the island's invaluable natural environment and its resources.

(2) Development strategy

- 1) Improve access to the main road in order to improve the livelihood of the island's inhabitants.
- 2) A jetty will be constructed for commodities transported to the island by sea. For the time being a carrier boat will be introduced in lieu of a jetty.
- 3) In order to meet the basic needs such as housing, water supply, electricity, schools, and medical clinics and to improve the basic living standard of the inhabitants, this project will include those infrastructural improvements required to improve fish marketing activities and functions.
- 4) Restrictive factors such as securing financial and human resources were taken into consideration and comprehensive improvements aimed at developing sustainable operations will be implemented.
- 5) A consensus of the region's inhabitants will be obtained during formulation and implementation of the remote island development plan.

- 6) The island often suffers from damages caused by cyclones and countermeasures against such natural disasters will be considered.
- 7) By utilizing the existing Fisheries Center, a distribution network for both fishery products and other goods will be established and Rennell Island will be promoted as a model area for remote island development.
- 8) Easy to maintain facilities will be built due to the lack of fuel and the constraints in importing commodities into the island.

(3) Content of the plan

1) Improvement of fishery related facilities

Off-shore facilities: Improve the cargo landing functions of Kanggava Bay.

- a. Improve the road running from the steep hilly area of inhabitants' homes to the coastal area.
- b. Improve the cargo loading/unloading yard.
- c. Install small barges to transport cargo from the ship anchored in offshore waters.
- d. Install emergency lights.

2) Improvements in the fisheries of Rennell Island

The initial stage of the development plan will be concerned with providing a fish supply for the island's markets. Later, plans to expand the supply volume to include Bellona Island as well, will be studied.

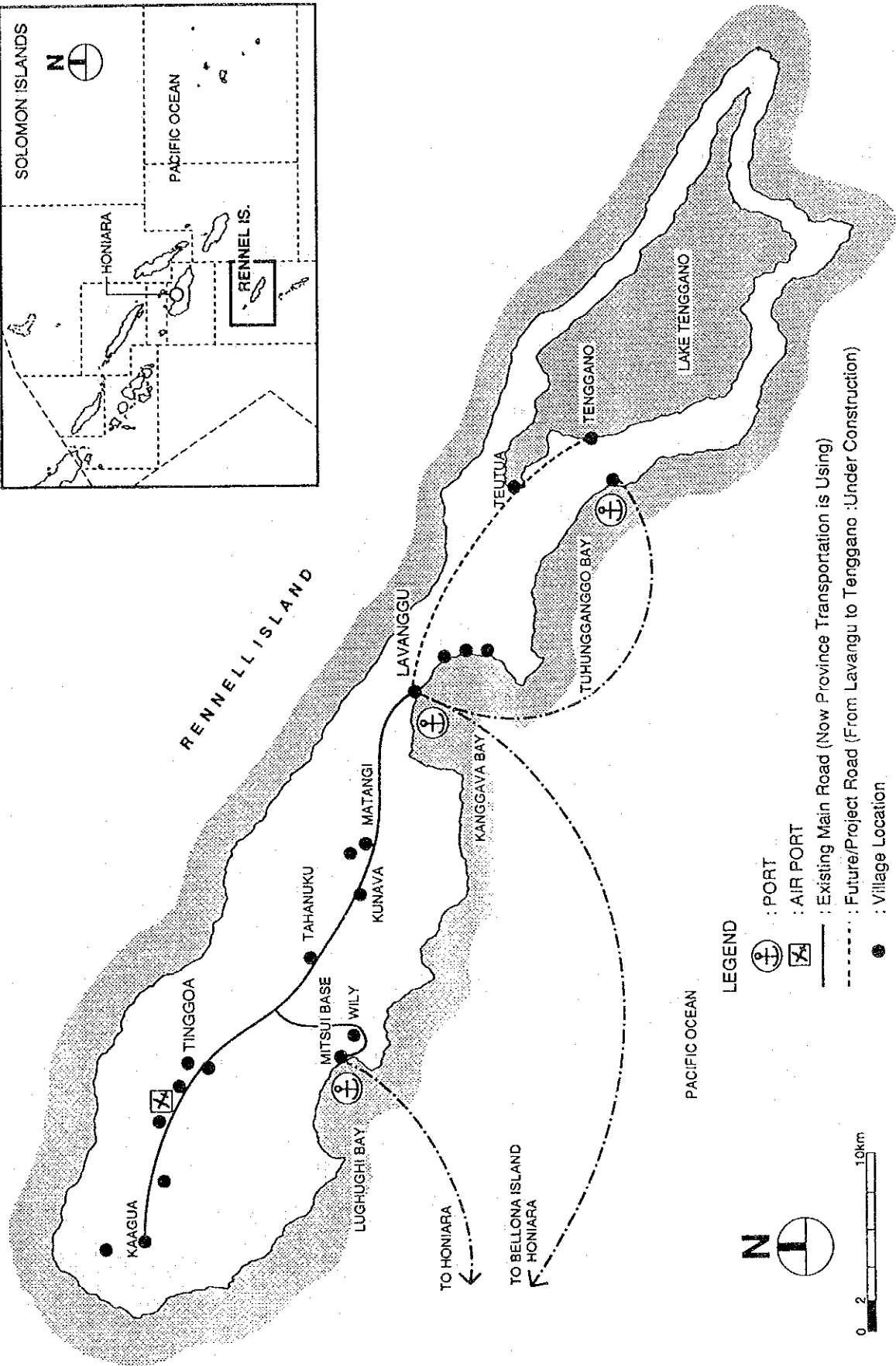
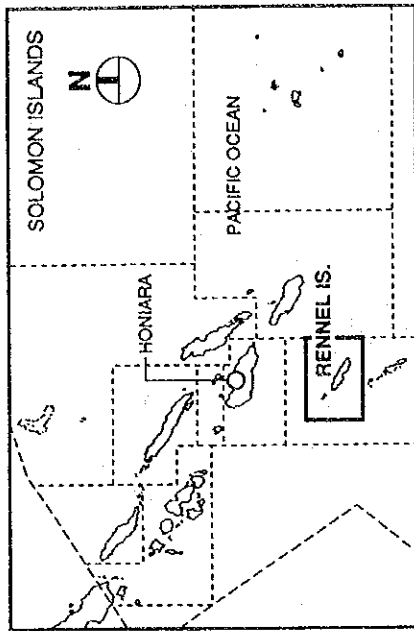
- a. Approach: Supplementary equipment will be installed to expand the functions of the existing Fisheries Center and its fisheries training programme.
- b. Operations: A fishery officer who has received some training under Japanese technical cooperation will be in charge of the Fisheries Center's operations.

3) Multi-purpose community support center

- a. Improve the marketing system.
- b. Expand transport functions.
- c. Implement repair activities.
- d. Install energy saving equipment and facilities: Communication, lights, water facility.
- e. Implement comprehensive support functions of the center.

(4) Maintenance

The multi-purpose community support center is owned and managed by the provincial government, but facility maintenance will be the responsibility of each village.



Map of Existing Infrastructure in Rennell Island

7. PROJECT EVALUATION AND ENVIRONMENTAL ASSESSMENT

An economic evaluation of the Project was carried out in order to determine its economic appropriateness. Furthermore, a financial analysis of the operations of the public corporation proposed in this project was also conducted. The project to promote remote islands was evaluated from a social development perspective.

(1) Economic evaluation

1) Zones 1 and 2: HFMA and development of the Florida Islands project

The cost and time savings benefits derived from fish marketing measures proposed in the project are great and the benefits which will be passed on to fishermen, distributors, and consumers have been identified.

2) Model Zone 3: WPFMA

The economic benefits arising from this project are increase catch and value added through exports of high quality fish.

(2) Financial evaluation

1) Model Zones 1 and 2: HFMA project

The HFMA project shows profit after depreciation on the assumption that HFMA purchases the planned supply of fresh fish in 2000 and 2010.

2) Model Zone 3: WPFMA

If the WPFMA is engaged in both fresh fish marketing and export activities, the profits after depreciation are minimal. However, if there is an increase in fish catch, it is estimated that the operation is financially viable.

(3) Social evaluation

Promotion of fisheries stemming from supplementary renovations and improvements of the Fisheries Center and transport means are anticipated to stimulate the distribution of fish and other goods throughout the island and to contribute to social development.

Improved cargo loading facilities will enable an organized and safe loading and unloading operations. Installing a warehouse and cargo yard will allow adjustments in the shipment of agricultural products. These development measures are anticipated to expand inter-island marketing opportunities, increase income, and raise the living standards of the island's inhabitants.

(4) Environmental assessment

1) Model Zone 1 (Honiara)

- a. Congestion within the market and its surrounding areas will be alleviated.
- b. The market will fulfill a major role as the commercial center of the capital.
- c. The market can be conveniently utilized.
- d. Market's sanitary conditions will be improved.
- e. Loss in both time and labor stemming from unloading of cargo is decreased.
- f. The changes in coastline through wharf construction on the coastline will be minimal.
- g. Local social and economic structure will gradually change.
- h. Traffic congestion and disruptions in market functions will be kept to a minimum during the construction period.

2) Model Zone 2 (Florida Islands)

- a. Time loss stemming from fish transport activities will be alleviated and fish production opportunities will increase.
- b. Accidents occurring in sea transport to Honiara will decrease and danger to fishermen lives will be mitigated.
- c. Fish marketing trips to Honiara by fishermen will no longer be necessary and opportunities to socialize will decrease.
- d. The consensus of villagers will be obtained when deciding the location of satellites.
- e. Solar powered communication equipment will be installed to establish a system of information exchange on fish volume, quality, and price between the production and consumption areas.

3) Model Zone 3 (Western Province)

- a. The utilization rate of existing facilities and infrastructure will be increased due to maximum use of existing facilities. This approach will be adopted to avoid environmental destruction which usually follows development activities.
- b. Effective use of harvested fishery products will avoid over-exploitation of fisheries resource.

4) Model Zone 4 (Rennell Island)

- a. Newly developed inter-island transport services will fulfil the basic needs of
- b. Sustainable development will be established by introducing minimum resource consumption measures such as energy, labor, and capital.

(5) Resource management

There is a stable fish production under existing fishing activities. Through careful resource management, there will be no significant resource deterioration due to increased fishing activities. However, resource management will be an urgent matter regarding non-migratory fish species.

8. IMPROVEMENT PLAN ON ORGANIZATIONAL SYSTEM AND OPERATIONS

8.1 Current Conditions

- (1) Petty fisheries is basically comprised of subsistent fisheries and marketing activities. However, through the endeavors of foreign aid related agencies, technology transfer is currently being implemented in the area of fish production and processing activities; and a segment of petty fisheries is gradually evolving into small-scale commercial fisheries.
- (2) The population growth rate of the Solomon Islands is growing rapidly, and concentration of the population has been intense in the areas. As a result, the growth in demand for fishery products in the towns has been marked. As a result, the demand for fish marketing and transport activities to the towns from the production sites is burgeoning.
- (3) Efforts to foster private enterprises in the area of fish marketing and transport and to raise activity effectiveness in these areas have been lagging. In order to remedy this situation, it is urgently required that an organizational system to foster private distributors and transporters is improved.
- (4) In order to achieve improvements in fish marketing and transport, the existing Fishery Centers should be consolidated and personnel should be recruited or relocated. Although foreign technical assistance will be required for the present, sustainable operations will be transferred to the Solomon Islanders at the appropriate time.

8.2 Objectives

The objectives are to foster fish marketing and transport personnel in the private sector, increase fishermen incomes and provide a stable fish supply to consumers and exporters.

8.3 Strategy

- (1) An investigating "committee to improve fish marketing and transport" will be established under the auspices of the Ministry of Natural Resources (MNR) and the Fisheries Division will organize a public corporation, whose objective will be to implement extensive improvements in the regional fish marketing network. Under this plan, the existing Fishery Centers will be incorporated into the public corporation.
- (2) Improvements in the fish marketing and transport system will be implemented in stages. For the present, the corporation will be the recipient of foreign assistance. However, when its commercial activities become viable, its role will be gradually restricted and basic activities will be turned over to the private sector.
- (3) Prior to and after the establishment of the public corporation, the Fisheries Division will be responsible for legal and organizational improvements in order to ensure the uninterrupted operation of the public corporation.

8.4 Plan of Action

- (1) Legal improvements in the legal system

Institute a "Fish Marketing Public Corporation Act", in order to establish a new public corporation.

- (2) Scope of activities by the public corporation and the provincial governments

The scope of activities which will be carried out by the provincial government and the public corporation in each of the model areas by the target year 2000 is outlines below.

- 1) HFMA: Model Zones 1 and 2 will be under the direct management of the HFMA which will also directly support each of the Fishery Centers through its fish purchasing activities. Fish production will be the responsibility of fishermen and the HFMA will be responsible for fish collection at the production site, fish transport from the production site to Honiara, and fish marketing activities at the Honiara markets. In addition, it will cooperate with social and cultural activities at the markets.
- 2) WPFMA: Model Zone 3 will be under the management of the WPFMA and it will be responsible for technology transfer to fishermen in the areas of fish production and quality control, as well as collection and transport of quality fishery products to

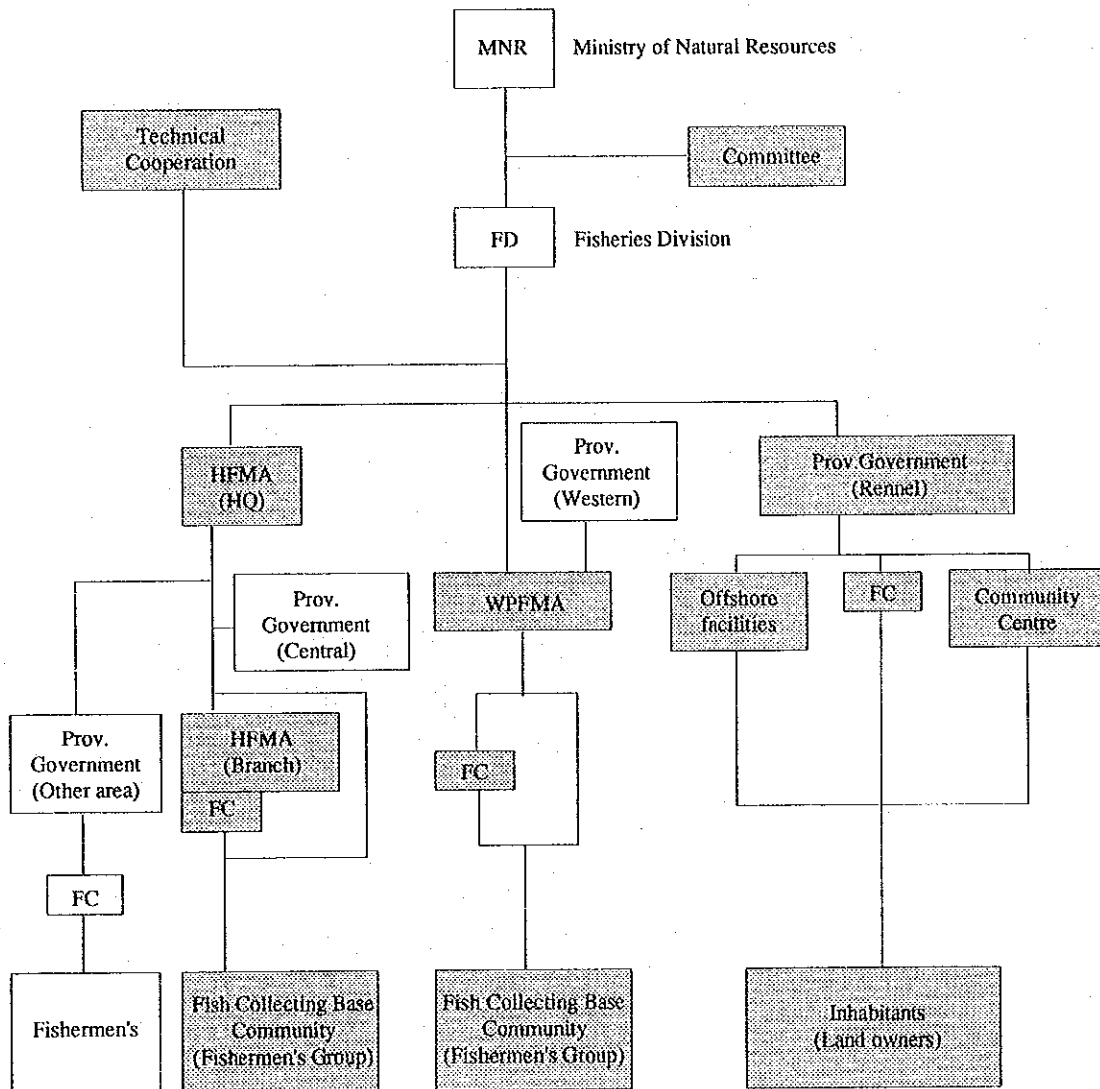
Noro. A system of cooperation with EC production sites through fish collection and transport activities will be set up.

- 3) Rennell/Bellona provincial government: Model Zone 4 will be under the jurisdiction of the Rennell/Bellona provincial government. A jetty, barge, and land facilities will be installed to improve the fish marketing system and the island's position as a distribution point for ocean transported goods. In addition, community development will be carried out to improve the social living standards of the fishing village. All stages of the fish marketing model project, as well as all activities pertaining to improvements in the inhabitants' lifestyle will be under the management of the provincial government with the support of the Fisheries Division.

(3) Organizational improvements

The operations of the MNR, the public corporation, and the provincial government by the target year 2000 are given below.

- 1) Committee on fish marketing and transport : MNR, relevant agencies, provincial governments, existing public corporations (DBSI, CEMA), processor/exporter, transporters, fishermen representatives, etc.
- 2) Public corporation on fish marketing and transport: Board of Directors will be composed of the same committee members on fish marketing and transport.
- 3) Placement of personnel
 - a. HFMA: One current manager will require retraining, and one new manager will be recruited and trained.
 - b. WPFMA: The existing staff personnel will undergo retraining and the general staff members will be recruited by relocating the existing personnel at the Fishery Centers.
 - c. Rennell Bellona provincial government: Management of the entire project will be the responsibility of the provincial government; and a total of four management personnel will be placed at each site. The staff will be gradually increased in conjunction with expanded activities. A part of the management positions will be filled by existing managers and the remaining positions will be filled by provincial government officers or by personnel recruited from the private sector. They will undergo a training and educational program to carry out their responsibilities.



Remarks

- (1) HFMA : Honiara Fish Marketing Authority
- (2) WPFMA : Western province Fish Marketing Authority
- (3) FC : Fisheries Center
- (4) Shaded : Shaded areas are proposed organization for the project.

Proposed Chart of the Public Corporation and Provincial Government for Improvement of Fish Marketing System

(4) Improvement plan in stages

Transitions in the functions of the private corporation are given below. Privatization will be gradually implemented in stages - Phase 1 (the year 2000), Phase 2 (2000 to 2010), and Phase 3 (after 2010).

1) HFMA

Phase 1: The HFMA will be responsible for all fish collection, transport, and marketing activities with the consent of fishermen. However, it will also be responsible for fostering future personnel in fish collection and transport activities.

Phase 2: A segment of the HFMA's fish marketing activities will be turned over to the private sector and a part of the management of the Tulagi base will be transferred to the provincial government.

Phase 3: The public corporation will be responsible for maintenance and control of facilities and only a segment of its fish wholesale functions in Honiara. In principle, fish wholesale and retail functions will be transferred to the private sector.

2) WPFMA

Phase 1: Although the Fishery Centers are currently under the jurisdiction of the provincial government, they will be transferred the management

Phase 2: Fish collection and transport will be carried out entirely by the public corporation. However, fish production and collection at the production sites will be implemented by the fishermen.

Phase 3: Fish collection and transport operations will be continued by the public corporation.

3) Rennell Bellona Province

Phase 1: The project will be placed under the jurisdiction of the provincial government in conjunction with Fisheries Division support. The newly formed provincial government does not have management and maintenance capabilities. In view of these circumstance, infrastructure and facility improvements which will be easy to manage and maintained will be installed.

Phase 2 and 3: All required facilities will be renovated and they will be managed by the provincial government.

(5) Foreign technical assistance

Foreign technical assistance in the form of dispatched experts and training programs abroad for future core staff members will be implemented during the preparatory stages of the public corporation and after its inception, until operational viability is established. Technology transfer in the areas of fish marketing and fishing, and facilities and equipment will be provided.

1) Fisheries Division officer

As a central government officer, he will be expected to make supervisory visits as required and to take the appropriate measures to resolve any problems that may arise.

Solomon Island personnel: Personnel in charge of fish marketing, staff members (responsible for fishing, equipment and facilities)

Technical assistance personnel: Project manager (fish marketing), fishing, equipment, and facility experts.

2) Separate technical assistance organization of each zone: Personnel sent from the central government and an organization based on appropriate contact with headquarters.

Solomon Island personnel: Staff members who have completed training abroad.

Technical assistance personnel: Young experts or volunteers.

3) Combined foreign technical assistance which includes preparatory stages of the public corporation, dispatch of experts, and training abroad programs, operating funds, etc. is recommended.

(6) Financial measures

It has been determined that if an operating budget for the initial three months, following one year of operations by the HFMA, can be secured, it will become financially viable.

9. CONCLUSION AND RECOMMENDATION

(1) Present conditions in fish marketing system

- 1) Due to the lack of private fish traders in the Solomon Islands, fishermen are required to transport their fish catch directly to the consumption areas or are dependent on the Fisheries Centers or foreign assistance agencies which are indirectly involved in fish marketing activities.
- 2) Although Fishery Centers have been set up at major rural fish landing sites, their functions have remained largely under developed due to the lack of a fish marketing and transport information network linking the production to the consumption areas.
- 3) Fish marketing and transport operations have been unable to achieve their maximum potential due to a shortage of personnel, operational fund, and managerial ability.

(2) Factors concerning implementation of development plans to improve fish marketing system

The following factors should be taken into consideration when implementing improvement measures in the fish marketing network.

1) Stage wise development

- a. Mutual understanding and a general consensus should be reached among fishermen and other related personnel prior to implementation of development measures.
- b. The scope of the Project should be to keep in pace with the economic growth of the nation and its objectives should be to achieve continuous operations and gradual participation of the private sector.
- c. The existing fish marketing facilities and their related infrastructure should be utilized to their maximum capacity.
- d. In developing the remote islands of the nation, an integrated marketing network of fish and other commodities should be targeted and a model for development of under-developed islands should be established.

2) Institutional arrangement

A "Committee to improve fish marketing/transport" under MNR should be established to regulate the following points before the completion of the facilities.

- a. To form the laws and institution
- b. To establish the public corporation

3) Foreign assistance

Before project operations are fully underway, it is necessary to invite foreign experts to the Solomon Islands and to send core management staff who will be in charge of future project operations, abroad to receive technical training. Technical transfer will be conducted in the field of fish marketing, fishing operation and mechanical engineering. Since measures to set up organization and system are not just matters of simple technical transfer, it will be necessary to consider the project as a "packaged" arrangement of despatching of experts, training in foreign countries and equipment supply.

4) Survey on fish resource management

This study has been limited to a survey of the fish marketing system, and improvements in the environment relevant to fish production have not been studied. However, resource management measures are clearly required for some fish species. A survey to improve fish resource management is recommended.

(3) Supplementary surveys during implementation of development plan in model areas

This is a pre-feasibility study and project formulation has been based on a short-term field survey. Subsequently, a more detail study is required in order to determine project scope, cost estimations, etc.. Detailed survey work is recommended in the following areas when the project is implemented in the model areas.

1) Model Zone 1 (Honiara)

- a. Market survey: Further study on the Central, Rove, and Kukum markets and in particular, the flow of all commodities throughout the year.
- b. Survey of market management and operations: Deliberations to consolidate a system of general market operations of the Central Market, by the Honiara Town Council and pertinent agencies.
- c. Survey of natural conditions: Although a soil test has already been carried out in the coastal area, a boring survey should be implemented at several sites within the market area.

2) Model Zone 2 (Florida Islands)

- a. Trial operation: Trial operation of fish collection and transport activities should be implemented using the vessel, Daula, owned by the Fisheries Division. Project implementation should proceed based on the results of this trial operation.

- b. Survey of natural conditions: Further surveys on the weather, sea, and soil conditions of the project site in Tulagi should be carried out prior to project implementation, although the surrounding sea is relatively moderate.

3) Model Zone 3 (Western Province)

Trial operation: Trial operation of fish collection and transport activities should be implemented using the vessel, Kuarao, owned by the provincial government. Project implementation should proceed based on the results of this trial operation.

4) Model Zone 4 (Rennell Island)

The following surveys are recommended to improve cargo landing functions of Kanggava Bay.

- a. A consensus of inhabitants engaged in fishing operations in Kanggava Bay.

- b. Survey of natural conditions

- A survey of the sea conditions of Kanggava Bay during rough weather.
- A detailed survey of coral reef conditions for wharf construction.
- A boring test confirming ground support conditions.

- c. Survey on transport/supplies

A detailed study of transport means, since shipment of materials is difficult.

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ABBREVIATIONS

ADB	:	Asian Development Bank
AIDAB	:	Australian International Development Assistance Bureau
CEMA	:	Commodities Export Market Authority
DF/R	:	Draft Final Report
EC	:	European Community
EEZ	:	Exclusive Economic Zone
FAO	:	Food and Agriculture Organization (United Nations)
FCs	:	Fisheries Centers
FD	:	Fisheries Division
FDAPIN	:	Fisheries Development Assistance for Pacific Island Nations
FFA	:	Forum Fisheries Agency
FI/R	:	Field Report
F/R	:	Final Report
FRP	:	Fiberglass Reinforced Plastic
GDP	:	Gross Domestic Product
HFMA	:	Honiara Fish Marketing Authority
HTC	:	Honiara Town Council
ICLARM	:	International Centre for Living Aquatic Resources Management
ICOD	:	International Center for Ocean Development
IC/R	:	Inception Report
IT/R	:	Interim Report
JICA	:	Japan International Cooperation Agency
JOCV	:	Japan Overseas Cooperation Volunteers
LDA	:	Livestock Development Authority
MDA	:	Malaita Development Authority
MDP	:	Ministry of Development Planning
mn	:	Million
MOF	:	Ministry of Finance
MNR	:	Ministry of Natural Resources (As of Feb. 1994, Min. of Agriculture and Fisheries)
MPGRD	:	Ministry of Provincial Government & Rural Development
mt	:	Metric ton
NBSI	:	National Bank of Solomon Islands
NDC	:	National Disaster Council
NDPC	:	National Development Planning Council
NFD	:	National Fisheries Development Ltd.
NFMS	:	Nationwide Fish Marketing System.
O/D	:	Origin and Destination
OFCF	:	Overseas Fisheries Cooperation Foundation
PFC	:	Provincial Fisheries Centers
RFCB	:	Rural Fish Collection Base
RFEP	:	Rural Fisheries Enterprise Project (European Community)
RSIPF	:	Royal Solomon Island Police Force
SBD	:	Solomon Dollars
SIEA	:	Solomon Islands Electricity Board
SIPA	:	Solomon Islands Port Authority
SDA	:	Seventh Day Adventist
S/D	:	Supply/Demand
SFMI	:	Small-scale Fisheries and Marketing Infrastructure Development
SOLAIR	:	Solomon Airlines
STL	:	Solomon Taiyo Limited
UC	:	United Church
UNDP	:	United Nations Development Programme
USAID	:	Agency for International Development (US)
VDA	:	Velaviru Development Cooperative Association (Choiseul Province)
WPFMA	:	Western Province Fish Marketing Authority

Terminology

- Esky : Insulated fiberglass reinforced plastic fish box
- Wontok : The term literally means a common language ("one talk"), and it has, in practice, assumed a range of meanings depending on the context of use. It can pertain to kin or relation traced through affinity, can refer to people coming from the same village or island. The bottom line of these usages is the sharing of material goods, social and emotional support, and rights and responsibilities.
- Loins : Raw, frozen or fillets of skipjack/tuna

Currency Equivalents

Currency Unit - Solomon Islands Dollar (SI\$)

SI\$1.00 = Yen 37 (Oct. 1993)

I. INTRODUCTION

I INTRODUCTION

1. Background

- (1) The Government of the Solomon Islands is striving to develop its national economy by developing its rich and varied fishery resources.
- (2) "Rural Fisheries Development Project" was drawn up in 1981 and Fisheries Centers and Sub-Centers were established through Japanese government grant aid and other foreign assistance to promote small-scale fisheries.
- (3) However, a fish marketing system is as yet undeveloped; and it is essential that existing Fisheries Centers and Sub-Fisheries Centers are effectively utilized to implement improvements in the fish marketing network, in order to provide a stable supply of fish products to large consumption areas and to help raise fishermen income.
- (4) In order to achieve the aforementioned, the Government of the Solomon Islands requested the Government of Japan to formulate a Master Plan on improving the nationwide fish marketing network, centered on small-scale commercial fisheries.
- (5) Upon receiving the request, the Government of Japan dispatched a preliminary study team to Solomon Islands in January 1993 and the Scope of Work (S/W) was agreed upon between both governments in February 1993.

2. Outline of the Study

(1) Objective of the Study

The objective of the study was to formulate a master plan for a nationwide fish marketing network for the Solomon Islands, in order to secure a stable fish supply for the consumers in the cities and to raise the income level of small-scale commercial fishermen. In addition, conducting a pre-feasibility study in model areas where the fish marketing plan would be enacted, was also another objective of the study.

(2) Study area

The study area covered the entire nation of the Solomon Islands.

(3) Study approach

The study was carried out in two phases and the scope of work covered in each phase is delineated below.

- 1) Phase I study: Based on existing data and field surveys, an assessment of existing the fish marketing system throughout the nation was undertaken. Based on these survey findings, the issues and problems confronting such a system were analyzed, alternative plans on improving the fish marketing system were formulated, and model areas were selected.
- 2) Phase II study: A pre-feasibility study was carried out in the selected model areas.

The work flow chart of the study is shown in Fig. I.1.1

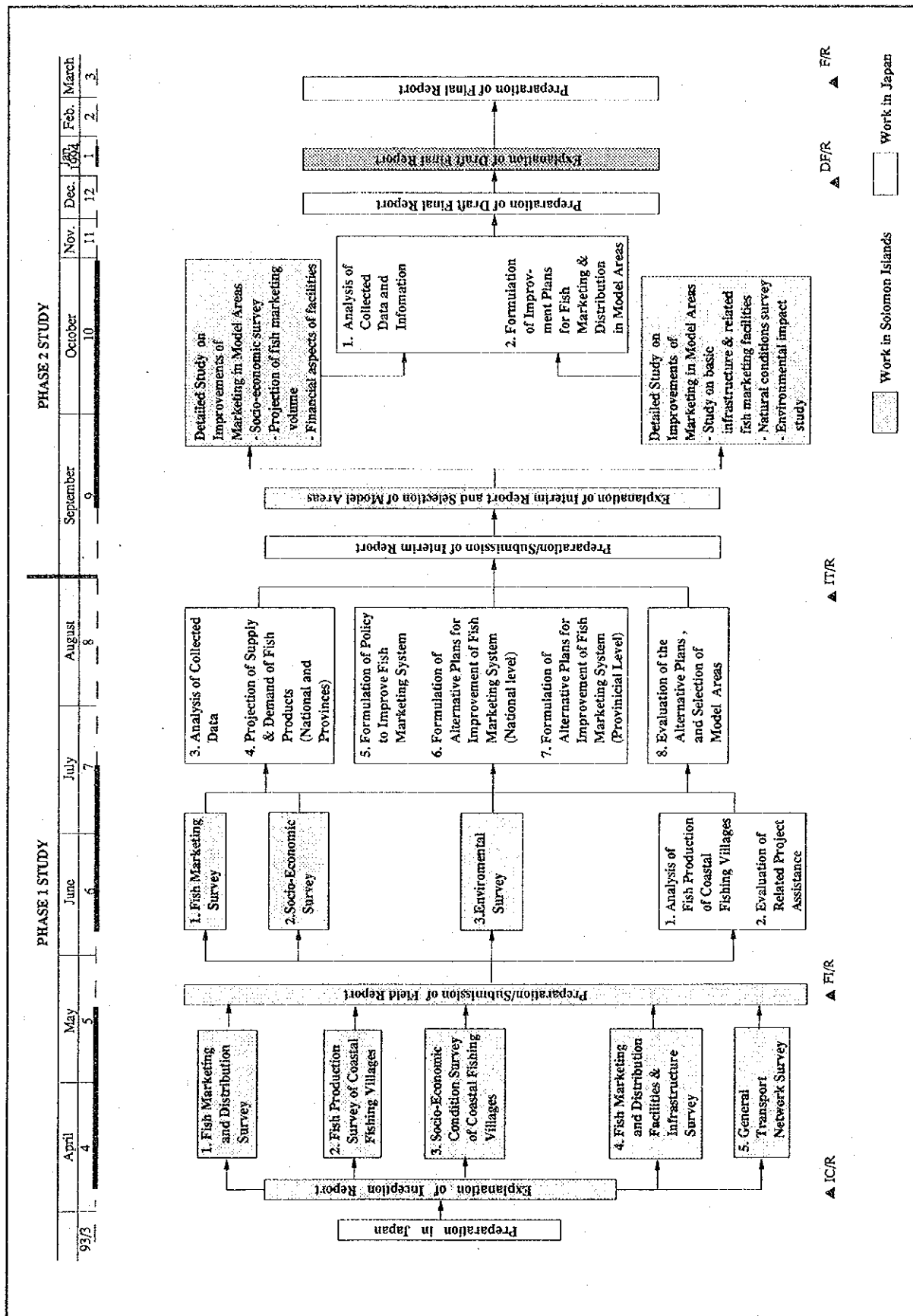


Fig. I.1.1 Work Flow Chart of the Study

II NATIONAL LEVEL

1. PRESENT CONDITION

1. PRESENT CONDITION

1.1 National Development Plan and Socio-economic Structure

1.1.1 National Socio-economic Development Plan

Currently, the national development plan in effect is the Third National Development Plan (1985-1989). Although it outlines national policy and objectives according to sector, specific targets have not been established. Separate provincial development plans of each province (1988-1992) which are approved by the Provincial Assembly exist, in addition to the national development plan.

Under the present National Coalition Partnership Government, statements of policy of each ministry have been drawn in June 1993. These policies will form the basis for the government's development programs for the next four years. The government intends to compile and introduce the National Development Plan in early 1994.

1.1.2 Socio-economic Structure

(1) Population

The total population of the Solomon Islands was 285,263 people according to the 1986 census. The estimates provided by the Statistics Office for 1992 was 342,732 people and it is projected to reach 372,765 in 1995. It was estimated to be growing at annual average growth rates of 2.93 percent (1986-92) and 3.06 percent (1992-95). The distribution of population according to province is shown in Table II.1.1.1. In particular, the population of Honiara and Guadalcanal Province is rapidly increasing. In Malaita Province where the population density is high, population growth has reached its limits and there is a marked outflow from the region.

(2) Gross Domestic Product (GDP)

According to the 1984 price index, the GDP showed an increasing trend from SI\$203.6 x 10⁶ in 1985 to SI\$240.9 x 10⁶ in 1991; and real growth was an annual average of 3 percent. Of this growth, the agriculture, forestry, and fisheries sector comprised about 39 percent (see Table II.1.1.2).

Export of forest products, tuna and copra was 32 percent of the overall GDP. The manufacturing sector, based primarily on processing agricultural products, accounts for about 4 percent of the GDP. Various services including the public sector, make up 46 percent of the GDP, while transport and communication account for about 5 percent.

The period of 1985-86 marked a turning point for the economy, due to a sharp drop in copra, cocoa, palm oil and timber prices, as well as cyclone damages to crops and infrastructure in May 1986 by Cyclone Namu. The overall effect was a fall in GDP of 1.7 percent in 1986. In 1987 and 1989, the economy recovered at a rate of 2.4 percent and 6.2 percent, respectively. This strong performance was due to increases in the output of palm oil, copra and cocoa, in response to price support by the Commodities Export Market Authority (CEMA).

(3) Balance of trade

The balance of trade (1985-90) is shown in Table II.1.1.3. The exports which are mainly dependent on fish, agriculture and timber, rose from SI\$103.8 x 10⁶ in 1985 to SI\$177.4 x 10⁶ in 1990. Despite the increased export performance, the trade balance continues to be in deficit. Imports rose from SI\$123.2 x 10⁶ in 1985 to SI\$233.2 x 10⁶ in 1990, resulting in a trade deficit of SI\$ 19.4 x 10⁶ in 1985 to SI\$55.8 x 10⁶ in 1990.

(4) Honiara retail price index

The Honiara retail price index is shown in Table II.1.1.4. Domestic inflation was measured by changes in the Honiara retail price index. The inflation rate rose from 8.7 percent in 1985 to 16.7 percent in 1986 as a result of rising import prices. In 1990 inflation moderated to a rate of around 10 percent.

(5) Exchange rate

Trends in the exchange rate of the Solomon dollar (SI\$) to the US dollar are shown in Table II.1.1.5. The domestic exchange is linked to the country's four main trading currencies (US\$, Aus\$, Yen, and Pound Sterling), but it is adjusted by the Central Bank if the rate is considered inappropriate according to economic conditions and development priorities.

Table II.1.1.1 Population of Solomon Islands by Province (1986-1995)

Province	Unit: Persons				
	1986 (Actual)	1992 (Est.)	1995 (Est.)	AAGR 1986- 92	AAGR (1992- 95)
Guadacanal	49,918	63,630	72,397	4.05%	4.30%
Malaita	80,032	90,092	91,517	1.97%	0.52%
Isabel	14,616	17,510	18,499	3.01%	1.83%
Makira	21,796	26,741	28,539	3.41%	2.17%
Western	41,681	49,716	55,887	2.94%	3.90%
Choiseul	13,569	15,627	17,649	2.35%	4.06%
Central	16,655	20,427	21,696	3.40%	2.01%
Rennell/Bellona	1,802	1,751	1,887	-0.48%	2.49%
Temotu	14,781	17,638	18,034	2.95%	0.74%
Honiara Town	30,413	39,600	46,660	4.40%	5.47%
Total	285,263	342,732	372,765	2.93%	3.06%

Remarks: AAGR = Annual average growth rate

Source: 1) Population Census (1986), Statistics Office, MOF

2) Provincial Development Plans (1992)

Table II.1.1.2 Gross Domestic Product by Sector at 1984 Prices (1985-1991)

								Unit: SI\$ mn	
	1985	1986	1987	1988	1989	1990	1991 Est.	Share of Monetary GDP	Share of Total GDP
Agriculture	43.5	36.5	34.8	39.4	46.4	49.7	52.5	27%	22%
Forestry & sawmilling	13.5	15.3	11.5	10.9	10.9	15.3	15.1	8%	6%
Fishing	15.4	15.2	11.9	14.4	13.2	8.9	7.9	4%	3%
Mining & exploration	0.5	0.7	0.5	0.3	0.2	0.2	0.2	0%	0%
Manufacturing	6.8	7.0	8.6	8.7	9.2	8.9	9.2	5%	4%
Electricity & water	1.9	2.0	1.8	2.2	2.5	2.8	2.9	1%	1%
Construction	7.0	7.2	6.4	6.4	7.3	7.3	7.2	4%	3%
Retail & wholesale trade	22.1	21.1	22.0	20.2	23.6	22.2	22.2	11%	9%
Transport & communication	11.0	11.1	10.1	10.6	12.0	11.3	11.2	6%	5%
Finance & services	45.4	47.1	58.9	63.2	63.1	64.7	68.4	35%	28%
GDP (Monetary Production)	167.1	163.2	166.5	176.3	188.4	191.3	196.8	100%	82%
Non-monetary : Food	33.7	33.7	35.8	36.9	38.2	39.5	40.8		17%
Non-monetary: Construction	2.8	3.3	2.9	3.0	3.1	3.2	3.3		1%
Total GDP (All Production)	203.6	200.2	205.2	216.2	229.7	234.0	240.9		100%
Growth rate (%) of GDP	4.6	-1.7	2.4	5.4	6.2	1.8	3.0		

Source: 1) Statistics Office, MOF

2) Pacific Island Economies: Solomon Islands, World Bank, 1993

Table II.1.1.3 Balance of Trade (1985-1990)

	Unit: SI\$ mn					
	1985	1986	1987	1988	1989	1990
Exports (fob)	103.82	114.91	128.31	170.58	171.25	177.44
Fish	31.96	52.93	54.58	78.40	65.29	53.19
Agriculture	42.32	18.53	25.18	37.33	48.98	43.80
Timber	24.74	35.73	37.17	39.79	41.32	60.81
Marine shells	0.88	1.20	2.53	4.45	5.60	6.31
Gold	0.80	2.22	2.10	1.51	1.11	1.20
Other exports	0.56	1.16	2.85	2.99	2.90	6.81
Re-exports	2.56	3.14	3.90	6.11	6.05	5.32
Imports (cif)	123.2	125.2	161.9	244	262.5	233.2
Balance	-19.385	-10.29	-33.595	-73.42	-91.25	-55.76
Remarks:	1) Agriculture includes copra, palm oil/kernal, cocoa coconut oil and tobacco.					
	2) Timber includes logs and sawn timber.					
Source:	Statistics Office, MOF					

Table II.1.1.4 Honiara Retail Price Index (1985-1990)

	1985	1986	1987	1988	1989	1990
Food	104.9	119.5	119.5	162.4	186.9	204.8
Drink & Tobacco	126.8	267.2	267.5	269.5	272.6	279.7
Clothing	108.4	114.6	114.6	146.9	159.0	162.9
Housing & utilities	109.6	111.5	111.5	120.3	127.8	143.8
Transport	110.5	143.2	143.2	169.8	196.5	259.7
Miscell	108.0	117.2	117.2	161.4	174.4	192.9
All items	108.7	126.8	142.9	167.7	185.5	204.5
% increase	8.7	16.7	12.7	17.1	10.8	10.2
Remarks:	Index based on 1984=100					
Source:	Statistics Office, MOF					

Table II.1.1.5 Exchange Rate of the SI\$ to US\$ (1986-1991)

	Unit: SI\$					
	1986	1987	1988	1989	1990	1991
	1.7415	2.0033	2.0825	2.2932	2.5288	2.7148
Source:	EIU Country Profile, 1992-93					