

**DEVELOPMENT AND MANAGEMENT PROFILE  
OF  
TRANSPORT INFRASTRUCTURE  
IN  
ASIA AND THE PACIFIC  
(SUPPLEMENT)**

- A. The South Pacific Countries**
- B. Newly Industrializing Economies**
- C. Other Small Economies**
- D. Vietnam**

**March 1991**

**Institute For International Cooperation  
Japan International Cooperation Agency**

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## FOREWORD

This is the second report supplementing the first report of the same title, "Development and Management Profile of Transport Infrastructure in Asia and the Pacific", which was published in 1989. Like the first report which covered 14 countries, this report provides country-specific profiles of the transport infrastructures for which development needs have been increasing in recent years. This report presents 16 country profiles of the transport sector in South Pacific countries, Newly Industrializing Economies, and other small economies in Asia, including the profiles of planning and investment in this sector. It also attempts to identify areas for future technical cooperation and development assistance.

This report was made in collaboration with Dr. Yuzo Akatsuka, Professor at the Infrastructure Development and Management Laboratory, Department of Civil Engineering, University of Tokyo, supported by Mr. Masahiko Kitauchi, Research Associate at the same laboratory. I would like to express deep appreciation for their cooperation and hard efforts.

I also hope that this report will be fully utilized as valuable help to all the people concerned such as development experts and survey teams who will be dispatched to these regions in the future.

March 1991

Akira Kasai

Managing Director

Institute for International Cooperation

Japan International Cooperation Agency



## PREFACE

The first issue of DEVELOPMENT AND MANAGEMENT PROFILE OF TRANSPORT INFRASTRUCTURE IN ASIA AND THE PACIFIC was published 18 months ago in September 1989. It was well received by those who are involved in infrastructure projects, professional staff of bilateral and multilateral donor organizations, government officials of aid recipient countries, and academics with an interest in international development problems. It was an unexpected pleasure for the authors to receive requests for a substantial number of reprints far exceeding those originally printed.

As stated in the preface of the first issue, "the purpose of this publication is to establish a comprehensive and systematic data base and brief profiles for the transport sector that will facilitate country-specific analysis and cross-country comparison of long-term trends in planning, development and management in the transport sector in Asia and the Pacific. It is hoped that this first issue of DEVELOPMENT AND MANAGEMENT PROFILE OF TRANSPORT INFRASTRUCTURE IN ASIA AND THE PACIFIC will serve as a baseline for transport statistics and assist in better planning, development and management of transport infrastructure in the region." The aims of the first issue remain unchanged in this second issue.

While the first issue appears to have served its original purpose, namely the dissemination of information and data about transport infrastructure in the developing countries of Asia and the Pacific region, many readers strongly suggested that the scope of the study be expanded to cover countries not included in the first issue, such as Vietnam, the Newly Industrializing Economies (NIEs), and South Pacific island countries, which have become increasingly important either as aid recipient countries, or as new donors in the region.

The economies of Asia and the Pacific region have been growing steadily, and the region is now expected to become one of the world's most important economic regions. Among the forces that have made this growth possible are first, continuing investment in the fields of transportation, second, the determination of the people of the region to achieve technological advancement, and

third, the concerted efforts of the countries of the region to enhance the efficiency and productivity of their economic activities.

We have therefore tried to collect relevant information and data about countries and economies that were not included in the first issue, using field visits wherever possible. Ultimately, a total of 16 countries and economies were covered: eight South Pacific island countries, four newly industrializing economies, Viet Nam and Laos on the Indochina Peninsula, as well as Maldives and Bhutan.

The authors had many opportunities to discuss matters of common interest with the professional staff of government agencies and international organizations. The economies visited between 1989 and 1991 include Fiji, Hong Kong, Korea, Pakistan, Papua New Guinea, the Philippines, Vanuatu, Singapore, Taiwan and Thailand. Among the international organizations visited were the Asian Development Bank, the World Bank, the United Nations, the United Nations Development Programme, and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

In addition, the authors had opportunities to visit agencies and organizations in Tokyo that are involved in international development, including the Japan International Cooperation Agency, the Overseas Economic Cooperation Fund, government ministries, non-governmental organizations, and several embassies of developing countries to which field visits were not made.

The authors also participated in international conferences and seminars held in Japan, such as the Fourth World Transport Research Conference, the ESCAP Seminar on Containerization and Port Planning and the 27th Permanent International Association of Navigation Congresses. These events provided opportunities to meet participants and discuss issues relating to transport infrastructure development in their countries.

These field visits, meetings and discussions have reconfirmed the need for continued efforts to collect data and information pertaining to the development and management of transport infrastructure in the economies of the region, and the need to disseminate such data and information to those who are involved in development activities.

Although the authors made every efforts to incorporate the findings thus obtained to fullest extent possible in this publication, much additional data and information remain to be collected, updated and integrated. Any comments and suggestions from readers and users of the publication, particularly with regard to the accuracy of the data and the adequacy of the coverage, would be very much appreciated.

The authors are very much obliged to all who extended assistance in their search for data and information, provided op-



portunities for discussions on matters of common interest, and offered many suggestions and advice. Without such cooperation this publication would never have materialized. The authors are also extremely grateful Ms. K. Sekiguchi and Ms. A. Indrawan, secretaries of the Laboratory, for their tireless efforts to finalize the voluminous data and information into the form of this publication.

March 1991

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CURRENCY EQUIVALENTS  
(As of the End of 1989)

<u>Country</u>	<u>Unit</u>	<u>Equivalent to</u> <u>US \$ 1.0</u>	
Afghanistan	Afghani	Af	50.60
Bangladesh	Taka	Tk	32.27
Bhutan	Ngultrum	Nu	17.04
Cambodia	Riel	-	-
China, People's Republic of	Yuan	Y	4.72
Cook Islands	New Zealand Dollar	NZ\$	1.67
Fiji	Fiji Dollar	F\$	1.49
Hong Kong	Hong Kong Dollar	HK\$	7.81
India	India Rupee	Rs	17.04
Indonesia	Rupiah	Rp	1797.00
Kiribati	Australian Dollar	A\$	1.26
Korea, Republic of	Won	W	679.60
Lao, People's Democratic Republic of	Kip	KN	689.00
Malaysia	Ringgit	M\$	2.70
Maldives	Rufiyaa	Rf	9.21
Myanmar	Kyat	MK	6.49
Nepal	Nepalese Rupee	NRs	28.60
Pakistan	Pakistan Rupee	PRs	21.42
Papua New Guinea	Kina	K	0.86
Philippines	Peso	P	22.44
Singapore	Singapore Dollar	S\$	1.89
Solomon Islands	Solomon Is. Dollar	SI\$	2.40
Sri Lanka	Sri Lanka Rupee	SLRs	40.00
Taiwan	New Taiwan Dollar	NT\$	26.16
Thailand	Baht	B	25.69
Tonga	Pa'anga	T\$	1.32
Vanuatu	Vatu	Vt	110.90
Vietnam	Dong	D	3900.00
Western Samoa	Tala	WS\$	2.29
<hr/>			
Australia	Australian Dollar	A\$	1.262
Canada	Canadian Dollar	C\$	1.158
Denmark	Danish Krone	DKr	6.608
France	Franc	F	5.788
Germany	Deutsche Mark	DM	1.698
Italy	Italian Lira	Lit	1270.50
Japan	Yen	Y	143.45
New Zealand	New Zealand Dollar	NZ\$	1.674

Netherland	Netherlands Guilder	Nf	1.916
Norway	Norwegian Krone	NKr	6.615
Sweden	Swedish Krona	SKr	6.227
Switzerland	Swiss Franc	SwF	1.547
United Kingdom	Pound Sterling	LStg	0.623

Source : \* KEY INDICATORS OF Developing Member Countries of  
AsDB, July 1990  
\* OECF Handbooks of Overseas Economic Cooperation 1990  
\* International Statistical Compendium 1990, Statistics  
Bureau, Management and Coordination Agency, Japan



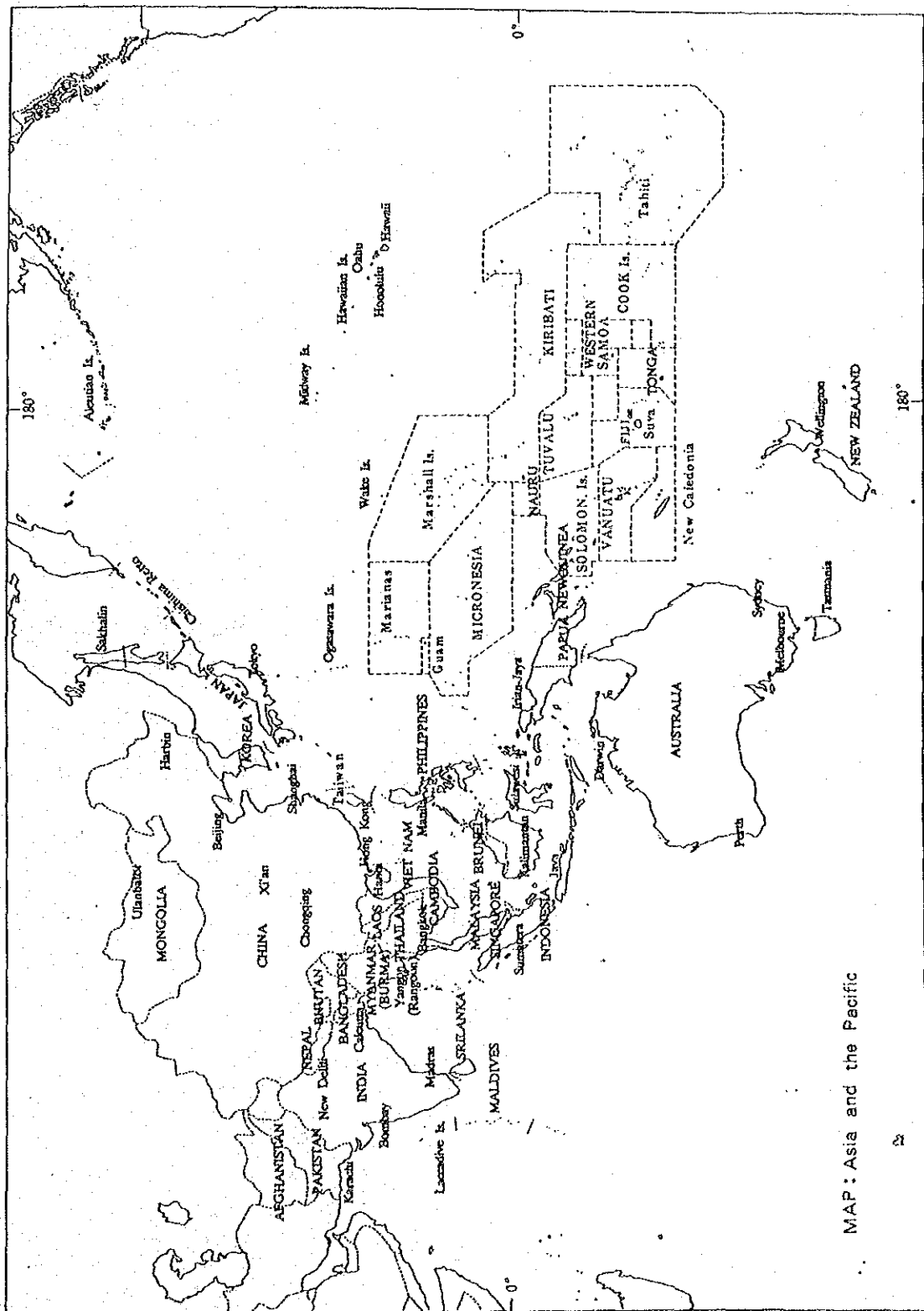
## ABBREVIATIONS

### DEVELOPMENT AID AGENCIES

AID:	Agency for International Development (USA)
AIDAB:	Australian International Development Assistance Bureau (Australia)
AsDB:	Asian Development Bank
CIDA:	Canadian International Development Agency (Canada)
DAC:	Development Assistance Committee
DANIDA:	Danish International Development Agency (Denmark)
EDF:	European Development Fund
ESCAP:	United Nations Economic and Social Commission for Asia and the Pacific
FINAID:	Finish Agency for International Development (Finland)
IBRD:	International Bank for Reconstruction and Development (World Bank)
IDA:	International Development Association
IsDB:	Islamic Development Bank
JICA:	Japan International Cooperation Agency (Japan)
KfW:	Kreditanstalt für Wiederaufbau (Federal Republic of Germany)
NORAD:	Norwegian Agency for International Development (Norway)
ODA:	Overseas Development Administration (United Kingdom)
OECD:	Organization for Economic Co-operation and Development
OECF:	Overseas Economic Cooperation Fund (Japan)
OPEC Fund:	The OPEC Fund for International Development

SIDA: Swedish International Development Authority (Sweden)

UNDP: United Nations Development Programme



MAP: Asia and the Pacific



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## THE COOK ISLANDS

### A. Economic Setting

1. The Cook Islands consists of 15 tiny islands which are widely dispersed over 1.8 million sq km of the South Pacific Ocean. The total land area is 236 sq km and the total population in 1989 was estimated at about 17,700. More than 50 per cent of the population lives on the country's largest island, Rarotonga. The country is divided into two island groups - the Northern and the Southern Groups, consisting of seven and eight islands, respectively (see Map-2). The geographic spread creates difficulties in administration, communication and transport. Industrial growth is restricted by fragmented domestic and small markets and lack of industrial raw materials and skills.

2. The First Development Plan (DP1) for Cook Island was prepared by the Government in 1982 for Fiscal Year (FY) 1982/83 - 1984/85. The economic and social objectives of the DP1 were: (i) to raise the level of prosperity of the people and to encourage them to remain in their home islands; (ii) to attain larger measure of economic independence; (iii) to ensure that economic development proceeds in a manner compatible with social and cultural values; (iv) to ensure an equitable distribution of the benefits of development; (v) to conserve natural resources and the environment. The economy of the Cook Islands is small and heavily dependent on agriculture and tourism. During DP1, real GDP exhibited a modest growth of 3 per cent per annum. Production and export of major crops, such as copra and papaya, substantially increased. Banana and pineapple shipments to New Zealand were major contributors to the foreign exchange earnings of the country. Tourist arrivals during the period also steadily increased, as a direct result of the improvement of the Rarotonga airstrip and the subsequent increase in air links.

3. Following the conclusion of DP1 the Government was unable to prepare a development plan for three years. In FY 1985/86 - FY 1986/87 the country experienced a declining trend in the export prices of agricultural commodities. There were, however, substantial tonnage increases in the air shipment of fruits, vegetables, and rootcrops. Tourist arrivals did not increase substantially in 1986; and this was attributed to the constraint on hotel accommodation and other infrastructure facilities.

4. The Second Development Plan (DP2) covering the period FY 1989/90 to 1992/93 is now under implementation starting in the fiscal year of 1988/89. DP2 will pursue the objectives and strategies developed under DP1. Its main features include economic measures which are designed to cushion the impact of the decision recently made by the Government in regard to its budget. The decision was to accept the limit on budget support from the Government of New Zealand (the main source of bilateral assistance) for NZ\$10 million in 1986/87, and thereafter to gradually



phase out the support over a 20-year period. The measures adopted in DP2 to minimize the adverse effect of the reduction in budget support, are as follows: (i) increase foreign exchange inflow through increased exports, obtaining more project-type aid, encouraging more tourists through improvement of facilities, licensing of foreign vessels and encouraging off-shore banking; and (ii) reduction of foreign exchange outflow by import substitution, encouragement of savings for investments, and reducing the budget deficit. The reduction in budget deficit is envisaged to be achieved through increased taxes and reduced Government spending.

## **B. Transport Sector**

5. The major transport infrastructure facilities in the Cook Islands comprise roads, airstrips and harbors, though its system is very limited and its condition differs greatly from island to island. Significant road networks are found on the Southern Group islands of Rarotonga, Aitutaki, Mangaia, Mauke, Mitiaro and Atiu. There is a very modest interisland shipping service, and air services are restricted to only a few of the larger islands. As the country comprises a number of small islands, sea transportation will continue to be its main mode of transportation.

## **C. Civil Aviation**

6. Rarotonga airport, constructed in 1973, which had a 2,300-meter airstrip, is the only international airport in the country. At present, it accommodates regular services to and from Auckland, Tahiti, Fiji and Los Angeles via Hawaii. Seven islands namely, Aitutaki, Mangaia, Mauke, Mitiaro, and Atiu in the Southern Group, and Rakahanga and Penrhyn in the Northern Group have airstrips which are suitable for use by certain types of aircraft. Regular flight services are provided by the Cook Islands Airways Company from Rarotonga to Aitutaki, Mangaia, Atiu, Mitiaro and Mauke, which is a joint venture between the Air New Zealand and the Government of the Cook Islands with equity participation of 90 per cent and 10 per cent, respectively. The other islands in the Northern group do not have any regular air services, but once every quarter a New Zealand Air Force plane visits Penrhyn Island for calibration of aviation facilities. The Rarotonga and Aitutaki airstrips are supervised and maintained by the Cook Islands Airport Authority (CIAA), while the airstrips on the other islands are maintained by the representative islands council. Two airline companies, Air Rarotonga and Cook Islands Airways, have regular flights to the Southern Group islands. CIAA is now considering an extension of the Rarotonga runway by at least 305 m to facilitate an increase in international traffic in the country.

## **D. Ports**

7. The main port of the country at Avatiu, Rarotonga is of adequate size to accommodate both New Zealand Shipping Corporation and inter island vessels. Foreign vessels larger than about 1,500 dead weight tons must anchor off-shore. In 1978 the total cargo handled at Rarotonga was about 35,000 m.t. consisting of 27,000 m.t. of foreign cargo and about 8,000 m.t. of domestic cargo. The existing port facilities at Rarotonga comprise four berths about 280 m long (two for overseas vessels and two for inter island vessels) backed up by two transit sheds of about 1,200 sq m and an open storage yard of about 6,000 sq m. Deepening of the existing basin from 4.5 m to 5.5 m and realignment work on the wharf face were completed under New Zealand aid.

8. Penrhyn has a deep and well-sheltered natural port that enables coastal vessels to berth at the wharf. However, the wharf is in poor condition and is privately owned, as is the land adjacent to it. All other ports in the Cook Islands have shallow passages which have been dredged through coral reefs surrounding the islands. Due to the draft limitations of the passages, none of the ports except Rarotonga is able to accommodate overseas or interisland vessels alongside the wharf and have to depend on lighterage operations.

9. Ships can dock along-side wharves only in the Avatiu harbor (Rarotonga) and on Penrhyn Island, since wharves do not exist on the outer islands. Near these islands the ships drop anchor off the reef and small boats ply to load or unload cargo. The small boats often find it difficult to transport and handle the cargo because of high waves and lack of proper handling facilities and wharves.

#### E. Shipping

10. The main overseas shipping link of the country is provided by the New Zealand Shipping Corporation, which is subsidized by the New Zealand Government, in its operation's and caters to the shipping needs of the Niue as well. In addition, vessels from Japan call at Rarotonga once every three to four months, discharge mainly general cargo and vehicles. The total overseas cargo of the country, which is handled at the two ports of Rarotonga and Aitutaki, averaged about 30,000 m.t. a year during the 1980s.

11. The inter-islands link is mainly sea transport. However, shipping service and harbor facilities in the country are very inadequate and require improvement. Only two old, run-down ships with the capacity of about 570 net registered tons (NRT) ply the inter island routes, making calls about once a month at Rarotonga (the capital and the main port of the Cook Islands) and Aitutaki (the second most populated island) which is located about 140 nautical miles north of Rarotonga. In addition, inter-island shipping services are also provided by a private operator with two vessels of 130 and 160 NRT whose operations are subsidized by the Government. These vessels call regularly at the 15

islands in the country resulting in lengthy intervals between ship calls at each island. Except for Aitutaki and Mangaia Islands which are served weekly, the Southern Group of Islands is served once a month on the average while the Northern Group is served every six weeks. This interval may be longer if sea conditions are rough, and it is not unusual for the frequency of service to only one call in every three months.

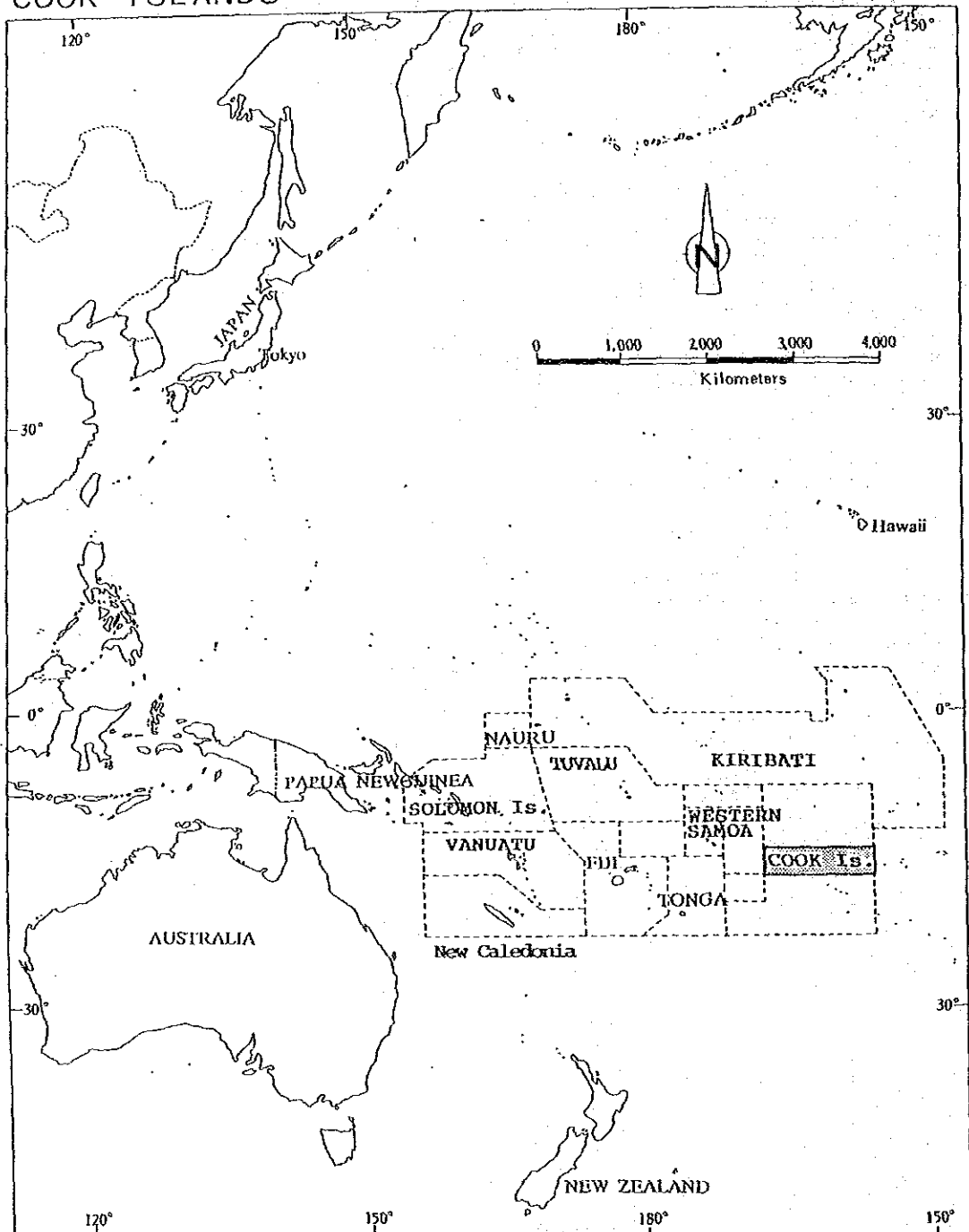
12. A large portion of the cargo carried by the inter island vessels is shipped from Rarotonga to the outer islands and vice-versa. Major commodities shipped from Rarotonga to the outer islands include general cargo and fuel oil. From the outer islands fruits and copra are sent to Rarotonga for subsequent export. Rarotonga thus functions as the main import/export transshipment and redistribution port of the country. Cargo movements between the outer islands are very limited and mainly comprise construction plant and equipment transferred from one island to another for rural development projects and personal effects of passengers.

#### F. Roads and Road Network

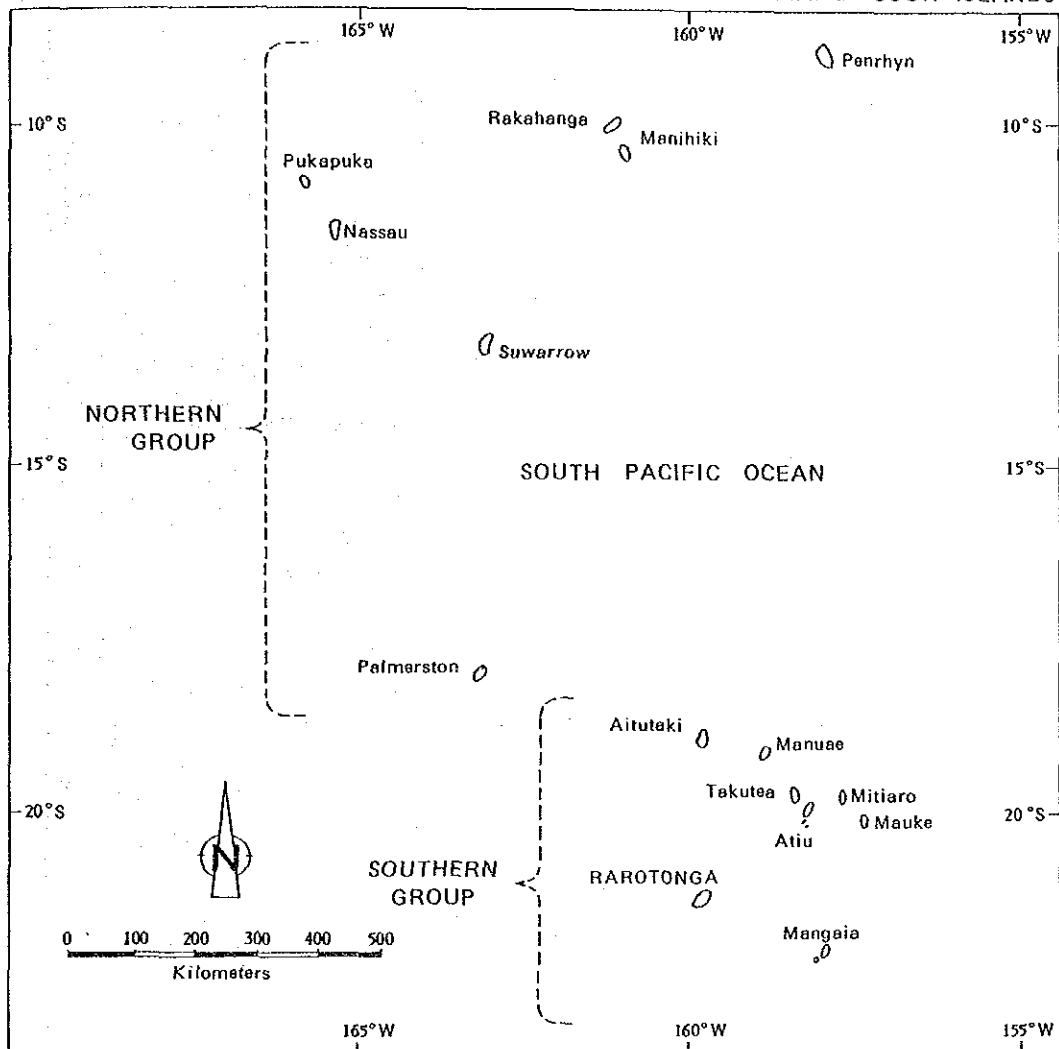
13. The 15 islands which form the Cook Islands range in size from 67.2 sq km for Rarotonga, the largest island, to 40 ha for Suvarrow, the smallest. Only the larger islands -- Rarotonga, Aitutaki, Mangaia, Atiu, Mauke and Mitiaro -- have roads, with a total length of 249 km, consisting of 56 km of sealed roads and 193 km of unsealed roads. The unsealed roads are either crushed coral or earth surfaced, and some are impassable during rainy season. The network excludes plantation roads, which are currently considered inadequate, particularly on the islands where orchard crops are extensively grown.

# COOK ISLANDS

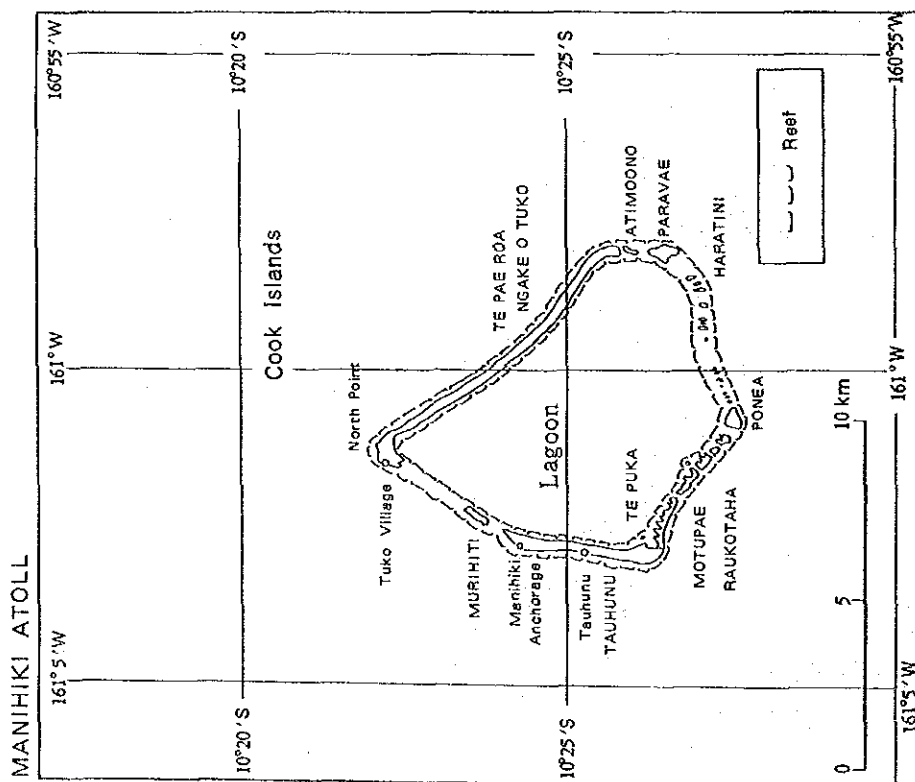
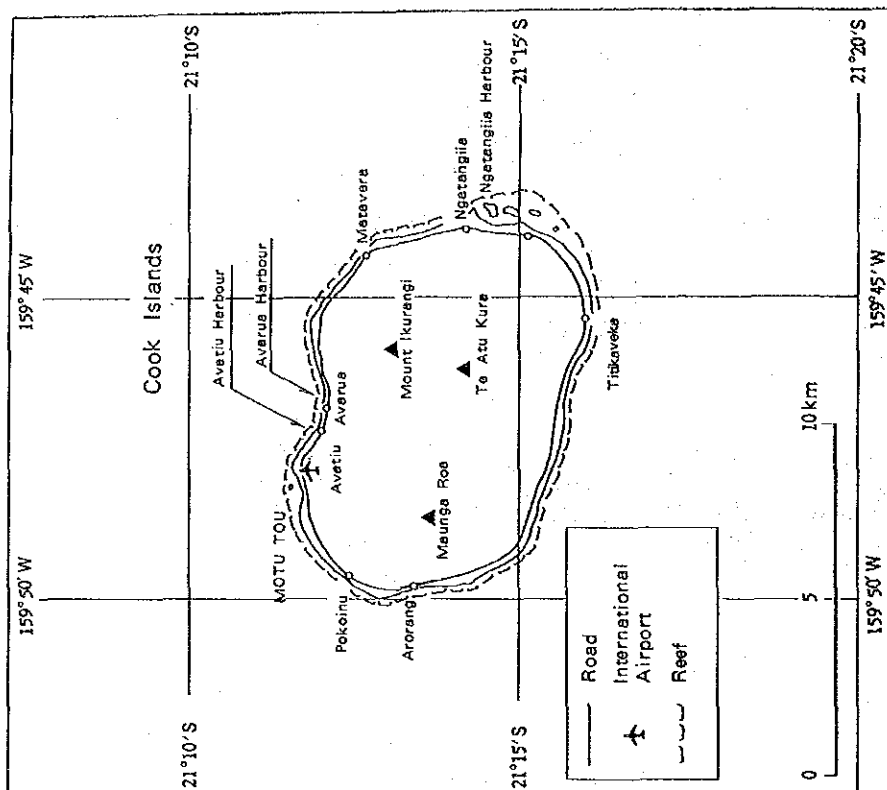
MAP 1 : Location



MAP 2 : COOK ISLANDS



MAP 3 : MANIHIKI ATOLL and RAROTONGA ISLAND  
RAROTONGA ISLAND



## A.2. FIJI

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## FILJI

### A. Economic Setting

1. Fiji comprises about 330 islands, of which some 105 are inhabited. The country's territory, with a total land area of 18,300 sq km. is scattered over 150,000 sq km of ocean. The two largest islands, Viti Levu (10,400 sq km) and Vanua Levu (5,500 sq km), respectively account for 57 and 30 per cent of the land area and 75 and 14 per cent of the country's population of 722,000 (mid-year of 1989). About 35 per cent of the population lives in urban areas.

2. The Fiji economy, while basically agricultural, is more diversified than the economies of many other South Pacific developing island countries. In 1987, agriculture accounted for 24 per cent of GDP; agriculture is dominated by sugar, which has long been the main source of cash income and export earnings. Tourism and related industries have gained in importance since the 1960s and contribute significantly to the economy. In 1986, sugar and tourism respectively accounted for 55 and 25 per cent of total export earnings, with other major foreign exchange earners being gold, timber and copra.

3. During the period 1979-1986, per capita GDP growth fluctuated widely, reflecting increases in sugar production and exports on the positive side, and unfavorable price trends for sugar and the adverse effects of drought and cyclones on the negative side. After real growth in GDP in 1986 of 9 per cent, political developments during 1987 caused a major disruption in the economy. This disruption resulted in an 7.8 per cent decline in real GDP. Construction activities were hardest hit, shrinking by 32 per cent. Sugar cane production declined by 29 per cent and tourist arrivals declined by 26 per cent. During 1988, a further decline was experienced in GDP in real terms of 1.8 per cent; sugar production and tourism remained static.

### B. Transport Sector

4. The demand for transport was growing quite strongly up to 1987; to cater to this growth, the Government carried out extensive improvement and upgrading of infrastructure, particularly roads, with this effort being maintained into 1988. During 1987, the overall balance of payments declined to a deficit to US\$30.0 million, compared with a surplus of US\$34.0 million in 1986. Gross international reserves declined from US\$170.5 million in 1986 to US\$131.6 million in 1987. In SDR terms, Fiji lost about one third of its foreign exchange reserves. As a result, new capital works have been delayed, ongoing works have been slowed down, and periodic maintenance of existing facilities has been reduced. Routine maintenance activities, however, have been continued at about pre-1987 levels.



Levu. It is a natural harbor, sheltered from the sea by reefs, and has direct approach to the Suva city center which has grown around the Port. Existing inland transport links from the Port area are good. In 1987 some 40 per cent of international cargo handled in Fiji passed through this Port. Suva Port also serves as a transshipment port for other South Pacific countries. The growth of cargo handled at Suva Port has been more rapid than the growth in total cargo handled at all other Fijian ports combined. Suva's role regarding import cargo is even more dominant, as the Port handles some 60 per cent of total imports to Fiji. Lautoka, the country's second largest port, is located on the northwestern coast of Viti Levu. Together, these two ports account for more than 90 per cent of international ship calls to Fijian ports, and they are also nodes for inter-island shipping and cruise services. Cruise passenger liners tend to call only at Suva and Lautoka with the same ships generally calling at both ports. The volume of cargo handled at the various ports in Fiji reflects a similar dominance of the two principal ports. However, the percentage of cargo handled at Suva and Lautoka ports (75 per cent) is lower than the share international ship arrivals due to the high average loading of sugar exports at the various outports.

13. Shipping in Fiji can be subdivided into the categories of overseas shipping and interisland shipping. Ships of various types and sizes call at Fiji from overseas ports throughout the year. In addition, about 200 interisland vessels provide a vital link between the two main islands of Viti Levu and Vanua Levu and the many scattered islands of the Fiji group. There are three official ports of entry in Fiji, namely Suva and Lautoka on the island of Viti Levu, and Levuka, on the island of Ovalau. International shipping to Fiji mainly calls at the two principal ports of Suva and Lautoka. Levuka is primarily an export port for fresh, frozen and canned tuna. Suva and Lautoka ports handle a diverse range of imports and exports, though the dominant influence at Lautoka is the export of bulk raw sugar produced at the mill next to the port. In addition to the official ports of entry, there are four major outports -- Vuda, Vatia and Ellington on the north-western and northern coast of Viti Levu and Malau on Vanua Levu. Vuda Point which is used to discharge bulk petroleum products to onshore storage facilities maintained by the major petroleum distribution companies, merely consists of mooring dolphins with under-water pipelines leading to the oil tanks. The other three outports are mainly used for loading raw sugar exports and discharging fertilizer for use in the sugar-growing areas.

#### F. Roads and Road Transport

14. Roads under the administration of PWD are constructed to the specific minimum standard. These roads are subdivided into four categories: main, secondary, country and residential. In addition, there are other roads that have not been gazetted. By 1987, the country's road network totalled to 4,777 km, con-

sisting of 1,307 km of main roads, 644 km of secondary roads, 2,603 km of country (rural access) roads, 117 km of residential roads, and 106 km of unproclaimed roads. Only 825 km of the network is paved to bitumen-surface standards. High priority was given under DP9 to the construction of new roads that would provide basic access to isolated rural areas with potential for development, but because of the recent economic decline, construction of almost all new roads is being deferred. Development in area served by existing roads has expanded, with concomitant increases in traffic volumes; these roads are being upgraded to provide all-weather access, to improve transport reliability and decrease vehicle operating and road maintenance costs.

15. In 1988, the number of registered motorized vehicles was approximately 59,700, excluding specialized agricultural and industrial vehicles and motorcycles. Registration figures, however, include vehicles that have been scrapped or otherwise rendered inoperative, and those not licensed during the particular year. Available data on vehicles licensed for use on public roads, totalling about 35,400 in 1987, excluding specialized vehicles and motorcycles, indicate annual growth in the total vehicle fleet of about 1.4 per cent to 1985, before declining during 1986 and 1987. Licensing, however, particularly in rural areas, is not always adhered to; the number of vehicles actually on the road may be somewhat higher. By type of vehicle, about 59 per cent are cars (including taxis), 39 per cent are goods vehicles, and about 2 per cent are buses. Based on Divisional <sup>1/</sup> data, licensed vehicle ownership appears to vary slightly, ranging from about 41 vehicles per thousand inhabitants in the Northern Division to 63 vehicles per thousand inhabitants in the Central/Eastern Division, which includes the capital at Suva (also the center of licensing for Government vehicles).

#### G. Railways

16. The railway network in Fiji is owned and operated by the Fiji Sugar Corporation (FSC) and is exclusively a freight transport facility serving the sugar cane growing areas. On the island of Viti Levu, the network runs throughout the flat coastal areas close to the north and west coast. In Vanua Levu, the railway lines spread in several directions along the coast and inland, but center on Labasa.

17. The total length of permanent mainline (0.32 m gauge) is 660 km, of which 510 km is on Viti Levu. In addition, about 330 km of portable lines, owned by FSC, are used for transporting cane to delivery points on the mainline.

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1/ For administrative purposes, Fiji is divided into four Divisions: Northern, Central, Eastern and Western.

5. Due to the archipelagic nature of the country, transport infrastructure is of vital importance for both national integration as well as basic economic development. Fiji's location in the South Pacific, between the continents of Australia and North America, provides convenient intermediate ports for shipping and airlines. Foreign-registered shipping handles almost all freight coming into and out of Fiji. Coastal shipping is limited by coral reefs surrounding the islands, although interisland shipping is the major mode of transporting passengers and freight within the country. There are two international airports, one at Nadi and the other at Nausori (near Suva); 22 smaller airports serve domestic traffic. The Fiji Sugar Corporation operates 290 km of narrow-gauge railway, mainly to transport cane to the mills as well as to haul goods and fertilizers between the mills, wharves, and farms.

6. On the larger islands, road transport is the most important transport mode because of its greater flexibility, efficiency, dependability, and its lower cost. The role of road transport has increased as the road network has been improved and as the scope of coverage is expanded. Since independence, Government policy has emphasized road transport (under three successive development plans) to provide access between commercial centers and developing areas and to open up other areas with good development potential.

### C. Planning, Coordination and Policy

7. The Ministry of Communications, Transport and Works (MCTW) is the agency primarily responsible for transport coordination and planning. Overall planning coordination is undertaken by MCTW, the Central Planning Office (CPO) of the Ministry of Finance and Economic Planning and the Development Committee, comprising relevant Permanent Secretaries and Ministers. Such coordination ensures that transport sector projects are appropriate in size, timing and location with regard to the specific physical infrastructure needs and development goals of the Government.

8. Since the late 1960s, development of the transport sector has been mainly on a program recommended in a study undertaken from 1966 to 1968 with UNDP assistance. The recommendations under the program were largely implemented by the early 1980s. Recent transport investments have been confined mostly to existing facilities whose need for improvement is readily evident, and to new road links needed to establish access to areas displaying significant development potential. To maintain a sensible mix of road upgrading on sections that yield high economic returns and construction of new country roads which provide basic access and increased rural welfare. While at the same time properly maintaining the existing road network, the Government prepared a road development program for implementation under the Ninth Development Plan (DP9; 1986-1990). DP9 provided for the upgrading of about 85 km of main and 90 km of secondary roads to

bitumen-surfaced standards, and DP9 provided for the upgrading of about 85 km of main and 90 km of secondary roads to bitumen-surfaced standards, and construction of about 350 km of country roads, as well as significant improvements in both periodic and routine maintenance.

9. National Government investment for roads and road transport administration between 1981 and 1987 amounted to a almost F\$148 million, averaging about F\$21 million annually. By category of expenditure, 10 per cent was for administration, 34 per cent for maintenance, 51 per cent for capital works, and 5 per cent for land transport functions. These proportions remained relatively constant over the 1981-1987 period. Under DP9, about 19 per cent of total Government capital expenditure was allocated to the transport sector, compared with 15 per cent under the Eighth Development Plan (DP8; 1981-1985). Although detailed expenditures for other modes were not available at the time of this study, the total expenditure for capital investment in infrastructure and utilities was expected to increase from F\$223 million under DP8 to F\$234 million under DP9. The transport share was increased from 30 per cent of total expenditure for infrastructure and utilities under DP8 to 38 per cent, or F\$88 million, of planned capital expenditure under DP9; road construction and improvement was accounted for about F\$80 million and road maintenance expenditures about F\$40 million, at 1985 prices. These figures demonstrate the Government's continued thrust towards upgrading and expanding the road network while enhancing road maintenance operations.

#### D. Civil Aviation

10. Air transport is the principal means by which people enter and leave Fiji. In the financial year of 1987/88, 200,300 persons arrived in the country by air, through Nadi, which is the main international airport. This airport is capable of serving wide-bodied aircraft and is a convenient refuelling stop for trans-Pacific flights. The second largest airport is at Nausori, which, because of its location close to the capital at Suva, is the main domestic airport, and caters to few international flights. There are, in addition, 18 other airports in Fiji served by regular scheduled air services.

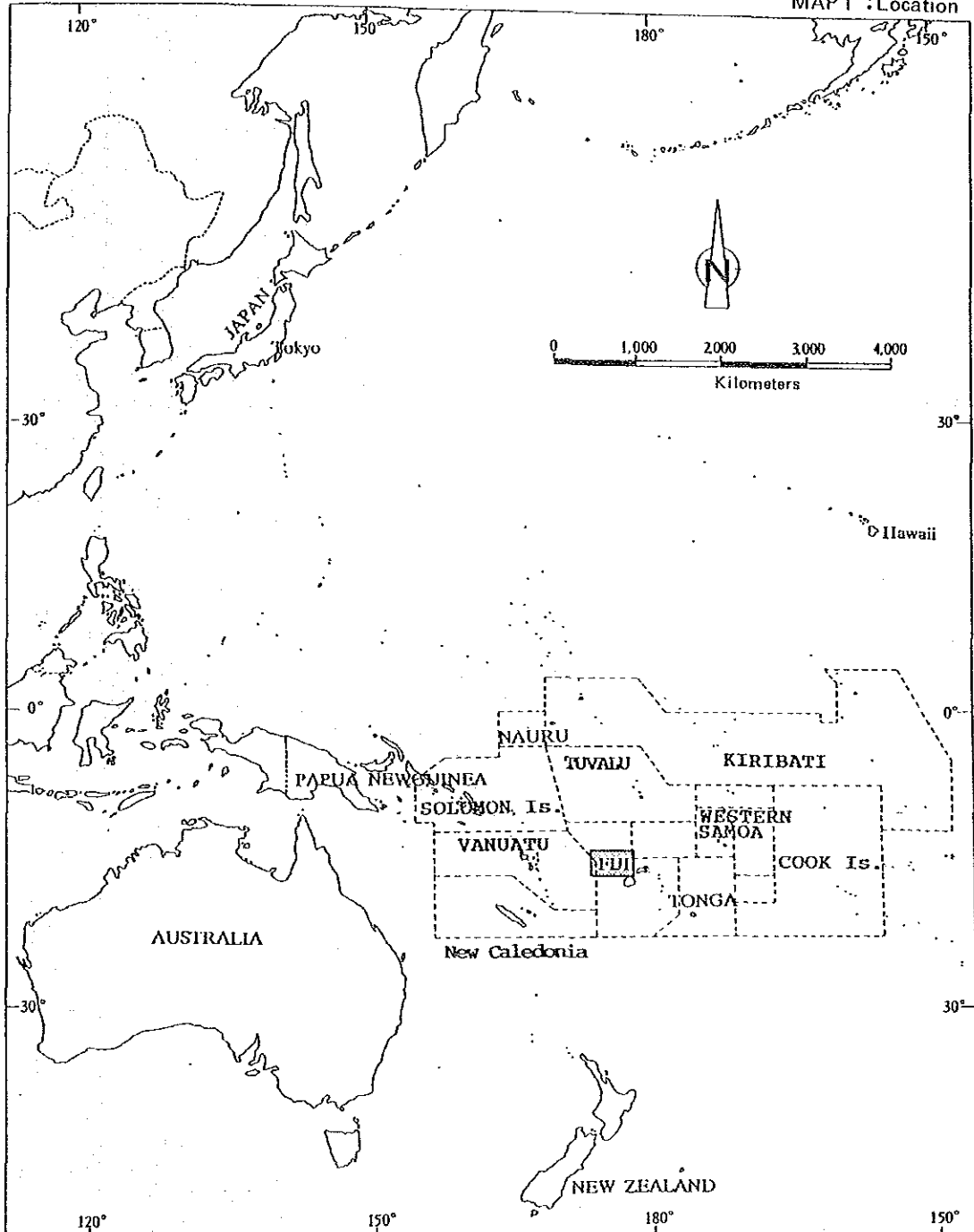
11. Scheduled international air transport services are provided by nine airlines including the domestically incorporated Air Pacific. For domestic air services, Air Pacific and Fiji Air Limited are the principal scheduled operators. Three other operators also offer scheduled domestic services and there are a number of charter services available, providing services to 24 airports and airfields.

#### E. Ports and Shipping

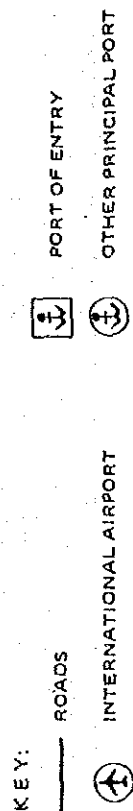
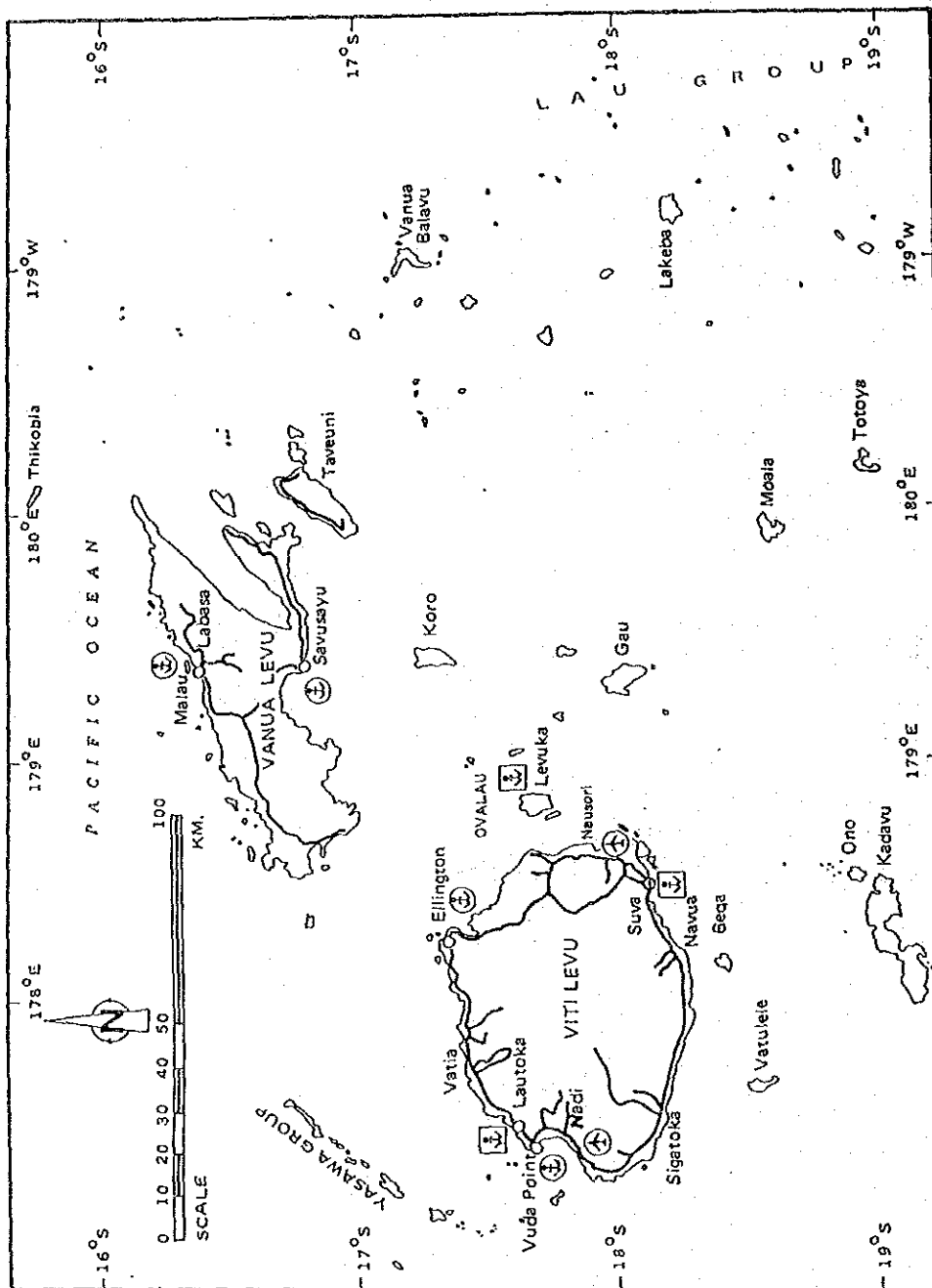
12. Suva Port is located on the southeast coast of Viti

# FIJI

MAP 1 : Location



MAP(2) : Transport Network



### A.3. KIRIBATI

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## KIRIBATI

### A. Economic Setting

1. Kiribati comprises 33 coral atolls, with a combined land area of about 700 sq km, scattered over 3.6 million sq km of the Central Pacific Ocean. The country is divided into three main groups of islands -- the Gilbert Group with the main atoll of Tarawa, the Line Group with Christmas Island and the uninhabited Phoenix Group (See Map 1). The country's population of 69,600 is growing at about 2 per cent per annum and is concentrated in the Gilbert Group. About one-third of the total population lives in South Tarawa, the seat of the Government and the center of economic activities of the country (See Map 2). Accordingly, South Tarawa is relatively urbanized, having most of the country's infrastructure. It consists of a chain of narrow islands about 35-km long, linked by causeways, between Betio in the west and Bonriki in the east. The adjacent islands of North Tarawa are much less developed. They have a similar land area as South Tarawa, but their population is only about 3,000.

2. Kiribati's atoll environment is physically and economically restricted. The phosphate resources, which had been the main source of export earnings in the 1970s, are depleted in 1979. No other significant mineral resource is known to exist and low rainfall severely limits agricultural possibilities. Natural vegetation consists mainly of coconut, pandanus and breadfruit. The major part of the predominantly rural society depends on subsistence agriculture and fishing. Principal sources of cash income and exports are copra, fish and handicrafts, as well as remittances from overseas workers. Kiribati is heavily dependent on external assistance, both for budgetary support and for development financing.

3. These economic constraints have been addressed in the National Development Plans, 1987-1990. With the ultimate goal of self-reliance, the Government aims to: (i) maximize the return from existing resources; (ii) reduce the population growth, curb the migration from rural to urban areas and promote development of outer islands; and (iii) restrain public and private consumption to more realistic levels than those obtained in the phosphate boom years. Apart from a diversification into new economic activities such as fish exports, special attention is to be given to improvements of the subsistence sector in rural areas and the decentralization of institutions and economic activities from the urban area of South Tarawa.

4. Until 1980 the economy of Kiribati had been based on phosphate and copra, when phosphate exports ceased as a result of depletion of the phosphate resources of the country and enabled Kiribati to have both a balance of payments surplus and a government budget surplus. Since 1964, the Government had been investing surplus phosphate revenue in a Revenue Equalization Reserve Fund (RERF) in the U.K. Earning of such investments is now being



utilized to supplement the budget deficits. Since 1980 copra has been and will be the only major export apart from tuna and brine shrimp. The Government has since been developing tuna and brine shrimp industries and subsidizing the replanting of coconut trees.

5. The Government and the government-owned Gilbert Islands Development Authority (GIDA) are the major employers in Gilbert Group, especially in Tarawa where almost 80 per cent of paid employment is in government departments or GIDA. Thus, the government expenditure and wage policy are the most important factors determining economic activity in Tarawa.

## **B. Transport Sector**

6. Characteristic of all atoll economies, transport is a major development problem, in Kiribati, compounded by the remoteness of the country and the difficulty in attracting regular international shipping services. The Nauru Pacific Line operates irregularly to Tarawa and Christmas Island. The Pacific Forum Line (PFL), which provides a network of linkages between the Pacific Islands, Australia and New Zealand has chartered the largest Kiribati vessel to provide a feeder service between Kiribati, Tuvalu and Fiji. Domestic shipping services are provided by the Kiribati Shipping Corporation (KSC) which serves all the atolls in the Gilbert Group. By 1981 each of all the 19 atolls of the group had acquired an airstrip to be served by the domestic airline, Air Tungaru. Communications with the Line Group are limited and extremely expensive. At present, Christmas Island, where 60 per cent (about 1,400 persons) of the Line Group population lives, can only be reached by air through Honolulu. Distance and cost of communications with these islands inhibit development. Even within the Gilbert Group, distances are considerable, freight rates high and services infrequent. There are long delays in the receipt of materials and equipments and prospects of marketing locally produced goods are poor. Access to emergency services is also limited and expensive.

7. Transport planning for the country is presently carried out by the Central Planning Office under the Ministry of Finance. In the past, internal transport services were subsidized by the Government. However, some of the transport subsidies, such as on road and ferry services, had been removed during the early stage of Development Plans. While, other services including internal shipping and air services still continue to be subsidized by the Government in order to provide the minimum acceptable standard of service.

## **C. Civil Aviation**

8. The international airport of the country is located at Bonriki in South Tarawa. Other airfields are located at Abemama, Butaritari, Marakei, Nonouti, Beru, Maiana and Christmas Island.

The internal air service is operated by Air Pacific under an agreement with the Government. Two Trislanders, one of which is owned by the Government, are used and each aircraft can carry 15 passengers and/or some freight.

9. External air transport is provided by Air Pacific and Air Nauru. At present, Air Pacific operates a weekly service between Nandi (Fiji) and Tarawa; and Air Nauru a twice weekly service between Tarawa and Nauru. The Government has also introduced, through a charter agreement with American Pacific Airways, a service between Honolulu, Christmas Island and Tarawa.

#### D. Ports

10. The main port of Kiribati is located at Betio (Tarawa) in the Gilbert Group, although Fanning and Christmas islands in the Line Group also have some port facilities. The port at Betio, although designed to take ships with up to 3 m draft, can at present take ships of up to only about 2 m draft because of siltation at the harbor entrance. Larger vessels with up to 8 m draft have, therefore, to anchor in the lagoon at a distance offshore of about two to three km. Loading and unloading of larger vessels is carried out using lighters. All international trade is handled at Betio with all general cargo discharged there and distributed to the outer islands on inter-island vessels. Cargo handled at Betio in 1975 was approximately 42,500 tons.

#### E. Shipping

11. Except for the service to Suva in Fiji, all overseas cargo is carried by foreign companies - China Navigation Company of Hongkong, Bank Line of the U.K., Daiwa of Japan and Nauru Pacific Lines of Nauru. Frequency of call for each varies from about six weeks to three months.

12. Sea transportation within the country, a responsibility of GIDA, is handled primarily by a domestic fleet of four ships. These ships provide the services of collection of copra for export and distribution of general cargo and drummed fuel to the outer islands. They also provide a passenger service. These shipping operations, essential as they are, are running generally at a considerable loss. The ships, not all of them suited for the purposes for which they are used, are generally old and are nearing the end of their operating life.

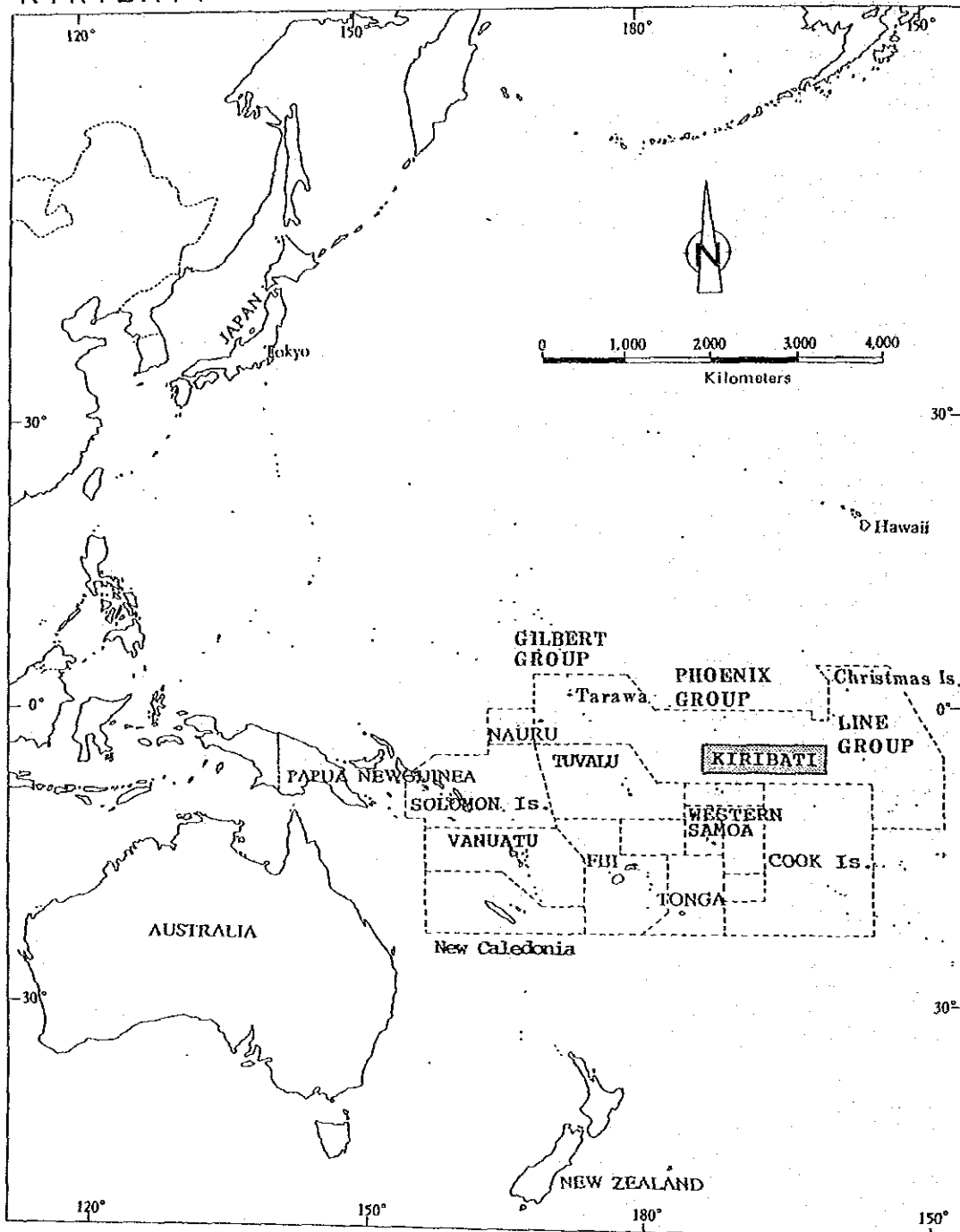
13. The ferry services between Betio and North Tarawa are also operated by GIDA using the passenger landing craft, one passenger launch with a capacity of about 60 and three smaller launches capable of carrying about 30 passengers. These small launches are past their economic life and need to be replaced.

#### F. Roads and Road Transport

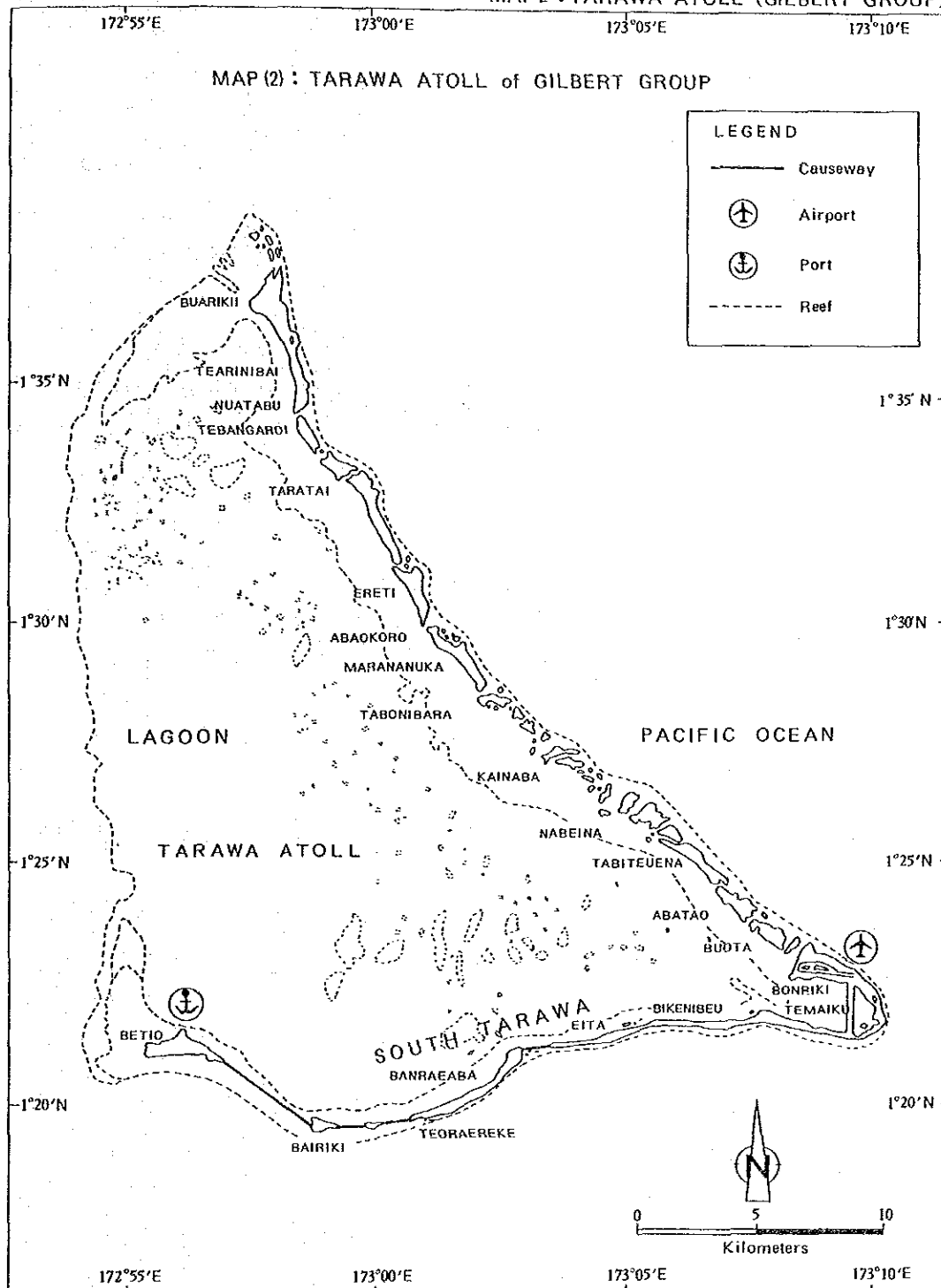
14. There are approximately 500 km of motorable roads in Kiribati, about one third of which are on Christmas Island. The only sealed pavements are in Tarawa (with about 20 km) and Christmas Island (about 110 km). There were 2,131 motor vehicles registered in 1985 in the country, of which 1,215 (57 per cent) were registered in Urban Tarawa.

# KIRIBATI

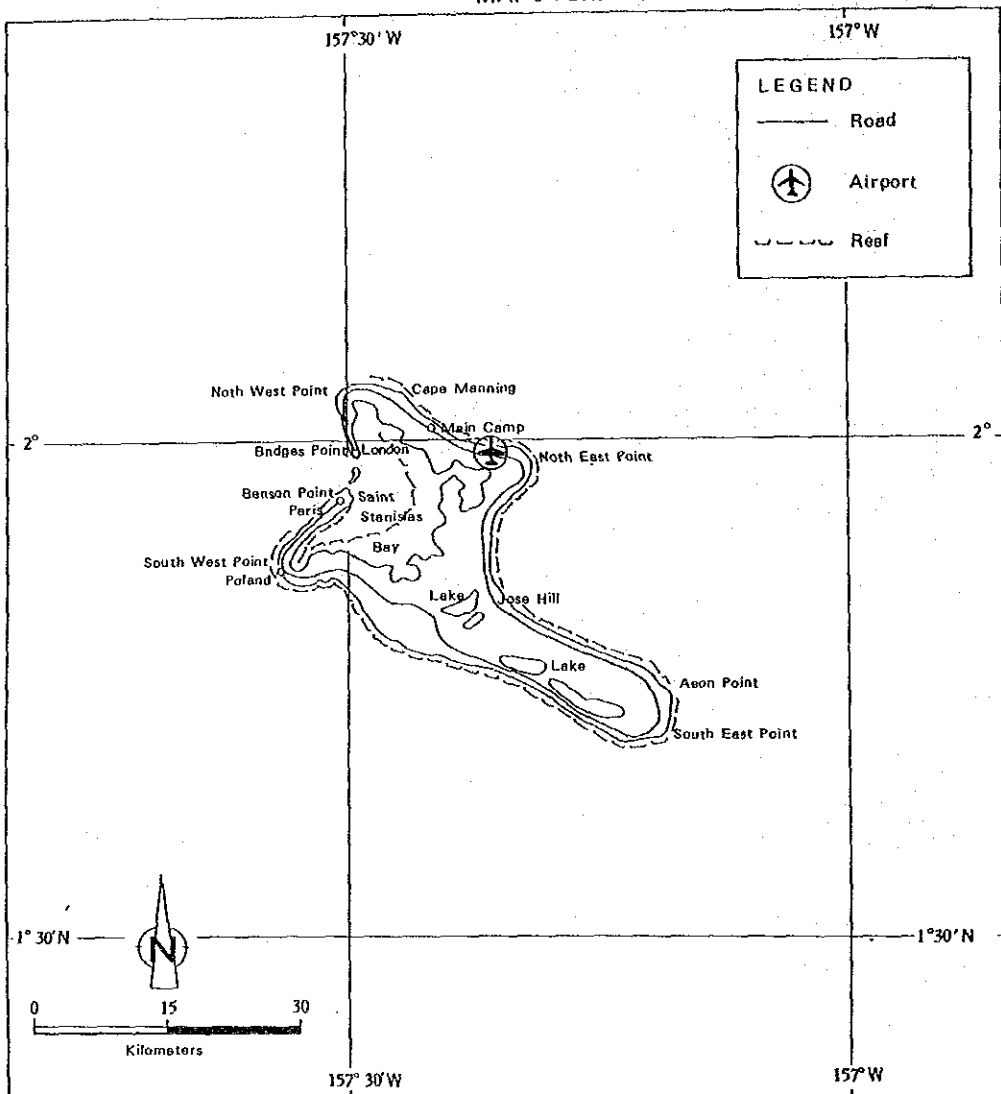
MAP 1 : Location



MAP 2 : TARAWA ATOLL (GILBERT GROUP)



MAP 3 : CHRISTMAS ISLAND (LINE GROUP)



#### A.4. PAPUA NEW GUINEA

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## PAPUA NEW GUINEA

### A. Economic Setting

1. Papua New Guinea (PNG) is a land of rugged mountain ranges, rich upland valleys, coastal plains and swamps, and numerous islands. The total land area encompasses some 461,910 sq km and supports a population of about 3.6 million (1989). Population growth between 1976 and 1988 was 2.1 per cent annually. Although regional differences are marked, the majority of the population lives in rural areas and only about 15 per cent are classified as urban-dwellers. Of the 1.1 million people defined as economically being active (between 15 and 64 years old), it is estimated that about 80 per cent employed in the agriculture sector. Economic activity centers upon exploiting the country's agricultural potential, timber and fisheries resources, and rich mineral deposits. The major economic activity for most of the population is, however, subsistence agriculture which accounts for almost 40 per cent of total agricultural production.

2. Although development potential is considerable, accessibility to many of the areas is difficult due primarily to severe topographic features. The transport system reflects the geographic, topographic and demographic characteristics of the country and its improvement has been limited to centers of population and areas with high potential for development. With the country's heavy dependence on foreign trade, imports and exports generate by far the largest volume of freight traffic for both road haulers and coastal and interisland shipping. As PNG is an archipelagic nation with scattered concentrations of population and economic activities, emphasis is placed by the Government on improving and maintaining regional road networks and their connecting port facilities serving agriculturally rich and productive hinterlands; air transport, however, is often the only means of carrying passengers and freight to many outlying areas. There are no railways in PNG and only a few rivers are navigable.

### B. Transport Planning and Investment

3. The Government's development efforts are concentrated on taking advantage of the country's vast natural resources. Recognizing the important role of transport for the development of the existing economic potential, the Government attaches high priority to the provision of an adequate transport infrastructure. Due to PNG's dependence on foreign trade, the Government's main objective is to ensure the availability of adequate port and shipping facilities throughout the country.

4. Planning for the improvement of transport infrastructure at the national level is the responsibility of the Department of Transport (DOT) which acts on policy directives and guidelines issued by the National Executive Council (NEC) which



is equivalent to Cabinet. The Development of National Planning (DNP) -- previously National Planning Office (NPO) -- integrates DOT proposals with proposals from other Government agencies to form a consolidated investment program that is consistent with the Government's National Development Strategy. This investment program is submitted through the Budget Priorities Committee (BPC) and the National Planning Committee (NPC)<sup>1/</sup> for inclusion in the Standing Design List which comprises projects approved for detailed design and cost estimating. This list typically contains two to three times the number and value of projects funded in any one year, and each year NPC and NEC jointly review the listed projects in the context of the Government's policy and funding priorities and select specific projects for incorporation into the National Public Expenditure Plan (NPEP). The NPEP is updated annually on a four-year rolling basis with the current plan.

5. While the achievements to date under the NPEP system have been reasonably successful, the Government recognizes that further development of the planning process is now required and this could be met by the preparation of more detailed sectoral strategies, improving planning and management capabilities, specifying programme targets for the entire budget, and closely monitoring implementation performance. As a mechanism to implement improvement of the planning system, the Government embarked on the process of establishing a medium-term development strategy based on a five-year planning cycle, which resulted in the first Medium-Term Development Plan covering the five year period 1986-1990.

6. The need for medium and long-term plans to coordinate development of an integrated and efficient transport system is recognized by the Government. Towards this end, the Government commissioned a Transport Investment Program Study (TIPS) which was completed in February 1984. TIPS examined the trunk road and air transport networks and recommended investment programs in these subsectors. TIPS was coordinated with the AsDB-assisted Port Development Study which was also completed in 1984. Based on these studies, DOT has established priorities for development of national transport infrastructure, in detail for the medium term (up to the year 1990) and in outline form for the longer term (up to the year 2000).

7. Planning of transport infrastructure at the provincial level is the responsibility of provincial governments. In the past this has been carried out largely on an ad hoc basis, generally because of a shortage of qualified staff. To help alleviate this situation, DOT has recently been providing assistance to provincial governments in the planning of infrastructure programs

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1/ BPC is composed of senior civil servants while NPC consists of senior government ministers, with the Prime Ministers as chairman.

funded by external agencies and the National Government.

8. To determine whether any changes are required in respect of the existing policies on transport operations, the Government has undertaken the Transport Operations Policy Formulation Study (TOPS) which includes an examination of Government policies relating to ports and shipping operations. Studies were carried out to improve and expand the navigation aid system for coastal shipping and in the channels for international shipping routes and also to improve road safety and to identify equitable, efficient and practical ways to recover expenditures from various road users.

9. In recent years, about 16 per cent of total planned Government expenditure has been allocated to the transport sector. In comparison, about 27 per cent has been allocated to agriculture, forestry and fisheries, 16 per cent to education, 8 per cent each to health and urban services, 6 per cent to energy, 5 per cent to minerals and industry, and 14 per cent to other sectors. In view of the high priority accorded by the Government to improving transport infrastructure, it is expected that this proportion will remain largely unchanged in the near future.

10. Over the period 1972 to 1982, K333.4 (\$366) million was spent by the National Government on all modes of transport. The roads subsector consumed more than 80 per cent of the total investment in the transport sector. Likewise, expenditure by provincial authorities has been concentrated on roads. The provinces spent from their resources the equivalent of about 60 per cent of the National Government investment.

11. Expenditure for the ports subsector during the period 1972-1982 was K29.5 (\$32) million or about 9 per cent of the total for the transport sector. The last 5-year capital expenditure plan for ports (1985-89) provided for a total investment of K55 (\$60) million which was more than five times the amount spent during the previous 5-year period (K10.4 million).

### C. Civil Aviation

12. Air transport has a significant role in the transport sector of the country and is often the only means of access to many rural areas. The sector can be categorized into four levels: international services; second-level services, composed of the main domestic routes operated solely by Air Niugini, the national airline; third-level services operated by private companies offering both regular passenger and freight services as well as charters; and a fourth-level of services, consisting of private, institutional and specialist aircraft.

13. Currently, there are about 420 operational airports and airstrips. Air Niugini operates scheduled services to 18 airports covering the routes with the highest transport demand. On these routes, Air Niugini operates as a monopoly and scheduled

services are provided by a combination of F28, F27 and Dash-7 aircraft. The third-level services, which are dominated by Talair and Douglas Airways, operating small aircraft on a regular basis, serve almost 150 airports and airstrips. This service provides the major -- and often the only -- means of access between the remote rural areas and the regional centres.

14. Airline operating costs are high, which is due to a combination of difficult flying conditions, high capital and infrastructure costs, variations in seasonal demand, high costs of labour, unbalanced load factors and a lack of effective competition. Annual average passenger load factors, are relatively low, about 60 per cent for Air Niugini and approximately 50 per cent on all routes for the third-level operators; there is, however, wide variation. As a result of operating conditions and institutional effects, tariffs are high,<sup>1/</sup> which affect the mobility of the rural population. The dominance of Port Moresby in the domestic air transport sector reflects its position as the national capital and its relative isolation from the rest of the country in terms of land transport; as well, a large proportion of higher-paid employees and a large number of head offices are located in Port Moresby. Demand is amplified by Government business, which accounts for approximately a quarter of Air Niugini's demand.

#### D. Ports

15. While there are some 50 public ports scattered throughout PNG, the 17 Papua New Guinea Harbor Board (PNGHB) administered ports account for the bulk of overseas and domestic trade. The PNGHB ports are: Alotau, Alotau, Biak, Buka, Daru, Kavieng, Kieta, Kimbe, Lae, Lorengau, Madang, Oro Bay, Port Moresby, Rabaul, Samarai, Vanimo and Wewak. The remainder, mainly wooden jetties and landings, are either privately owned or are administered by the provincial governments. The most important facility belonging to the private group is the overseas wharf located in Anewa Bay (near Kieta), North Solomons which is owned and operated by Bougainville Copper Ltd. (BCL).

16. Of the 17 PNGHB administered ports, eleven are designated ports of entry and have more or less regular calls from overseas liner and tramp ships. The most important port is Lae accounting for some 32 per cent of the total cargo volume handled over PNGHB facilities followed by Port Moresby with 24 per cent. Next in importance are Rabaul, Madang and Kimbe with a share of about 8 per cent each in the total cargo volume.

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1/ The Air Niugini domestic airline tariffs in PNG are, on average 150 per cent higher than those in the Philippines, 100 per cent higher than those in Indonesia and approximately 65 per cent greater than those in Malaysia.

17. In 1989, the 17 ports under PNGHB served a total of about 8,400 ship calls. Of these, 2,100 were from overseas ships and 6,300 from domestic ships. The cargo volume handled by these ships totaled 3.4 million revenue tons (rt) of which 69 per cent was overseas and 31 per cent domestic. Dry general and bulk cargo accounted for 82 per cent and liquid bulk for 18 per cent of the total cargo volume. The main export commodities are copper,<sup>1/</sup> copra, coffee, palm oil and timber. Imports consist mainly of manufactured goods, foodgrains, fertilizers, cement, chemicals and petroleum products.

18. In parallel with the Transport Investment Program Study undertaken, the Government carried out the Ports Development Study (PDS) with a view to developing medium and long-term investment plans for the ports sector. The study has identified a rehabilitation and development program for eight ports out of the 17 ports under PNGHB administration, namely; Alotau, Kimbe, Lae, Lorengau, Oro Bay, Port Moresby, Vanimo and Wewak. In addition to these eight ports, the Government has decided to construct a new port at Bialla. Of this program, the AsDB has earlier agreed to finance the development of Lae Port Project. Under its Second Port Project the AsDB has subsequently financed the development of the ports of Port Moresby, Kimbe, Oro Bay and Bialla. The IBRD has also financed two projects. The first project approved in 1972 included improvements at the ports of Kieta, Lae and Port Moresby and the construction of an overseas wharf at Alotau. The second project approved in 1978 and co-financed with the Kuwait Fund for Arab Economic Development provided for the construction of a specialized container berth at Port Moresby and the construction of a new coastal wharf at Samarai.

#### E. Shipping

19. The coastal and inter-island fleet (about 25,000 dwt) comprises some 350 vessels which are operated by private companies, church missions and the Government. Overseas shipping services are provided mainly by 12 private companies. Most of the overseas cargo is carried in specialized vessels such as container vessels and large bulk carriers. Overseas general cargo trade is substantially containerized and scheduled container ships call at ten of the 17 PNGHB ports. These ships are self-sustaining with their own cargo gear for loading and unloading of containers. The use of self-sustaining container vessels is expected to continue as container volumes in the foreseeable future do not warrant the employment of shore based container cranes.

20. Foreign bulk carriers cater to the export trade in copper, copra, logs and palm oil. While bulk carriers in the world's oceangoing fleet have steadily increased in size over the

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1/ Handled by BCL in Anewa Bay.

last two decades, this trend is not fully reflected in the ships calling at the PNGHB ports which were mainly designed for smaller ships: this restrains shippers from benefiting from economies of scale associated with the use of large bulk carriers. As the Government is determined to eliminate such constraints, sizes of ships calling at the PNGHB ports are expected to grow in the future.

#### **F. Roads and Road Transport**

21. Roads in PNG are administratively classified as either national roads or provincial roads. For planning purposes, DOT separates roads into three functional categories: (i) trunk roads, mainly serving inter-regional transport; (ii) collectors, which connect main population or commercial centres to trunk roads; and (iii) feeders, which serve rural areas and usually connect to collectors. The overall network consists of approximately 22,280 km, of which about 6,800 km are trunk roads and the rest collectors and feeders. Only about 8 per cent of the network is paved, with the remainder consisting of gravel and earth roads. The network is highly fragmented, mainly serving areas with greater population densities, and is concentrated around provincial capitals, coastal communities and in the Highlands.

22. Rugged terrain conditions pose constraints to extensions of the network. The average road density of 0.05 km of road per sq km of land area is one of the lowest in the Southeast Asian and Pacific regions. PNG has 0.05 km of road per sq km, while Indonesia has 0.11 km, Thailand 0.15 km and the Philippines 0.52 km.

23. The rate of growth in the vehicle fleet has been low averaging 3 per cent annually over the 1971-1981 period. In 1981 the number of registered motorized vehicles was approximately 51,500. By type of vehicle, almost 37 per cent are cars and station wagons, 34 per cent light trucks, 14 per cent medium and heavy trucks, 6 per cent buses, 5 per cent motorcycles and 4 per cent tractors.

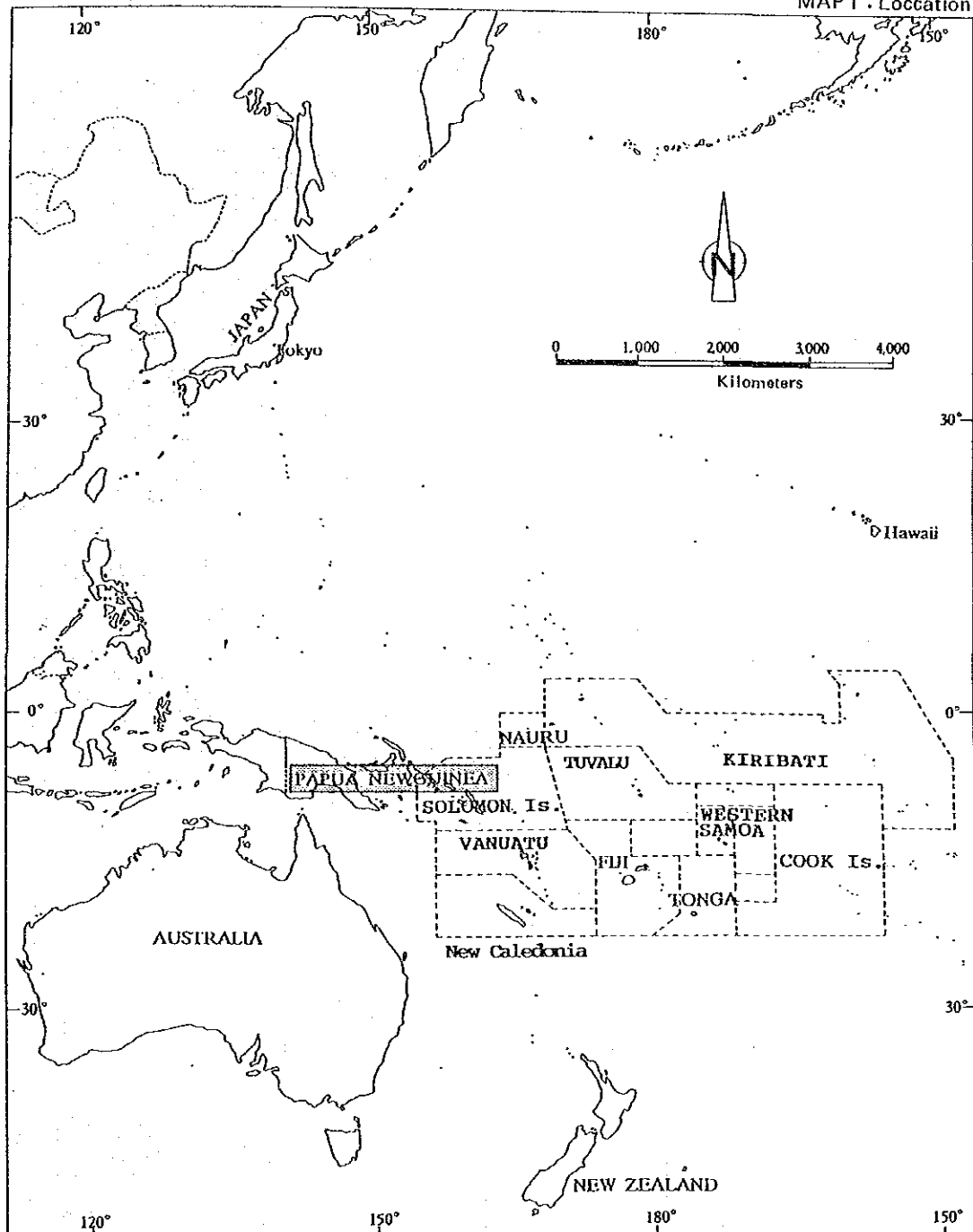
24. The truck fleet increased steadily throughout the 1970s and early 1980s, at an overall rate of approximately 6 per cent per year. By 1981 the truck fleet comprised about 24,900 vehicle, of which 30 per cent were categorized as medium or heavy. These medium and heavy trucks dominate long-haul inter-urban freight movements. Light trucks are generally of the small utility variety and are popular due to their ability to carry both passengers and freight.

25. Road transport services are provided wholly by the private sector. Although the industry comprises a large number of operators owning one or two trucks, transport services are dominated by a few large locally owned and expatriate-managed companies that own about one-third of the medium and heavy fleet. Besides operating their own vehicles under long-term haulage

contracts, these companies also manage a large number of additional trucks under subcontract agreements with small-scale operators.

# PAPUA NEW GUINEA

MAP 1 : Location



[illegible]



#### A.5. SOLOMON ISLANDS

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## SOLOMON ISLANDS

### A. Economic Setting

1. Solomon Islands is an island group in the South Pacific with a total land mass of about 27,560 sq km, four-fifths of which is accounted for by six main islands. Generally, the country has mountainous tropical rain forests interspersed with a few fertile alluvial plains. The total population is about 316,000 (in 1989) with a growth rate of over 3 per cent per annum, which is among the highest in the South Pacific. The urban population, mainly in the Honiara area, has been growing at about 8 per cent annually, reflecting a large amount of migration from outer islands and rural areas. The majority of Solomon Islanders are closely associated with traditional socioeconomic systems. Three-fourths of the population lives in isolated and dispersed rural settlements and 25 per cent of the country's GDP is generated from non-cash incomes. The modern sector which consists mainly of plantations, forestry and commercial fishing, is highly export-oriented -- the average export/GDP ratio during the early 1980s was about 0.5. Copra, timber, palm oil and fish are the country's principal foreign exchange earners, although cocoa does hold out some promise for the future. The economy is highly dependent on imports of both capital and consumer goods. During 1985-1987, imports averaged about 50 per cent of GDP.

### B. Transport Sector

2. The archipelagic nature of Solomon Islands and the predominance of coastal settlements have made sea transport relatively more important than other means of transportation in the country. Due to the terrain and climatic conditions, roads are difficult and costly to construct and tend to be limited to centers of population and areas of high development potential. There are no railways in the country and only a few rivers are navigable for a short distance. Civil aviation is often the sole means of transport, for both passengers and some items of high value freight, to many remote locations. It is estimated that the formal domestic sea transport sector, which excludes motorized mini boats and canoes, carries close to 55 per cent of the country's total freight-ton-kms and about 47 per cent of total passenger-kms. Road transportation is the next most important means of transport accounting for an estimated 45 per cent of freight-ton-kms and 48 per cent of passenger-kms. Although domestic aviation accounts for about 5 per cent of passenger-kms and a negligible proportion of freight-ton-kms, it provides extensive links between the islands through 26 airfields and two international airports.

3. Over recent years, investment in the transport sector as a whole, and the share of the country's development budget allocated to the transport sector, have both shown a fluctuating pattern. Expenditures on the transport sector as a whole in-

creased from SI\$2.5 million in 1984 to SI\$10.0 million in 1985, but then declined marginally to SI\$9.7 million in 1986; SI\$24.2 million have been earmarked for the transport sector in 1987. The share of allocations to the transport sector in the country's total development budget increased from 14 per cent in 1984 to about 30 per cent in both 1985 and 1986, but has declined to 18 per cent in 1987.

4. A relatively small proportion of recent development expenditures has been channeled to the transport sector, in particular into the sea-transport subsector. In 1986 only SI\$0.2 million or 2 per cent of the total budget was allocated to the development and rehabilitation of Guadalcanal and Malaita roads, and the expansion of Henderson Airport. In 1987, however, the sea-transport subsector is expected to be accorded higher priority. SI\$7.5, 47 per cent of the development budget allocation for the transport sector, is earmarked for the sea-transport subsector. Of this, about SI\$4.0 million is allocated for the development of Noro Port and SI\$3.5 million for the rehabilitation of the government shipping fleet.

### C. Planning and Coordination

5. Proposals for improvement of transport infrastructure are generally initiated at the provincial level, or as in the case of Honiara Port Project, at the level of the concerned statutory body. The proposals are then reviewed by the Ministry of Transport, Works and Utilities (MTWU) and also by the Ministry of Finance (MOF) and the Ministry of Economic Planning (MEP) before being submitted to the National Planning Council (NPC) for approval. MEP incorporates approved projects in the annual development plan. If not already determined, a financing source is identified and appropriate budgetary allocations are then made by MOF.

6. The overall aim of the government in the transportation sector is to develop an integrated land, sea and air transport system as an incentive to agricultural and commercial development, rural improvement and tourism. To improve transport planning and coordination, the government has been trying to obtain external financial assistance for a study that would help develop an integrated transport policy. The main objective of the study would be to provide an informed basis upon which the government could develop future projects to expand and improve the national transport system. A Transport Planner has been recently appointed to MTWU to advise on the formulation of a national transport policy.

### D. Civil Aviation

7. The domestic air carrier, Solair, which is partly owned by the Government, serves 26 airports/airfields covering all major islands and provinces. Of these, only Henderson near

Honiara and Munda (Western Province) have bituminous runways; the rest have gravel runways. Henderson has an existing runway of 2,000 m and can cater to jet aircraft such as the B737. Munda has a 1,200 m runway and can accommodate only non-jet aircraft. The extent of the air network is considered adequate at present traffic levels. The Government is currently extending the runway at Henderson by 200 m to enable it to receive larger aircraft.

8. Solair operates six aircraft of five different models with capacities ranging from 5 to 19 seats. Apart from domestic services, it flies to Kieta in Bougainville (Papua New Guinea) as well as to Port Vila and Santo in Vanuatu. In 1983 Solair traffic amounted to 55,000 passengers (an increase of 6.7 per cent over the 1982 traffic level) and 10.6 million passenger-km corresponding to an average passenger trip length of 195 km. Direct international flights, apart from Solair's international network, link Honiara with Brisbane (Australia), Port Moresby (PNG), and Nauru, Auckland (New Zealand), Nadi (Fiji) and Port Vila (Vanuatu).

#### E. Ports

9. Out of nine major ports in the country, Honiara, Gizo and the newly established port of Noro are controlled by the Solomon Islands Ports Authority (SIPA). Four of the six remaining ports viz., Yandina, Tulagi, Nila and Graciosa Bay are privately owned and operated. Viru Harbor is owned and operated by a provincial government. After the recent shut-down of some private logging operations in New Georgia, the Ringgi Cove facility has also been taken over by the concerned provincial government.

10. Honiara Port is by far the most important port in the country. It handles almost all the country's imported cargoes and a large portion of its general purpose and other export cargoes. The Port also serves as a hub for the country's inter-island shipping traffic. Each of the other ports handles, primarily, a single major export commodity and some limited imports (such as capital plant materials, equipment and vehicles). Gizo and Yandina ports handle mainly copra. The bulk of the country's fresh and frozen fish exports are handled at Tulagi. With the completion of the Noro port project, however, fish exports will be handled largely at Noro. The remaining ports handle log exports.

11. In addition, Solomon Islands has 44 provincial wharves, some 30 of them in Western Province. The provincial governments are responsible for their construction and maintenance, although assistance in the form of survey and design work is provided by the national government. Some additional wharves in the provinces are operated by church missions and private individuals.

#### F. Shipping

12. There are three levels of shipping in Solomon Islands. The most basic service is provided by fiberglass canoes equipped with outboard motors. These have almost completely replaced the traditional wooden padding canoe and are widely used for administration purpose as well as for private and commercial purposes by individuals.

13. The second level of shipping is provided by an inter-island fleet operated by the Government and the private sector. In 1986 there were 102 ships registered in Solomon Islands with a total gross registered tonnage of about 6,400. The Government fleet numbered 21 vessels, 42 ships were owned by Solomon Islanders and 39 by foreigners and church missions.

14. The private sector fleet dominates the routes between the main population centers and in particular the links between Honiara and the provincial capitals. The feeder routes to provincial capitals are served mostly by smaller Solomon Islander-owned ships operating on an ad hoc basis. Services to outer islands are provided mainly by Government ships.

15. The third level of shipping service is provided by ships plying international routes. Honiara, being the main import and export port of the country, services a variety of ships. Aside from conventional ships and geared semicontainer ships, which dominated the international shipping traffic, the overseas wharf at Honiara is used by palm oil parcel tankers and by a small number of cruise vessels. Fishing boats also call at the Port but their numbers will decline substantially following the closure of the Tulagi fish cannery. The other ports that cater to international shipping handle mainly specialized vessels used for the exports of copra, frozen fish and logs.

16. Cost recovery has been a problem retarding the development of the country's shipping services. Small isolated communities and the lack of road access mean that ships often have to visit a large number of pick-up point offering a few passengers and small quantities of cargo, resulting in low utilization of available steaming time and carrying capacity.

17. Within the Government marine transport organization, there is a lack of coherent management and organization and a lack of skilled manpower. These have manifested themselves into a situation where: (i) there is little coordination of shipping services and freight rate and passenger rate setting; (ii) physical infrastructure required by shipping is neglected; (iii) shipping services are unreliable; and (iv) a large percentage of the government shipping fleet requires constant maintenance and repair. These issues have been identified in the National Development Plans and programs to address them are being pursued.

## G. Roads and Road Transport

18. Solomon Islands has about 1,300 km of public roads in 1987, 170 km of which are classified as urban roads, and 520 km of private roads for plantation and logging operations. The majority of public roads are located on the main islands, Guadalcanal (548 km) and Malaita (350 km), while Western Province has a high share of private roads (400 km) for logging operations. Only 100 km of the public roads are bitumen sealed, 93 km of which are in Guadalcanal. While the extent of the main road network is considered fairly complete in the sense that it connects major population centers, ports and air fields, the majority of the roads are in a deteriorated condition with poor quality surfaces and inadequate drainage. This is partly due to poor maintenance mainly because of limited financial resources and equipment. Rural roads are in very poor condition and are mostly accessible only to tractors and four-wheel drive vehicles. The use of many roads is further constrained by numerous river crossings with only natural roads where heavy rain prevents movement for a considerable part of the year.

19. Public passenger transportation services in the country are provided by a formal sector consisting of privately operated buses and taxis. Bus services are restricted mostly to Honiara township limits on Guadalcanal where three licensed companies operate with large buses and mini-buses. No subsidy is provided by the Government which regulates fares and route licensing. In addition to the buses, there is an informal passenger transport sector consisting mainly of open trucks without seats. Despite some resistance from informal passenger transport operators, in April 1984 the provincial government granted permission to two of the bus companies to extend services to Tambea in the west (45 km from Honiara) and to the Vouza bridge in the east (37 km from Honiara). These extensions have substantially improved the safety of passenger transport. Apart from these public carriers, licensed taxis provide short distance service for which fares are negotiable; more than 80 per cent of all registered taxis operate in Honiara. Occasionally, a tourist bus operates between Honiara and the small resort at Tambea.

20. The trucking industry is dominated by private company-owned vehicles, particularly within the logging, rice, oil palm and fuel transport sectors. 'For hire' services are provided by two medium-sized firms in Guadalcanal and by a number of small-scale operators with a maximum of three trucks per owner in all the major islands. The majority of trucks on Guadalcanal carry a mixture of passengers and freight with smallholders accompanying their copra, cocoa or other produce for sale at the Honiara market.

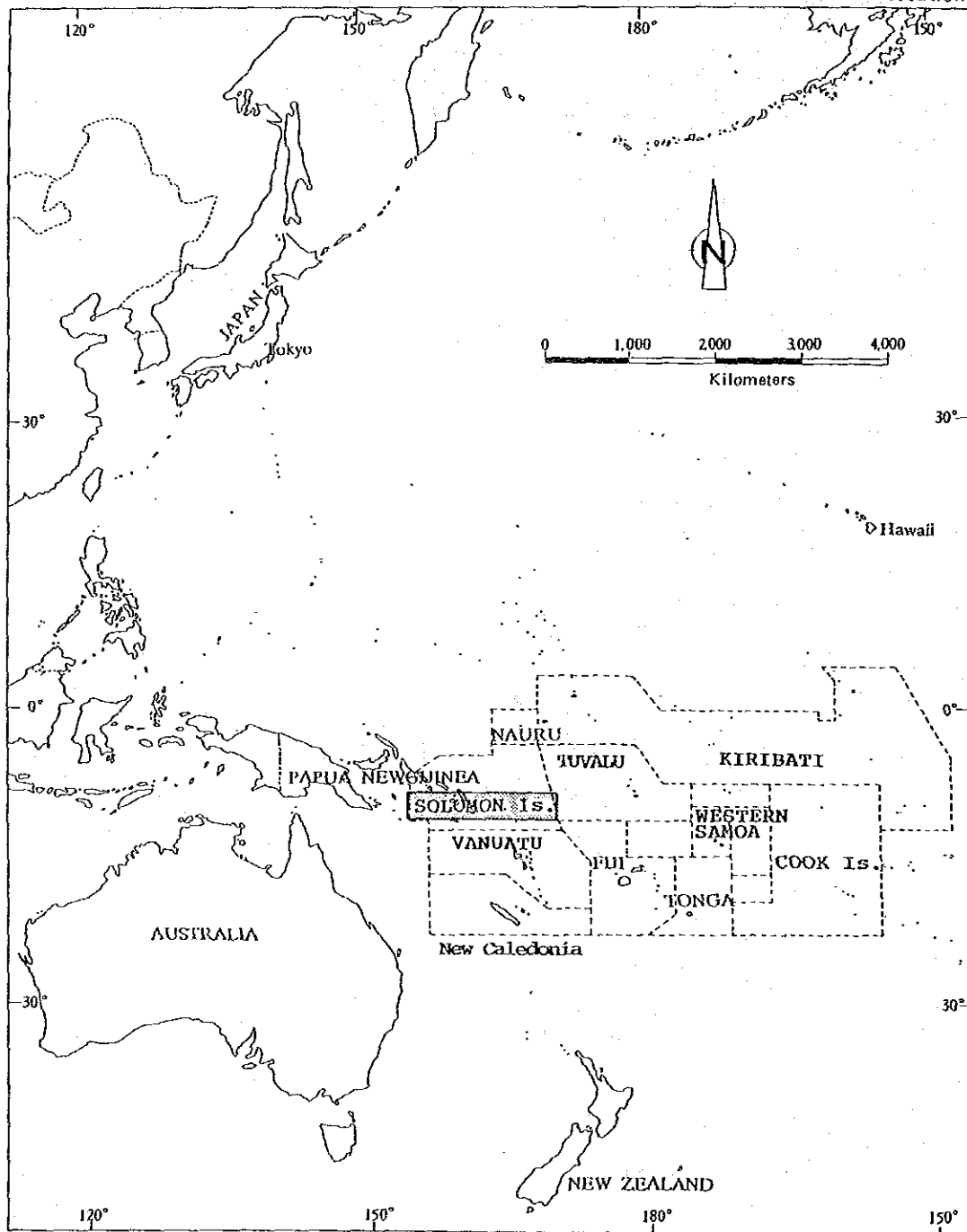
21. At present, the Government is not enforcing any formal transport tariffs but is contemplating the establishment, in the longer term, of an entity to approve applications for fare and rate increases on a cost plus fee basis together with route licensing to avoid excessive competition.

22. Regular traffic counts have been carried out by MTWU

since 1970 for the existing Guadalcanal road. These counts indicate an overall annual traffic growth rate of about 7 per cent -- higher close to Honiara and lower for the rural sections of the road -- almost coinciding with the average annual growth for the private vehicle fleet. Such a high growth rate is not considered likely to continue in the future as rice, oil palm and cocoa plantations are already established and their future development plans are modest in scope.

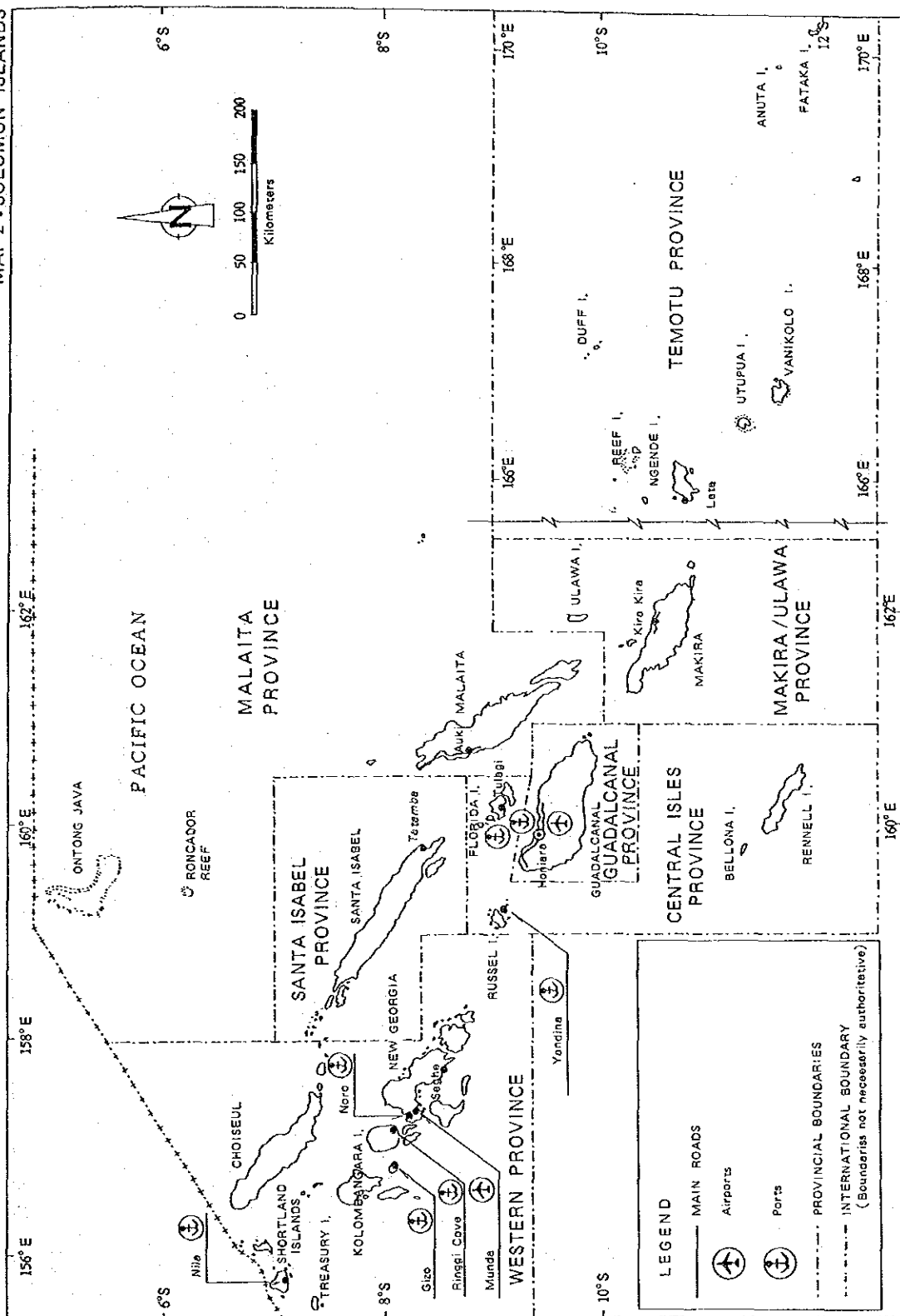
# SOLOMON ISLANDS

MAP 1 : Location





MAP 2 : SOLOMON ISLANDS



**LEGEND :**

- Main Road
- Other Road
- Sub-Provincial HeadQuarter
- Port / Anchorage
- Airport / Air Strip
- River

**Map Labels:**

- Verenceaso
- Lambei
- Arulino
- Ndoma
- Poto
- HONIARA
- Henderson
- Ngilimbiu
- Vouze
- Rusvatu
- AOLA
- Rere
- Kooka
- MBAMBAKIRA
- Chocho
- AVU AVU
- HAIMARAO
- Makine
- MARAU SOUND
- Tengerare
- GUADALCANAL PLAINS
- WEATHER COAST
- SOLOMON SEA

**Scale:** 0 4 8 12 16 20 Kilometers

**Coordinates:** 160° 00' E, 9° 30' S

## A.6. TONGA

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## TONGA

### A. Economic Setting

1. The Kingdom of Tonga, with a total land area of about 747 sq km, comprises 171 islands, of which 36 are inhabited. The bulk of the population lives in three main island groups - Tongatapu, Vava'u and Ha'apai which are scattered over roughly 360,000 sq km of territorial sea. The total population of Tonga in 1989 was about 99,700, mostly Polynesians; 66,000 people live on the main Tongatapu group; 9,000 live on the scattered archipelagic Ha'apai group; and 15,000 live on the northerly Tonga group of Vava'u. The remainder live on the 'Eua Island (4,000) and on the Niuas group (2,500). The population is predominantly rural; only 33 per cent of the population is classified as urban. Population growth rate has been considerably lower than in most other South Pacific countries, with an average annual rate of increase of only 0.9 per cent from 1976 to 1986 and 0.8 per cent in 1989, mainly as a result of a high emigration rate and the Government's family planning program. In 1984, the largest percentage of economically active persons (43 per cent) was in the agriculture sector, with the majority working as subsistence farmers and fishermen. The second largest group was in the service sector (17 per cent).

2. Tonga is predominantly an agricultural country with a large subsistence sector and is economically dependent on agricultural exports: coconut, coconut products, bananas and vanilla are major sources of cash income and foreign exchange earnings. The country's forest resources are largely undeveloped and timber and wood products are imported to meet local needs. The fishing industry which is concentrating on reef fishing is underdeveloped and is geared to subsistence needs. Efforts have been made to diversify the economy by encouraging establishment of secondary industries, by an industrial development incentives policy and by establishment of small industries centers. New industrial opportunities are also opening up in industries such as vanilla processing and the milling of senile coconut trees for structural timber.

3. The economic development of Tonga is constrained by its location, and its physical and demographic characteristics: (i) it is far from the centers of world trade and industry; (ii) its land area is fragmented by its archipelagic configuration; (iii) the population is dispersed; and (iv) the small size of the domestic market which is scattered makes it difficult to attain economies of scale.

4. The Sixth Five-Year Development Plan (DP6), covering the period FY1991 to FY1995, is expected to continue with the same emphasis as the previous plan by giving the highest priority to agriculture and fisheries followed by transport and communications, and social services. An important objective of the Plan is to promote balanced regional development by encouraging deve-

lopment of islands outside the main island of Tongatapu which is already reasonably well-developed. Most development expenditure is financed through external aid. New Zealand and Australia are major sources of bilateral aid, with the Federal Republic of Germany assuming increasing importance. The multilateral aid sources are the European Economic Community (EEC) and Asian Development Bank. Tonga has recently become a member of the World Bank and funds from this source may become important in the future.

5. Gross Domestic Product (GDP) grew at about 3.7 per cent between 1975 and 1980 and at 3.4 per cent between 1981 and 1985. The main contributors to growth were the infrastructure and industry sectors. Public sector investment in air transport, tourism, shipping, health and education also contributed to the growth. Agriculture stagnated during 1975-1985 but in 1985 remained the largest sector (42 per cent of GDP), followed by public administration (19 per cent) and trade (11 per cent); industry's share was 10 per cent, and building and construction (including roads) was 8 per cent. Absolute figures on the national accounts are not available for recent years, the latest GDP estimate of T\$82.6 million (at current prices) being for 1983. The World Bank has estimated 1985 per-capita income at about \$730.

6. With a small and open economy, Tonga's total foreign trade in 1985 was equivalent to 72 per cent of GDP. The country's balance of payments during the period 1982-1985 had a surplus despite the large deficit in the balance of trade because of private transfers, which accounted for about 49 per cent of all current receipts, and official aid inflows, which accounted for 20 per cent. Tourism's contribution was about 8 per cent. The commodity trade position deteriorated continuously during 1966-1985, with the ratio of exports to imports declining from 67 per cent during 1966-1970 to only 16 per cent during 1982-1985. While imports grew annually by an average of about 15 per cent during this period, exports grew by less than 5 per cent. Growth in imports was mainly in manufactured consumer goods. The principal exports were coconut-based products, which accounted for 57 per cent of all exports in 1982-1985, declining from 71 per cent in 1976-1980. Tonga's main trading partners are Australia and New Zealand, which together accounted for 86 per cent of the Tonga's exports and 63 per cent of its imports.

7. The major thrusts of DP5 were economic growth and domestic resource mobilization, with emphasis on productive activities (agriculture and industry), private sector participation in the economy, and regional and rural development. This emphasis is expected to be continued by DP6. To implement DP6, investments are to be directed primarily to the productive sectors and to the upgrading and expansion of needed infrastructure to support these sectors. Policies would be adopted to stimulate investment, production, and employment in the private sector. The Tonga Development Bank, the main source of loan funds to private investors, would be strengthened.

## B. Civil Aviation

8. Fua'amotu airport on Tongatapu is Tonga's main international airport; in 1985 it accommodated 2,357 aircraft movements (1,358 international and 999 domestic) and handled 22,874 passenger arrivals and 21,938 departures. The country's second airport on Vava'u handled 1,041 aircraft movements in 1984 and 8,970 passengers. Vava'u airport has a coral pavement which has recently been upgraded to give a 1,000-meter effective runway which can handle 40-seater aircraft without difficulty. The airport on Ha'apai has also recently been upgraded and can now handle 20-seater aircraft. The other airfields on 'Eua Island, Niuatoputapu and Niuafu'ou have relatively short, coral or grass runway and can only handle small aircraft.

9. Tonga currently relies on neighboring countries for international air service. Airlines providing international service include Air Pacific, Polynesian Airlines, Hawaiian Air and Air New Zealand. There are no direct services to Australia, although several airlines have requested permission from the Government to fly this sector. The Government recently established its own airline, Friendly Island Airways. The airline offers daily service to Vava'u and 'Eua Island, a twice-weekly service to Ha'apai and once-a-week service to Niuatoputapu. A service to Niuafu'ou operates every other week.

## C. Ports

10. Nuku'alofa, on Tongatapu, is the country's main international port. During 1985, it handled 157 international vessels; imports through the port totaled about 84,000 tons, exports about 20,000 tons and 42,000 passengers from 46 cruise ships used the port. The Queen Salote Wharf provides two deepwater international berths, an interisland berth and a loading/unloading ramp together with ancillary facilities and cargo handling equipment, particularly for containers. The fishing harbor of Fau'a is located adjacent to the Queen Salote Wharf. Nalafu on Vava'u already has a deepwater harbor; the port has recently been upgraded and can handle small-to-medium-sized container vessels and large international cruise ships can anchor in the approach channel. Tonga's remaining ports handle interisland vessels and act as transshipment ports for the small outlying islands. Pangai has been developed as the main port in the Ha'apai group and it is also being used as the main transshipment point for the northern Ha'apai islands. Nuku'alofa acts as the main transshipment point for the islands of Nomuka, Ha'afeva and 'Eua.

11. Tongan ports are administered by the Ministry of Finance, through its Harbours and Wharves Department. The Government's development objectives for the sector are to: (i) provide regular, efficient and safe cargo and passenger transport, both internationally and locally; (ii) provide efficient, speedy and economic handling of cargo; (iii) ensure adequate shipping services and onshore facilities in outer islands to encourage devel-

opment; and (iv) provide necessary land and facilities for storing and handling cargo in close proximity to wharves. The Controller of Customs is responsible for all of the charges specified under the Harbours Act and the Wharves Act and also for the administration of both Acts. Port construction and maintenance are under the jurisdiction of Ministry of Works.

#### **D. Shipping**

12. At least seven major shipping lines provide international services to Nuku'alofa on Tongatapu (including container services); one of these -- the Warner Pacific Line -- also provides an international service to Naiafu on Vava'u. Major domestic services operate between Nuku'alofa and the regional ports of Pangai, Naiafu (including a weekly container service), Ha'afeva, Nomuka, and Nafanua (on 'Eua Island), while less frequent services operate to the Niuas. Small boat services operate between these ports and the smaller outer islands. The public sector is a major participant in both international and domestic shipping services. The Government is a shareholder of the Pacific Forum Line and charters a Tongan vessel, the Fua Kavenga, out to the line. The Government also operates inter island services through the Shipping Corporation of Polynesia, which is owned by the Government by 60 per cent and 40 per cent by Columbus Line, in competition with private operators which currently provide all other interisland services.

#### **E. Roads and Road Transport**

13. In 1988, the Tongan road system comprised 516 km of asphalt and coral-paved main roads and 1,273 km of earth roads/tracks in the farm areas or that link the main roads. Functionally, these roads are grouped into highway, trunk, feeder and access roads. During 1981-1988, the Government built 270 km of sealed roads, along with some secondary and agricultural roads. Investment in road construction during 1981-1985 was T\$3.3 million, of which 93 per cent was externally funded. During this period, road maintenance was inadequate and many roads remained in very bad condition. In more recent years, however, roads which have been upgraded to trunk road standard, have been adequately maintained. Roads which have not been upgraded have received practically no maintenance.

14. Under DP5, the Government's emphasis on road development was to upgrade existing roads and improve their maintenance, as well as to expand rural roads in order to help increase and diversify farm production and enhance the development of isolated areas. DP5 has earmarked T\$13.1 million for road upgrading (including T\$3.2 million for rural roads), to be funded mostly from external sources, to build 133 km of main road, 160 km of secondary roads, and 266 km of rural roads by upgrading parts of the existing network. To ensure adequate funds for proper road repair and maintenance, the Government plans to develop and

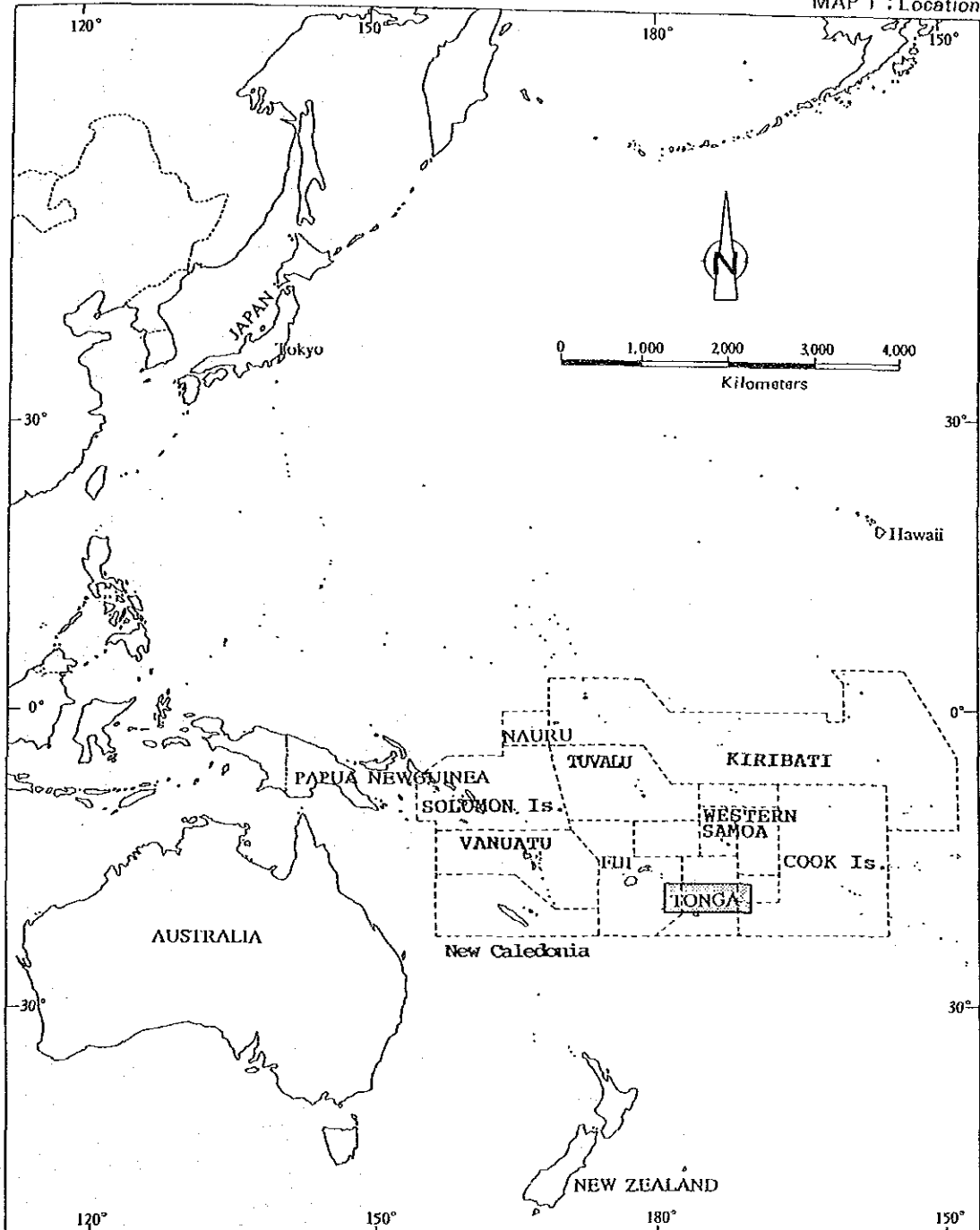
introduce a system of road user charges that takes into account both capital and recurrent costs. Along this line, the Government recently raised fuel taxes and license fees, but has not otherwise formulated any further schemes nor set a time-table for attaining its full-cost recovery goal.

15. The Government's annual surveys of traffic in Tongatapu during the period 1981-1985 indicated an average annual growth rate of about 2 per cent for that period. The total number of vehicles in Tonga has been increasing steadily in recent years, rising from 1,560 in 1975 to 2,850 in 1980 and 6,600 in 1987. These increases mostly took place in Nuku'alofa, where traffic increased annually by 16 per cent from 1981 to 1985.

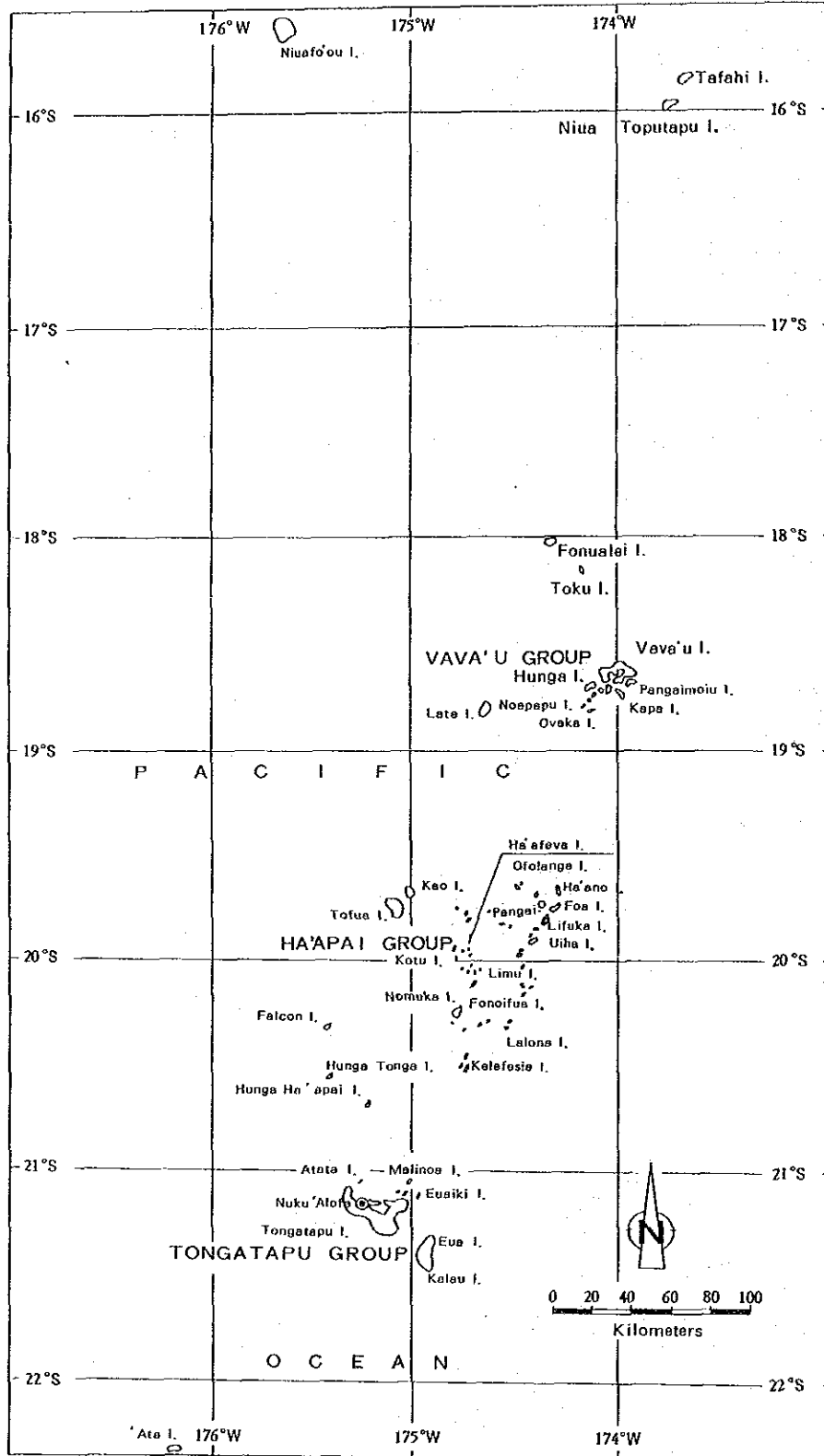


# TONGA

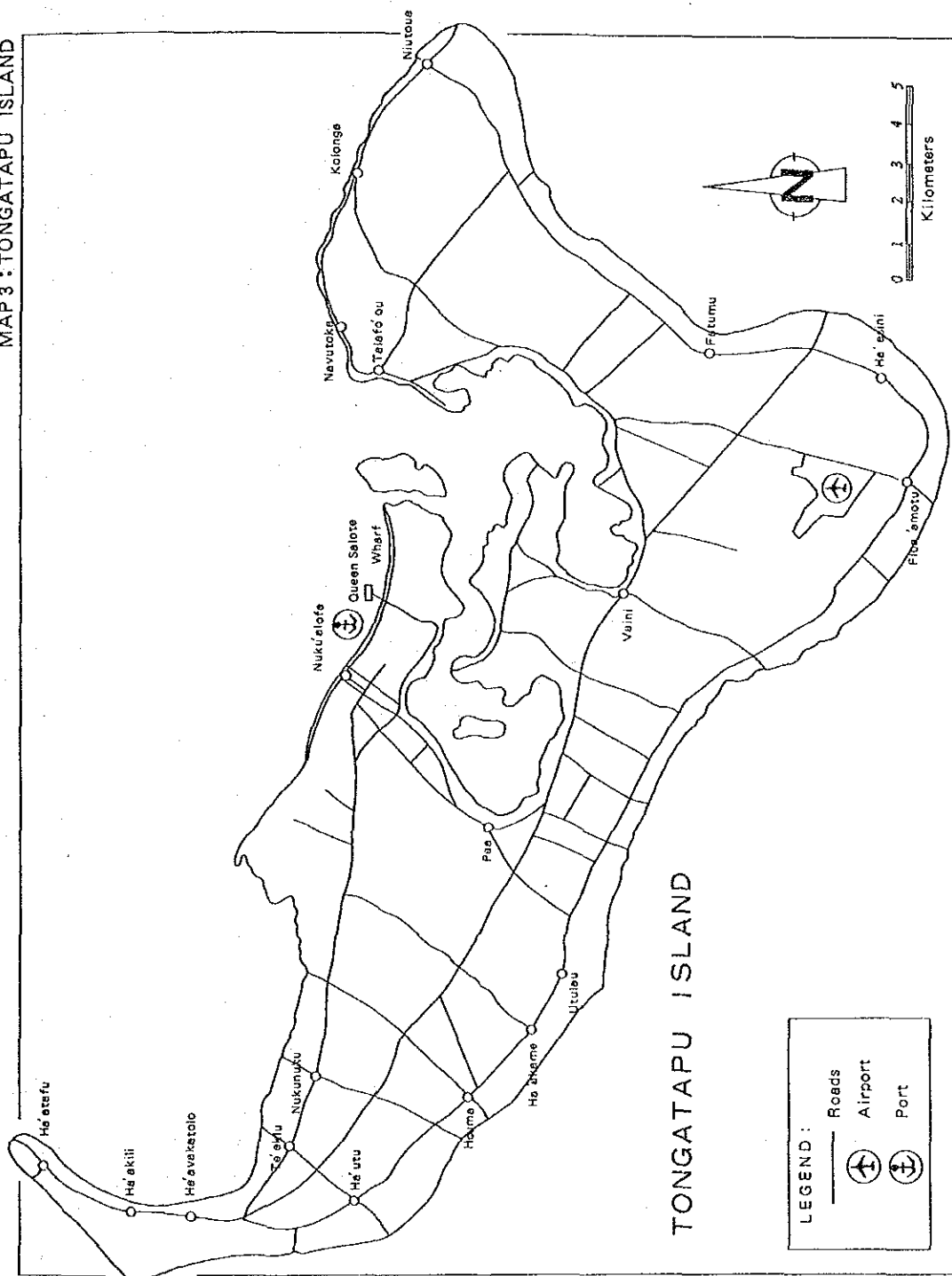
MAP 1 : Location



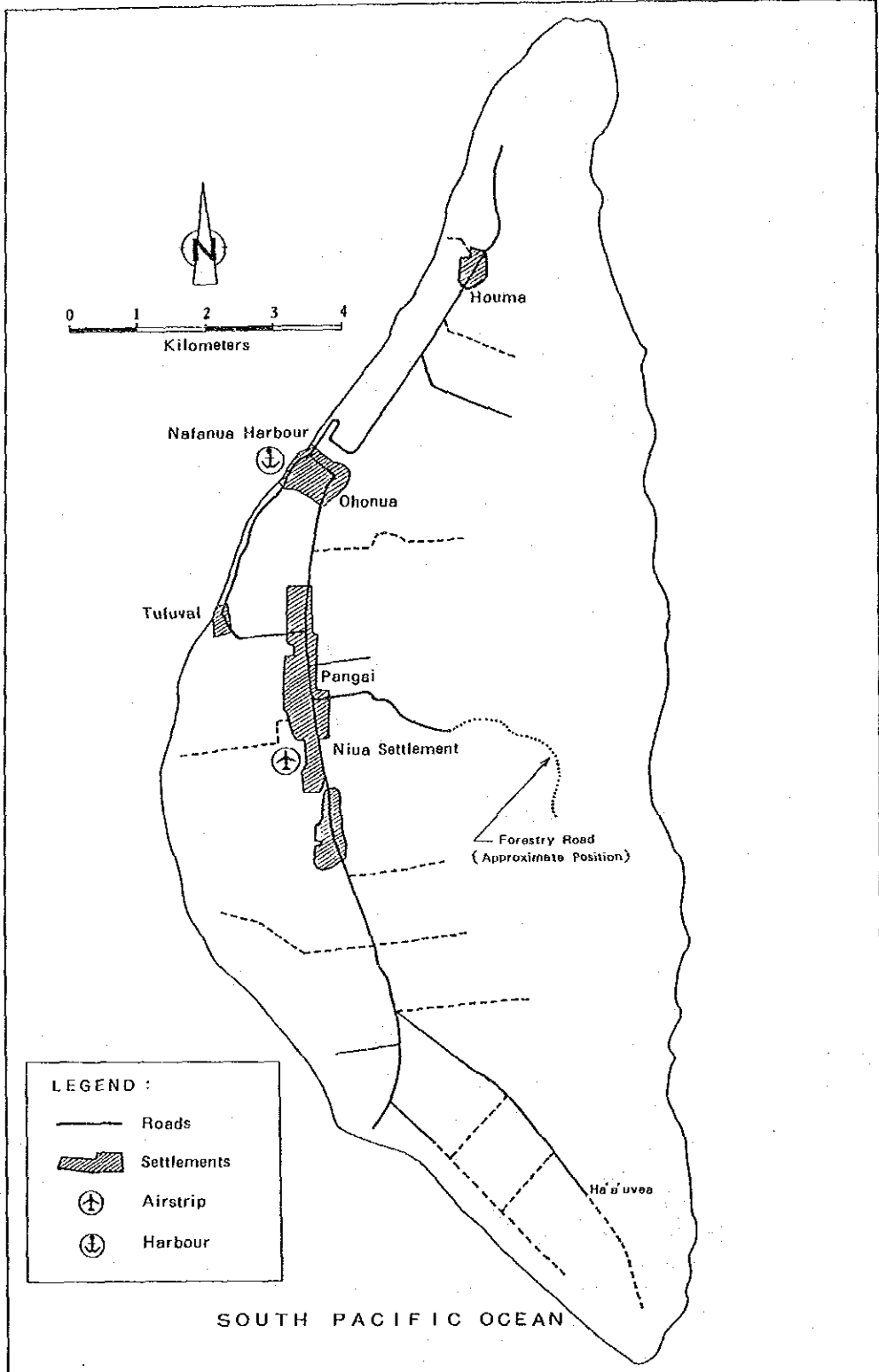
MAP 2: The Kingdom of Tonga



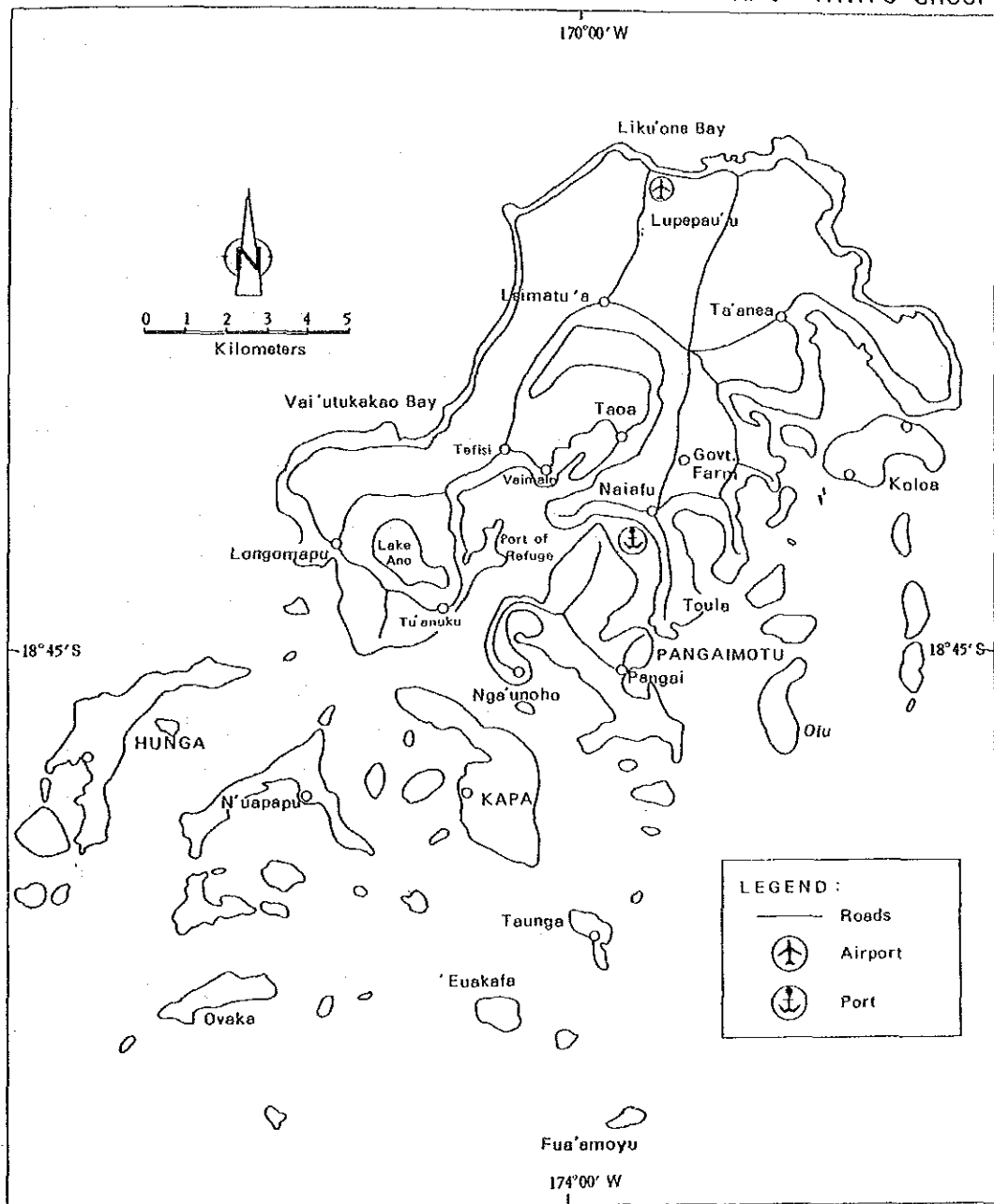
MAP 3 : TONGATAPU ISLAND



MAP 4 : 'EUA ISLAND (TONGATAPU GROUP)



MAP 5 : VAVA'U GROUP





## A.7. VANUATU

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## VANUATU

### A. Economic Setting

1. The Republic of Vanuatu is an archipelago consisting of about 80 islands spread over a distance of 850 km in the South Pacific. While Vanuatu has a total land area of about 12,000 sq km, its territorial waters cover almost 450,000 sq km. The islands form part of an active volcanic chain and are vulnerable to earthquakes; over the last 25 years, the country has experienced an average of about 160 earthquakes per year, including minor tremors. As well, Vanuatu experiences an average of two cyclones per year. The total population in 1989 was about 155,300 and the population growth rate is about 3 per cent per annum. There are two main urban centers -- the capital Port Villa, on the island of Efate, and Santo, on the island of Espiritu Santo which have about 20 per cent and 17 per cent of the total population, respectively. Subsistence agriculture is the principal means of livelihood for about 80 per cent of the population. The modern sector of the economy consists mainly of Government services, tourism and plantation agriculture. The main foreign exchange earners are copra exports and tourism, while imports consist mainly of consumer goods, equipment and construction materials.

2. Development of Vanuatu has been constrained, as in the case of most other South Pacific developing countries, by remoteness from centers of world trade and industry, a fragmented, small-island geography, a dispersed population, and the difficulty of attaining appropriate economics of scale, given the small domestic market. The main natural resource of the country is the land itself; an estimated 5,500 sq km, or 45 per cent of the total land area, is potentially arable. About 17 per cent of the total land surface is currently utilized. Both the climate and soil are conducive to the development of agriculture, livestock and forestry. The territorial waters are regarded as an important potential resource for fisheries and minerals.

3. Shortly after Vanuatu gained independence in July 1980, the Government embarked on the preparation of its First National Development Plan (FNDP) covering the period 1982-1986. FNDP was the first of three phases of a 15-year development program. Under FNDP, total capital expenditures of the various sectoral development programs and projects were about Vt\$11,500 million (\$109.5 million) of which Vt\$6,187 million (\$58.9 million) or about 54 per cent was financed by grant aid and the rest from concessional loans and other sources. Priorities in the allocation of these resources were accorded to agriculture followed by infrastructure, social services including education and forestry. Under the Second National Development Program (SNDP 1987-1991), sectoral allocation for infrastructure is 16.4 per cent of the projected national development expenditures.

4. Grant aid has been the country's major source of development finance in the past and this is likely to continue during



the following NDPs. The donors expected to contribute to SNDP are Australia (38 per cent of the total grant aid), United Kingdom (31 per cent), France (10 per cent), New Zealand (5 per cent), Canada (1 per cent), the European Development Fund (13 per cent) and non-governmental organizations (2 per cent).

5. The main economic objective of the Government is to concentrate on developing the productive sectors which will in the future generate domestic savings and earn foreign exchange, increase exports and substitute for certain imports. This involves promoting the export sector which is basically agricultural and creating the necessary physical infrastructure to support the export sector. Such infrastructure includes, among other things, wharves, landing stages, storage sheds for collection of copra and necessary access roads from inland areas to the coast in the outer islands where most of the copra exports originate. High priority is therefore being given by the Government to necessary investment in the infrastructure sector to facilitate economic development.

#### **B. Transport Sector**

6. Since Vanuatu is an archipelago of scattered concentrations of population and economic activity, maritime transport is the most important transport mode in the country, measured in terms of traffic volume and contribution to production and consumption. As Vanuatu's main cash crop is copra, the country's most vital transport needs are to move the copra from the producing islands to the two international ports, Port Villa and Santo Port, and then to export it efficiently. Because of the country's terrain, roads are relatively difficult and costly to construct and tend to be limited to centers of population and areas of high development potential. The total length of all roads, paved and unpaved, is only 1,300 km (1986). The number of registered vehicles is about 5,000, 65 per cent of which are concentrated on the island of Efate. There are no railways in Vanuatu. Aviation infrastructure is relatively well developed, with international airports at Port Villa, Santo and Lenakel, and 24 domestic airfields, most of which are grass strips.

7. The second NDP (1987-1991) is now under implementation. The total investment program under the First NDP was estimated at \$109.5 million equivalent, of which about \$19.9 million, or 18 per cent, was allocated to the transport sector reflecting higher priorities being attached to the marine transport subsector. Grant aid has been the country's major source of development finance in the past, and this continues during the Second NDP period. The Government's capital budgeting system is not yet fully developed and, under the present arrangements, it is possible to analyze accurately only the development expenditures and corresponding receipts that pass through the Government's Development Fund. Expenditure from the Development Fund on transport and communications averaged about \$0.7 million per annum over the period 1982-1986, about 80 per cent of which was financed through

foreign grants.

8. Transport planning and coordination is the responsibility of the Ministry of Transport, Communications and Public Works (MTCW), with assistance being provided by the National Planning Statistics Office (NPSO) and the Ministry of Finance, Commerce, Industry and Tourism (MFCIT). Proposed development projects, including those in the transport sector, are embodied in the NDP. NPSO is responsible for coordinating the formulation of the NDP before submission to the Council of Ministers for approval. MFCIT also plays a role in the preparation of the NDP by providing assistance in coordinating fiscal policy, including reviewing the impact of development programs on the national budget. Sectoral investment targets for the Second NDP period 1987-1991 are broadly consistent with those established under the mid term review of the First NDP with the priorities for the transport sector.

### C. Civil Aviation

9. Air transport plays a significant role in economic and social development, providing for fast transit of passengers, freight and mail, and facilitating trade, tourism and communications, both domestically and internationally. As a result of capital investments made during the First NDP period, Vanuatu has a relatively well-developed civil aviation infrastructural system. The significant concerns of the sector during the Second NDP are to ensure the existing system functions efficiently and safely, to consolidate and expand on the progress of the last five years and to re-establish and expand international air services. The sectoral objectives are to: (i) restore and expand international air services; (ii) upgrade international airport infrastructure network to ensure in particular that this is not a constraint to tourism development; (iii) complete the domestic airport infrastructure network and to upgrade existing aerodromes where necessary; (iv) improve procedures to encourage efficiency and economic self-reliance in all aspects of airport and airline operations; (v) maintain and improve where necessary the standards of safety and regularity of air transport operations; (vi) decentralize civil aviation responsibilities where possible, and (vii) continue to develop local manpower resources.

10. Vanuatu has three international airports. Bauerfield Airport with a 2,000 m long runway, at Port Villa and Pekoa Airport with a 1,600 m long runway at Santo are presently licensed to operate aircraft up to B737 and F27 respectively, on a regular basis, while Burtonfield Airport (a 900 m long grass runway), near Lenakel, is licensed to operate aircraft up to a Twin Otter class, with the prior permission of the Minister responsible for Civil Aviation. Significant upgrading is expected at Bauerfield and Pekoa during the Second NDP period.

11. During the First NDP period, substantial domestic air transport development program was embarked with the main objec-

tive of providing access to some of the more isolated rural communities. The six new airfields; at South West Bay (Malakula), Aniwa, Futuna and North West Santo, Linua and north Ambrym, are now operational, constructed under the program. In addition to the above program, aerodomes at Linua (Torres), Naone (Maewo) and Sara (Pentecost) were also constructed during the First NDP period. The construction of further airfields to complete the island domestic network are underway during the Second NDP period. Twenty four aerodomes (in addition to the international airports) handle domestic traffic. These facilities are predominantly grass strips varying in length from 700 m to 1,000 m.

#### D. Ports

12. Vanuatu has two international ports, the Port of Santo, on the island of Espiritu Santo, and Port Villa, on the island of Efate. The historical predominance of the northern islands in terms of copra production results in about 75 per cent of the country's copra exports being handled over the Santo wharf. Port Villa's economic status and population result in about 70 per cent of the country's imports being handled over the Villa wharf. Import and export proportions at the two international ports are expected to remain broadly constant over the next decade.

13. Of the 19 interisland wharves in the country, 13 are located outside of Port Villa and Santo. Those in use by the interisland fleet include wharves at Port Sandwich, Lakatoro, Norsup and Walarano, on the island of Malakula; Lolowai, Nduindui and Vilakalaka, on the island of Ambae; Loltong on Pentecost Island; and Craig Cove on Ambrym Island. Many of these wharves have been recently constructed or rehabilitated and are operated by the relevant Local Government Councils which, among other things, are responsible for coordinating infrastructure development in their regions.

#### E. Shipping

14. The two main categories of shipping services in the country are interisland and international. At the end of 1986, the interisland fleet consisted of 37 privately owned ships, with an average capacity of 55 dead weight tons (DWT), and 11 Government ships. However, several private and Government's ships were damaged or lost during the Cyclone Uma, and the total capacity of the private vessels was reduced from 2,049 DWT to about 1,550 DWT. The interisland shipping network comprises three shipping areas, each with a different level of service: (i) a "core" area, extending from Efate in the south to Espiritu Santo in the north, including the west coasts of Pentecost, Epi, Ambrym and Maewo, within which services average about one vessel per week; (ii) a "fringe" area, comprising the west coasts of Espiritu Santo and Malakula and the east coasts of Pentecost, Maewo and Ambrym, in which the average shipping frequency is one vessel every six

weeks; and (iii) an "outer" area, comprising the northern and southernmost islands (Banks, Torres and Tafea), where the frequency of service is less than once every six weeks.

15. The "outer" area, low production volumes, long distances, and small populations combine to make routes unprofitable to commercial shipowners, resulting in infrequent services. Within the "fringe" area, there is potential for cargo growth since productive land is available for agricultural development but distances are prohibitive. In the "core" area, the combination of large volumes of copra (about 75 per cent of national production), short distances between collection points, and proximity to the country's two international ports result in intensive competition among shipowners and, thus, frequent and reliable services.

16. An important feature of interisland shipping is that, in addition to collecting copra, consumer goods are sold to the islanders from the on-board ships, mail is distributed, and passengers are carried. Interisland shipping thus plays an important role in assisting the integration of disparate parts of the archipelago. The Government fleet serves four purposes: (i) to facilitate Government administration in those areas not adequately served by air or private shipping; (ii) to provide for special Government requirements, such as navigational aids, hydrographic surveys, and reef blasting; (iii) to provide for emergency services such as search and rescue, coastal surveillance, and disaster relief; and (iv) to provide vessels for pilotage services at the two international ports.

17. The Second NDP recognizes that policy measures will need to ensure that, to the extent feasible, cargo is collected and stored at central locations and that there is sufficient flow of information for synchronizing cargo availability with shipping services. In pursuing this objective, a Shipping License Advisory Committee was established to examine issues relating to interisland shipping, including the processing of applications for the licensing of vessels on the basis of specific criteria that reflect the country's shipping requirements. During the last few years, many of the ships entering the domestic fleet were near the end of their useful lives. The average age of the privately owned vessels is now in excess of 25 years, which tends to have an adverse impact on ship operating costs and reliability of services. The Government addresses this issue by introduction of an upper-age limit for ships applying to enter the fleet.

18. Vanuatu does not have an international shipping fleet and all exports and imports are carried on foreign ships. In the main, exports go to Europe, while imports come from Australia and the Far East. Most international ships calling at Santo Port for copra exports are large relative to Vanuatu's small volumes of cargo as the ships also pick up cargo from several other Pacific ports for transport to Europe.

19. In the past, export traffic was dominated by large

"roll-on-roll-off" ships, about 20,000 DWT, developed by a French shipping line. These ships accounted for about two-thirds of all cargo carried ten years ago, but although they still call, their dominance has come to an end because trade with France has decreased progressively since Independence in 1980. Most copra exports are now collected by multipurpose liners of about 15,000 DWT. The import ships, which also call at other ports in the Pacific region, are smaller general cargo vessels, carrying containers, palletized cargo and break-bulk cargo. About 70 per cent of total imports are containerized. Cruise ships also call at Port Villa and, to a lesser extent, at Santo Port.

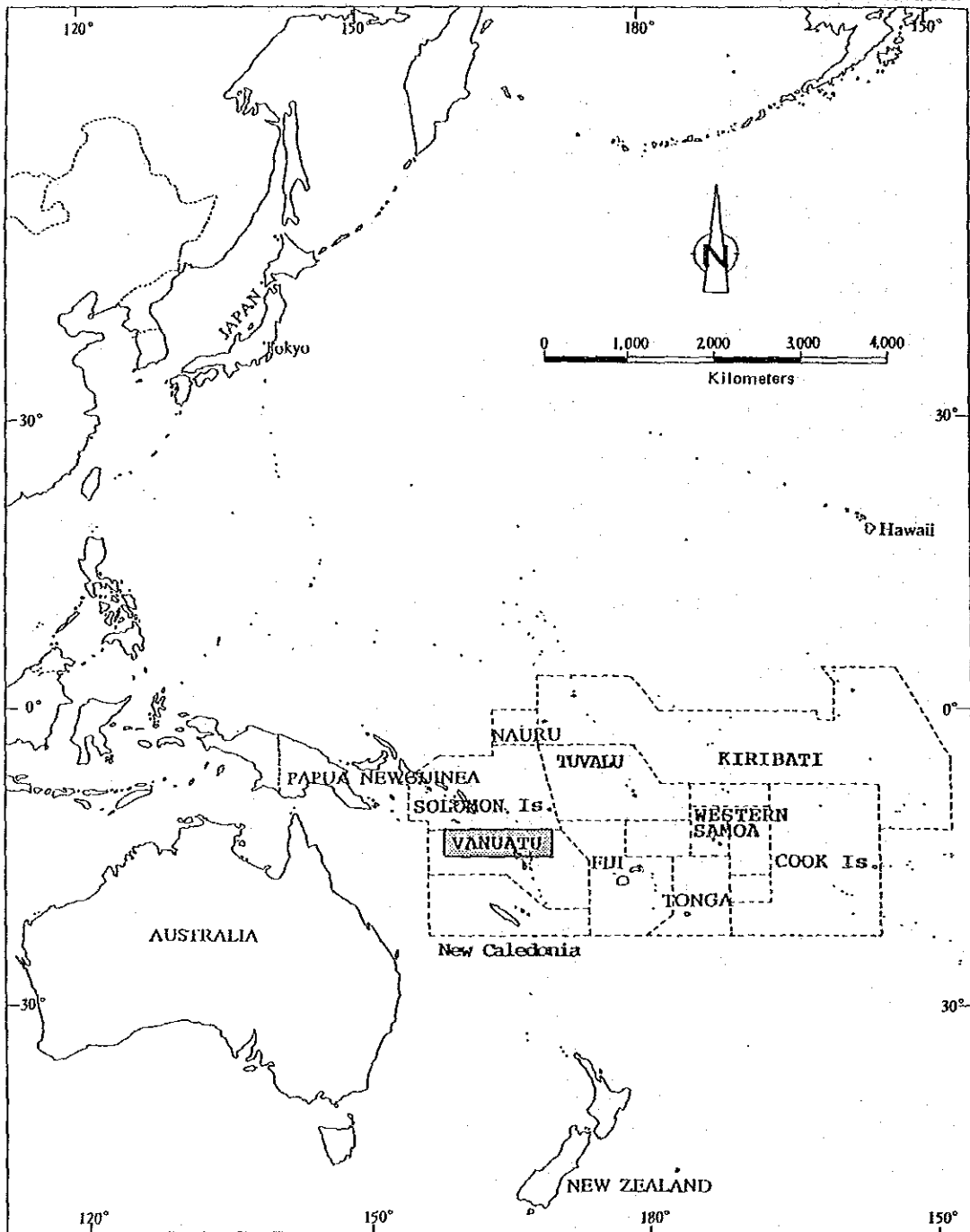
#### F. Roads and Road Transport

20. During the First NDP period, there was an increase of 11 per cent, to 1,328 km, in the national roads inventory, but the country, particularly outside Efate and Espiritu Santo, is poorly served, largely because of high construction and maintenance costs and sparsely spread population. Road transport services and infrastructure, however, have a major role to play in fostering internal and external trade as well as in promoting social intercourse particularly in the small isolated communities of rural Vanuatu. The sectoral objectives during the Second NDP period are to: (i) promote regional development and access to regional centers through improved facilities; (ii) provide greater access to areas of existing and potential agricultural production and to other centers of economic activity; (iii) develop the road system to provide links with sea transport and aerodomes; (iv) connect communities to administrative and service centers, and; (v) introduce measures to promote the efficient, safe and economic operation of vehicles.

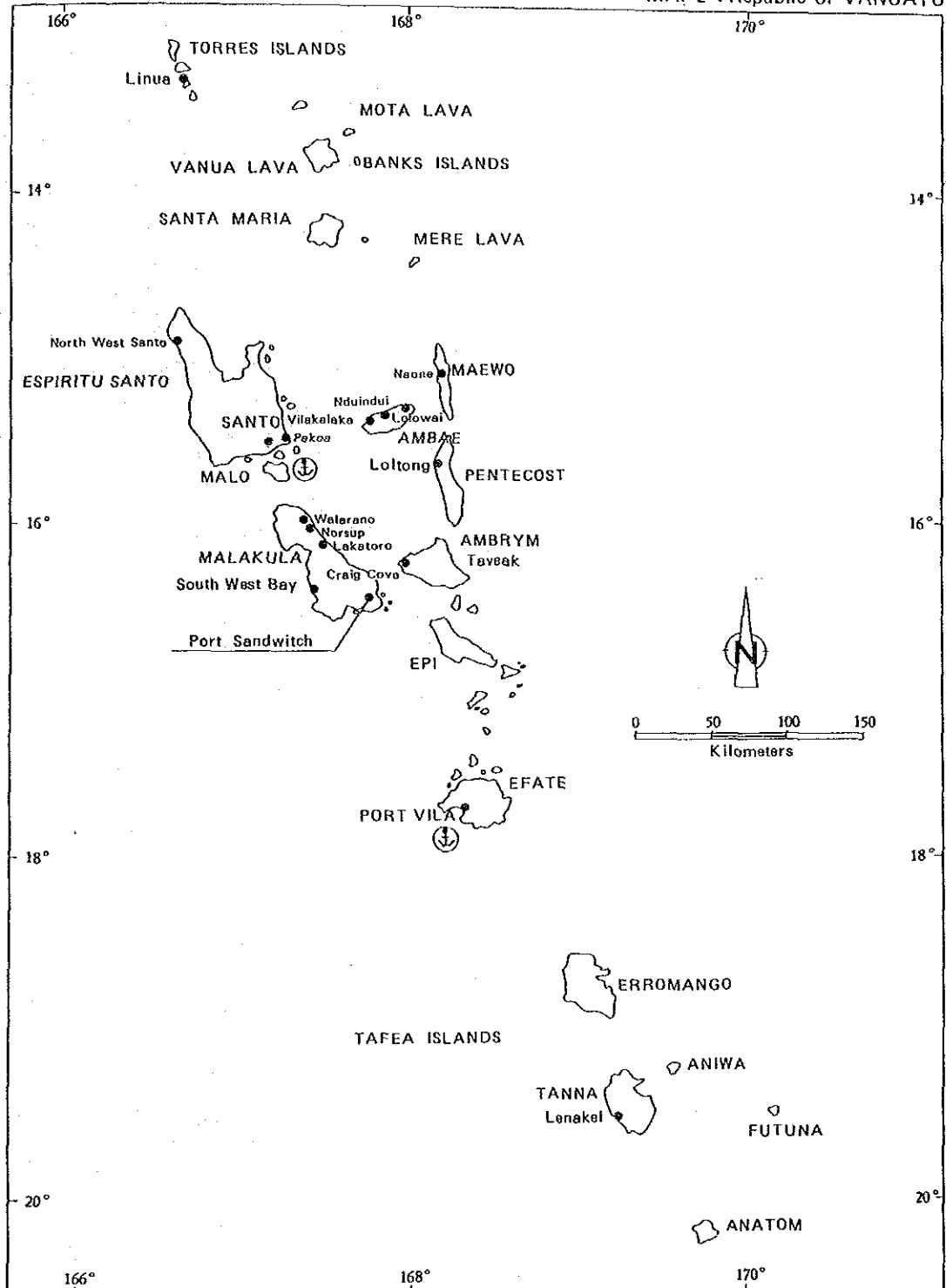
21. The road network in Vanuatu is characterized by a low road density (road length per land area) and a considerable disparity in road availability between the local government councils. It has been determined largely by the needs of urban and agricultural activities and to link coastal communities. Roads range in standard from cleared earth tracks to single and double-track coral-surfaced roads. There are few sealed roads; those that are available are almost exclusively confined to the urban areas of Port Villa and Santo.

# VANUATU

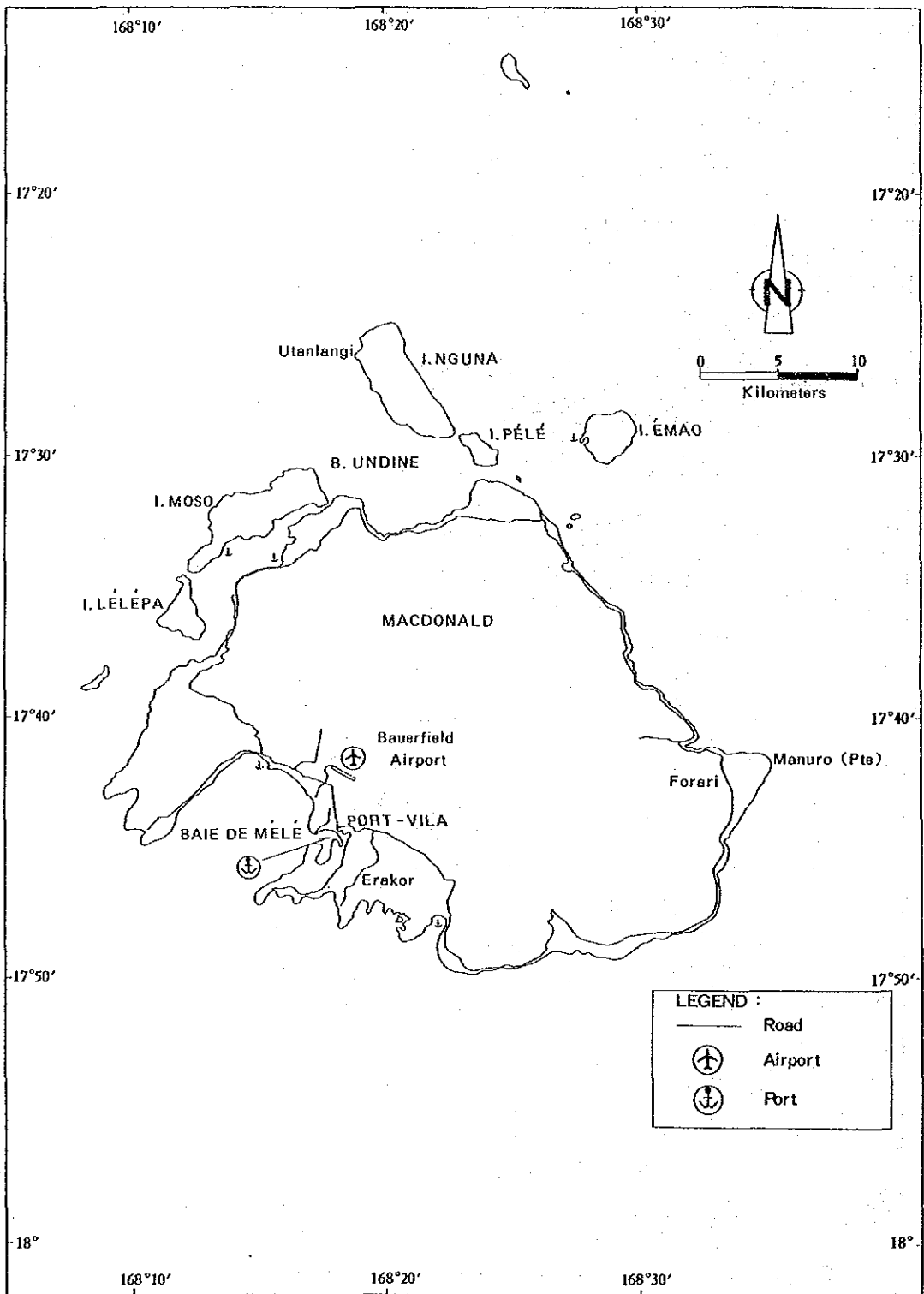
MAP 1 : Location



MAP 2 : Republic of VANUATU



MAP 3 : EFATE ISLAND





#### A.8. WESTERN SAMOA

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## WESTERN SAMOA

### A. Economic Setting

1. Western Samoa covers an area of 2,857 sq km and has a population of approximately 183,000 in 1989. Ninety-nine per cent of the land area is concentrated on the two main islands of Upolu and Savai'i. Three quarters of the population live on Upolu, 22 per cent within the Apia urban area. The natural growth of the population has been approximately 2.9 per cent a year in recent years, but a high rate of emigration has resulted in net population growth of only 0.6 per cent per annum.

2. Agriculture is the mainstay of the economy, accounting for one-half of the GDP and, directly or indirectly, for about 90 per cent of export earnings. The sector supports more than two thirds of the population and production is mainly on a subsistence basis. The extended family system and the traditional rural village are still predominant features of the social structure. Although the bulk of agricultural output is intended for on-farm consumption, during the last decade or so there has been a significant increase in the quantities of marketed output. Major outlets for marketed production include the wholesale market in Apia, small processing industries, and the export sector. The principal crops for sale in the local markets are roots and tubers, bananas, fish, and a range of traditional and non-traditional fruits and vegetables. Coconut oil, copra and taro are the major export items.

3. Since Independence in 1962, Western Samoa has been trying to increase economic growth as a means of improving welfare in the country. Despite considerable gains on this front, the economy still remains fragmented and heavily dependent on official development assistance and inflows of private remittances from Samoans living abroad. These inflows are needed to finance imports, the level of which is currently twice that of exports. Slow growth in domestic output and employment has encouraged a steady emigration of young people, mainly to New Zealand, Australia and the United States. While this has alleviated employment problems and generated foreign exchange, it has also contributed to the long-standing structural problem of a lack of skilled manpower.

4. Western Samoa experienced serious economic imbalances during 1980-1982, mainly on account of structural, cyclical and fiscal/monetary constraints to the economy. These constraints led to a sharp deterioration in the terms of trade and balance of payments, as well as to reduced domestic demand and inflationary pressures. The Government's efforts to restore financial and monetary discipline and to establish economic stability, assisted by a substantial increase in the international price of coconut products and higher inflows of capital from abroad, produced some results; GDP grew by 0.6 per cent in 1989 and by 1.0 per cent in 1987. Over this period, there was also considerable

improvement in the balance of payments position and in inflation and output.

5. In 1986 and 1987, economic growth slowed down to less than 1 per cent per annum due to a decline in agricultural production and rural incomes. These declines were due to sharp declines in the export prices of coconut products. Although industrial production expanded significantly in 1986, it declined in 1987 when shortages of copra caused a reduction in copra milling. Overall industrial output was generally curtailed in 1987 as a result of processing equipment failures at both the timber and coconut mills. Offsetting these trends, however, were increases in construction activity and in the service industries, including tourism. Real domestic demand grew by around 9 per cent in 1987 and inflation fell to 4.6 per cent. Investment spending recovered strongly, mainly as a result of celebrations marking the 25th Anniversary of Independence, continued high private remittances from abroad, and moderate growth in private sector credit.

6. The 1988 budget (tabled in November 1987) aimed at balancing the desire to achieve higher rates of economic growth, with the need to maintain financial stability. The budget program was expected to generate a deficit equivalent to 13 per cent of GDP, and, in contrast with the strategy followed in previous budgets, emphasizes the privatisation of public enterprises and their functions. Net borrowing over this period was expected to be reduced from WS\$6.8 million to WS\$3.7 million.

## **B. Planning and Investment**

7. Development strategies and economic guidelines for the country are formulated within the context of development plans. The Fourth Development Plan (DP4: 1980-1984) had as its main priority the development of the agriculture sector. Most of DP4's targets, however, were not attained, mainly on account of sharp decline in production and export prices. The Fifth Plan (DP5: 1985-1987) attempted to consolidate the modest gains made during DP4 and at the same time emphasized the need to: (i) increase production; (ii) achieve economic independence and self-reliance; (iii) increase the participation of Samoans in the development process; and (iv) protect and conserve the environment. DP5 focused specifically on development of projects geared to increasing the country's production capacity, value added, employment, foreign exchange earnings, and savings. The Sixth Plan (DP6: 1988-1990) had three major goals: (i) attainment of better and sustained growth in key economic sectors; (ii) increased production and economic stability; and (iii) development of human resources. These objectives were to be reached through increases in productivity and continued diversification of the production base. The Government also aimed to continue the implementation of macroeconomic policies compatible with tighter fiscal and monetary discipline.

8. Development expenditures in DP6 were budgeted at WS\$170.2 million. Of this, 70 per cent was allocated to the development of infrastructure and support services, 20 per cent to the various economic sectors (including agriculture, forestry and industry), and 10 per cent to social services. Finance to support DP6 expenditures was provided from internal and external sources. Eighty-five per cent of the total projected development expenditure was financed by external aid amounting to WS\$145 million. External aid was to cover 91 per cent of the outlay on infrastructure and support services, 63 per cent of the investments within the various economic sectors, and 88 per cent of social services development.

### C. Transport Sector

9. Western Samoa's small population and relative geographical isolation from its principal markets place severe natural constraints on its developmental efforts. Distance from its major markets often relegates the country to the role of being a marginal producer which in turn acts to exaggerate the impact on its economy of cyclical movements in the prices of its principal commodity exports. As a consequence, the country's economic performance has been below its capacity growth rate. Therefore, one key factor in enhancing the competitiveness of the economy lies in minimizing the adverse effects of isolation and distance. The country, like many of its South Pacific neighbors, must therefore place a greater than normal emphasis on the development of transport and communications.

10. Over the past 18 years the Government has been making substantial investments in roadworks. As a result there is no acute problem in land transportation. The road network is now estimated at 2,100 km in 1988, compared with about 871 km in 1970. With bilateral assistance from the Governments of Australia and Japan the international airport was upgraded under a four year program that was completed in 1987. The airport is now capable of sustaining Boeing 747 operations.

11. While the road network and the airport have sufficient capacity for present and future requirements, the principal port at Apia is in need of rehabilitation and expansion.

### D. Civil Aviation

12. The principal airport Western Samoa is Faleolo International Airport, about 32 kilometres west of Apia. The airport has a 2,700 metre runway and can accommodate unrestricted operations of B-727 aircraft and restricted operations of B-767 and B-747 aircraft. The largest aircraft to currently use the airport is a B-727. The airport has a new passenger terminal. The West Samoan Airport Authority was established in 1986 and is responsible for the ownership, operation, development and maintenance of all airports in Western Samoa. The standards which are

required to be met at Faleolo International Airport are subject to inspection by the New Zealand Department of Civil Aviation. In 1987, Faleolo Airport accommodated 3,518 aircraft movements and 198,000 passenger movements. The movement of aircraft has declined, though the replacement of a B-737 with a B-727 in 1987 resulted in substantial growth in passenger movements. In 1983 almost two-thirds of passenger movements and four-fifths of aircraft movements were related to travel between Faleolo and Pago Pago in American Samoa. Faleolo is used almost exclusively for international services.

13. In addition to Faleolo International Airport, there are three other airstrips in Western Samoa: at Fagali'i, 2 kilometres south of Apia and with a 548 metre long compacted soil runway; at Asau on Savai'i, with a 609 metre corral surfaced runway; and Maota, also on Savai'i, with a 549 metre metal and grass runway. The latter two airstrips have no nav aids, air traffic control, communications or fire services. All three runways can accommodate Islander aircraft only, and would need extension and strengthening to accommodate larger aircraft.

14. Polynesian Airlines is the government-owned national carrier of Western Samoa. The airline is managed and operated by Ansett Airlines of Australia under a management contract, most recently renewed in 1987 for a further 10 years. The airline operates a B-727 jet and a DHT and an Islander aircraft, the latter used to provide services within Western Samoa. Some 22 services are provided weekly from Fagali'i to Savai'i, 12 to Maota and 10 to Asau. Polynesian Airlines operates 34 services to Pago Pago each week, five of which are provided in conjunction with Samoa Aviation. Other services are operated to Sydney, Fiji and Rarotonga, all in conjunction with other airlines. In total six international carriers use Faleolo International Airport, and direct services are provided to six countries.

#### E. Ports

15. The principal port in Western Samoa is Apia Port. In 1986 throughput at the port was 180,600 tons, with container cargo accounting for 81 per cent of imports and 70 per cent of exports. The wharf is 198 metres in length and berth occupancy in 1983 was estimated to be 60 per cent; it is likely that occupancy is little different now. The structure of the wharf permits only top loading of containers, a more capital-intensive and expensive procedure than the use of roll-on ramp operations.

16. A deepwater wharf was completed at Asau Port in 1966 but it was not until five years later that the necessary access channel was blasted through the coral reef to permit larger vessels to use the port. Nevertheless the entrance remains narrow and difficult. The port is little used, and cargo throughput is only about 5,000 tons per year, mainly timber exports and oil imports.

17. Ferry terminals for roll-on roll-off operations have been developed at Mulifanua and Salelologa.

#### F. Shipping

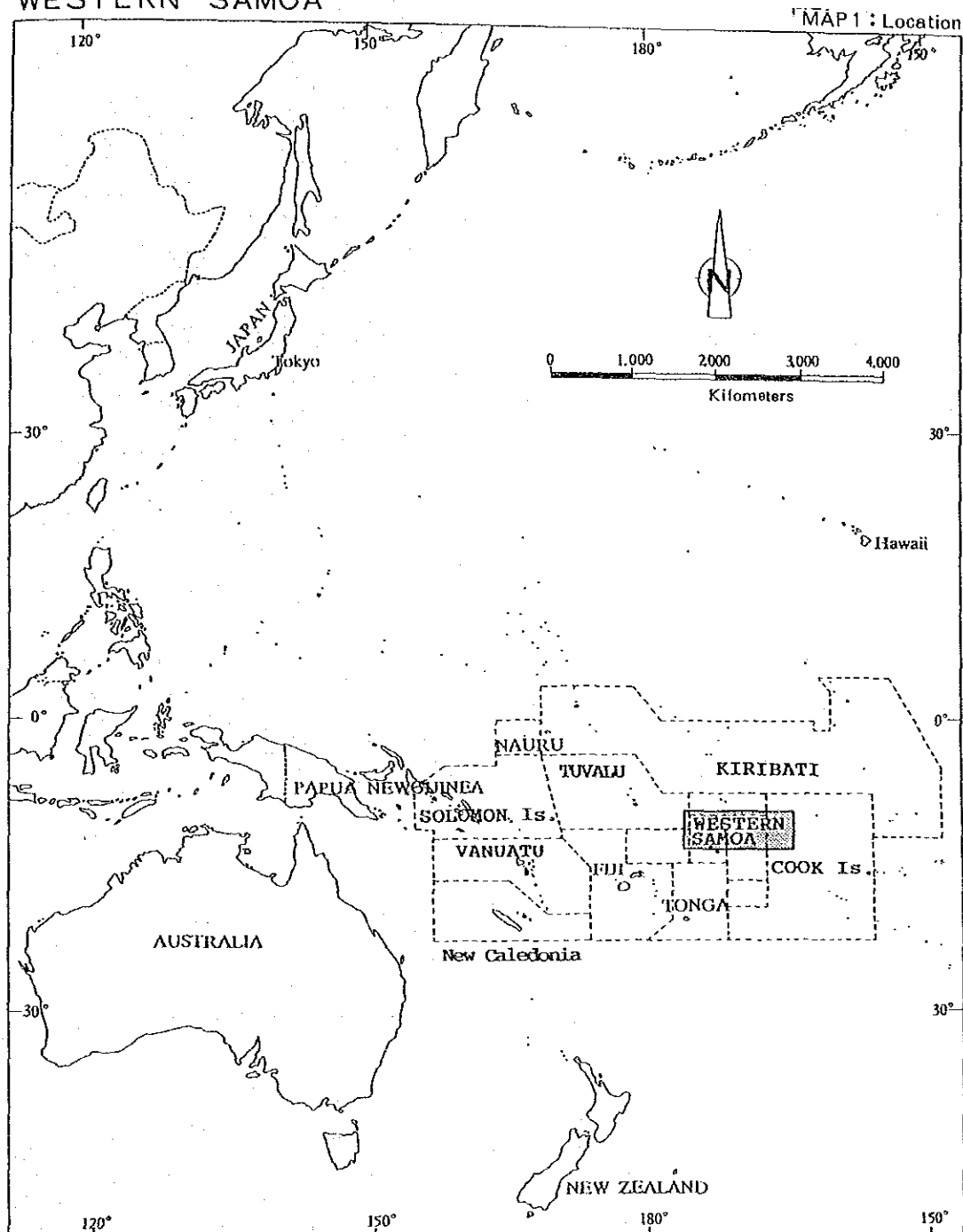
18. As of 1984, the government controlled virtually all shipping in Western Samoa through its 94 per cent ownership of the West Samoa Shipping Corporation (WSSC). The Minister of Transport is Chairman of the Corporation. While the WSSC was, at that time, not receiving any subsidy, it has accumulated substantial losses, largely due to government restraint on tariffs following a doubling of fares in 1981. It is understood the Columbus Line may have an interest in the WSSC. The WSSC is currently the sole operator of vessels on the 13 nautical mile trip between Malifanua on Upolu and Salelologa on Savai'i (using two vessels) and also operates a weekly ferry service between Apia and Pago Pago on American Samoa. Australian International Development Assistance Bureau (AIDAB) provided a barge for passenger services between Savai'i and Upolu in the early 1980s. It appears that there are no other scheduled shipping services within Western Samoa, although Inter-Island Shipping Company which is based in American Samoa has provided a ferry service between Upolu and Savai'i in the past.

19. Western Samoa is reasonably well served by international shipping, with regular services to Hong Kong, Japan, Europe and the United States. The Pacific Forum Line (PFL), previously based in Apia, operates a service about every three weeks between Auckland in New Zealand and Fiji, Western Samoa, American Samoa and Tonga. A marginally less frequent service is also operated by the PFL between Australia and Fiji, Western Samoa and Tonga. Western Samoa has leased a vessel, the Forum Samoa to the PFL. The vessel was acquired from the Federal Republic of Germany with a soft loan.

#### G. Roads and Road Transport

20. Considerable expansion of the road network was undertaken in the 1970s when the road network was expanded from 821 kilometres to 2,042 kilometres. The length of road in 1986 was estimated to be about 2,100 kilometres. About 300 kilometres of roads are sealed. Most of the population in Western Samoa live on the coastal plains of the two islands, making it relatively easy to serve them with a perimeter road on each island. The perimeter roads must occasionally detour inland where no level coastal fringe exists. A central cross-island highway on Savai'i has been considered, but is not economically viable. Upolu has a number of cross-island and interconnecting roads (see Map 2). About half of the roads are in a very poor state of repair. Overloading of trucks, by about 50 per cent, can be observed. A number of sand-based roads extend from the perimeter roads to coastal communities.

# WESTERN SAMOA



MAP2: WESTERN SAMOA

