

B. NEWLY INDUSTRIALIZING ECONOMIES

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B.1. HONG KONG

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HONG KONG

A. Economic Setting

1. Hong Kong's 1070 square km is divided into four main areas - Kowloon, Hong Kong Island, the New Territories and the Outer Islands. Kowloon is a peninsula on the north side of the harbour. Kowloon proper only includes the land south of Boundary Rd, a mere 12 sq km. North of Boundary Rd is New Kowloon which is part of the New Territories. Hong Kong Island, which is on the south side of the harbour covers 78 sq km or just 7 per cent of Hong Kong's land area. The New Territories, where about one third of Hong Kong's population lives, occupy 980 sq km, or 91 per cent of Hong Kong's land area, and are north of Kowloon and south of the Chinese border. The Outer Islands refers to any island apart from Hong Kong Island. Officially, the outer islands are part of the New Territories and make up about 20 per cent of Hong Kong's total land area. There are actually 235 islands. Some are tiny rocks, but the largest one, Lantau Island, is nearly twice the size of Hong Kong Island.

2. Hong Kong's official population is about 5,800,000 in 1989, which makes Hong Kong one of the most densely populated places in the world. The overall density of the population works out to about 5,400 people per sq km, and there is an extremely wide variation in density from area to area. Some urban areas have tens of thousands of people per sq km, stacked in multi-block high-rise housing estates, while other areas are lightly inhabited. About 98 per cent of Hong Kong's population is ethnic Chinese, most of whom have their origins in China's Guangdong Province. About 60 per cent were born in the colony.

3. The growth rate of the Hong Kong economy slowed down further in 1989. This was brought about partly by reduced overseas demand for Hong Kong's products and partly by the economy adjusting itself to capacity constraints following several years of rapid growth. The year-on-year growth rate of domestic exports showed a marked deceleration in 1989, from an increase of 9 per cent in real terms in the first half to a decline of 3 per cent in real terms in the second half, compared with the corresponding growth rate of 9 per cent for 1988. The year-on-year growth rate of re-exports also moderated, with increases in real terms of 29 per cent in the first half and 11 per cent in the second half, compared with the increase of 46 per cent for 1988. Domestic demand, including consumption and investment, was sluggish in the latter part of the year. Reflecting these developments, the gross domestic product (GDP) grew by only 2.5 per cent in real terms in 1989, compared with increases of 14 per cent in 1987 and seven per cent in 1988.

4. Repercussions of the events in China in mid-1989 reinforced the cyclical downturn of the economy. While certain sectors like property and tourism suffered more than others, the economy at large weathered the short-term impact well. There was

little disruption in manufacturing and trading activities, including outward processing arrangements across the border.

5. As the economy was still operating close to capacity, the labour market remained generally tight. The seasonally adjusted unemployment rate and the underemployment rate stayed at a low level during 1989, moving between 1.3 and 1.4 per cent and 0.6 and 0.8 per cent respectively. The employment situation varied between major sectors. While employment in the manufacturing sector declined, employment in the service sectors generally increased. Labour incomes were boosted by the sustained demand for labour. Earnings in the manufacturing sector and in most service sectors increased significantly, both in money terms and in real terms. However, as economic activity continued to slow down, the pressure of demand for labour tended to ease. The number of vacancies in most sectors, such as manufacturing, building and construction, wholesale/retail and import/export trades, and restaurants and hotels, declined in the latter part of 1989 compared with a year earlier.

6. The Consumer Price Index, as one of the major indicators of inflation, averaged 10.1 per cent higher in 1989 compared with a year earlier. The corresponding rate of increase in this Index was 5.5 per cent in 1987 and 7.5 per cent in 1988. However, the rate of inflation had shown a tendency to ease towards the end of the year, in line with the moderation in economic growth.

B. Transport Administration and Planning

7. The Transport Branch of the Government Secretariat, headed by the Secretary for Transport, is responsible for the overall policy formulation and the direction and coordination of all transport matters. In discharging this responsibility, the secretary is assisted on major issues by the Transport Advisory Committee, which advises the Governor in Council on major transport policies and issues. The committee has 18 appointed members, including the chairman and six government members. The secretary also chairs the Transport Policy Co-ordinating Committee which oversees the co-ordination and implementation of policies and projects.

8. The responsibility for the execution of transport policies and measures rests with the Transport Department and the Highways Department. The Commissioner for Transport, who heads the Transport Department, is the administering authority for the Road Traffic Ordinance and other legislation regulating public transport operations other than railways. His responsibilities cover road traffic management, including government road tunnels, carparks and metered parking spaces, and the regulation of internal road and waterborne public transport. On these matters, he is advised by the Standing Conference on Road Use and the Standing Committee on Waterborne Transport. He is also the authority for the licensing of drivers, and the registration, licensing and

inspection of vehicles. A Transport Tribunal, chaired by an unofficial member and set up under the Road Traffic Ordinance, provides the public with a channel of appeal against decisions made by the Commissioner for Transport in respect of the registration and licensing of vehicles and the issue of hire car permits and passenger service licences. The Director of Highways heads the Highways Department, which is responsible for designing and building all highways and roads, and for their repair and maintenance.

9. Transport planning is conducted at two levels, territory-wide and regional. At the territory-wide level, strategic planning looks at the provision of new infrastructure to move people from one region of the territory to another. The Second Comprehensive Transport Study has identified a series of strategic new projects which are now under planning. At the same time, regional and district planning looks at improvements to road links within respective areas. Several sub-regional and district traffic studies were completed in 1989, including traffic studies for north-west Kowloon and Tai Po Road and improvements to the Mid-levels east-west road corridor. Currently underway is the Central Kowloon Traffic Study. Other studies with traffic and transport content completed in 1989 include the Central and Wan Chai Reclamation Feasibility Study, the Green Island Reclamation Feasibility Study and the West Kowloon Reclamation Transport Study.

C. Civil Aviation Sector

(1) Air Traffic and Hong Kong-based Air Services

10. Passenger throughput and cargo traffic continued to grow in 1989. There were 16.2 million passengers, representing an increase of six per cent over the total of 15.3 million in 1988. General cargo, including manufactured goods imported, exported and re-exported by air, totalled 730,000 tonnes compared with 694,000 tonnes in 1988. The value of airborne goods totalled \$234,196 million. Viewed against Hong Kong's total trade in imports, exports and re-exports, imports by air made up about 20 per cent, exports by air about 29 per cent and re-exports by air about 16 per cent in value terms. The United States remained the major market for exports and re-exports by air, accounting for 42 per cent and 20 per cent respectively. An increase of 8.4 per cent in aircraft movements was recorded, bringing the annual total to 94,300. More than 80 per cent of the aircraft calling at Hong Kong were wide-bodied types.

11. Throughout 1989, Cathay Pacific Airways (CPA) continued to develop its frequency and capacity to major cities, commencing scheduled services to Manchester in October 1989. To cope with the increasing scale of its operations, CPA acquired three L1011s, two B747-400s and one B747 freighter. By the end of 1989, its fleet comprised 17 L1011s, eight B747-200s, six B747-300s, two B747-400s and three B747 freighters. Hong Kong Dragon Air-

lines (HDA) commenced scheduled services to Dhaka and Katmandu in February 1989. The airline continued to operate scheduled services to Phuket (Thailand), Utapao and Kagoshima and non-scheduled passenger services to a number of cities in Asia. In May the company acquired its fourth B737. Air Hong Kong (AHK) acquired a second B707 freighter and continued to operate non-scheduled cargo services between Hong Kong and a number of destinations, including Bangkok, Singapore, Melbourne and Sydney. In November 1989, the airline commenced a scheduled all-cargo service to Manchester.

12. In 1989, the Air Transport Licensing Authority granted a total of 10 licences to Hong Kong airlines: four to Cathay Pacific Airways, two to Hong Kong Dragon Airlines and four to Air Hong Kong. Together with those granted in 1988, this meant that, at December 31 1989, Cathay Pacific Airways held licences to operate scheduled services to 57 cities in 29 countries, Hong Kong Dragon Airlines was licensed to serve 48 cities in eight countries and Air Hong Kong was licensed to operate scheduled all-cargo services to 15 cities in 11 countries.

(2) Airport Improvement

13. At the Hong Kong International Airport, which is administered by the Civil Aviation Department, a number of new works projects were launched to cope with the forecast demand in traffic. To enable the airport to accommodate projected growth the government has accepted in principle the recommendations of a consultancy study on the capacity and development potential of Kai Tak Airport. As a result a phased implementation programme was initiated with a view to expanding facilities to handle up to 24 million passengers a year.

14. To meet the forecast requirement for aircraft parking positions, work commenced in September 1989 on an extension to the cargo and long-term aircraft parking facilities. The first phase, which is expected to be completed in September 1990, will provide three additional B747 parking positions. Meanwhile, work on the extension of the passenger aircraft parking apron was completed in September 1989, providing additional parking spaces for two B747 jets or up to six smaller aircraft. In November 1989, a 'Disabled Aircraft Recovery System' was delivered. It comprises a series of sophisticated, self-powered trailers which will significantly enhance the ability of the Civil Aviation Department to speedily remove an aircraft disabled on the runway.

15. An advanced computerized radar data processing and display system to enhance the efficiency of the Hong Kong air-traffic control services was commissioned in April 1989. A set of new air-traffic control simulators to match the new system was brought into use in October 1989.

16. A second air cargo terminal has been under construction by the Hong Kong Air Cargo Terminal Limited (HACTL) since 1989. With its completion scheduled for the middle of 1991, it will

more than double the existing air cargo-handling capacity of about 720,000 annual tonnes. Work commenced in November to construct a further two floors on the existing multi-storey carpark. This would provide an additional 500 car parking spaces by mid-1991.

17. In June 1989, Common Use Terminal Equipment (CUTE) for passenger check-in was fully installed in the passenger terminal. The introduction of CUTE has improved check-in processing and provided flexibility in check-in counter utilization. Planning work continued on major long-term improvements to the passengers terminal building. Work is expected to commence in April 1990 and will include refurbishing of the air-conditioning, check-in desks and the departure baggage system.

(3) Planning of New Airport

18. At the opening session of the Legislative Council in October 1989, the Governor announced the government's intention to proceed with plans to develop a replacement airport at Chek Lap Kok off the north coast of Lantau Island, in concert with plans for future port and urban development. The target date for the opening of the new airport is June 1997. This announcement followed consideration of the results of a number of consultancies and studies which were completed during 1989. The findings of the Kai Tak Development Potential Consultancy indicated that even with a large-scale expansion scheme the existing airport would not be able to meet forecast air traffic demand much beyond the mid-1990's. Further studies were commissioned to establish the preferred site for a replacement airport.

19. The Alternative Replacement Airport Sites (ARAS) Consultancy established that a two-runway airport could feasibly be developed on a reclaimed artificial island in the Western Harbour area of Hong Kong west of Lamma Island. However the Chek Lap Kok Master Plan Review Consultancy confirmed the findings of earlier studies which proposed Chek Lap Kok as the preferred location for a replacement airport for Hong Kong.

D. Port Sector

(1) Port Administration and Operations

20. The port of Hong Kong has a sheltered, natural deep-water harbour and is navigable throughout the year. It is Hong Kong's most important natural resource, being one of the world's busiest ports. During 1989 a total of 228,500 ships and craft used the waters of the port. This equates to one arrival or departure every 2.3 minutes. Ocean-going ships from more than 200 lines, flying the flags of 70 countries, trade between Hong Kong and world ports.

21. The Marine Department is responsible for all aspects of Hong Kong's maritime affairs. The department employs 1,636

staff. The Hong Kong Government has always taken the view that it should not generally undertake activities which can be done commercially and thus more appropriately by the private sector. The Marine Department is therefore not a Port Authority in the accepted sense, and many of the port facilities are privately owned and operated. The principal purpose of the department in relation to the port is to ensure that conditions exist for ships to enter port, work their cargoes and leave as quickly and safely as possible. The department must also consider overall port planning and development and reconcile as far as possible the often conflicting interests of terminal operators, port users and land interests.

22. The Director of Marine is the Pilotage Authority and is advised by the Pilotage Advisory Committee. The Pilotage Authority has widespread powers regarding the operations and dues charged by the pilots, although the pilots themselves operate in the form of a private company. All ships of a certain gross registered tonnage are required to engage the services of a Hong Kong-licensed pilot when navigating in the pilotage area.

23. The Port Committee advises the Director of Marine on port policy. The Port Operations Committee is concerned with the everyday operation of the port. The Container Terminal (Land Use) Committee deals with all land-related issues relevant to container terminals. These committees are attended by a cross-section of shipping, government, commercial and port interests. The Marine Department Technical Policy Division is responsible for the development of technical standards and legislation relating to the establishment and administration of the new Hong Kong shipping register. This includes computerization of the register and the development of technical policy necessary to ensure that the standards of the relevant international conventions are translated into legislation and applied to Hong Kong ships. The Technical Policy Division also provides representation for Hong Kong at technical conferences on matters including maritime safety, pollution and manning, in association with representatives invited from Hong Kong Shipowners' Association.

(2) Port Facilities

24. During 1989 over 1,700 lighters and 400 motor boats transported cargo to and from ocean-going ships moored at the anchorages and harbour buoys in mid-stream in the harbour, and private or public cargo working areas ashore. Floating heavy-lift cranes of up to 350 tonnes lifting capacity provided service to handle heavy cargo with weights exceeding the capacity of ships' gear. Tugs are available round the clock to assist berthing and unberthing operations. Waterboats and fuel-oil barges provide replenishment if necessary to prepare the ships for voyages ahead. Transportation of ships' agents, crew, stevedores and repair gangs to and from ships in the harbour and service for delivery of provisions are available from various public landings around the harbour. The Marine Department provides a free service for collecting daily domestic refuse from ships. At a nomi-

nal charge, the department's contractor also provides a service to collect and dispose of trade refuse from ships.

25. In 1989, some 18,900 ocean-going vessels and 93,600 river-trade vessels called at Hong Kong and loaded and discharged more than 86 million ton of cargo. This included 62 million ton of general goods from ocean-going vessels, including 4.44 million TEUs (20 foot equivalent units). To cope with ever increasing traffic demands, expansion of container facilities continues. Expansion at Kwai Chung container terminal continued apace with Terminal 6 being completed in May 1989 with 3 berths supported by a land area of 29 hectares. Meanwhile work on Terminal 7 was also completed in 1990. This provides additional three berths on a land area of 31.5 hectares. With the success of an 18.6 hectare multi-storey container freight station and godown constructed on Terminal 3, other operators are also progressing with similar expansion plans. These multi-storey facilities maximize land use.

26. Common-user cargo handling facilities administered by the Marine Department are provided at Wan Chai, Western District, Sheung Wan, Yau Ma Tei, Kowloon Bay, Kwun Tong, Sham Shui Po, Cha Kwo Ling, Chai Wan, Tsuen Wan, Rambler Channel, Tuen Mun and Ap Lei Chau. Lighters, motor cargo boats and river trade coasters use these areas to receive and deliver cargo to and from lorries or to bridge the sea-land interface. Common-user cargo handling facilities are in great demand and are highly utilized. Waiting time at the areas substantiated the government's policy of provision of additional common-user cargo working areas throughout the territory to maintain and improve swift and efficient internal cargo movement. The Marine Department provides and maintains 75 mooring buoys within the port of Hong Kong for ships to work cargo in the stream. These moorings are classified as 'A Class' and 'B Class' and are suitable for vessels up to 183 and 137 metres in length respectively. Many of these are special typhoon moorings to which vessels may remain secured during typhoons, so improving efficiency and reducing operational costs.

(3) Planning of New Port

27. In 1989 the government appointed a multi-disciplinary team of international consultants to carry out a Port and Airport Development Strategy Study (PADS). The main purpose of the study was to provide a long-term strategy to ensure that the port and airport facilities provided for Hong Kong by the year 2011 are in line with the demands of both air and shipping traffic. The second purpose was to address the more short-term demand for additional container terminals and to ensure that they are planned so that they do not compromise the long-term strategy. As Hong Kong's existing port and airport are close to maximum capacity, the PADS study recommended major port development, in hitherto unused parts of Hong Kong. The proposals make provision for the establishment of facilities to handle growth in break-bulk cargo, in addition to containerized cargo.

E. Ferry Services

28. Ferry services are still an important way of crossing the harbour, and essential for regular and recreational trips to and from Hong Kong's outlying islands. The majority of ferry travel is provided by two franchised operators - the Hongkong and Yaumati Ferry Company Limited (HYF) and the Star Ferry Company Limited. In addition to franchised ferry routes, nine minor ferry services are operated to or between outlying islands by six licensed operators. These are supplemented by kaitos, or local village ferry services, which are licensed to serve remote, coastal settlements. In 1989, 123 kaitos were operated by 103 operators.

29. In 1989, the Star Ferry Company operated 14 vessels across the harbour and carried 40 million passengers on its four routes. HYF owned 76 vessels and operated 26 ferry services, including passenger and/or vehicular services across the harbour, services to outlying islands, and vehicular charter services to Lantau Island. They carried 199,700 passengers and 13,800 vehicles daily. In 1989, the patronage of HYF's cross-harbour ferry services continued to be eroded by new cross-harbour bus routes and the Mass Transit Railway (MTR). With the extension of the MTR Kwun Tong line across the harbour to Quarry Bay in August 1989 and the addition of new cross-harbour bus routes via the Eastern Harbour Crossing in September 1989, there was further competition for cross-harbour travel. The further development of HYF's inner harbour ferry services has been examined by the Transport Department.

30. The China Ferry Terminal at Tsim Sha Tsui was opened in early November 1988 and most China services now operate from there. In response to public demands, a limited number of services to Macau started operating from the China Ferry Terminal in early 1989 and after a slow start, are gaining in popularity. At the Macau Ferry Terminal in Central Hong Kong Island, passenger growth remained steady at five per cent per annum. A service to Shekou, China from Central, has been successful during 1989 and therefore more services to China will be made available from the Macau Ferry Terminal in near future. In 1989, 12.6 million passengers were carried between Hong Kong and Macau and 2.9 million between Hong Kong and China, by ferries operating from Central, Hong Kong Island, and Tsim Sha Tsui and Sham Shui Po in Kowloon.

F. Railway Sector

(1) Railway System

31. There are five rail systems, including a heavily-utilized underground metro, a busy suburban railway, a modern light railway, a traditional street tramway and a newly renovated mountainside funicular.

(2) Mass Transit Railway

32. The Mass Transit Railway Corporation (MTRC) operates a three-line metro system comprising 43 route-km with 38 stations served by 671 cars formed into eight-car trains. Trains run at two-minute intervals in the morning peak period on the Tsuen Wan line and on the Kwun Tong line to the west of Kwun Tong. Headways in the evening peak are 2.5 minutes on these lines, while on the Island line 2.5 minute headways are maintained throughout the morning and evening peaks. In early August 1989, the MTRC opened its Eastern Harbour Crossing extension between Kwun Tong and Quarry Bay, together with a new station at Lam Tin. This extension provides a second railway link beneath the harbour, and has brought much-needed relief to the Nathan Road rail corridor. Total patronage continued to increase, and by the end of 1989 the MTRC was carrying 1.97 million passengers a day. The success of the MTRC depends heavily on interchange arrangements between lines and connections with other modes. There are six stations which offer interchanges between lines, while 67 dedicated feeder bus and green minibus routes help to bring passengers to the railway. Multi-storey car parks are also provided adjacent to the stations at Kwai Fong, Tsuen Wan, Sheung Wan, Tin Hau and Central.

(3) Kowloon-Canton Railway

33. The Kowloon-Canton Railway (British Section) was opened in 1910 and was double-tracked and electrified in the early 1980s. Formerly a government department, it was vested in the Kowloon-Canton Railway Corporation (KCRC) in February 1983. Although the 34-km railway caters for through freight trains to and from China and for four daily passenger trains each way between Kowloon and Guangzhou, it principally provides a suburban service to the new towns of the north-eastern New Territories. This traffic has grown substantially throughout the period since the first electric trains were introduced in 1982, and by the end of 1989 the KCRC was handling 500,000 passenger journeys daily. Peak period average headways range from five minutes at the northern end of the line to every three minutes south of Sha Tin. Passenger traffic is carried in a fleet of 85 three-car, multiple-unit trains which are now assembled in formations of up to 12 cars. A new station was opened at Tai Wo in May 1989, bringing the number of stations to 13.

34. Domestic trains fares were increased by an average of seven per cent from May 1, 1989 and the ordinary adult fare now ranges from H\$2.00 to H\$6.00, according to distance traveled. Train patronage is helped by interchanges with other operators. The busiest station is at Kowloon Tong, where connection is made with the MTRC and numerous feeder bus routes. Feeder buses and green minibuses also serve most other stations, and during the year the KCRC introduced increases in the number of its own free feeder bus routes. In 1989 reconstruction of the Ho Tung Lau workshops began, which, when completed in 1993 will provide better maintenance facilities and accommodation for additional

trains. Nine six-car trains will enter service in 1990 and another seven are expected to be delivered in 1991.

(4) Light Rail Transit

35. In addition to its main line, the KCRC owns and operates the 23 km Light Rail Transit (LRT) system in the north-western New Territories which commenced operation in September 1988. Initial services comprised five routes with a sixth route introduced in June 1989. There are 41 stops and traffic is handled by 70 light rail cars operated either singly or in pairs. By the end of 1989 226,700 boardings a day were handled on the LRT and on its feeder bus services, which are also operated by the KCRC within a transit service area extending from Tuen Mun to Yuen Long. Unusually for Hong Kong, an 'open' fare system is employed, with zonal fares providing free transfers from one route to another and to and from feeder buses. The LRT system is constructed largely on roadside reserves, although there is some tramway-style street running. Unfamiliarity with rail operation in and alongside the roads led to a number of accidents during running trials and shortly after the 1988 opening. Consequently a number of measures have been put into effect to improve and make the public more alert to the system. The system will be further extended by three links in Tuen Mun to be completed at the end of 1991.

(5) Tramways

36. Electric trams have operated on Hong Kong Island since 1904. Today, Hong Kong Tramways operates six overlapping services over 13 km of double track between Kennedy Town and Shau Kei Wan and along almost three km of single line around Happy Valley. The 163 trams comprise the only all-double-deck tram fleet in the world. During the year a rebodding programme continued, and by end of 1989 over half the fleet had been rebodied or refurbished. Tramway patronage fell slightly during the year to 349,500 boardings daily, and fares remained unchanged since 1983 at 60 Hong Kong cents per adult trip.

(6) Funicular

37. Hong Kong's other 'tramway' is actually a cable-hauled funicular railway operated from Garden Road in Central to Victoria Gap by the Peak Tramways Company. The 1.4 km line began operation in 1888 and climbs 373 metres on gradients as steep as one-in-two. The service caters largely for sightseers but also serves Peak district commuters.

G. Roads and Road Network

38. Hong Kong's roads have one of the highest vehicle densities in the world. At the end of 1989, there were 345,397 licensed vehicles and about 1,465 km of roads - 402 on Hong Kong Island, 376 in Kowloon and 687 in the New Territories. To cope

with the ever-increasing transport demands, the Highways Department has embarked on an extensive construction programme, with about 50 road projects under construction and a similar number being actively planned at any one time. There are five major road tunnels, over 630 flyovers and bridges, 371 footbridges and 202 subways to keep vehicles and people on the move.

39. The principal feature of road network in Hong Kong is the strategic road system consisting of Routes 1 through 8. Route 1, which runs from Aberdeen on the southern shore of Hong Kong Island to Lok Ma Chau Border Control Point in the northern New Territories. Route 2 runs from Kowloon Bay Reclamation Area, through the airport tunnel, onto East and West Kowloon Corridors, Tsuen Wan Road, Tuen Mun Road and Yuen Long Northern Bypass to the junction of Castle Peak Road and Lok Ma Chau Border Link Road. Route 3, provide a direct link between the north-western New Territories and Hong Kong Island via Tai Lam Tunnel, Tsing Yi, West Kowloon Expressway and Western Harbour Crossing is under investigation. Route 4 runs along the base of the foothills separating Kowloon from the New Territories and connects Kwun Tong and Lai Chi Kok. Route 5, a 7 km two-way trunk road connecting Sha Tin with Tsuen Wan, is being constructed and when completed in 1990, it will form part of the New Territories Circular Road system. Route 6 which include the Eastern Harbour Crossing, Kwun Tong Bypass, Tate's Cairn Tunnel and Road T6 linking Tate's Cairn Tunnel to the Tolo Highway is expected to be completed in mid-1991. Route 7 stretches from the Cross-Harbour Tunnel along the north shore, through Gloucester Road, Harcourt Road and Connaught Road to Kennedy Town in the west. Route 8 runs along the northern shore from the Cross-Harbour Tunnel through the Island Eastern Corridor to Shau Kei Wan and Chai Wan in the east on Hong Kong Island.

40. In the New Territories, the remaining sections of the New Territories Circular Road from Pak Shek Au to Au Tau are expected to be completed in 1991. A principal road link with China at Lok Ma Chau, which connects the New Territories Circular Road by a grade-separated interchange has been completed recently. A Tuen Mun to Yuen Long Eastern Corridor and a Yuen Long Southern Bypass have been planned in the north-western New Territories, to provide an eastern continuation of Route 2. Construction is due to start in 1991 for completion in 1993. The Yuen Long-Tuen Mun Eastern Corridor project will provide, when completed, two-way trunk road along the eastern side of Castle Peak Road to connect with the proposed Yuen Long Southern Bypass. Construction will start in 1990 for completion in mid-1993.

II. Road Passenger Transport

41. Despite the growth of rail services, road passenger transport still accounted for two-thirds of all public transport journeys. Of the journeys made by road, over half were on franchised buses, with the remainder being handled variously by non-franchised buses, green minibuses, public light buses and taxis.

(1) Franchised Buses

42. The standard and capacity of franchised bus services continued to improve through effective planning and co-ordination. There are three franchised bus companies which together carried 3.5 million passenger boardings a day on a network of 340 regular routes.

43. The largest bus operator is the Kowloon Motor Bus Company (KMB), which ran 227 bus routes in Kowloon and the New Territories in addition to 21 cross-harbour routes operated jointly with the China Motor Bus Company (CMB) and one cross-harbour route of its own. KMB also operates 'Airbus' services to and from the airport, comprising two routes to Hong Kong Island and one within Kowloon. The KMB fleet at the end of 1989 comprised 2,849 registered vehicles. Expansion of the network continued, much of this being in the new towns of the New Territories. In 1989 the company carried 975 million passengers and operated 201 million vehicle-km, compared with 1,081 million passengers and 215 million vehicle-km in 1988. The company's franchise extends until August 31, 1997.

44. Bus services on Hong Kong Island are provided by the China Motor Bus Company, which operates 84 island routes and, jointly with KMB, 21 cross-harbour routes. At the end of 1989 CMB's fleet comprised 1,004 double-deckers and two single-deckers. These vehicles carried 299 million passengers and traveled 50 million vehicle-km in 1989 compared with 317 million and 53 million respectively in 1988. The company continues to expand its fleet of three-axle double-deckers. In January 1989, the company's franchise was extended until August 31, 1993.

45. The New Lantau Bus Company (NLB) operates seven regular and two recreational routes on Lantau Island. NLB's fleet comprised 56 buses at the end of the year. During 1989 the company carried 8,200 passengers on an average weekday, but on Sundays and public holidays recreational travel raised average ridership to 20,000.

(2) Non-franchised Bus Operators

46. Residents' services were introduced in 1982 to meet the transport needs of relatively isolated residential areas without adequate access to franchised bus services. Residents' organizations may request a non-franchised bus operator to apply for such a service, which is then vetted and authorized under the operator's passenger service licence. Residents' services must operate in accordance with approved schedules of service, which also specify the routing, timetable, stopping place, and, in some cases, the fares. Most of these services operate during peak hours. A licence is normally valid for one year and may be renewed if there is a continuing need for the service. At the end of 1989, there were 25 residents' services carrying 28,000 passenger trips a day. Vehicles used on these services varied from small 24-seat coaches to double-deck buses. Apart from the

scheduled residents' services, non-franchised buses and light buses operate to serve the needs of factory employees, tourists and school children on a contract hire basis. At the end of December 1989, the licensed fleet of non-franchised buses totaled 2,600 vehicles.

(3) Minibuses

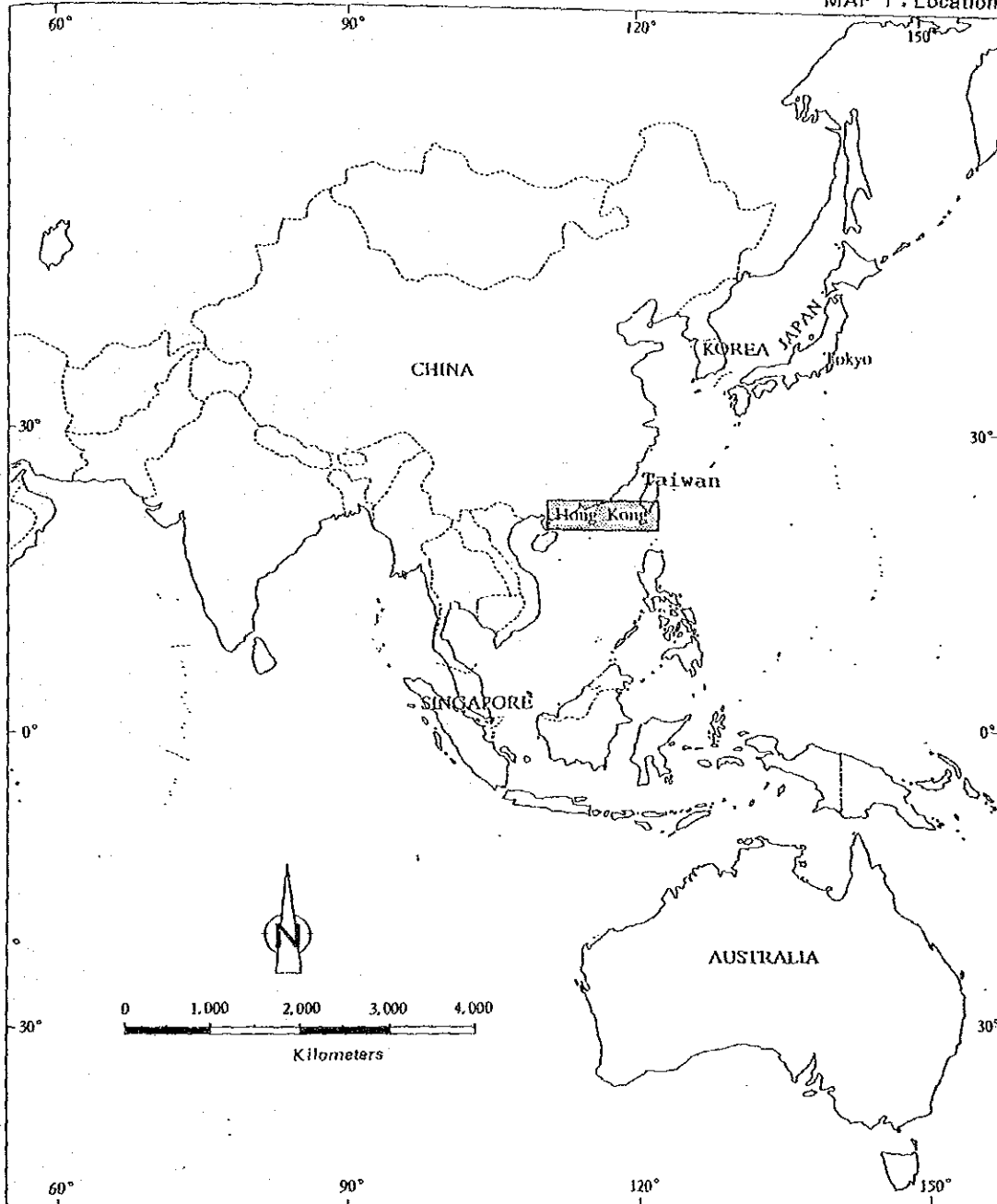
47. Hong Kong's minibuses are licensed to carry a maximum of 16 seated passengers. There were 6,750 minibuses in 1989. Of these, 4,350 were public light buses (PLB), and 2,400 private light buses. The PLBs are authorized to carry passengers at separate fares. The private light buses are only authorized to carry group passengers and the collection of fares is not permitted. The operation of PLBs is regulated by a passenger service licence. Those in green livery provide services according to official schedules. In 1989, there were 1,295 of them operating on 170 approved routes, each with fixed fares and time-tables. They carried 695,000 passengers a day. Red PLBs operate without a schedule. They do not have fixed routes, timetables and fares. In 1989, there were about 3,046 red PLBs which carried 1,065,000 passengers daily. In line with government policy to convert more PLBs to operate on scheduled routes, 14 new scheduled routes have been identified in 1989. A new green minibus selection exercise would be conducted in 1990 for competitive bidding by minibus operators.

(4) Taxis

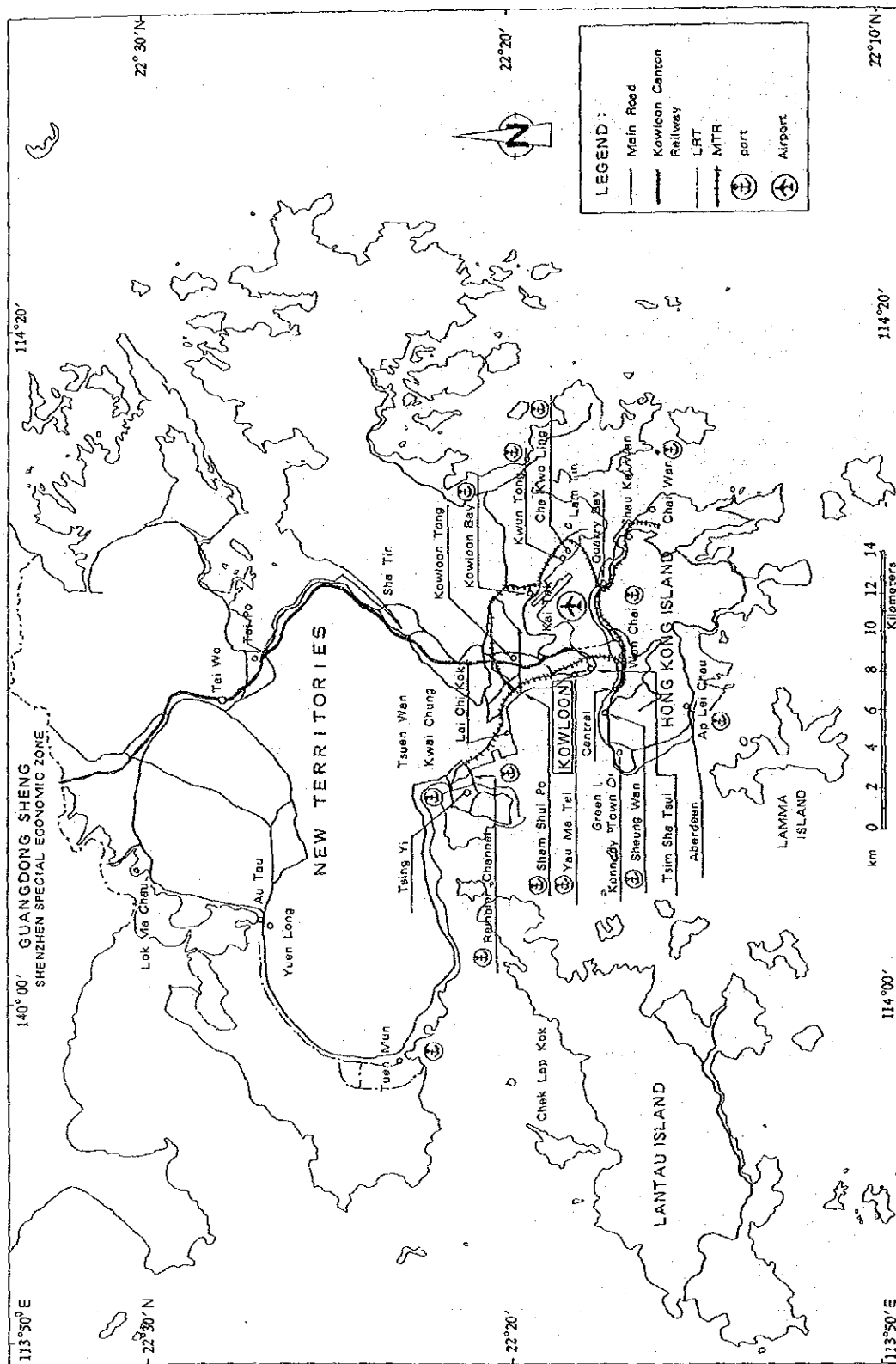
48. The quota governing the maximum number of taxis that may be licensed in the urban area and the New Territories was increased following a review of the operation of the trade and demand for taxis in 1989. At the end of 1989, there were 14,600 urban taxis, 2,738 New Territories taxis, and 40 Lantau taxis, carrying an average of 1,045,700, 175,500 and 1,100 daily passengers respectively. During 1989, new licences were issued for 200 urban taxis and for 100 in the New Territories.

HONG KONG

MAP 1 : Location



MAP 2 : HONG KONG



B.2. KOREA

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REPUBLIC OF KOREA

A. Economic Setting

1. The Republic of Korea has a land area of 99,091 sq km, about 70 per cent of which is mountainous, and a population of about 42.4 million in 1989. Agriculture is confined to around 22,600 sq km, or only 23 per cent of the total area, mainly in the river valleys, lower hillsides, and coastal plains. The climate is seasonal, with very cold dry winters and hot humid summers. Annual rainfall averages 800 mm to 1,400 mm, with about 60 per cent of the annual rainfall occurring between June and September; seasonal flooding is a problem in some areas.

2. Korea's export-led industrialization is among the most successful examples of economic development in recent history. During 1962-1978, real gross national product (GNP) grew by about 9 per cent per annum and real per capita income more than tripled. After a brief but serious recession during 1979-1981, the Korean economy recovered its growth momentum, with real GNP increasing by about 10 per cent per annum during 1983-1987, reflecting Korea's return to the high export and high growth trajectory envisioned for the Fifth and Sixth Plan periods, 1982 to 1991. GNP at current prices is estimated to have reached W109.9 trillion (\$150.3 billion) in 1988, resulting in per capita GNP of about \$3,530. In January 1987, Korea began implementing the SFYP, under which economic growth is projected to continue, but at a rate lower than recently experienced, with real GNP expected to increase at 8.3 per cent per year over the period. As the population growth rate is expected to average only 1.1 per cent annually, per capita incomes should increase at more than 7 per cent annually; it is expected that this will be reflected, inter alia, as an increase in the demand for all kinds of transport.

B. Transport Sector

3. The remarkable economic progress made by Korea over the last quarter century has been supported by the impressive development of the country's transport system. At the beginning of the 1960s, Korea was a poor, rural, developing country, dependent on agriculture as its main source of income. The main means of transporting goods and passengers was railways, built early in this century and rehabilitated following the Korean War. Today, Korea is a semi-industrialized, middle-income country, with about 75 per cent of its population living in urban areas, served by a relatively modern transport system. Railways have continued to grow in absolute terms but are no longer the primary transport mode; a diversified road network comprising toll roads, national roads, provincial and county roads in rural areas and city roads has been developed, carrying most of the passenger traffic and much of the freight. The share of coastal goods transport has also increased markedly, due primarily to the movement of bulk

products between coastal cities and industrial areas. The country's export drive and reliance on foreign trade since 1970 led to a four-fold increase in the volume of port traffic and a more than six-fold increase in the international shipping fleet. Although domestic air transport is minor compared with other modes, the number of passengers has increased about four times since 1975. The Seoul subway has been expanded to 123 km, carrying over 800 million passengers annually. A short section of subway (16 km) is operational in Pusan and will be expanded to 26 km by 1991.

4. Substantial changes in the modal distribution of traffic have occurred over the past 20 years. The previously dominant role of the railways (81 per cent of ton-km in 1966) has been replaced by a more balanced distribution of freight traffic among rail, coastal shipping, and roads, and among road and rail for passenger transport. Since 1965, for freight traffic, respective shares of road and coastal shipping in terms of total ton-km increased from 9 per cent to 22 per cent and from 10 per cent to 44 per cent. Movements by rail, although showing growth in absolute terms, fell from 81 per cent to 34 per cent of total ton-km. These changes reflect both the economic advantages of the various modes and the different growth rates as well as the locations and types of industries served. Rail and coastal shipping are more efficient for long-distance transport and bulk commodities, while road transport is better suited to the shorter-distance trips and more general cargoes. Rapidly increasing personal incomes have generated large increases in personal travel, mainly by public transport such as express trains and buses. Between 1984 and 1989, the road share of total passenger-km decreased from 75 per cent to 68 per cent, an annual average rate of increase in passenger-km of about 2 per cent; the rail share increased from 24 per cent to 29 per cent, with an annual rate of increase of 6 per cent (including the subway in Seoul).

5. The development strategies of the Sixth Five-Year Social and Economic Development Plan (1987-1991) (SFYP), recognizing the regionally imbalanced growth strategies pursued in the 1960s and 1970s, emphasized, inter alia, the promotion of competition to improve economic efficiency, improvement of equity in income distribution, and an enhanced role for the Government in social development and welfare activities. For the transport sector, the Government's basic policy focus under the SFYP was to: (i) increase transportation efficiency, capacity and quality; (ii) provide transportation facilities that are balanced and that encourage regional development; and (iii) improve transport administration. The Government sought to achieve the above objectives through: (i) a more rational distribution of the means of transportation; (ii) efforts to utilize existing facilities to the maximum degree; (iii) optimizing new investment and energy conservation; (iv) increasing the participation of private enterprise in the sector; (v) investments aimed at improving transportation in the largest cities; and (vi) increasing the length of paved roads in the network to enhance the accessibility of medium

and small cities and rural areas.

6. For more than two decades, the transport system in Korea has been strained by the demands of rapid economic growth; this growth has made necessary large public sector investments for transport infrastructure. The Government allocated a relatively high share of the total development budget -- up to 23 per cent of its total capital expenditure -- to expand and modernize transport infrastructure from 1967 to 1977. This tapered down to about 15 per cent in the Fourth Plan (1977-1981) and to about 10 per cent in the Fifth Plan (1982-1986), as the economy and the investment requirements of other components of the development plans grew. As the major investments in airports, ports, and the subway system in Seoul were largely completed under the Fifth Plan, the transport sector investment allocations under the recently initiated SFYP were scaled down to about 4 per cent of total national capital investment. However, the allocation for national roads, including toll roads, was increased about three-fold in current terms compared with the Fifth Plan outlay for roads. Total transport sector investment under the SFYP was expected to be about W7.0 trillion (\$9.7 billion). Roads accounted for about 58 per cent of the transport sector plan expenditure, at W4.0 trillion (\$5.6 billion).

7. Large investments in transport infrastructure have been complemented by a considerable effort to improve the efficiency of the transport system through the establishment and strengthening of institutions to plan, construct, maintain and operate transport facilities and services. In the public sector, institutions, such as the Korea Highway Corporation (KHC) and Bureau of Public Roads (BPR) in Ministry of Construction (MOC), the Korea National Railroad (KNR), and the Korea Maritime and Port Administration (KMPA) in the Ministry of Transport (MOT), have been established or strengthened, in many instances with increasing financial and managerial responsibility. In the private sector, a highly efficient contracting industry for civil works has evolved, which reflects both the policy of competitive bidding in the award of contracts and the large volume of construction that has been carried out in Korea during the past 20 years. There are now some 500 firms capable of handling a broad range of public works. Furthermore, with Government encouragement, the major construction firms have successfully expanded their construction activities overseas.

C. Planning, Coordination and Policy

8. The Government's basic objective in the past has been to increase and modernize the capacity of the transport system in line with forecast traffic growth, with a view to avoiding major transport bottlenecks. While this approach has been largely successful in that the present transport system is reasonably balanced intermodally and traffic is, in general, allocated economically among the various modes, this policy has followed a number of investment decisions, both public and private which

were regionally unbalanced, focussing on an axis with Seoul to the northwest and Pusan to the southeast. While economic efficiency is one of the main criteria for transport infrastructure investment, the Government recognizes that there are still gaps that must be filled in order to encourage rapid and equitable development. Consequently, considerable weight is given to the amelioration of regional imbalances in establishing transport infrastructure priorities.

9. In the early 1980s, the Government recognized that while the nation's transport system was basically in place, transport investment decisions had become considerably more complex. Although the coordination of investment plans had been vested in the Ministry of Transport (MOT) through its Transport Coordination Division (TCD), more comprehensive investment planning and improved coordination among Government agencies was required. The Government has since taken action to improve intergovernmental coordination through the TCD in conjunction with the Economic Planning Board (EPB) and the line ministries concerned, and, with assistance from IBRD, undertook numerous studies of various sectoral issues, including investment planning.

10. Regarding intermodal investment planning, there has been a need to establish procedures for comparing investment alternatives between modes, as well as the investment plans of agencies responsible for road construction and improvement. To this end, EPB has assigned detailed transport investment project appraisal to its Industry Policy Coordination Bureau. This Bureau has a staff well trained in investment evaluation that annually reviews all major transport investment projects for economic feasibility and appropriateness within the development Plan. A further review is undertaken through an Interagency Coordinating Committee, chaired by EPB. Finally, the Budget Bureau of EPB, through the budget review process, routinely coordinates investment plans of the various agencies in conjunction with the private sector. In complex cases, detailed intermodal investment planning studies are undertaken to determine the most economic investment scenario and appropriate timing for its implementation. This was recently demonstrated through a study entitled "The Kyonggi Region Multimodal Transport Study" (KRMTS), which mainly recommended additions to the toll road network and rail system in the capital region and the widening of some major arterial roads in the Seoul metropolitan area. On the basis of KRMTS recommendations, IBRD approved a loan in January 1988 mainly for the construction of new toll roads. Studies for other regions will be undertaken in the future as needed.

11. Responsibility for the planning and construction of all national roads is through MOC, while Ministry of Home Affairs (MOHA) is responsible through the provinces, counties, and cities for their roads. These investments in the past have been largely uncoordinated and were implemented on an ad hoc basis, with responsibility residing with the agency concerned; because of this, some uneconomic and non-complementary investment decisions

have been made. In addition to the KRMTS, two major steps have recently been taken by the Government with a view to enhancing coordinated road sector investment. First, a Highway Network Master Plan Study (HNMPs) completed in 1986 prioritized investments for all types of roads in rural areas to the year 2001. The recommendations of the study, along with some of the recommendations of the KRMTS, provided the basis for the selection of road links in rural areas to be constructed or improved under the SRDP, concurrent with implementation of the SFYP. Second, since the Government has perceived a need to centralize coordination of road investments to ensure that project timing and scope are congruent among the agencies concerned, the Bureau of Public Roads (BPR) within MOC starting in 1987 has been entrusted with the authority to review plans and specific projects for improvement of roads proposed by the provinces and counties. If such plans and projects are feasible and conform to plan requirements, the release of matching national counterpart funds will be authorized.

D. Civil Aviation

12. Aviation plays a very minor role in the Korean transport system, with domestic air passenger-km accounting for only 2.5 per cent of the total in 1989. Growth is rapid, however, and during the period 1977-1987, domestic passenger-km grew fourfold, from 385.3 million to 1,430.8 million (approximately 14 per cent per annum). The privately owned Korean Air Lines (KAL) operates international and domestic flights. In 1986, the aircraft fleet consisted of 47 passenger aircraft (31 wide-bodied jets, 15 other jets, and 4 turbo-props), 15 light aircraft, 37 helicopters, 9 training aircraft, 1 inspection aircraft, and 1 glider. There are three international airports, at Kimpo (Seoul), Gimhae (Pusan), and Jeju. In 1988 the Government authorized the formation of a new privately-owned airline which will compete directly with KAL for domestic and international traffic.

E. Ports and Shipping

13. There are 25 first-class and 22 second-class ports and numerous minor local ports along the coastline of Korea. Since Korean industry relies to a large extent on imported raw materials, most industrial complexes are located near ports. In response to the substantial growth in the Korean economy, freight transport through the ports over the decade 1984-1989 increased more than threefold, from 157.47 million tons to 258.77 million tons, an annual rate of increase of approximately 10.4 per cent. This rapid rate of increase has resulted in serious port capacity problems at times, but investments in the improvement and expansion of port facilities have made it possible for Korean ports generally to keep pace with the rapidly increasing traffic volumes. In addition to the assistance provided by the AsDB for the development of Incheon Port, the Government has also received assistance from IBRD, OECF and the Saudi Fund for Development.

14. The two main international general cargo ports are Pusan and Incheon, which respectively handled 26.1 per cent and 15.9 per cent of international tonnage in 1987. Pusan is the main container port, handling 97.6 per cent of container cargoes in 1989, with Incheon handling the remainder. This imbalance prevails despite the fact that a substantial proportion of all containerized cargo originates in or is destined for the Incheon hinterland. Apart from the available capacity at Pusan, several reasons account for this imbalance: (i) Incheon is situated about one ship-day from container shipping routes; (ii) the tidal range of up to 9 m at Incheon restricts entry to the locks at low tides, causing delays to shipping; and (iii) the present low level of surcharges at Pusan port has not induced shippers and consignees to use Incheon Port. Also, at present the port traffic organizations and the shipping agents are concentrated in Pusan. In the long run, the opening of the new container ports in the Peoples Republic of China, being developed with OECF and IBRD assistance, will bring Incheon nearer to the main container routes.

15. Coastal shipping is becoming a major mode of domestic freight transport. In 1966, only 0.7 million ton-km were transported by this mode, representing about 10 per cent of the total domestic ton-km. By 1981, coastal shipping handled about 34 per cent and by 1989, 44.1 per cent, or 17.9 billion ton-km. Much of this traffic consists of bulk commodities such as oil, cement and anthracite. In 1989, the average haul per ton of cargo was about 325 km. The share of the total domestic traffic is expected to increase to about 45 per cent, or 17 billion ton-km by 1991.

16. In view of the growing volumes of both international and coastal freight traffic, measures are being taken to increase the cargo handling capacity of the ports. The SFYP envisaged, among other things, continued development of both Pusan and Incheon ports. Under the SFYP, the Government allocated about W1,154 billion (\$1.6 billion), representing about 16 per cent of the total transport infrastructure allocation to port development.

F. Railways

17. At the end of 1989, the railway system, operated by the semi-autonomous Korean National Railroad (KNR), had a track length of 6,437 km. Of this, 892 km was double-tracked and 525 km was electrified. In 1989, KNR rolling stock amounted to 1,452 locomotives (including 680 diesel, 633 electric and 139 other, including specialty locomotives), 15,307 freight cars, and 2,133 passenger cars.

18. Rail freight traffic consists mainly of bulk commodities. Of the 13,605 million ton-kms of freight transported in 1989, 33 per cent was anthracite, 22 per cent was cement, and 10 per cent was ore. General cargo accounted for only about 22 per cent. Freight transport by rail has growth slowly during the

period 1984-1989; ton-kms increasing by 13.1 per cent during the period. Passenger travel by rail also increased by 25.2 per cent over the same period. However, since most of the increase in domestic traffic in recent years has accrued to road transport, the railway share of total passenger traffic declined from 43 per cent in 1962, to 27 per cent in 1971, to 23 per cent in 1981, and to 22 per cent in 1989. The freight traffic share also declined, from 78 per cent in 1962, to 47 per cent in 1971, to 46 per cent in 1981, and to 34 per cent in 1989.

19. Under the SFYP, it is estimated that the railway share of freight will continue to decline as a result of the continued expansion of the paved highway network, but in terms of absolute volume the demand for railway freight services is expected to grow by 17 per cent. The rail proportion of passenger-km during the SFYP period is expected to remain at 21 per cent. Accordingly, the SFYP, with a total railway allocation of about W1,462 billion (about \$2.0 billion), provides for substantial improvement of railway lines (mainly extension of line, construction of double tracks, electrification, etc.) and rolling stock. The SFYP also envisages continued improvement to railway operating practices, giving high priority to long-distance passenger and bulk cargo traffic. Low-traffic stations and unprofitable lines may be abandoned.

G. Roads and Road Transport

20. With the high level of public expenditure, including multilateral and bilateral assistance, for road subsector investment since the First Plan, the extent and condition of the road network have improved considerably. Between 1962 and 1989, the total road network has more than doubled, from 27,200 km to 56,481 km, and the percentage of paved roads has increased from about 5 per cent in 1962 to 66 per cent in 1989. During the same time period, the rural road network, comprising toll roads and national, provincial and county roads, has increased from 16,000 km with 6 per cent paved to almost 37,000 km with about 50 per cent paved. Of this, about 88 per cent of the 13,741 km national road network (including 1,551 km of toll roads) was paved, as was about 57 per cent of the 10,558 km provincial road network and about 22 per cent of the 12,861 km county road network. City and special city^{1/} roads amount to 19,500 km, of which 14,800 km (75 per cent) were paved in 1989.

21. Construction of toll roads in Korea began with the AsDB financed Seoul-Incheon highway in 1967, which was the first toll road handed over by MOC to KHC for management, in February 1969. Since then, the locally financed four-lane Seoul-Pusan toll road was put into service in 1970 and several two-lane toll roads have

1/ There are 57 cities and 5 Special Cities in Korea. Special cities include Seoul, Pusan, Daegu, Incheon and Kwangju.

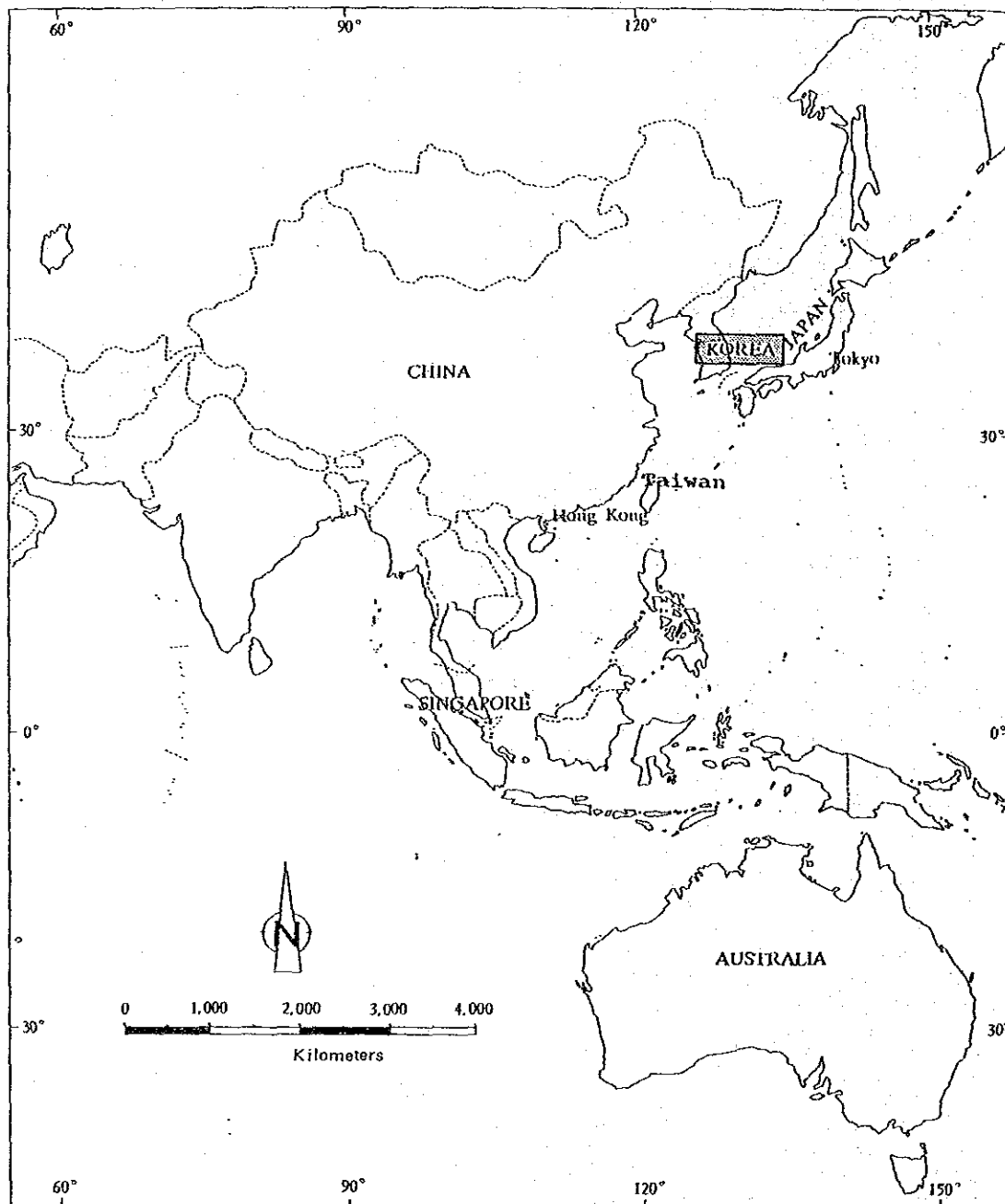
been constructed under local and external financing. As traffic volumes have increased rapidly on all toll roads, particularly on the two-lane roads, congestion is becoming a problem and road capacity increases are necessary. To this end, KHC has been actively engaged in the widening of toll roads to four or six lanes. A toll road network of 1,551 km is currently managed by KHC.

22. The Sixth Road Development Program (SRDP), prepared as part of the SFYP, emphasized that the protection of existing road facilities through adequate maintenance was as important as building new and improving existing roads. SRDP also gave policy direction for road transport, which in consideration of the need to promote economic development in the less developed parts of the country emphasized the need to: (i) expand and widen arterial roads where traffic volumes warrant; (ii) continue improving and paving national, provincial, and county roads; (iii) increase and modernize the vehicle fleet and further develop both vehicle and road safety measures; (iv) improve the efficiency of road transport operators by expanding terminal facilities and encouraging larger-scale transport firms; and (v) expand and improve the transportation network in remote areas to reach all villages with 50 or more households. To this end, under the SRDP a total of W3.675 trillion was allocated for the road subsector for construction of 300 km and widening of 240 km of toll roads, paving of 1,900 km and widening of 900 km of national roads, and paving of 3,900 km of provincial and county roads. During the SFYP period, it was expected that about 2,500 km of city roads would also be improved. The improvement of city roads was not included in the SRDP but was expected to cost a total of W1.4 trillion over the Plan period.

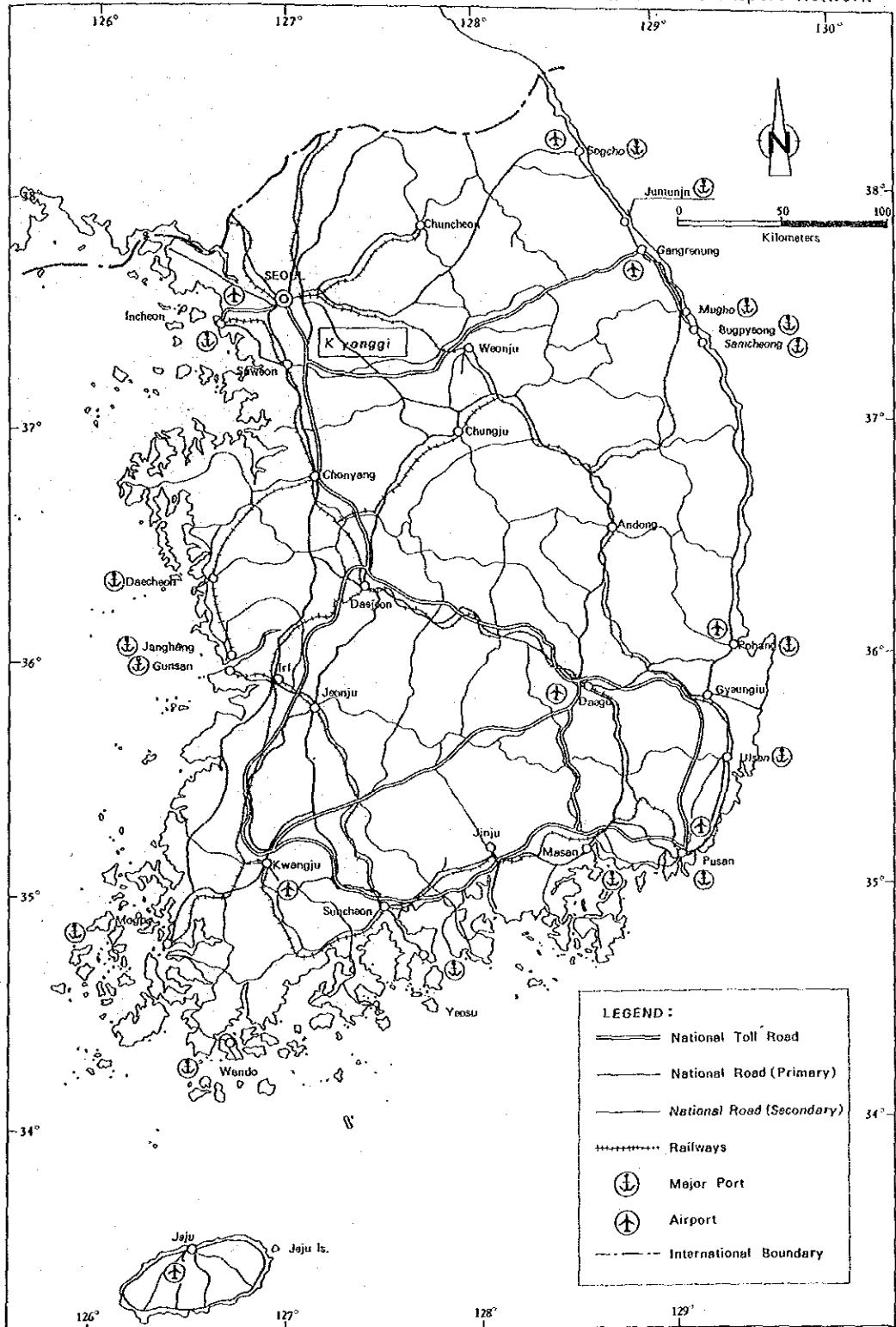
23. The motor vehicle fleet in Korea has been growing rapidly in recent years with the growth of the economy and personal incomes, despite relatively high levels of taxation on private automobiles. In 1989, a total of 2.66 million vehicles were registered in Korea, of which about 3.85 million were road vehicles with four or more wheels, including 1,559,000 cars and taxis, 323,400 buses, and 778,000 trucks; the remaining 1,188,000 vehicles were motorcycles. With the development of the domestic automotive industry and the rapid economic growth during the Fourth and Fifth Plans, vehicle registrations increased at annual rates of 30 per cent and 20 per cent respectively and traffic on national roads in rural areas has been increasing at an annual average rate of 12 per cent. Under the SFYP, the vehicle fleet, excluding motorcycles, was expected to increase to 3.2 million units by 1991, comprising 1.8 million cars, 0.4 million buses and about 1 million trucks, an annual average growth rate of 23 per cent. The rapid vehicle fleet growth in the past has increasingly burdened the public road system, with the result that more roads need to be improved, congestion is becoming more common, capacity increases are warranted, and traffic safety has become a major national problem. The vehicle fleet growth under the SFYP has exacerbated the need for road investment and road safety measures.

KOREA

MAP 1 : Location



MAP 2 : Transport Network



B.3. SINGAPORE

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SINGAPORE

A. Economic Setting

1. Singapore consists of the island of Singapore and some 58 islets within its territorial waters. The main island is about 42 km in length and 23 km in breadth, and 573.1 sq km in area. It has a coastline of 137.7 km. The total land area, including the islets, is 625.6 sq km. Singapore's immediate neighbours are Malaysia (Peninsular Malaysia, to the north, Sabah and Sarawak to the east) and Indonesia to the south. Singapore is linked with Peninsular Malaysia by a 1,056 m causeway which carries a road, a railway and a water pipeline across the Strait of Johor. At Putri Narrows, near the north-west corner of the island, the strait is 640 m wide; near the causeway, it is about 914 m wide. Some of the islets are of economic importance. The major ones are Pulau Tekong Besar (1,793 hectares); Pulau Ubin (1,019 hectares); Sentosa (329 hectares); Pulau Bukom Besar (145 hectares); Pulau Merlimau (55 hectares); and Pulau Ayer Chawan (169 hectares). Pulau Seburus Dalam and Luar were merged by reclamation with Pulau Seraya, which has a total land area of 193 hectares.

2. The island can be roughly divided into three regions: the central hilly region of igneous rock formation in Bukit Timah, Bukit Gombak, Bukit Panjang and Bukit Mandai; the western region of sedimentary rocks which form a succession of northwest-trending hills and valleys; and the relatively flat eastern region of sand and gravel deposits which extends from Katong to Changi.

3. The population at June 30, 1989, was 2.69 million with a growth rate of 1.5 per cent in 1989. Population density rose from 4,197 persons to a sq km in 1987 to 4,300 persons to a sq km in 1989. The population comprised 2.04 million Chinese, 0.41 million Malays, 0.17 million Indians (including Pakistanis, Bangladeshis, and Sri Lankans) and 0.07 million persons of other ethnic groups. The Chinese constituted 75.8 per cent of the population, the Malays 15.2 per cent, the Indians 6.3 per cent and persons of other ethnic groups the remaining 2.7 per cent.

4. Since the First Development Plan between 1961 and 1965, the emphasis on development strategy has been on industrialization, in recognition of the limits of growth based on entrepot trade. However, the basic resources at Singapore's disposal for stimulating growth are largely intangibles. The island republic has very few natural resources and has to obtain all its basic requirements, including food, water and raw materials, from external sources. Further, the population is too small to create a significant domestic market. However, Singapore has the advantages of a favorable geographic location and natural harbours, and has an urbanized, highly literate and trainable population. These factors, together with political stability and experience as a trading centre, enabled development objectives to build up a

manufacturing sector geared to the export market, to provide suitable economic infrastructure, to attract foreign and local capital, to develop technical, managerial and marketing expertise and to train and discipline the labor force.

5. The economic strategy of the 1970s was to diversify the economy, to upgrade industries to higher skill levels and higher value-added and to develop Singapore into a regional and international financial centre. The Asian Dollar and Bond Markets were stimulated by numerous fiscal incentives as well as complete removal of foreign exchange controls. Export promotion to develop new markets accompanied the aggressive drive for foreign investment into new areas. Entrepot trade is not consciously inhibited in any way, although it plays a greatly diminished role. In the services sector, emphasis was on the development of the tourist industry, transportation and warehousing as well as financial and insurance services.

6. To advance into high-technology and capital-intensive industries and the introduction of automation and more effective mechanization of existing production methods prompted the establishment of new industries such as petrochemicals, biotechnology, aerospace and information technology throughout the 1980s. The services sector was also given the same emphasis as the manufacturing sector as tax incentives were extended to such activities as countertrade and the development of an overseas headquarters centre and international purchasing offices. Singapore manufacturing sector is increasingly transformed from a more offshore production base to a more integrated manufacturing-cum-services one, offering after-sales services, testing and other storage and warehousing services as well. As much as it is allowed, Singapore's growth strategy would also aim to complement and supplement the developmental needs of the neighbouring countries because of its comparative advantage in infrastructure and services. In this regard, it has maintained a high interest and level of participation in the ASEAN group in particular.

7. A major factor in past growth had been the effective implementation of soundly-conceived government policies that took Singapore's weaknesses and strengths fully into account. Other major factors included the competitiveness of Singapore's exports on world markets, the ability to attract overseas investments, the allocation of resources to investment, especially for infrastructure and human resources, rather than consumption and the development of an international financial sector. Singapore's gross national product (GNP) per head grew from S\$2,830 in 1960 to S\$9,940 in 1980 and S\$19,420 in 1989. Its per capita indigenous GNP were S\$2,480, S\$8,320 and S\$17,910 respectively.

B. Transport Sector

8. The growth rate of the transport sector, comprising air, sea and land transport was above the national average but below those of the financial and manufacturing sectors in the

period since 1960, but outstripped both of these two over the period since 1980. In terms of shares to GDP, the transport and communication sector contributed 14.1 per cent in 1989, about half those of the financial and manufacturing sectors.

9. The growth in employment of the transport and communication sector was 1.1 per cent over the period since 1960, slightly lower than the national average of 1.7 per cent and not as high as those of the financial and manufacturing sectors. But its share of total employment at 9.7 per cent in 1988 was higher than that of the financial sector. The export orientatedness of the transport and communication sector measured by the ratio of exports to output has grown from 49 per cent in 1973 to 56 per cent in 1983. While not as significant as that of the manufacturing sector, its contribution to Singapore's exports is higher than that for the financial sector. The same degrees of contribution of these sectors for net foreign exchange earnings have been observed over the three years. The average annual rate of growth of the transport and communication sector at 9.4 per cent in 1989 was third following the financial and business services sector at 14.6 per cent and the manufacturing sector at 9.9 per cent and the relative shares in foreign exchange earning of these last two sectors were 20.4 per cent and 54.6 per cent respectively in 1983.

10. While Singapore strives to develop its transport facilities in air and sea to provide the value-added, employment and foreign exchange earnings as well as to complement other industrial sector which depend on such infrastructural support, it also intends to enhance its role in the ASEAN region, Asia Pacific and the global context. The two objectives are not in conflict but in fact very much complementary each other.

11. In specific terms for cooperation, besides offering Singapore's physical facilities in airport and port infrastructure, its expertise in development and management of these facilities can also be shared with other countries. There are already such transfer of technology and expertise in port management for instance from Singapore to China and the scope can certainly be widened in both scope and areas. Another very important area of contribution from Singapore would be in human resource training and development in these areas of the transport industry, from the technical to the management and maintenance levels.

C. Air Transport

12. The growth of airfreight excluding mail has grown 3.3 times over the period 1979 to 1988 when 511,541 tones of airfreight were handled. For passengers passing through over the same period, there has been a two-fold increase with some 12.5 million passengers chalked up in 1988. The number of commercial aircraft grew 1.2 times to 79,027 in 1988 over the same period.

13. Besides expanding terminal facilities at Changi Inter-

national Airport where about 70 per cent of the building works at the second terminal is completed by 1989, plans of a third terminal are to be finalized by 1991 and drafting plans of a fourth terminal are mooted as it would be built around 2010. Other innovative ideas like having a airport-cum-aviation centre at the Seletar business park, also feature Singapore's intensive search to latch onto technology to enhance its advantages, which is expected to allow business executives to fly in and out of Singapore in their private jets and conduct business in offices located in the business park. The move is to cater to general aviation and timesensitive service utilities. To stretch resources and tie-ups, the national carrier, Singapore Airlines (SIA) has linked up with the American Delta Airlines and Swissair. A second scheduled airline which is a subsidiary of SIA, Tradewinds has become the 50th scheduled airline to serve Changi Airport. A third Singapore-registered airline, Region Air is signing a two-year pact with Air Europe which would help it to start its operations, obtain expertise and secure traffic rights. A liberal aviation policy is pursued in Singapore as a policy of "open skies" is obviously the best option for Singapore with its sights set on the airfreight and tourist industries. The historical accord reached in July 1990 with the United Kingdom which allows foreign airlines to base their fleets in Singapore not only allows for more flights from the UK but also to treat Singapore almost as another home base. UK airlines would base a fleet equivalent to 20 jumbo jets in Singapore, that is using Singapore as a hub and operate feeder services in the region.

D. Ports

14. In the area of air and sea transportation, Singapore has developed ahead. The Tanjong Pagar Container Terminal features round-the-clock service throughout the year where efficient relay and turnaround services is greatly expedited by computerization. Computer applications includes documentation, billing, stowage planning, container control and container freight station (CFS) operations. In terms of development in containerization, Singapore's facilities is being rivaled only by Hong Kong as the world's busiest container port. In 1989, Singapore was second for the third consecutive year behind Hong Kong with 4.36 million TEUs (20-foot equivalent unit). The Port of Singapore Authority (PSA) expects to cross the 5 million TEU mark in 1990. Development of the Brani Container Terminal to be completed by 1992 to handle 7.4 million TEUs is aimed to boost existing facilities on the main island. Total cargo handled rose by 12 per cent to 173 million tonnes in 1989.

15. In addition to the investment for further development of container terminals, facilities to handle conventional cargo at the Pasir Panjang Terminal are also being expanded under a S\$160 million plan involving two projects. When completed, the two projects would add some 4 million tones or nearly 60% to the terminal's existing capacity of 7 million tones a year.

16. An understanding of sophisticated technological development in the area of information and data management is germane to enhance future cooperation in transport which facilitates trade. PortNet is the maritime version of TradeNet which is to facilitate "paperless" trading. TradeNet is Singapore's nationwide electronic data interchange (EDI) network launched in January 1989. The network enables various parties from the public and private sectors to exchange standard trade documents electronically. TradeNet also provides trade related databases like trade statistics, flight schedules, controlled item lists and lists of codes including the harmonized system codes, port and country codes and others. Currently, PortNet has a subscribing pool of 150 which is expected to expand to 400 by 1992. PortNet is linked to TradeNet and PortNet subscribers have the option to use TradeNet as the document clearance system as well as access to its databases.

17. Singapore broke new ground by setting Teleport links with Hong Kong International Terminal and Modern Terminals Ltd. in November 1989 followed by a similar connection with the Port of Bremerhaven in West Germany in December 1989. Through the on-line transmission, information on containers loaded, for instance, can be exchanged electronically between these ports, creating an "electronic highway" for real-time transfer of shipping and cargo information through Singapore. The instant data interchange has helped to improve yard and ship planning, leading to faster ship turnaround times. As other ports develop their own computer systems, the greater number of Teleport or data links can be put in place.

18. Singapore's port development does not appear merely reflect a singular aim to attract more cargo from Asia and the Pacific region or Europe. As more shipping lines are drawn in by the quality and efficiency of port facilities and services, the spillover in opportunities for other port related activities such as bunkering, ship supplies, information related to trade, ship management and financial services like oil futures is desirable for the private sector. In as much as this role applies in the domestic context, the Singapore port can similarly create these multiplier effects or linkages for other surrounding countries.

E. Railways: Mass Rapid Transit System

19. The 67 km Mass Rapid Transit (MRT) System consists of two lines running north-south and east-west. The S\$5 billion MRT system has 42 stations, 15 underground, 26 elevated and one at ground level. The MRT is a conventional electrically-driven railway system. On November 7, 1987, the line from Yio Chu Kang to Toa Payoh was opened for passenger services. Presently, the 25 stations running on a route length of 38.3 kilometres serve an average of 290,000 passengers a day. When the entire 42-station system is expected to become operational in 1990, serving some 800,000 passengers daily at intervals of three to six minutes.

20. When fully operational, there will be 66 trains serving the entire MRT system. Each six-car train can accommodate 1,800 passengers at any one time. The cars are coupled in two sets of three cars each with open gangways linking all six cars. The trains are powered from an electrified third rail at 750 volts DC. The trains are fully automatic and can be operated up to 80 km an hour though the average speed during operations is 45 km an hour, stopping at stations for 20 to 30 seconds. Travel times on the MRT are significantly lower than on bus or car.

21. The Singapore Mass Rapid Transit (SMRT) was set up as a private company in August 1987 to operate the MRT system while the Mass Rapid Transit Corporation (MRTC) continued with the task of building the railway. The new company has an authorized capital of S\$200 million and an initial paid-up capital of S\$150 million.

22. Fare collection is automatic and it uses magnetically coded plastic tickets which can be recycled. The single trip tickets can be purchased from the coin-operated ticketing machines while the stored-value tickets and the monthly concession tickets are available at the sales counter for all regular commuters. The minimum fare for travel is 50 cents which will cover a distance of not more than 3.5 km, while the maximum fare covering the 25 stations is S\$1.40 for single trip journeys.

23. Train operations are controlled and monitored from the Operations Control Centre (OCC) at Stamford Road. This OCC also monitors the power supply, environmental control and tunnel ventilation systems. The main depot where most of the trains are sent for inspection, overhaul and repairs is the Bishan Depot. This depot, occupying a site of 30 hectares has specially equipped workshops for dealing with various mechanical, electrical and electronic equipment as well as a plant for acid washing of trains, cash-handling facilities, a two km test track and the training school. Two other smaller sub-depots, one at Changi and the other at Ulu Pandan, will provide for routine interior and exterior cleaning and for minor repairs to be carried out. The two largest stations, Raffles Place and City Hall stations, will also serve as the interchange stations between north-south and east-west lines.

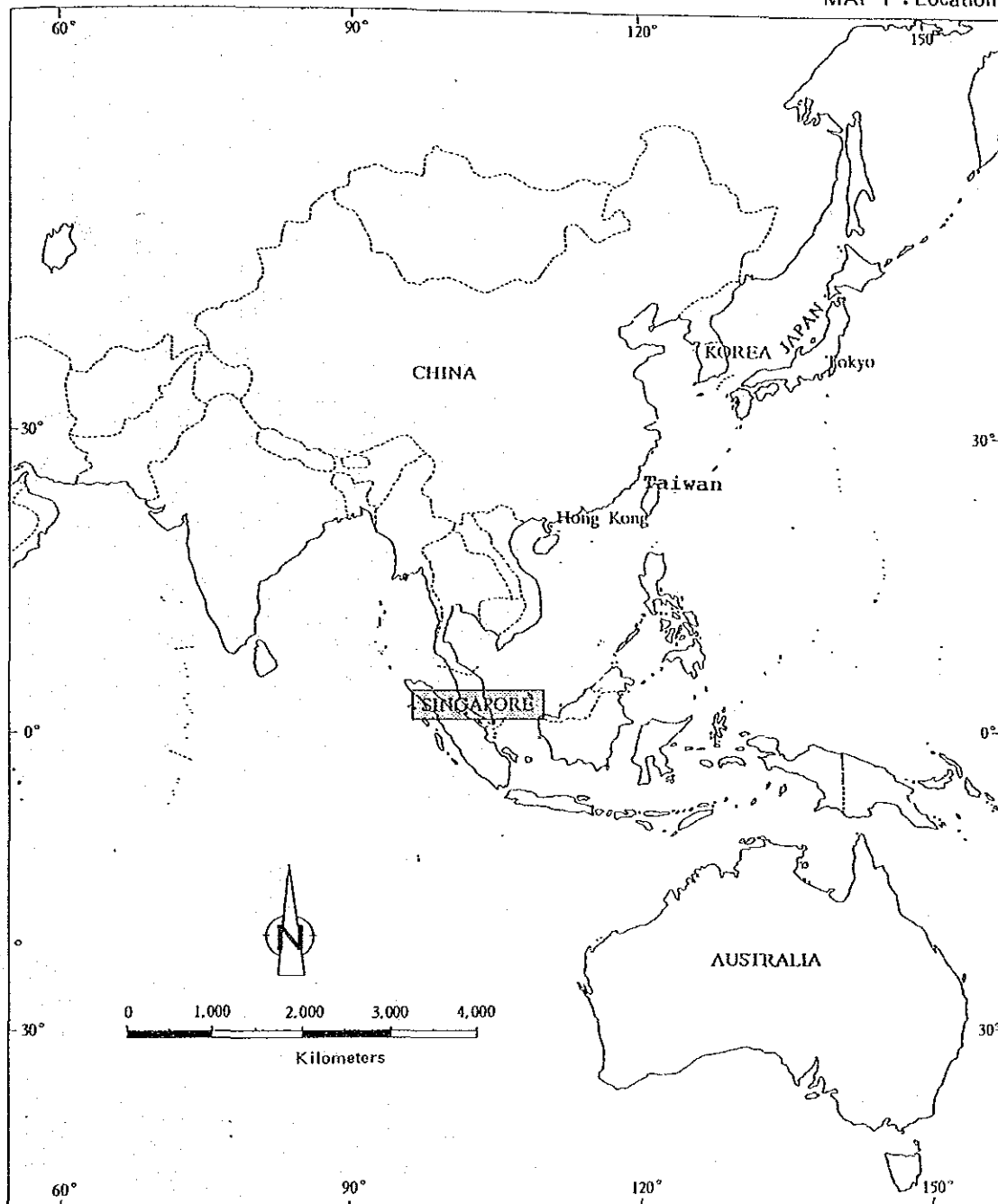
F. Roads and Road Transport

24. There are 2,810 km of roads, of which 2,725 km are asphalt-paved. There are six expressways with a total length of 96 km in the road network. There are 82 flyovers, of which the longest is the Keppel Viaduct (over Keppel Road) with a length of 2.1 km, 417 vehicular bridges and 331 pedestrian overhead bridges. The oldest bridge still in use is the Cavenagh Bridge over the Singapore River - a steel structure constructed in 1870 which has a length of 45.7 m against which the longest and modern one is Benjamin Sheares Bridge, with a total length of 1,855 m.

25. There were 491,808 motor vehicles in 1988, of which, 238,984 were motor cars, 116,476 were motorcycles and scooters, 10,473 were taxis and 8,788 were buses.

SINGAPORE

MAP 1 : Location



B.4. TAIWAN

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TAIWAN

A. Economic Setting

1. Taiwan is located at the western rim of the Pacific Ocean, between Japan and the Philippines. It is an island with a population of 20.0 million living on its area of 36,000 sq km (1989). The land can be classified into five ranges: the central mountain range, volcanic mountains, foothills, terrace tablelands, and coastal plain and basins. The predominant feature of the island is its mountains, which account for over 60 per cent of its total land area. Most of the flat land that is arable and suitable for living is located in the western side. The development on the eastern side is slower than that on the western side because of its geographic separation by the Central Mountain Range and limited habitable land. Besides Taiwan proper, there are 77 small offshore islands with some serving as popular vacation and sight-seeing spots.

2. The population density is 556 persons per sq km in 1989, which is the second highest in the world. Indeed, the pressures generated by population growth have been significant. The successful implementation of population policy and family planning programs in the recent decade has resulted in a noticeable decline in the birth rate, with the natural increase rate of 1.04 per cent in 1989. Population aged 15 and above increased at a rate of 2.6 per cent with the labor force growing at an annual rate of 1.8 per cent. Total employment increased at a slightly slower rate of 2.1 per cent per year over the last five years. Consequently, the unemployment rate was varying from 1.3 per cent to 2.7 per cent per year in the same period. Agricultural employment as a percentage of total employment in 1989 was 12.9 per cent. As industry becomes more automated and technology intensive in Taiwan, growth in industrial employment slowed down to 2.0 per cent in 1989 and industry's share in total employment declined to 42.3 per cent in the same year. Employment in the rapidly expanding service sector exceeded industrial employment for the first time in 1988, and services continued to absorb the major portion of new job seekers, with the share in total employment increased to 44.8 per cent in 1989. The change in industrial structure in Taiwan has been accompanied by sustained economic growth. In 1989, Taiwan's Gross Domestic Product (GDP) stood at NTS\$3.97 trillion.

3. The principal objectives of various plans in the 1950s and 1960s were; promotion of agricultural and industrial production; fostering of price stability, reduction of trade deficit, and increase of GNP and per capita income. The general objectives of various development plans in the 1970s and the early 1980s were: improvement of the economic structure, strengthening of development potential, acceleration of the pace of economic modernization, and promotion of a well-balanced socio-economic development. The ongoing plan, the ninth mid-term plan, emphasizes the following objectives; promotion of economic liberaliza-

tion, restructuring of industry, promotion of science and technology, protection of the environment from pollution, and reduction of a stubborn trade surplus.

B. Transport Sector

4. In the 1970s and 1980s, a number of important development projects were launched to meet the needs of continuous economic growth and stability in Taiwan. The most of the major transportation projects are now completed, while some of them will be completed in the near future.

5. Virtually all intercity travels are by highway, railway, or air. It is estimated that in 1989, 941 million intercity passenger trips were made in Taiwan. Of this total, it was further estimated that 85.5 per cent of these trips were made by highway transport, 13.6 per cent by railway transport, and less than 1 per cent by air transport. In 1989 the average trip lengths for air, railway, and highway intercity trips were 128 km, 64 km, and 20 km respectively. It is noteworthy, however, that the average trip lengths for highway transportation had increased from 16 in 1979 to 20 in 1989, a reflection on the constructions of freeway and highways during the past two decades. It is also a reflection of the rapid growth of car ownership. The number of small passenger cars per 1,000 persons grew by 313 per cent over the last decade. In the same period, however, the number of buses per 1,000 persons increased by only 8 per cent. This trend toward greater use of private transportation modes has not only created congestion in urban area, but has also created congestion on the intercity highways.

6. In terms of cargo tonnage transported, virtually all freight is transported by highway and railway systems. The role of air transport in domestic freight transportation is negligible. In 1989, almost 263 million tons of freight were transported between cities. Of this total, about 93 per cent was transported by commercial highway vehicles and over 6.9 per cent was transported by railway. The average distance transported per ton of freight on highway vehicles was 47 km as opposed to 111 km for that on railway cars and 123 km for aviation. From the foregoing descriptions, highway transportation is clearly the single most important intercity transport mode in Taiwan. It constitutes the primary door-to-door transport mode for both passengers and freight. Railway transportation plays a smaller role, but is nevertheless significant in longer distance transport for both passengers and freight. Air transportation plays a much smaller role, but remains the quickest mode of intercity transport.

7. Highway and railway intercity transportation have all faced the problem of capacity shortages. Railway capacity is not sufficient to meet transport demand, the utilization is too high, and passenger trains are often held up to allow freight trains to pass by, thereby increasing travel time. On the other hand, the volume of vehicle traffic and highway traffic flows are growing

very rapidly, but the quality of road service is deteriorating and land acquisition for highway construction or expansion often involves much difficulty. Supporting measures have to be planned and executed to overcome these difficulties to enhance intercity transport efficiency.

C. Transportation Planning

8. The first Integrated Transportation Planning Study, completed in 1976, provided a broad framework for the development of the transport infrastructure up to the year 2000. This study was updated in 1986 and had formed the basis of transport policy up to the present day. In August 1989, the Institute of Transportation (IOT) completed the Comprehensive Transportation Planning Study (CTPS) which re-evaluated transportation requirements up to the year 2020. The basic concerns of the study had been placed on the requirements of the whole economy when moving gradually toward liberalization and systemization and the sense of coping with the uncertainty about the future of the world economy. Therefore, the study has set up a strategy for the future infrastructure development to readjust the capacity of transportation services and to surmount existing problems and challenges in preparation for the whole country's entry into the ranks of the developed countries.

9. The comprehensive transportation planning divided the transportation systems into four groups, i.e. international transport system, intercity (round-the-island) transport system, regional transport system, and metropolitan transport system. The transportation demand and traffic conditions of these four groups in the future have been forecast up to the year 2020. CTPS indicates that by the year 2020, the population of Taiwan will be 22.5 million, per household income will be NT\$890,000, in terms of 1989 prices, and there will be 25 cars per every 1,000 people. In the coming years, the government's overall transportation policy is to integrate railways, highways, civil aviation, ports, and Mass Rapid Transit System (MRTS) into an efficient nationwide transportation system.

10. To meet the transportation demand for the year 2020, and with the consideration of the resource constraint, the new transportation infrastructure in Taiwan is expected to be developed stage by stage. There is a increasing need for the nation to develop more efficient transportation systems with high speed, large capacity, and high quality of service. The provincial highway system and the existing railway system will be shifted to serve mainly for regional commuters, while railway freight system will still remain as the major part of long-distance freight transportation.

11. The construction of a high speed railway with a speed of 300 kph and a second freeway parallel to the existing North-South Freeway mainly serve the medium and long distance passenger trips and freight transport needs of the western corridor. The

improvements and constructions of North Link Railway, Kaohsiung-Pingtung Railway, and South Link Railway are to connect the eastern corridor and the western corridor. Existing conventional railway system will be improved and integrated with the future MRTS to become the major regional transportation system.

12. When the constructions of Nankang-Ilan Expressway, the New Central Cross Island Expressway, and the New South Cross Island Expressway are completed, the eastern region and the rest of Taiwan can be fully linked through a complete round-the-island freeway system. Besides, some highway system will be upgraded to expressways to better serve the inter-and intra-regional passenger and freight traffic.

13. The constructions of rapid transit systems in various metropolitan areas together with the improvement of the existing bus system will form a package to effectively cope with the growing demand of urban passenger transportation.

14. To improve the port capacity and level of operational services and to meet the increasing shipping demands, expansion of cargo-handling and operational capacity and development of deep-water port facilities are the main tasks in the coming decade. The on-going and planned projects include expansion and upgrading projects in Keelung, Kaohsiung, and Taichung.

15. Airport terminal facilities and navigational-aid equipment will be also expanded and improved. A total of Nt \$30 billion has been allocated for expansion of the two international airports in five years to meet the urgent needs of growing air-traffic demand. The expansion projects include Chiang Kai Shek (CKS) International Airport Second Passenger Terminal, Kaohsiung International Airport Third Passenger Terminal, and the air-traffic control systems. In the long run, Kaohsiung International Airport will be upgraded and renovated to a higher level to share the international air traffic with CKS International Airport. Although the market share for domestic air transport is small, its development potential cannot be ignored, especially when the frequent "air bus" type of services have been identified as having potential in the air corridors of north-south, west-east and Taipei-offshore island. To coordinate the further development of domestic air transportation, Luetao Airport (Green Island), Lanyu Airport (Orchid Island), Chimei Airport and Hengchun Airport are planned to be upgraded by 1996.

D. Civil Aviation

16. There are two international airports, Chiang Kai-shek International Airport in Taoyuan in northern Taiwan, and Hsiao-kang International Airport in Kaohsiung, in southern Taiwan. Besides, there are eleven domestic airports, i.e. in Taipei, Hualien, Taitung, Taichung, Tainan, Chiayi, Makung (Pescadores), Chimei, Lanyu, Lutaotao, and Wangan. Currently, there are twenty-one international airlines operate 377 direct passenger flights

from Taiwan to 33 cities around the world, and cargo flights to 18 countries. To promote civil aviation, the Ministry of Communications is actively assisting airlines to expand international air routes for trade, tourism and friendly relations with other countries. There are six private airlines in Taiwan. International flight services are operated by China Airlines, which inaugurated a round-the-world service in April 1984. Altogether 15 foreign airlines operate passenger and cargo services.

17. International air transport which was initiated during the prewar period, had not experienced higher degree of development until the late 1960s. The number of international flight was 51,813 in 1989. The international air passengers numbered 8 millions and a total of 0.6 million m.t. of international air freight was handled in the same year. The average annual growth rate in the past two decades were 12.6 per cent and 17.6 per cent for passenger and freight respectively. With traffic volume rising steadily, the terminals for passengers and freight are crowded during peak hours, especially in Kaohsiung Airport. Airport facilities are planned to be expanded and improved to cope with this situation and to meet the future demands.

E. Ports

18. Taiwan has four international ports: Keelung, Kaohsiung, Hualien, and Taichung. In addition, Suao Port functions as a supplementary port to Keelung. An expansion of wharves and storage facilities together with an increase in loading and unloading equipment over the past few years has substantially enhanced the cargo handling capacity of the ports. Kaohsiung is now the third largest container port in the world, after Hongkong and Singapore, handling over 3 million TEUs in 1989. The port has 70 operating piers and four container terminals. Located at the northern tip of Taiwan, Keelung is a natural port and provides 39 deep water berths and two mooring buoys. To handle containers, three container terminals with nine berths and 11 gantry cranes had been built. Taichung is a man-made port constructed on the central west coast. The port currently has 29 wharves with an annual cargo handling capacity of 14.9 million revenue tons. With navigation channels at a depth of 13 m below low-tide water level, Taichung now accommodates ship of 60,000-dwt class. On the east coast, Hualien is a relatively small port which is capable of simultaneously berthing two 60,000-dwt vessels and six smaller vessels. Suao Port, surrounded by mountains on three sides, is situated on the northeastern coast of Taiwan. The total water area of the harbor is about four sq. km. Currently, the harbor has 13 deep-water berths.

19. Water transportation is of vital importance to the trade-oriented economy of Taiwan. The freight handled at these ports has grown rapidly in the past two decades. Freight handled at international ports totaled 296.3 million tons in 1989, compared with 21.9 million tons in 1969, and 116.5 million tons in 1979. Growing international trade has stimulated the port traf-

fic handled to increase at an average annual rate of 13.9 per cent. Also, the rapidly growing traffic has caused the ports to face several difficulties and problems, such as:

- (1) The container berths at Keelung and Kaohsiung are now being used to capacity and have to be expanded;
- (2) Lack of adequate grain silos and related facilities at Taichung and Kaohsiung have caused ship waiting in particular for bulk carriers and need to be improved;
- (3) Access roads to and from the terminals of Keelung are too limited and too narrow, resulting in frequent traffic congestions. More and wider roads should be constructed to remedy this problem.
- (4) Keelung Harbor is not deep enough to accommodate vessels of the 30,000 dwt class and its loading and unloading capacity is restricted. Deepening and expansion of the fairways are urgently needed.

F. Railway System

20. The Taiwan Railway Administration (TRA), which is the sole operator of railways in Taiwan, currently has 1,075 route km of railways in operation, of which 40 per cent are double-track facilities. The railway trunkline in the western north-south corridor is a 25 kv electrified facility and serves all of the major urban centers and major harbors in Taiwan. The railway trunkline in the eastern north-south corridor, although not yet electrified, provides a vital transportation function because the highways in the east are not as well developed. As shown in Map 3, besides the two trunklines, there are 12 branch lines with a total length of 408 km. The final segment of the South Link Railway is under construction and a round-the-island railway network was expected to be opened to traffic by the end of 1990.

G. Roads

21. Highway transportation is the most important intercity transport mode in Taiwan. Highway Systems are divided into four classifications, i.e. national, provincial, county, and local. At the end of 1989 the total length of highways was 16,138 km. Of this total, 382 km were national, 3,929 km were provincial, 2,638 km were county, and 9,190 km were local. The national freeway and the provincial highways generally serve as the primary arterial system for intercity transportation, while the county and local highways serve the function of collection and distribution of local traffics. The Sun Yat-Sen National Freeway was completed in October 1978. It serves the western region, stretching from Keelung in the north to Kaohsiung in the south and connecting most of the major urban centers in the western region. The freeway has 40 interchanges, 6 service areas, 10 toll stations, and equipped with a centralized traffic surveillance and control system. Map 2 shows the highway networks by their functional classifications.

II. Urban Transportation

22. There are several urban centers located on the three regions of western plains. The Taipei metropolitan area, with an area of 538 sq km, serves as Taiwan's political, cultural, and financial center. Many industrial concerns locate their head quarters in Taipei, which has truly become an international city. The Kaohsiung metropolitan area serves as an industrial center of Taiwan where heavy industries are concentrated. The other important urban centers are Taichung metropolitan area, with population of 1 million, serving as the commercial and industrial center for the central region of Taiwan backed up by a new port; Tainan, with population of 660,000 which is a historical center of Taiwan and an educational center for southern Taiwan; and Keelung, with population 350,000 serving as the major port city in northern Taiwan.

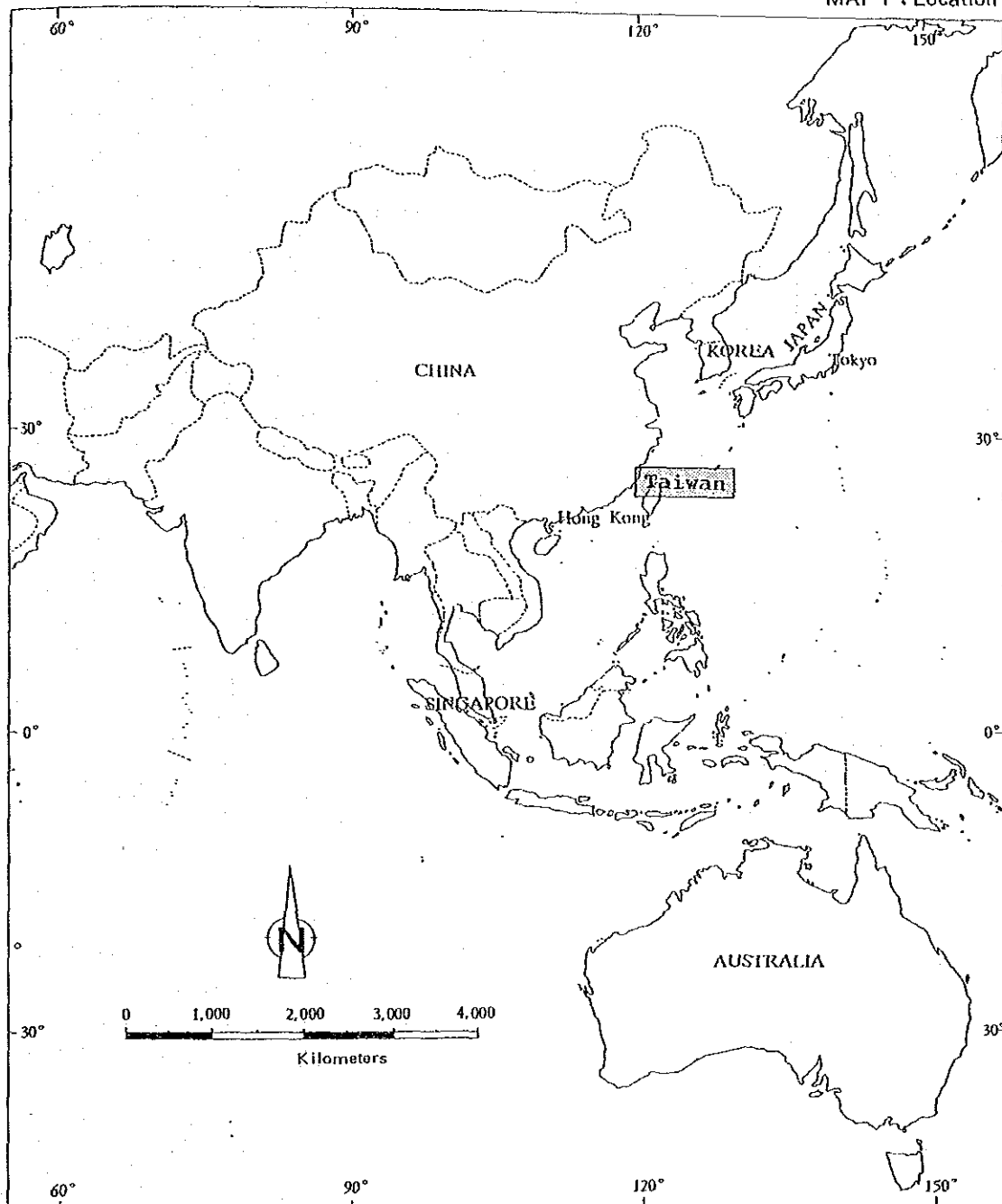
23. In order to deal with traffic congestion and pollution problems, and for conservation of energy, a policy of promoting mass transportation in urban areas has evolved. Increasing attention has been paid to both short-range improvements of the operations of existing bus systems and long-range capital investment plans for Mass Rapid Transit Systems (MRTS) in a form of underground railway. The Taipei Metropolitan MRTS is now under construction. The Kaohsiung Metropolitan MRTS is at the stage of planning and design. And a feasibility study is now being done for MRTS for Taichung Metropolitan Area.

24. Over the last two decades, cities of Taiwan, like many other large cities around the world, have experienced serious transport development and management problems to cope with the rapid expansion of urbanized area, the fast increase of private vehicles, lack of adequate parking spaces, the inadequacy of mass transportation system, and the increasing expansion of high rise buildings which generate heavy traffic, all of which have apparently aggravated the worsening traffic condition in cities and their suburban area in recent years.

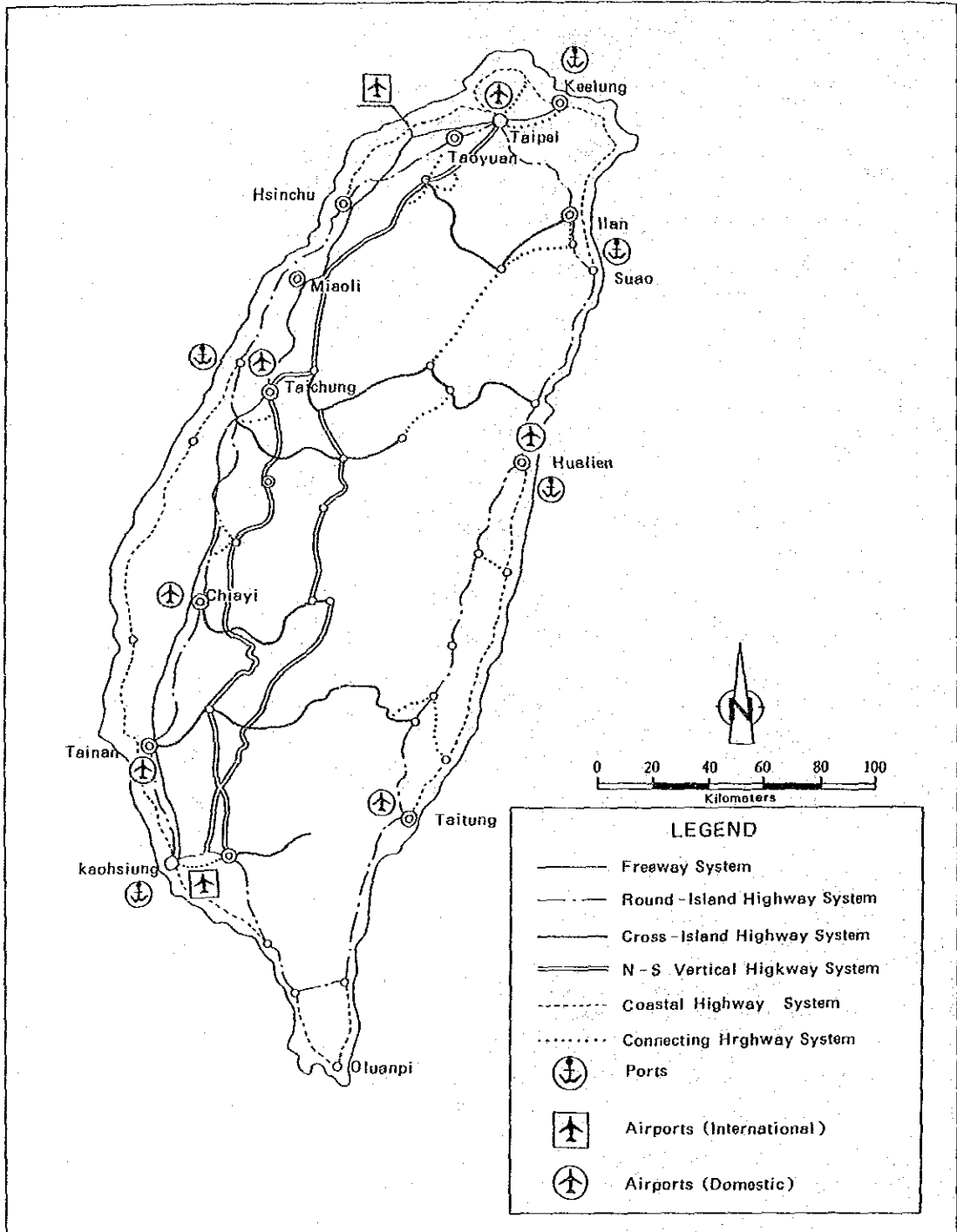
25. At this moment, bus system is the sole public transport means in urban area, while taxicab has emerged as a dominant form of passenger transport in recent years. However, the trend toward greater use of private transportation means has reflected on the decrease of city bus passengers. Number of city bus passengers has decreased in a greater rate over the last five years from 1.1 per cent in 1985/86 to 5.2 per cent in 1988/89. Evidently, efficient utilization of public transportation has not been achieved. Therefore, increasing attention has been paid to both Short-term improvements of bus operations and long-range capital investment plans for MRTS.

TAIWAN

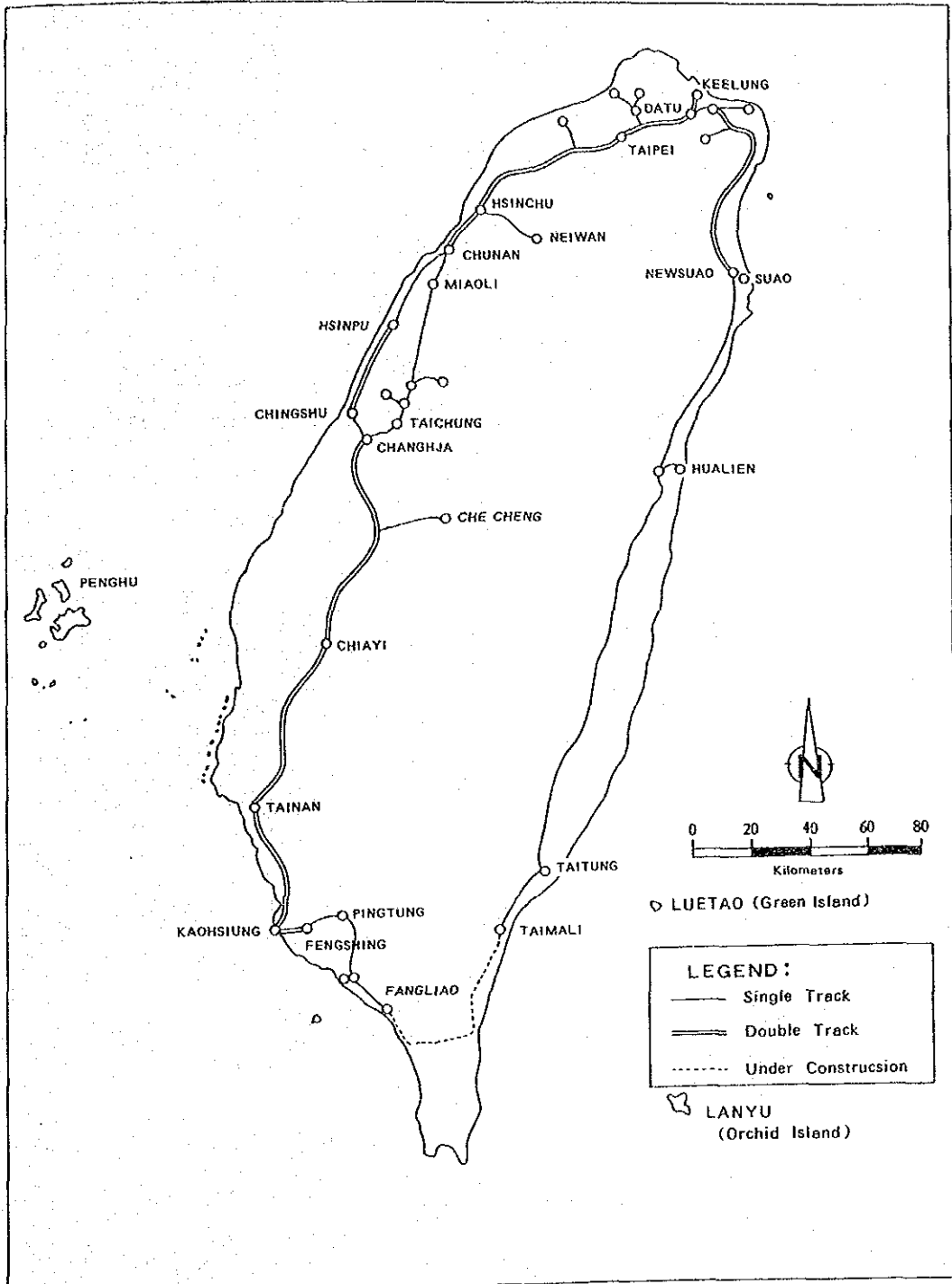
MAP 1 : Location



MAP 2 : Ports, Airports and Highway Network



MAP 3 : Railway System



C. OTHER SMALL ECONOMIES

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C.1. BHUTAN

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BHUTAN

A. Economic Setting

1. Bhutan is a small landlocked country measuring about 170 km from north to south and 300 km from east to west, encompassing an area of about 46,500 sq km. Bhutan borders on the People's Republic of China in the north and northwest and on India elsewhere. The nearest port is Calcutta, 750 km by road from Phuntsholing, the southern gateway town to India. Thimphu, the capital, is located 175 km north of the border with India. The topography of the country is mountainous and rugged, with a terrain rising from altitudes of 160 m to more than 7,000 m. Flat land is found only in a few broad river valleys extending southward from the High Himalaya mountain range in the north. Bhutan is relatively well endowed with natural resources, the most important being natural forest that covers almost half of the country's total land area. There are also significant deposits of minerals such as limestone, coal, copper and tungsten, the exploitation of which has been limited largely due to the lack of access roads.

2. The population of Bhutan, estimated at about 1.45 million as of 1989, is small relative to the country's land area and is scattered over about 4,500 settlements, located mainly in the south of the country and along the river valleys where cultivable land is available. Bhutan is faced with a severe shortage of both skilled and unskilled manpower. The several reasons for this are the small size of the population, the low productivity of labor employed in agriculture, and a steady growth in the number of tasks to be performed as the level of development increases. By far the largest proportion of the active domestic labor force is employed in subsistence agriculture, wage employment in the remaining sectors of the economy is accounted for almost entirely by immigrant workers from India and Nepal.

3. The most important sector in the economy is agriculture, accounting for about 45 per cent of GDP in 1988, with traditional subsistence agriculture contributing up to 90 per cent of total production. The industrial sector is of minor significance, reflecting Bhutan's early stage of economic development. Although time series data on Bhutan are limited, recent estimates of GDP growth indicate an average annual growth of 8.4 per cent between 1984 and 1988. Forestry and mining had been the fastest growing subsectors between 1981 and 1984, averaging 14.5 per cent annually, beginning, however, from relatively low base levels.

4. Agriculture, the key sector and the mainstay of Bhutan's economy, grew by about 4.9 per cent per annum between 1984 and 1988. This outstanding growth has been attributed largely to good weather, as much of the yield was from non-irrigated crops. The increase in agriculture output has enabled the country to reduce its food-grain deficit. Since foodgrain imports, mostly

by the Food Corporation of Bhutan, are roughly equivalent to the estimated consumption of the expatriate labor force (10,000 - 15,000 mt), Bhutan regards itself as having achieved food self-sufficiency for its indigenous population. The forestry sector has been recovering from the production slowdown since 1980 which was associated with the government takeover of commercial logging activities and the concomitant restrictions imposed on log export by the private sector. Nevertheless, commercial forestry remains at relatively low levels while non-commercial forestry, reflecting new development projects and housing construction, increased sharply, though irregularly, during the same period.

5. Manufacturing, accounting for only 5.9 per cent of aggregate output, grew by 5.5 per cent annually between 1984 and 1988. Although capacity utilization was high in large industrial enterprises such as cement, distilling and fruit processing, it was generally low in enterprises such as the large Gedu Wood Industries Complex, which was constrained by continuing shortages of logs, partly as a result of nationalization of logging activities. With the implementation of development projects, construction activity has been expanding, while services, including Government operations and tourism, have been deliberately controlled. Although provision has been made to reach a target of nearly 5,000 tourist arrivals, actual arrivals in 1984 fell short of the peak figure (2,009) registered in 1979. Revenues from tourism are estimated at about \$2 million annually.

6. In recent years, domestic revenues have been increased by the commercialization of public enterprises and by collection of income tax from public corporations, which was extended in 1984/85 to cover all businesses operating under industrial license or royal charter. The most important sources of revenue include the Bank of Bhutan, the Bhutan Lottery, and Penden Cement. The Chukha Hydropower Plant has been the largest source since when it became operational in 1986, yielding Nu 180 - 200 million per annum. In 1985 another source of revenue was the public offering of shares in Penden Cement and leasing of bus routes to private operators by the Bhutan Government Transport Service.

7. India continues to be Bhutan's principal trade partner, accounting for almost 90 per cent of total imports (total in 1984/85: \$69 million) and an even larger share of exports (total in 1984/85: \$15.1 million). Trade with other countries has been expanding in recent years. Trade and current account deficits, however, have been growing vis-a-vis third countries as well as with India, except in 1984/85 when the current account deficit with India narrowed slightly and a sharper contraction in both trade and current account deficits vis-a-vis third countries was realized. As the current account deficits with India and third countries have been more than covered by Indian budgetary grant and aid as well as external assistance from countries other than India, Bhutan's international reserves, both in Indian rupees and in convertible currency, have been accumulating. At the end of 1984/85, foreign exchange reserves amounted to more than Rs25

million and \$14 million equivalent -- about 4.5 months of imports from India and 20 months of imports from third countries.

8. Bhutan has begun to receive a large amount of external assistance from a number of bilateral and multilateral sources. Apart from India, which provides the largest assistance for both budgetary support and project assistance, many other bilateral and multilateral sources have become increasingly involved in the development assistance, including Japan, Switzerland, Norway, Kuwait, Denmark, the International Development Association (IDA), the International Fund for Agricultural Development (IFAD) and the Asian Development Bank. During 1985/86, external assistance financed about 61 per cent of total budget expenditures of which India accounts for about 45 per cent and all other sources, 16 per cent.

B. Development Planning

9. The major goals of the Sixth Plan (1987/88-1991/92) are (i) to achieve an improved standard of living and national self-reliance; (ii) to attain national integration and social justice; and (iii) to preserve and promote traditional values and culture. A 6.9 per cent annual growth rate in GDP is tentatively projected. Total Plan outlays are expected to be around Nu 8.0 billion-8.5 billion compared with the expected actual outlays of Nu 5.0 billion during the Fifth Plan (which excludes the Chukha Hydropower Project). Moreover, the Sixth Plan envisages rapid expansion of maintenance expenditure along with a modest growth of development expenditure. The revenue from the Chukha Hydropower Project will be supplemented toward the end of the Sixth Plan by export earnings of two large projects -- Nanglam Cement (1,500 tons daily compared with 400 tons daily of Penden Cement) and a calcium carbide plant.

10. The major emphasis of the Sixth Plan will be the further decentralization of public services to the subdistrict level (from 18 districts to about 100 blocks) in order to provide cost-effective public services to all districts and to coordinate and monitor all development activities in a systematic manner. The overall experience with decentralization under the Fifth Plan has been good, despite shortfalls in the accomplishment of some physical targets.

C. Transport Sector

11. Transport planning in Bhutan is concerned almost exclusively with the development and maintenance of the road network, since other modes are relatively unimportant. The Central Government is responsible for the planning of road projects belonging to the national road network, while feeder roads are planned by the District Administrations (dzongkhag). The division of functions between the Central Government and the dzongkhag is expected to result in the development of a road network more

consistent with the locally perceived needs. As a condition for including road projects of the dzongkhags in the annual work programs of the Government, the districts are expected to provide on a voluntary basis the labor required to implement the projects. This concept of popular participation helps ensure the rational use of resources, and the willingness of a community to provide labor for road construction is a strong indication of the need for the road being built. To ensure coordination of road planning with other development projects, discussions among the main ministries under the supervision of the Planning Commission are held regularly.

12. In the past, the selection of new roads was based largely on qualitative criteria. Quantitative methods of road planning were not used because relevant quantitative information such as traffic and vehicle fleet statistics was not available. For the formulation of the Five-Year Road Development Program under the Sixth Plan, the Public Works Department (PWD) was assisted by the foreign consultants who established the viability of the Program on a quantitative basis, according to recognized evaluation standards. However, there is still a need to strengthen PWD's capability in road planning through introduction of a system for traffic surveys on arterial roads as well as systematic methods for the screening and evaluation of road projects.

13. Investment in the transport sector has always been accorded high priority under previous development plans. Under the First and Second Plans (1961/62-1970/71), the principal objective was to end Bhutan's isolation from the outside world and enhance regional integration within the country. Accordingly, 66 per cent of the outlays under the First Plan and 41 per cent under the Second Plan were allocated to transport infrastructure. While the share of the transport sector in the outlays of the subsequent plans decreased, the actual investment amount continued to rise rapidly, reaching a level of almost Nu 450 million (\$37.5 million) under the Fifth Plan (1981/82-1986/87). Under the Sixth Plan, a tentative amount of Nu 700 million (\$58 million), equivalent to about 10 per cent of the total Sixth Plan outlay, is proposed to be allocated to the transport sector. As in the past, almost all of the programmed transport sector investments will be spent for road and bridge construction.

D. Civil Aviation

14. In recognition of the need to improve access to Bhutan, the Government in 1983 established a national airline, Druk-Air Corporation, which began regular service between Calcutta and Paro, a town near Thimphu, using two small twin-engine planes. The airport at Paro was rehabilitated in 1982 with the assistance of the Indian Air Force. There is no domestic air service in Bhutan.

15. As a result of the Government's emphasis on development of a road network in the country, along with budgetary constraints and the relatively low level of demand for air travel during the last 20 years, no regular international air service operated in Bhutan until early 1983. There is still no domestic air service. There are two airfields in the country -- at Paro, (one-and-a-half hours' drive from Thimphu), and at Yangphula, (25 km south of Tashigang in the eastern region). Both were constructed by Indian Boarder Roads Organization (BRO).

16. Tourism in Bhutan is an industry with vast potential, but prior to 1983 transport arrangements for tourists to enter and leave Bhutan were time-consuming, requiring a two-day journey by road from Bagdogra in West Bengal State in India, the nearest civil airport with a night-stop in Phuntsholing, the border town. In addition, special permits were required for the land travel within India. Similarly, all trips by Government officials outside Bhutan involved four days of land travel and visiting consultants and businessmen spent long periods of potentially revenue-earning time traveling.

17. In recognition of the need to improve access to Bhutan, the Government in 1983 established a national airline, Druk-Air Corporation (DAC), which began operating an air service between Calcutta and Paro in February 1983, initially three times a week in each direction. One aircraft, a Dornier twin turbo-prop 18-seat aircraft was purchased and was based at Calcutta. A second similar aircraft was purchased later in 1983. Flight crews were trained in the Federal Republic of Germany prior to the delivery of the first aircraft in December 1982. Servicing is undertaken by Indian Airlines in Calcutta.

18. The airport at Paro was rehabilitated in 1982 with the assistance of the India Air Force, which also undertakes air traffic control and fire-fighting activities. Immigration, customs and police officials travel from Thimphu to meet each flight. In late 1982 a Department of Civil Aviation was set up by the Government under the Ministry of Communications and Tourism. DAC has on its board six Government Ministers. The Managing Director is assisted by expatriate advisors and a small staff in Thimphu. A Resident Director -- formerly with Indian Airlines -- represents DAC in Calcutta.

19. Financial projections by DAC indicate that on the basis of the scheduled services between Calcutta and Paro, DAC would incur a loss. However, DAC has arranged for its aircraft to be leased to the Indian domestic airline Vayudoot each day (all day or part day). In addition to passengers, high-value perishable produce are exported from Bhutan in small quantities and items such as medicines and newspaper brought in by plane. Mail is not carried by DAC.

E. Roads and Road Network

20. Bhutan's mountainous terrain, with deep valleys and numerous rivers, has always made transportation difficult. In the past, internal and external trade relied exclusively on human and animal portage. The latter is still important in remote areas. The road network is at an early stage of development and many communities are not yet served by any form of transport infrastructure. East-west travel in the southern parts of the country is possible only by transit through India. There are no motorable roads connecting Bhutan to China in the north, nor to India across the east or west Indo-Bhutan borders; all road traffic entering or leaving Bhutan must pass into northern India.

21. Despite the tremendous natural constraints to road construction in Bhutan, the road network has grown from only a few kilometers in the late 1950s to about 2,130 km in 1986. Nonetheless, the network is still relatively small and is inadequate to serve the country's economic development and basic social needs. The initial strategy adopted by the Government was to open up the country with three roads running from the Indian border in the south to the interior of the country. Under the first three Development Plans (1961/62-1975/76), these north-south roads -- Phuntsholing to Thimphu, Paro and Haa (298 km) in the west; Gaylegphug to Tongsa and Sarbhang (275 km) in the central region, and Samdrup Jonkhar to Tashigang (180 km) in the far east (see Map 2) -- were constructed. An east-west road between Thimphu and Tashigang (561 km) was opened to traffic in 1985 and was completed for paving subsequently. This arterial road network, representing about 65 per cent of the total road network of Bhutan, has been constructed and is being maintained by the Indian Border Roads Organization (BRO) which is a construction organization under the Indian Ministry of Surface Transport. Under the Fourth and Fifth Plans (1976/77-1986/87), construction of feeder roads by PWD commenced. The present road network of about 2,130 km of roads (all single-lane with passing bays) consists of 1,930 km of national roads and 200 km of feeder roads. About 1,670 km of the existing roads (78 per cent) has a bitumen-sealed surface. Under the Sixth Plan, the Government intends to construct and upgrade about 1,000 km of roads to provide vital links to the national road network, to open up important development areas, and to connect remote communities with Rural Service Centers.

22. By December 1985, the road transport fleet numbered about 4,000 vehicles. Thereafter, following a period of relatively moderate growth, the registered vehicle fleet had shown an upsurge, a result of a liberalization of car imports. With increasing economic activity and the quickening pace of development, rapid growth is expected to continue. Of the total number of registered vehicles in 1985, passenger cars, including jeeps, accounted for about 49 per cent, trucks 19 per cent, buses 3 per cent and motorcycles 29 per cent.

23. With the exception of main arteries, roads in Bhutan are generally not heavily traveled. Sample traffic counts carried out by the consultants indicated that main roads carry an

average daily traffic (ADT) of about 200 vehicles, with higher figures near terminal towns. Long-distance traffic is dominated by trucks and buses. Traffic growth during the Sixth Plan period is expected to be in the range of 10 to 12 per cent annually. This estimate is based on the projected 6.9 per cent growth rate in real GDP, an annual population growth rate of 1.8 per cent, and an income elasticity of demand for road transport estimated to be 1.5.

24. Legislation restricting truck loads and sizes is provided by the Bhutan Motor Vehicles Act of 1976. Enforcement of traffic and vehicle regulations rests with the Royal Bhutan Police and is satisfactory. The rugged nature of the terrain precludes the operation of vehicles larger than the present 5-7 tons capacity. Damage to road surfaces from the overloading of trucks has been insignificant.

F. Ropeways, Mule Tracks and Suspension Bridges

25. Because of Bhutan's mountainous topography and the seasonal nature of its rainfall, the importance of waterways for transportation is marginal. A few rivers in the south are navigable by small craft and rivers are sometimes used to transport logs. Given the high cost of road construction in mountainous terrain, ropeways have been used successfully to transport specific cargoes, mainly timber and minerals. The largest ropeway is at the Penden Cement Factory carrying limestone over a distance of six km from the quarry to the plant.

26. The existing ropeways in the country have been installed to transport specific cargoes -- mainly timber and minerals. The largest ropeways is at the Penden Cement Factory, transporting limestone over a distance of 6 km from the quarry to the plant. The ropeway is electrically powered and has a capacity of 100 mt per hour. A 500 m ropeway carries slate from a mine at Sile to the nearest all-weather road. At Bumthang, Paro and Gedu, the Forestry Department has mobile cable cranes for the transportation of logs. These cable cranes can be moved relatively easily and are 500 m to 1,500 m in length. They are operated by diesel powered winches.

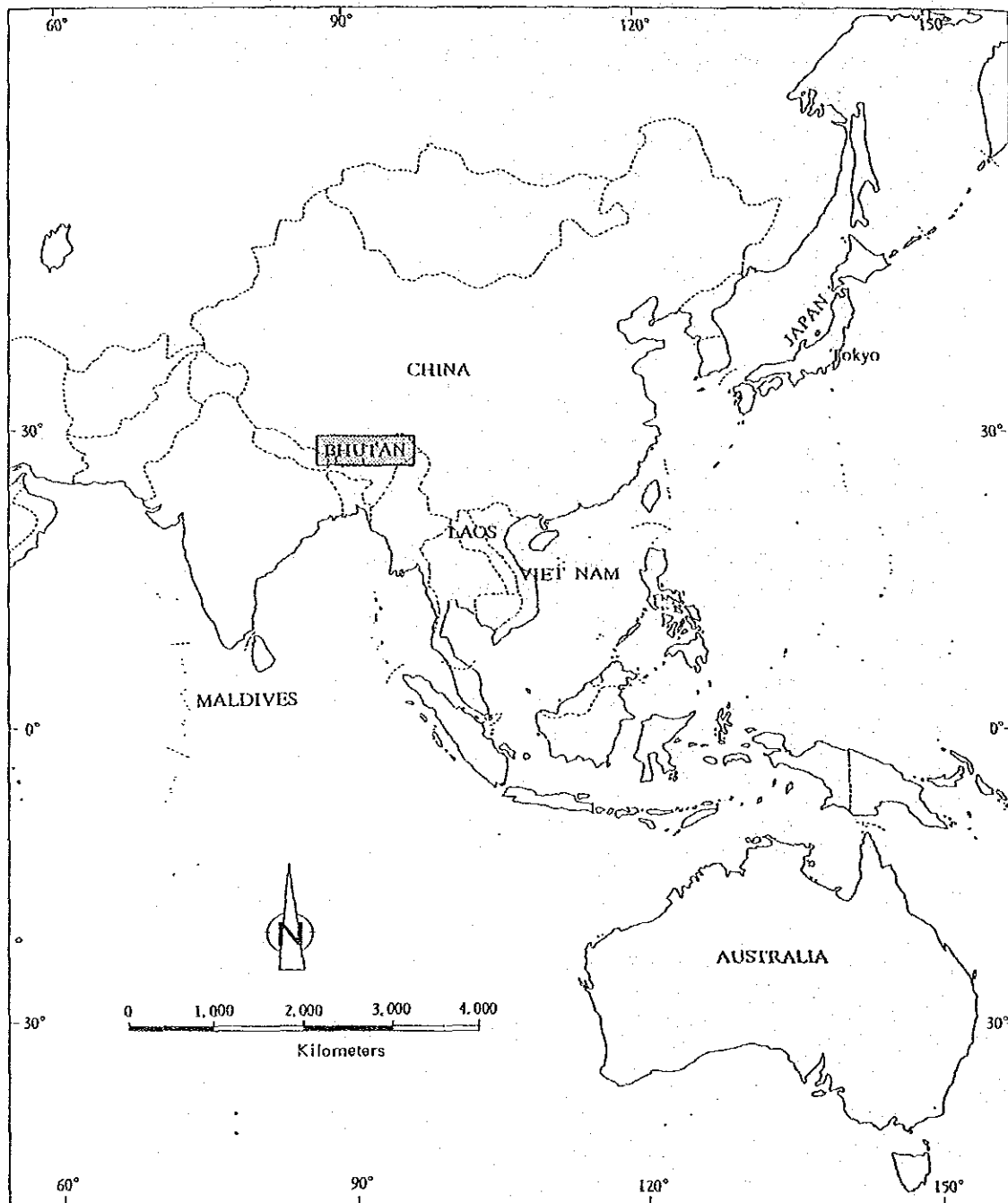
27. With assistance from the Government of Switzerland, a 5.1 km cargo and passenger ropeway was constructed 9 km east of Wangdiphodrang to transport logs from a Forestry Department felling area to the main road. Vegetables, particularly potatoes, are also carried.

28. The Himalayas and its foothills, which cover almost the whole country, are laced with narrow steep tracks used by farmers and animals laden with the needs and products of isolated valleys or villages. These tracks not only link the many valleys but also play a vital role in unifying the country. The main obstacles to this system of communication are the fast-flowing rivers. The Government has been therefore gradually improving this sys-

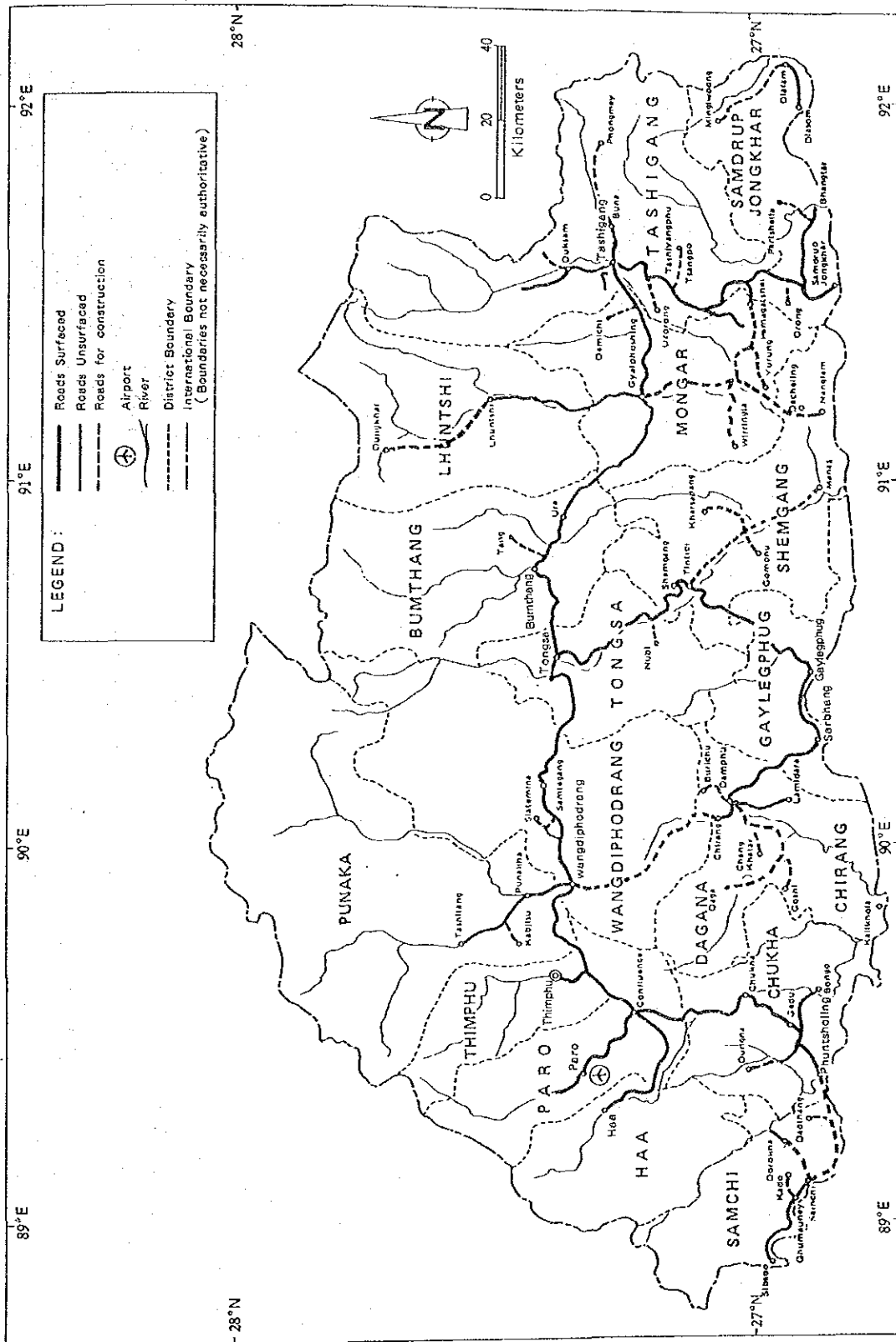
tem, particularly through construction of suspension bridges at critical locations. Construction of suspension bridges is carried out by the district administrations under the technical control of PWD. Assistance has been received from the United Nations Capital Development Fund (UNCDF) and World Food Programme (WFP) for such work.

BHUTAN

MAP 1 : Location



MAP 2 : ROAD NETWORK



C.2. LAO, PEOPLE'S DEMOCRATIC REPUBLIC OF

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LAO PEOPLE'S DEMOCRATIC REPUBLIC OF (LAOS)

A. Economic Setting

1. Laos is a landlocked country of 236,800 sq km with a small population of 4.1 million (1989), giving an average population density of 17 persons per sq km; the lowest in Southeast Asia. The population is presently growing at 2.9 per cent a year. Ninety per cent of the population lives in rural hamlets scattered over the country. However, 60 per cent of this rural population is concentrated in the plains of Vientiane, Khammouane, Savannakhet and Champassak Provinces. The capital of the country, Vientiane, has the largest population (160,000), followed by Savannakhet (53,000), Pakse (22,000) and Luang Prabang (9,000). Except for the plains along the Mekong river and some of its tributaries where population densities reach an average of 37 persons per sq km, the country is hilly and mountainous and 80 per cent of its land area is located at altitudes from 200 m to 3,000 m above sea level. Economic activity in the lowland plains is dominated by permanent agriculture while in the mountainous areas shifting agriculture and timber extraction are practiced. The cultivated area of 800,000 ha constitutes only 3 per cent of the land area. Paddy fields cover 700,000 ha which yielded a record harvest of 1.5 million mt in 1986, an amount sufficient for consumption and support to a rice buffer stock. Laos remains one of the least developed countries in the world. The country is administratively divided into 17 provinces, 112 districts, 950 communes and some 11,400 villages.

2. Agriculture, including livestock and fisheries, and forestry account for 60 per cent of the Gross Domestic Product equivalent (GDP),^{1/} employ 70 per cent of the labor force, constitute 31 per cent of the total value of exports, mostly through coffee and wood products, and are the main sources of income for most rural households. The above-mentioned two sectors also provide raw materials for agroindustries and wood manufacturing plants. Industrial plants and cottage industries in operation include food, beverage, soap and wood processing units, rice and coffee mills, feed mills, brick and ceramic kilns, repair shops, salt extraction and weaving. The country has large deposits of mineral resources, particularly iron ore, limestone, tin and gypsum. However, apart from tin and gypsum, the extent of the country's mineral deposits largely remains unassessed. Virtually all industries goods, equipment and materials are imported.

3. During the First Five-Year Development Plan period (1981-1985) GDP in real terms grew at 6.4 per cent a year, while in 1986 it increased by 5.6 per cent. Over the first Plan period freight and passenger transport demand increased at annual rates

^{1/} The national accounts in Laos are recorded by the system of Net Material Product.

of 7 and 11 per cent, but from low base figures. The major transport routes follow the north-south pattern of population distribution, with west-east links to the border with Viet Nam providing access to that country and its seaports. Seventy per cent of the country's international trade now passes across that border, while the rest mainly crosses the Thai/Laos border at Thanaleng and Savannakhet.

4. The thrust of the Government's current Five-Year Plan emphasizes: (i) continued development of the agricultural sector as a means of attaining food security and diversification of crop production; (ii) rehabilitation and reconstruction of basic transport infrastructure; (iii) development of natural resources, especially forest, hydropower and mineral deposits; (iv) improvement of small-scale industries processing locally-available raw materials; and (v) expanding and upgrading educational and health services.

B. Transport Sector

5. The public road system, which totals 13,090 km, is mostly in a badly deteriorated condition. The Mekong river, which flows through Laos for some 1,800 km, provides a natural means of transportation. However, its navigational use is limited to 1,190 km mainly, because of rapids between Savannakhet and Pakse, the Khong falls, and low water levels during the dry season. Domestic air transport, though small in volume, plays a significant role by providing passenger services between important urban areas and to areas otherwise inaccessible. A pipeline to transport gasoline from Viet Nam to Laos is operated along national road No.8. There are no railways in the country.

6. Road transportation is the dominant mode, carrying 90 per cent of total freight ton-km and 85 per cent of total passenger-km. The share of river transport constitutes 10 per cent of freight ton-km and 5 per cent of passenger-km. Domestic air-freight is negligible while air transport contributes 10 per cent of passenger-km. It is anticipated that road transport will continue to dominate both freight and passenger traffic in the foreseeable future.

7. There are no railways in Laos. However, the Government's long-term plans include a study of alternative rail links from the potentially rich iron ore fields in Xieng Khouang Province in the northeastern part of the country to the port of Vinh in Viet Nam.

8. Planning and coordination responsibilities are vested with the State Planning Committee (SPC), which is headed by a chairman with the rank of Vice Prime Minister who reports directly to the Council of Ministers. SPC reviews and monitors all planning activities originating from the Ministry of Transport and Post (MOTP), liaises with external donors, and monitors and supervises implementation of development projects. It also

formulates the country's five-year development plans, annual development plans and guidelines on planning aspects.

9. MOTP is responsible for the development of national and important provincial roads, river wharves and airports, and river, road and air transport. Planning of airports and air transport services is under MOTP while the administrative function is vested with the Ministry of Defence. MOTP is also responsible for telecommunications and postal services. Pipeline development and administration is under the Ministry of Commerce. Based on the five-year development plan, as formulated by SPC in consultation with MOTP, the provinces prepare annual detailed implementation schemes for all projects supported by the State authorities, and submit plans of transport projects to be funded from provincial resources for consideration by MOTP and approval by SPC. Districts decide on projects to be implemented at the local level, and funding for them is provided from the districts' own resources and through some free manpower provided by the local population. Local funds for all foreign-assisted projects are provided either by the State or by provincial authorities, and approval of implementation requires the endorsement of MOTP and SPC before consideration by the Council of Ministers.

10. Under the current Five-Year Plan, the Government has given high priority to improvement of the road transport system which is essential to support its development objectives, principally to facilities: (i) the movement of agricultural products from surplus to deficit areas; (ii) the flow of consumer goods and agricultural inputs to the rural areas; (iii) the marketing and export of cash crops (particularly coffee and cardamom) and other produce; and (iv) effective participation in regional and international trade. The Government's policy concerning roads is essentially to develop a road network that can be maintained economically and at the same time improve its maintenance operations. Its development plans are to: (i) improve to an all-weather standard national road Nos. 13 and 13B from Khong in the south to Pak Mong in the north (1,352 km) via Vientiane and Luang Prabang; (ii) complete bitumen paving of national road No.9 (246 km) between Savannakhet and the border with Viet Nam; (iii) reconstruct national road No.8 from Phou Ngou to the border with Viet Nam (150 km); (iv) upgrade national road No.7 to paved standard between Phou Khoune and Xieng Khouang (140 km); and (v) improve provincial and local roads serving agriculturally important areas.

11. In view of the deteriorated condition of the country's transport system, the Government has allocated a relatively large share of funds to the transport sector during the past six years. Transport sector expenditures rose from K63 million (\$2 million) in 1981 to K1,819 million (\$19 million) in 1986. The Second Five-Year Development Plan (1986-1990) provided K8.9 billion (\$94 million) in constant 1985 prices for the transport sector, of which more than 95 per cent is for the road subsector, reflecting the high priority given to roads; the rest is for river transport. The State allocation for transport under the Second Plan

constitutes 20 per cent of the total State development budget. Rehabilitation and reconstruction of national roads during this Plan period received K5.6 billion (\$59 million), while K2.1 billion (\$22 million) were allocated for rehabilitation and upgrading of important provincial roads. Maintenance of national roads received an allocation of K1.0 billion (\$11 million) as part of the Plan. The provincial authorities are also planning to increase allocations from their own resources to the transport sector.

C. Civil Aviation

12. Although the share of airfreight in total freight transported is negligible, this mode is important for long-distance passenger movements since it provides service to otherwise inaccessible parts of the country. Laos has five airports (four with cement concrete runways and one with a runway paved with Double Bituminous Surface Treatment (DBST)) and 13 airfields. The network is considered to be adequate at present traffic levels. The sole domestic carrier is Lao Aviation, which comes under the MOTP (planning function) and the Ministry of Defense (administrative function). Lao Aviation provides regular flights to all five airports and two airfields with gravel-surfaced runways, and presently carries 1,000 mt of cargo and 90,000 passengers a year. The fleet, which is entirely of Soviet manufacture, consists of four Antonov (AN) 2 aircraft with 12 seats each, four AN-24 aircraft with 55 seats per unit, three AN-26 aircraft (combined cargo and passenger cabin) with 74 seats each, and one MI-8 helicopter with eight seats. Direct international flights link Vientiane with Bangkok by Lao Aviation and Thai Airways (three flights a week), Hanoi by Lao Aviation and Air Viet Nam (three flights a week), and Moscow by Aeroflot (once a week).

13. The Government's air transport program under the Second Five-Year Development Plan emphasizes rehabilitation and maintenance of the existing airport infrastructure, improvement of navigational aids, aircraft maintenance and repair facilities, upgrading of ground handling facilities, training of personnel, and acquisition of a jet aircraft for international services (either a TU-134 with 87 seats or a YAK-42 with 140 seats).

D. Inland Waterways

14. The country's main navigable rivers include the Mekong river which flows through Laos for 1,820 km and some of its tributaries, particularly the Nam Ngum and the Nam Kading rivers. The Mekong river is navigable for up to 50 mt barges over 1,190 km from Houei Sai in the north via Luang Prabang and Vientiane to Savannakhet. However, only low draught boats can pass between Keng Kabao (26 km north of Savannakhet) and Savannakhet. Between Savannakhet and Pakse (a distance of 260 km) the Mekong river is not navigable because of rapids at Khemarat. South of Pakse, the

river is again navigable over 160 km for small river craft until the Khong falls located immediately before the border between Laos and Cambodia. After the falls and on Laostian territory, the small river port of Veune Kham could be rehabilitated to serve part of Laostian international trade through the Mekong river to the South China Sea, a distance of 735 km.

15. The newly-constructed transit river port for barges at Keng Kabao has berthing facilities along pontoons that rise and fall with the water level in the Mekong river. The port infrastructure was constructed from 1979 to 1985 with financial and technical assistance from the Netherlands and with support from the Interim Committee for Coordination of Investigations of the Lower Mekong Basin. These facilities are provided with two fixed tower cranes, each of three mt capacity at maximum 28 m outreach of the crane arm, a three-bay drive-in lockable warehouse (90 m x 24 m) at road level, a concrete bulk storage yard of about 6,000 sq m, and administration buildings and worker's accommodation and amenities within a fenced compound. Loading and unloading take place by manually transferring the cargo between barge and pontoon, and then by crane lift between pontoon and the river bank top. Cargo handling at the river bank top is to be by five three-mt capacity forklifts. The cargo handling system would greatly benefit from palletization to avoid both costly and time-consuming handling by manual methods, particularly between barge and pontoon, provided that barges are equipped with removable tops to allow direct crane access to the cargo hold, if introduced.

16. The port, which has a capacity of 100,000 mt a year (day shift only), is scheduled to serve international traffic between the port at Da Nang in Viet Nam and the northern part of Laos, including Vientiane. Related planned river port developments include upgrading of the landing and handling facilities at Thanaleng and Laksi near Vientiane and at Luang Prabang and Pak Beng and also upgrading of the shipyard at Laksi, four km south of Vientiane, where only a concrete slip with rail tracks exists for building and launching river barges and passenger boats.

17. In 1986 river vessels hauled 50,000 mt of cargo between points in Laos over an average distance of 330 km and carried 330,000 passengers with an average trip length of 100 km; these figures, however, exclude the vehicular ferries crossing the Mekong river between Thanaleng and Nong Khai (Thailand) and between Savannakhet and Mukhadan (Thailand). At present, 70 per cent of Laostian foreign trade of 435,000 mt passes through Viet Nam. This includes cargo from/to the Vietnamese ports of Da Nang, Vinh and Haiphong, while 28 per cent is from/to Thailand or in transit through that country; the rest enters/exits at the border with Cambodia. The future foreign trade distribution by border crossing will likely focus on the transit port at Keng Kabao which is connected to the port of Da Nang via a newly-constructed all-weather road.

18. The existing fleet of river boats for transport of

cargo comprises 20 barges owned by the state and 470 barges owned by the provincial governments and the private sector with an average load capacity of 7 mt per unit; two of the state-owned barges have an average capacity of 100 mt and are hauled by a 400 horsepower tug boat. Private sector cargo boats account for about 40 per cent of the total fleet capacity. In contrast, private sector passenger boats account for 25 per cent of total passenger boat seat capacity, the latter share being distributed over 14 boats with an average of 30 seats per unit against 17 boats with an average of 70 seats per unit in the public sector.

E. Roads

19. The country has a road network, excluding forest and mining roads, of 13,090 km consisting of national, provincial and local roads; presently only 19 per cent of the total network is paved. The national roads, linking major towns and provinces and providing connections to neighboring countries total 2,460 km, of which 1,200 km are paved; the rest have gravel or earth surfaces. The provincial road network covers 6,360 km, of which 835 km are paved with the remaining length being mostly earth-surfaced; it comprises roads connecting towns and larger villages within provinces. Though the national and provincial road network is considered generally adequate, in the sense that it provides connections to all important towns, provincial capitals and border crossings, the condition of most roads is poor and in urgent need of improvement. The local roads totaling 4,270 km are mostly earth-surfaced and in very poor condition. The deteriorated state of the road network is partly due to neglect of maintenance prior to 1985, mainly because of the recent war and the succeeding period of government reorganization, limited financial resources and lack of road maintenance equipment. More significantly, many of the national and provincial roads were constructed in the 1930s and 1940s and were not designed for heavy vehicles of the type now in use, which result in high maintenance costs.

20. The spine of the national road system consists of road No.13 (1,230 km) which links Luang Prabang in the north with Khong in the south and passes through the major urbanized areas of Vientiane, Savannakhet and Pakse. This important link serves as an all-weather road between Phone Hong in the north and Seno in the south, and between Pakse and Laos/Cambodian border at Khong, a total distance of 660 km. The other sections of this link, Phone Hong-Luang Prabang (330 km) and Seno-Pakse (240 km), have badly deteriorated gravel or bituminous pavements which occasionally become impassable for motor vehicles during rainy periods. National road Nos.7 and 9 leading to the Vietnamese border have recently been upgraded to all-weather standard and some of the sections are programmed for further improvement to bituminous pavement. Work on national road No.8 is progressing, but many river crossings still lack bridges. The condition of the provincial roads is even worse, the latter providing mostly seasonal access.

F. Road Transport

21. Following establishment of a central vehicle register under MOTP, the statistics on the civil vehicle fleet now cover the entire country. As of 31 December 1986, 32,700 motor vehicles were registered and in operation in Laos, including 9,870 cars, jeeps and pickups, 620 buses, 3,370 trucks and 18,840 motorcycles. The truck fleet was composed of 3,110 units carrying general cargo, 65 for use by forestry enterprises and 195 being utilized for transport of fuel products. By the end of 1986 the private sector and provincial governments owned 8 per cent of cars, jeeps and pickups, while the remainder belonged to the State and its employees; almost all buses were owned by the provincial governments and Vientiane Municipality. In the freight sector, 10 per cent of all trucks were in private hands, while the provincial governments owned 20 per cent of the fleet and the State the remainder. In contrast, 95 per cent of all motorcycles were owned by the private sector. The average ownership of motor vehicles (including motorcycles) in Laos is 9 vehicles per 1,000 population, which correspond to 2 vehicles per 1,000 population in Bangladesh, 9 in Pakistan, 20 in the Philippines and 38 in Thailand.

22. During the period 1981-1986, about 2,100 government-owned trucks were added to the fleet against 100 private trucks; 1,600 light vehicles were newly registered for government use, compared with 250 private light vehicles. The relatively slower growth of the private vehicle fleet partially reflects the Government's inability to allocate adequate foreign exchange to private procurement of vehicles at this stage in the country's development. However, the Government allows private transport associations and individuals to buy secondhand vehicles from foreigners and aid organizations, and also permits the import of vehicles to a limited extent, provided that these associations and individuals have the necessary capital and can justify the transportation purpose. During the Second Plan period the Government intended to import about 1,900 new 2-axle and 3-axle trucks for civil cargo carrying purposes to supplement its existing fleet. In January 1986 the Government's fuel stations began selling petroleum products to private transport associations at the same price as for government-owned vehicles. These stations now also sell limited fuel products at the Government price plus 15 per cent tax to citizens in the private sector who own vehicles. The price of gasoline on the parallel market is 80 per cent higher than the Government price. From 1 September 1987 Laos citizens receiving remittances from abroad are officially allowed to exchange these at \$1.00 = K350.

23. Although traffic counts are not carried out systematically, recent feasibility studies give some indications of the traffic volumes on the road network. The highest traffic volume in 1987 outside urban areas was recorded at 2,000 motor vehicles per day (mvpd) on national road No.13 over 12 km northeast of Vientiane; over the next 40 km to the Nam Ngum river this volume decreased to an average of 150 mvpd, and on the sections from

there to Savannakhet and onwards to Pakse an average of 100 mvpd were counted. On national road No.13 between Vientiane and Phone Hong (70 km north of Vientiane) an average of 1,200 mvpd were recorded, and between the latter town and Vang Vieng the average traffic was 100 mvpd; further on to Luang Prabang an average of 90 mvpd were counted. Trucks constitute about 60 per cent of the traffic flows on these roads. Traffic volumes on national road No.9 varied from 200 to 300 mvpd, 85 per cent of which were trucks, mainly transporting fuel products to the southern provinces and cargo between Viet Nam and the Lao PDR. On most other national and important provincial roads traffic volumes were typically in the range of 100-150 mvpd.

24. In 1985 motor vehicles in Laos carried 113 million ton-km and 286 million passenger-km, of which the private sector accounted for 30 per cent. Freight transportation services are provided by the State Government, the provincial governments and by private associations which are regulated by the provincial administrations. Four State transport enterprises (STEs) provide services for general cargo and fuel products between provinces and between Viet Nam and Laos. STE No.1, which has the largest fleet in the country with 700 operational trucks, is based in Vientiane. It covers freight transport in the area from Luang Prabang and Xieng Khouang in the north to Savannakhet in the south, including the international route to the port of Da Nang in Viet Nam. The cargo transport needs between the southern provinces and from/to Vientiane and Da Nang are served by STE No.2 at Savannakhet, while similar services north of Luang Prabang and from/to the Vietnamese ports of Haiphong and Vinh are provided by STE No.3 at Luang Prabang. STE No.4 is responsible for distributing fuel products all over the country and is organized under the Ministry of Commerce in Vientiane. In addition, provincial transport enterprises and private transport associations provide both freight and passenger services (by bus and pickup) within each province. Following the opening of national road No.9 as an all weather route to Viet Nam, a number of Vietnamese-registered trucks also began providing international services. Laos trucks are also allowed to operate in Viet Nam between seaports and Laos destinations or origins.

25. The two local government transport enterprises and the private transport associations in Vientiane Province and Municipality have 490 operational trucks, accounting for 12 million ton-km (66 per cent by the private associations) and 125 buses and pickups carrying 68 million passenger-km (24 per cent by the private associations). The Government plans to increase the vehicles fleet of these transport enterprises to serve expected growth in transport demand.

26. Each transport enterprise operates its own workshop for service and minor repairs of its vehicle fleet. For major repairs of these vehicles the Government has established base workshops at Vientiane, Luang Prabang, Pakse and Savannakhet. It is also improving the maintenance standard of the vehicle fleet to attain a higher degree of utilization through retention of

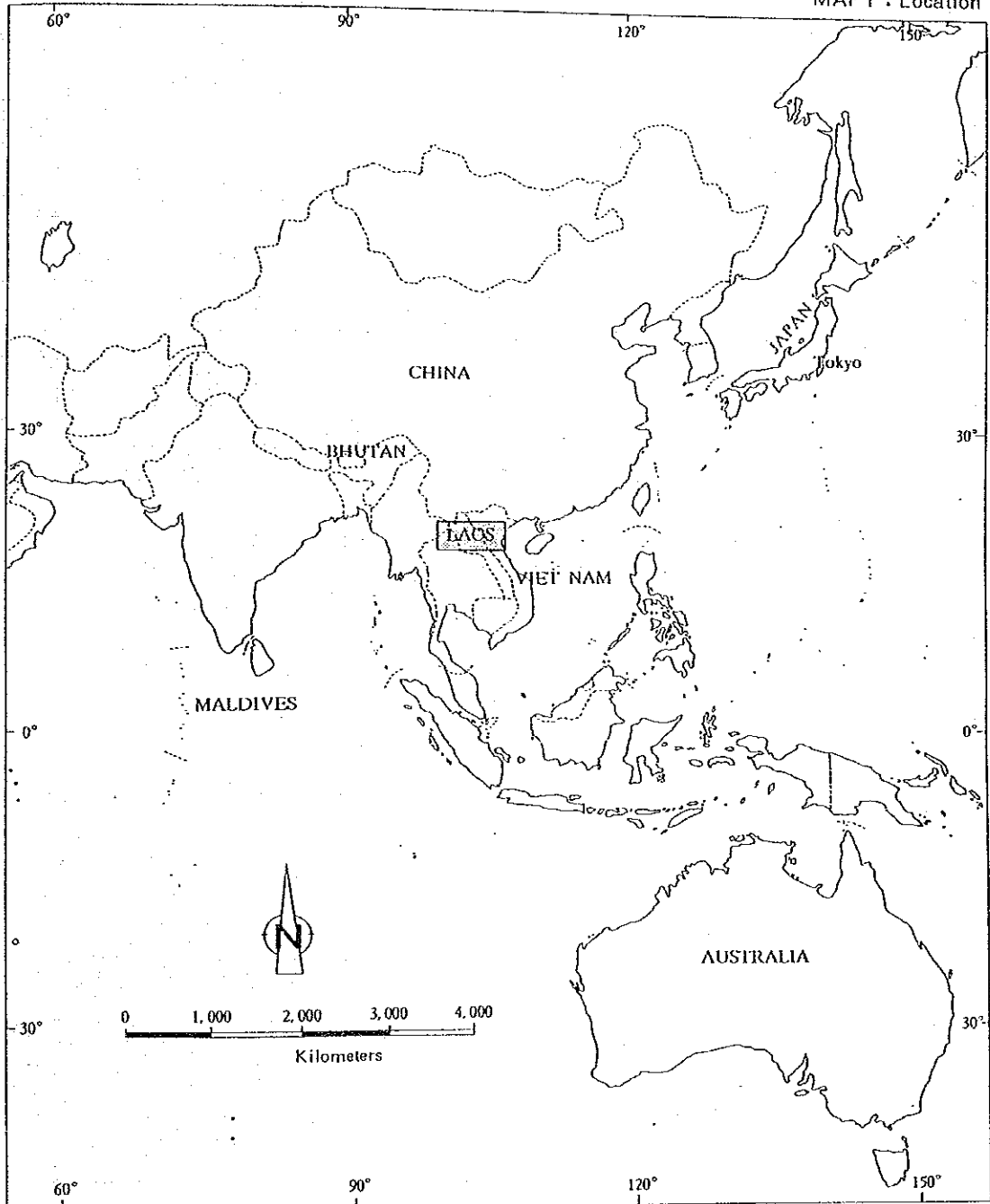
foreign exchange earned by the provincial governments, which will allow the timely purchase of spare parts and decentralization of spare parts holdings.

27. The average capacity of a truck operating in Laos is 5.5 mt with a two-way load factor of about 35 per cent; this implies that underloading rather than overloading is a problem. State and provincial trucking has the same load factor as for private truck operations. The underloading is partially explained by the fact that trucks are also used for passenger transport, and by the hauling of fuel and forestry products and construction materials which normally results in empty backhaul. However, the two most important factors which inhibit higher load factors are badly deteriorated roads and the low bearing capacity of bridges in poor condition. Following gradual improvement of the road network, higher utilization of the average truck load capacity should occur. There are yet no legal axle load limits or restrictions on vehicle weights and dimensions in the country. At present, road and bridge conditions and the mountainous nature of the country restrict overloading and the use of large vehicles. However, due to expected future import of heavier trucks, including 3-axle units and truck-trailer combinations, the Government is taking steps on the basis of studies to approve maximum permissible axle loads of 12 mt for a single-axle and 20 mt for a tandem rear-axle group; related enforcement legislation is anticipated to be completed shortly. Initially these loads would only be allowed on national roads where the bridges have been adequately strengthened, and thereafter the loads would gradually be extended to other roads in line with future road and bridge improvements.

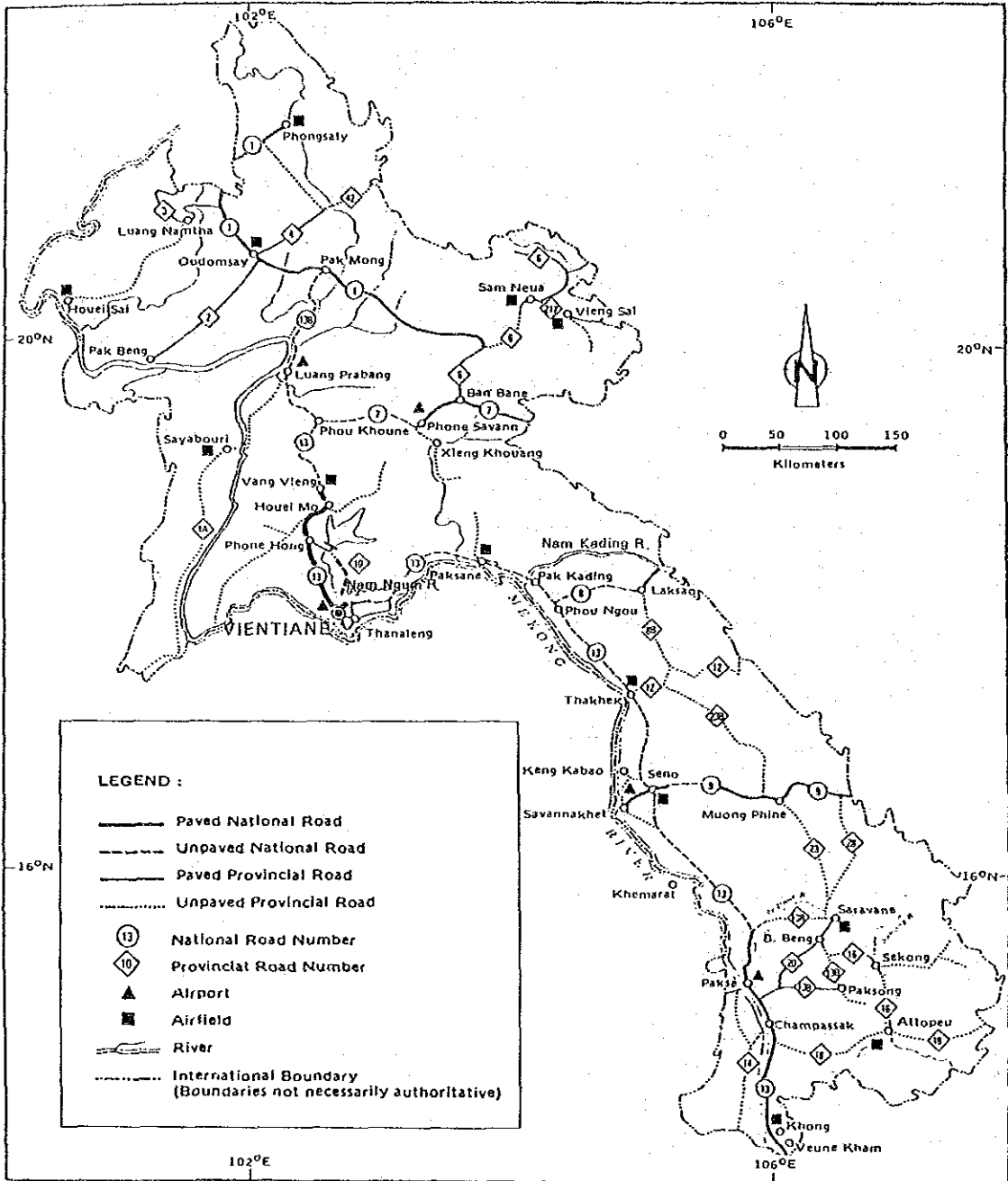
28. The current charges for freight and passenger transport for various road types and conditions, commodities and distances are regulated and enforced by both the provincial and State authorities, the latter being represented by MOTP. The charges are revised regularly in accordance with changes in road condition and basic vehicle operating costs.

LAOS

MAP 1 : Location



MAP 2 : TRANSPRT NETWORK



C.3. MALDIVES

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MALDIVES

A. Economic Setting

1. The Republic of Maldives is an archipelago of about 1,200 atoll islands located some 500 km southwest of Sri Lanka. The islands, of which approximately 200 are inhabited, form a part of 19 atolls which extend about 900 km from north to south. All the islands are small and rarely more than two meters above sea level. The total land area of Maldives is estimated at 300 sq km. The total population is about 190,000, of which more than 25 per cent is located on the 1.5 sq km and very congested capital island of Male'. Male' is also the main port and the focus of economic activity in the Maldives.

2. The resource endowment of Maldives is very limited. There are no known mineral resources and agricultural production is limited due to poor soils and a shortage of arable land. The small size of the domestic market rules out any major import substitution activities. The country has, however, substantial fish resources, unpolluted beaches, and spectacular coral and marine life, and a long tradition in seafaring. Consequently, the Maldivian economy is based on the three related activities of fishing, tourism, and shipping. Fishing is the mainstay of the Maldivian economy. In 1986, the industry accounted for 60 per cent of total exports and employed 36 per cent of the labor force. Tourism is the second most important industry. In 1986, tourism earned about one half of total foreign exchange receipts and employed about 6 per cent of the labor force. Tourist arrivals in 1986 were nearly 123,000, an approximately 50 per cent increase from 1982. Investment activity in the tourism sector continues to concentrate on upgrading existing facilities and developing new resorts. In this connection, transport services between the resort islands and the Male' airport are also being progressively improved. The only two important activities in the small manufacturing sector are wooden boatbuilding for the local fishing and interisland services, and finished garments for export, using imported materials.

3. The Ministry of Planning and Development (MOPD), which was upgraded in November 1982 from the National Planning Agency, is responsible for development planning and coordination of development activities which are undertaken by each ministry and department. MOPD prepares Country Economic Report which formulates development strategies and priorities for future development, with emphasis on: (i) increasing the national product and foreign exchange earnings, (ii) improving health and sanitation levels, (iii) raising education levels, and (iv) accelerating the development of the outer atolls in order to achieve balanced economic and social development.

4. Considerable progress in executing development projects and coordination between the major donors has been experienced in recent years. A wide range of projects has been successfully

implemented by the United Nation Development Programme (UNDP) and by bilateral donors for projects in the outer islands as well as on Male', especially in the education, health and institutional development sectors. Multilateral donors have focused on the primary industry of fishing and transport, communications and power. All external financing for Maldives is coordinated under the Ministry of Foreign Affairs (MFA).

5. The transport, communications and maritime-related sectors have been well coordinated. In this regard, the World Bank and the Kuwait Fund focused on two major projects totaling for the fishing industry development. Japan provided a phased program totaling \$13 million for telecommunications development in conjunction with the International Telecommunications Union. Japan also funded a \$17 million coastal protection project for a 0.5 sq km area of recently reclaimed land on Male' Island. Transport projects have also been systematically planned and funded on a well coordinated basis by several international and bilateral funding agencies. In this regard, the \$22 million expansion project of the Hulule airport was expected to be funded mainly by Japan. Port sector and power sector developments have been conducted almost entirely by the Asian Development Bank.

B. Transport Sector

6. The transport sector is administered separately by the Civil Aviation Authority (CAA) and the Ministry of Transport and Shipping (MOTS), of which the shipping subsector is the most important. Apart from transport services to and within Maldives, shipping is also important as a major earner of foreign exchange. The sources for such earnings are the Government-owned Maldives National Ship Management Limited (MNSML) and remittances from Maldivian crews on foreign owned vessels.

7. While air services are of growing importance, this subsector is mainly geared to the tourist industry and potentially, on a minor scale, to domestic passenger travel. While passenger arrivals on international flights have increased at an average rate of 11 per cent per year for the past five years, nearly reaching 123,000 in 1986, total international air freight in 1986 was only 2,500 tons. Domestic air traffic in 1986 totaled less than 1,500 passengers and there was virtually no cargo. In response to growth in the tourism sector, expansion of the international airport at Hulule Island was expected to be completed during the period 1988-1990 at a cost of \$22 million. A small domestic airport has also recently been constructed at Hanimadhu Island. Gan, in the southern Maldives, was previously the only domestic airport. The opening of the two, small domestic airports mentioned above is not expected to have any significant impact on domestic shipping.

8. Road transport is of negligible importance to the national flow of goods, except internally on the small island of Male'. At Male', the impact of increasing vehicle numbers in

recent years is causing congestion. This situation is being monitored by the Government and is being controlled by levying heavy import duties on motor vehicles, along with registration fees. However, there are still only about 200 commercial vehicles on the island. Roads are unpaved and bicycles are the ubiquitous form of transport. Recently, short experimental stretches of road have been paved and in due course extensive road paving may be anticipated on Male'.

C. Civil Aviation

9. Air feeder services operate six days a week from Colombo, Sri Lanka and twice a week from Trivandrum, India to Hulule Airport, a small coral island 3 km from Male'. The expansion of the runway at Hulule completed at the end of 1981 enabled larger, long-range jet aircraft to land with the effect that tourists would be able to fly directly from Europe to the Maldives. Arrivals by air increased from 7,500 in 1974 to about 123,000 in 1986 with tourists accounting for about 70 per cent of the traffic. This traffic is expected to increase further as the bed capacities on the tourist resort islands expand.

D. Ports

10. Maldives is dependent on seaborne imports for basic food items and Male' is the only island with port facilities to handle oceangoing ships. Overseas traffic has been increasing from 19,800 tons in 1974 to 76,700 tons in 1981, with some fluctuation depending on the yearly foodgrain stock requirements which represent the bulk of the cargo. Nearly all the cargoes are imports, of which 95 per cent is carried by Maldives Shipping Ltd. (MSL) vessels. Based on the expected growth of the Maldivian economy, the overseas traffic is estimated to double within the next decade. There are no reliable statistics on the informal inter-atoll traffic. It has been suggested that the total traffic volume could be at the level of about 36,000 mt between Male' and the outer atolls with an imbalance ratio of about 2:1 in favor of Male' outbound cargo and about 80,000 passengers in each direction. Because of the similarities in economic activities in each of the outer atolls and the very limited natural endowments, significant intra-atoll traffic does not exist.

11. The harbor facilities at Male' stretch along a narrow lagoon for some 1,600 m on the northern side of the island with varied widths of 50 to 160 m and depths of 0.5 to 3.0 m. The harbor consists of five sections: (i) the Eastern Harbor for mooring Male' registered fishing vessel (dhonis) and leisure and commercial craft; (ii) the Government/Tourist Harbor with a landing stage for Government vessels and tourist launches; (iii) the Commercial Harbor providing nominally 110 m of a wharf with water depth of up to 2.5 m for use of barges from overseas cargo vessels moored at the offshore anchorage; (iv) the Western Harbor for inter-atoll trading, accommodating dhonis (locally made

wooden soil boats) for delivery of fish, coral and sand, and also large passenger-cum-cargo diesel boats from the more distant atolls; and (v) the Far Western Harbor used mostly for longer term moorings of yatch-dhonis.

12. The main constraint faced by the port is congestion of both foreign and interisland cargo operations, caused by inadequate port storage space and poor landward access to the foreign trade Commercial Harbor. Delays to shipping and cargo damage are also inherent in the foreign trade lighterage system, as a result of double handling of cargo, time lost in the positioning of barges, and exposure to rain and wave conditions both at the ship and, at times, alongside the lighterage wharf, which has berthage for five lighters. As a result of these constraints, the average discharge rate per vessel working hour is only about 15 freight tons, according to the analysis of cargo handling statistics conducted for MNSML vessels for the period January 1986 to April 1988. The corresponding average throughput of imports for Male' Port as a whole is about 500 freight tons per day. In order to improve this situation and to upgrade the lighterage system, construction of an alongside berth, and associated works are currently under implementation being financed by AsDB.

13. Most islands in the archipelago are surrounded by shallow coral reefs which prevent direct shore access by all but very small craft. However, some islands have coral entries and small wooden jetties, capable of handling small fish collection vessels.

E. Shipping

14. Shipping is conducted at several levels in Maldives. Cross-trading, which arising under the United Nations Conference on Trade and Development (1964) and commonly referred to as the 40-20-40 rule, where 40 per cent of trade between two countries is reserved for vessels registered in each of the trading partners and 20 per cent is reserved for third party carriers, is conducted as a source of national revenue by Maldives National Shipping Management Limited (MNSML). International crewing services are provided to various foreign shipowners. Export of fresh and canned fish is partly conducted by the Government-owned State Trading Organization (STO). Liner services for Maldivian imports are mainly performed by MNSML and increasing number of private Maldivian shipowners. Interisland shipping services are conducted by a large fleet of small, mainly informally operated wooden vessels, locally referred to a dhonis, and diesel boats.

15. Cross-trading operations are operated by MNSML. In 1984, MNSML began a drastic fleet rationalization program, under which vessels operating at a loss have been sold or replaced by newer vessels. Under the program, the number of vessels was reduced from 39 in 1982, to 14 by the end of 1987, of which half are involved in cross-trading and half are regularly engaged in the Maldives import trade. During the same period, dead weight

capacity dropped about half, to 122,000 dwt. As a result of this program, the financial position of MNSML has improved gradually and the company is estimated to have been operating profitably since 1986.

16. About 450 Maldivian nationals are engaged in the MNSML's foreign shipping services. A further 1,100 are employed as crew members for other foreign shipowners. A seaman training program has been started with the assistance from the International Marine Organization (IMO) and the Norwegian Government which is expected to increase the number of Maldivian seamen employed overseas.

17. Exports from Maldives comprise almost entirely fish, fish products and finished garments. The export of fish predominantly takes place directly at sea, from specially constructed collector vessels, and to a lesser extent from the fish cannery at Felivaru Island, about 170 km north of Male'. Two of the three small factories which manufacture garments are located at Gan Island and the other is at Thulusdhu Island, about 30 km north of Male'. Finished garments are loaded on small locally owned ships of only a few hundred tons capacity, mainly for shipment to Colombo. Virtually, no exports are handled at Male' Port and fishing vessel activities at Male' Port are only concerned with meeting local consumption demand.

18. The import trade of the Maldives is almost entirely through Male' Port and mainly conducted by MNSML and other private Maldivian-owned and registered vessels of the approximately 200 ship calls by 45 different vessels which visited Male' Port from October 1986 to October 1987, about 60 per cent were of less than 500 freight ton capacity. These small, locally owned vessels are generally about 30 m in length, have a draft of about three meters, and are engaged in a regular, general cargo trade at Colombo. While relatively prolific in numbers, these vessels carry less than 10 per cent of all imports to the Maldives. Vessels carrying consignments of more than 500 tons accounted for more than 90 per cent of total imports. These are general cargo vessels, about 15 to 20 years old, of 3,000 to 5,000 dwt capacity, 100 meters in length, and with a draft of about six meters. They are all equipped with their own cargo lifting equipment, which is a necessity for lighterage operations at Male' Port. Most of the vessels in this category are Maldivian owned and operated, and carried an average of nearly 75,000 freight tons per year and about 2,500 freight tons per voyage.

19. Interisland traffic data for Male' Port is not systematically collected except for the number of ship calls and passengers, which is recorded by the Male' Municipality. It is estimated that the number of interisland ship calls at Male' Port is about 5,000 per annum, with interisland traffic currently totaling about 30,000 freight tons and 80,000 passengers per annum. Because there are no significant regional centers in the Maldives, apart from Gan Island, interisland freight and passenger traffic is dominated by movements directly between Male' and

individual small island communities. A semi-formal commercially based sector of interisland services to and from Gan Island is provided by a fleet of about 25 diesel boats of an average 30 dwt. These vessels carry a total of about 50 freight tons and about 75 passengers on a round voyage to and from Male'. The majority of inter island services are conducted by the informal sector.

20. These informal services are predominantly provided by the diversion of small island-based open fishing vessels (dhonis). The average capacity of the dhonis is about five dwt but they typically carry about four tons of cargo on a round voyage, plus about ten passengers. This informal system also provides an important means of regular contact between islanders and family members who have migrated to Male'. While at Male', the passengers live on board the vessels and complete their own sale of island produce (mainly firewood, fruit and coconuts) and cooperate in the purchase and loading of return cargoes (mainly flour, sugar and rice). It is anticipated that in response to the progressive deepening of outer island harbors and the gradual introduction of port infrastructure and development of regional centers in the outer islands, the larger, semi-formal diesel boats will gradually replace many of the small dhonis in the informal sector.

MALDIVES

MA1 : Location

