3. FIJI

FIJI

A. Sector Overview

1. Fiji comprises about 330 islands, of which some 105 are inhabited. The country's territory, with a total land area of 18,300 sq km. is scattered over 150,000 sq km of ocean. The two largest islands, Viti Levu (10,400 sq km) and Vanua Levu (5,500 sq km), respectively account for 57 and 30 per cent of the land area and 75 and 14 per cent of the country's population of 715,000 (August 1986 census). About 35 per cent of the population lives in urban areas.

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

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

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

5. Due to the archipelagic nature of the country,

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

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

B. Planning, Coordination and Policy

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

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

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

C. Investment

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

D. Roads and Road Transport

10. Roads under the administration of PWD are constructed to the specific minimum standard. These roads are subdivided into four categories: main, secondary, country and residential. In addition, there are other roads that have not been gazetted; these are unproclaimed roads.1/ By 1987, the country's road network totalled to 4,777 km, consisting of 1,307 km of main roads, 644 km of secondary roads, 2,603 km of country (rural access) roads, 117 km of residential roads, and 106 km of unproclaimed roads. Only 825 km of the network is paved to bitumen-surface standards. High priority was given under DP9 to the construction of new roads that would provide basic access to isolated rural areas with potential for development, but because of the recent economic decline, construction of almost all new roads is being deferred. Development in area served by existing roads has expanded, with concomitant increases in traffic volumes; these roads are being upgraded to provide all-weather

1/ Unproclaimed roads are those which have not been proclaimed as public roads, and published as such in the Government Gazette.

access, to improve transport reliability and decrease vehicle operating and road maintenance costs. Technical assistance to help the Government prepare a project comprising upgrading of existing roads has been proposed.

11. In 1987, the number of registered motorized vehicles was approximately 58,700, excluding specialized agricultural and industrial vehicles and motorcycles. Registration figures, however, include vehicles that have been scrapped or otherwise rendered inoperative, and those not licensed during the particular year. Available data on vehicles licensed for use on public roads, totalling about 35,400 in 1987, excluding specialized vehicles and motorcycles, indicate annual growth in the total vehicle fleet of about 1.4 per cent to 1985, before declining during 1986 and 1987. Licensing, however, particularly in rural areas, is not always adhered to ; the number of vehicles actually on the road may be somewhat higher. By type of vehicle, about 59 per cent are cars (including taxis), 39 per cent are goods vehicles, and about 2 per cent are buses. Based on Divisional 1/ data, licensed vehicle ownership appears to vary slightly, ranging from about 41 vehicles per thousand inhabitants in the Northern Division to 63 vehicles per thousand inhabitants in the Central/Eastern Division, which includes the capital at Suva (also the center of licensing for Government vehicles).

E. Civil Aviation

12. Air transport is the principal means by which people enter and leave Fiji. In 1987, 254,000 persons arrived in the country by air, through Nadi, which is the main international airport. This airport is capable of serving wide-bodied aircraft and is a convenient refuelling stop for trans-Pacific flights. The second largest airport is at Nausori, which, because of its location close to the capital at Suva, is the main domestic airport, and caters to few international flights. There are, in addition, 18 other airports in Fiji served by regular scheduled air services.

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

F. Railways

14. The railway network in Fiji is owned and operated by

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

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

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

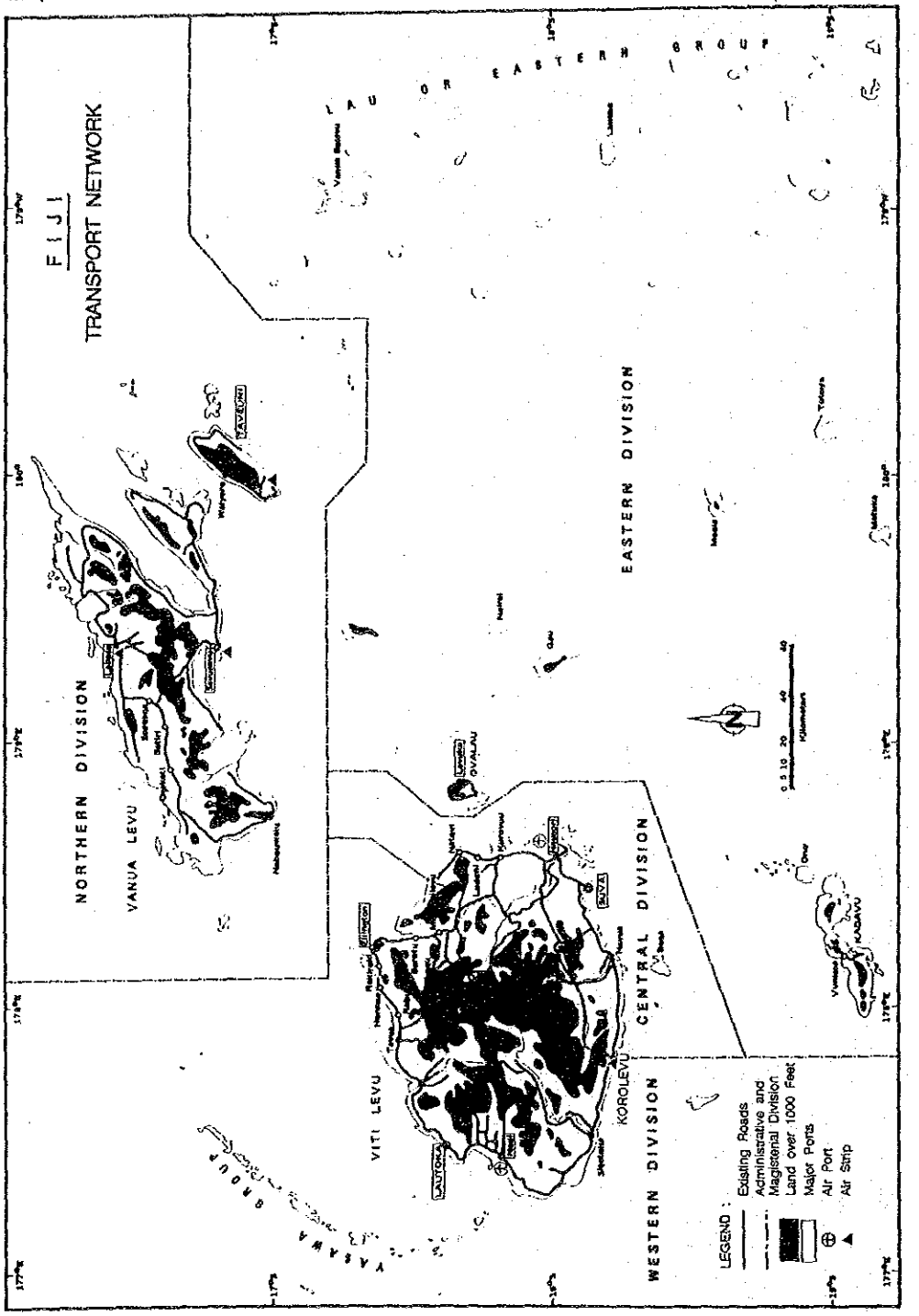
G. Shipping and Ports

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

17. Suva Port is located on the southeast coast of Viti Levu. It is a natural harbor, sheltered from the sea by reefs, and has direct approach to the Suva city center which has grown around the Port. Existing inland transport links from the Port area are good. In 1987 some 40 per cent of international cargo handled in Fiji passed through this Port. Suva Port also serves as a transshipment port for other South Pacific countries. The growth of cargo handled at Suva Port has been more rapid than the growth in total cargo handled at all other Fijian ports combined. Suva's role regarding import cargo is even more dominant, as the Port handles some 60 per cent of total imports to Fiji. Lautoka, the country's second largest port, is located on the northwestern coast of Viti Levu. Together, these two ports account for more than 90 per cent of international ship calls to Fijian ports, and they are also nodes for inter-island shipping and cruise services. Cruise passenger liners tend to call only at Suva and

Lautoka with the same ships generally calling at both ports. The volume of cargo handled at the various ports in Fiji reflects a similar dominance of the two principal ports. However, the percentage of cargo handled at Suva and Lautoka ports (75 per cent) is lower than the share international ship arrivals due to the high average loading of sugar exports at the various outports.

Map


FIJI
TRANSPORT NETWORK
NORTHERN DIVISION
VANUA LEVU
EASTERN DIVISION
LAU OR EASTERN GROUP
CENTRAL DIVISION
WESTERN DIVISION
VITI LEVU
KORO LEVU
YASAWA GROUP
LEGEND :
Existing Roads
Administrative and Magisterial Division
Land over 1000 Feet
Major Ports
Air Port
Air Strip

4. INDIA

INDIA

A. Sector Overwiew

1. India has a population of about 781 million growing at an annual rate of about 2.0 per cent, a land area of about 3.3 million sq km and a net cropped agricultural land area of 143 million ha. About 75 per cent of the population lives in rural areas; the heaviest concentrations being in the northern plains and along the 5,600 km coastline. The major urban centers accounting for about 25 per cent of the population are relatively far apart; for example, the distance by rail between Delhi and Madras is about 2,200 km and between Calcutta and Bombay about 2,000 km. Such distances are reflected in the huge volume and the intensity of transportation in the country.

2. The existing transport system comprises several modes, among which rail and road account for over 90 per cent of the total freight and passenger traffic. The other modes such as coastal shipping, inland waterways, air transport and pipelines are of minor importance as carriers of general goods and passengers. However, they play a significant role as "specialized" modes because of the large size of the country and its varying geographical features. In addition, animal-powered vehicles, such as bullock carts, carry a substantial tonnage of originating traffic in rural areas. However, in terms of traffic volume expressed in ton-km, the contribution of the animal-powered mode is not significant.

3. During FY1950/51-FY1984/85 the transport sector recorded substantial growth in terms of extent of the network and output. Despite a relatively large base in FY1950/51, railways recorded an average annual growth rate of 3.1 per cent in freight traffic and 2.9 per cent in passenger traffic, although the total route length increased at an average rate of 0.4 per cent per annum. Freight traffic increased sharply in FY1985/86 and FY1986/87 and, as a result, the average growth rate over the last 36 years was 3.4 per cent per annum. The road transport fleet increased by 6.8 per cent per annum for trucks and 5.4 per cent per annum for buses. The total length of the road network expanded at an annual rate of 4.5 per cent. Overseas shipping tonnage increased at a rate of 11 per cent and coastal shipping at 1.4 per cent per annum. The traffic at major ports increased at a rate of about 5.2 per cent per annum. Domestic airline passenger traffic increased at a rate of about 10.5 per cent per annum.

4. Despite these impressive growth rates, about one third of the villages in the country did not have a road link in FY1984/85 and about two thirds were without all-weather access roads. The capacity of the transportation system is inadequate to meet the growth demand and the existing infrastructure has been burdened with overaged and obsolete equipment and facilities that require replacement or upgrading. Capacity constraints of

the railways have led to the movement of bulk commodities, such as coal and cement, over long distances by road at a high cost to the economy. Inadequate road capacity and substandard maintenance have let to excessive transit delays, fuel wastage and high operating costs. Modernization of port facilities has lagged behind changes in shipping technology and cargo-handling methods, resulting in slow turnaround time of ships and congestion in the ports. The Government is focusing its attention on these aspects of the transport sector under the Seventh Five Year Plan, 1985/86-1989/90 (SFYP).

B. Planning and Coordination

5. The responsibility for management of the transport sector is divided between the Government and the private sector. The Government plans, provides and maintains all transport infrastructure including railways, roads, seaports, airports and inland waterways. It also operates the Indian Railways (IR), the Shipping Corporation of India, the Central Inland Water Transport Corporation, pipelines, most urban bus services, Air India, Indian Airlines, and the nation's seaports and airports. The private sector operates virtually the entire trucking industry, a major share of non-urban buses, almost half of the international shipping industry, and all non-motorized transport, in particular country boats and bullock carts.1/ The Governments' jurisdiction in the transport sector is divided between the Central Government, which is responsible for the railways, the national highway system, national inland waterways, pipelines, major seaports and airports, and the state and local governments, which are responsible for state and other highways, non-national inland waterways, and intermediate and minor seaports and public sector bus services.

6. Several Government organization are concerned with the planning, coordination and operation of transport services. Investment planning is carried out separately for each mode at the Ministries of Railways, Surface Transport and Civil Aviation. An integrated transport plan is prepared by the Planning Commission. The Planning Commission, which sets priorities among sectors, works in close cooperation with the various Federal Ministries and state governments. The five-year development plans, which are formulated by the Planning Commission, are approved by the Cabinet and the National Development Council representing the Central and state governments. Transport projects within the plans require further approval by the ministries concerned for expenditures up to Rs 50 million; by the Interministerial Expenditure Finance Committee for expenditures greater than Rs 50 million and less than Rs 200 million; and by the Public Investment Board and Cabinet for expenditures greater than Rs 200 million. Activities in the sector are further

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1/ Most of the short-haul freight traffic in the villages is by bullock carts.

coordinated through control of fares, tariffs, administrative regulation and licensing. The Central Government controls rail fares and tariffs, while the States have the right to determine road transport passenger fares and tariffs. Road trucking rates are set by the market. The Central Government also sets prices for civil aviation and some rates for coastal shipping and inland waterways. Commercial road vehicles are licensed by regional or state transport authorities. The licenses specify the route or area of operation and the type of service that is permitted.

7. In 1978 the Government appointed a National Transport Policy Committee (NTPC), which carried out a review of the transport sector and made recommendations for improving its efficiency. Nearly all its recommendations were approved by the Cabinet in 1982. NTPC recommended liberalization of the transport sector, in particular that transport agencies should have more freedom to set prices; that fares and rates should be cost based; that taxes, especially on road transport, should be reduced; and that projects should not be undertaken if they cannot be viable in the long run without subsidies.

8. A subsequent step to the NTPC report was the establishment, by the Planning Commission in October 1985, of a Steering Committee for Transport Planning. The Committee has been asked to produce a perspective national integrated transport plan and make recommendations as to how long-term transport planning on a continuing basis can be established. The Committee is in the process of formulating this plan.

C. Transport Policy and Investment

9. National development planning in India has taken the form of five-year plans; the first covered the period FY1951/52-FY1955/56. Under SFYP the main thrust for augmenting transport capacity is toward improvement in productivity of the existing facilities through technological improvements as well as improvements in management practices, rather than the building up of additional physical capacity. Accordingly, the main policy objectives under SFYP for the transport sector are to:

(i) replace overaged facilities and equipment in a phased manner and ensure that in future arrears in this regard are not allowed to build up;

(ii) modernize the transport sector on the basis of new technologies;

(iii) ensure that the existing facilities are efficiently maintained;

(iv) give priority to the completion of ongoing works which add to the capacity of the system;

(v) conserve energy, particularly diesel oil, to the

extent possible; and

(vi) avoid sectoral mismatches and duplication through integrated planning of mineral, industrial, energy and transportation development.

10. The total public sector allocation for the transport sector under SFYP amounts to Rs 229,700 million or about 13 per cent of total investment under SFYP. This allocation is almost double the amount provided for the sector under the Sixth Plan, but the percentage share remains unchanged. About 54 per cent of the public sector allocation for the transport sector under SFYP is for railways, followed by roads (24 per cent), ports (5 per cent), aviation (5 per cent), shipping (4 per cent), inland waterways (1 per cent), and others including road transport corporation (7 per cent).

D. Railways

11. Indian Railways (IR) is the nation's largest business with 1.7 million employees and depreciated assets valued at Rs 104 billion. IR is also the largest railway in Asia and the second largest state-owned railway under single management in the world. IR is owned and operated by the Government of India. It is administered and managed by the Railway Board consisting of a Chairman, Financial Commissioner and four members, who are appointed by Cabinet. The Chairman of the Railway Board is also designated as Principal Secretary. IR has the legal status of a Ministry with responsibility for the planning, construction, maintenance and operation of the railways. The railway system is divided into nine geographical zones, each under the control of a General Manager. IR also owns and operates manufacturing units producing locomotives, rolling stock and railway equipment such as wheels, axles and signalling equipment.

12. The first railway in Asia was established in India in 1853, connecting Bombay and Thana, a distance of 53 kilometers. At the time of partition in 1947, the rail network covered 53,000 route kilometers. Today the IR system extends over 62,000 route kilometers, more than 13,000 kilometers of which have either double or multiple tracks. Over 10 percent of route kilometers are electrified. The network consists of three gauges, a result of limited allocation of funds for construction prior to Independence. Broad (1.676 meter) gauge, while covering only about 54 percent of route kilometrage, accounts for about 89 percent of ton-kms and 82 percent of passenger kms of the entire system. Most of the sections that are double tracked and most electrified sections are on broad gauge. IR has about 16,000 locomotives, of which more than half run on steam; in the 1960s there were more than 10,000 steam locomotives. Steam locomotives are now being phased out and most freight trains, particularly on lines where there is high traffic density, now have diesel or electric traction. Principal items of rolling stock are: 3,000 electric multiple units (EMUs), 28,000 passenger coaches and

365,000 freight wagons. The acquisition of new passenger coaches has not kept up with passenger traffic. The result is extreme overcrowding on some of the railway routes. Much of the freight wagon fleet consists of uneconomical low capacity general purpose wagons, which are gradually being phased out.

13. Over the past 25 years rail freight tonnage grew at 2.9 per cent per year. With an average lead increasing from 513 kms in 1950/51 to 730 kms in 1984/85, the growth in ton-kilometers was higher, at 3.7 per cent per year. These low growth rates occurred well into the 1970s, after which the improvements in the road network encouraged a rapid increase in the movement of goods by road. Over the same period there has been a change in the composition of freight traffic. In the 1950s and 1960s less-than-carload freight was an important item. Today 90 percent of rail freight consists of bulk commodities in full carloads. Seven bulk commodities -- coal, steel, iron ore, foodgrains, petroleum products, cement and fertilizers -- account for 80 per cent of freight ton-kilometers. Coal alone represents 39 per cent of IR's freight tonnage, 33 per cent of ton-kilometers and 31 per cent of freight revenue. Passenger traffic has increased more rapidly over the past 25 years than freight traffic, the number of passengers at 3.1 per cent per year and the number of passenger-kilometers at 4.6 per cent per year. There has also been a radical change in the composition of traffic. There has been a sharp decline over the past quarter of a century in the proportion of non-urban ordinary second class passenger-kilometers -- from 50 per cent in 1960/61 to 32 per cent in 1984/85 -- and a corresponding increase in non-urban express second class and urban passenger traffic. The average distance travelled by non-urban passengers today is 123 kilometers, 75 per cent greater than 25 years ago. The increasing competition from road transport reduced rail's share of short to medium distance passenger traffic, for which buses can provide better service.

14. Indian Railway's achievements in support of the development of the nation are impressive. With inadequate access to capital, IR successfully rehabilitated a system that at the time of partition was in a poor state of repair. Throughout the country the railway supported the development and growth of heavy industry and agriculture and the building up of social infrastructure, health centers and schools. IR now manufactures all its locomotives and passenger coaches. Turnround time of wagons at terminals needs to be substantially reduced and further measures taken to increase the utilization of motive power and rolling stock. High levels of investment are needed to increase line capacity and to renew rolling stock for which IR lacks resources. It has been recommended that IR be allowed a greater degree of commercial freedom, for example by allowing tariffs to be set at levels that will enable the Railway to mobilize sufficient resources to provide efficient services for traffic for which rail has a comparative advantage.

15. IR will continue to play an important role in support of further development of the economy. The decision to put

priority in the Seventh Plan (1985-1990) on freight traffic appears justified in light of the large expected freight traffic growth and increased competition from road transport for shorter-distance passengers and from air transport for long-distance intercity passengers. Freight traffic is projected to be about 50 per cent greater in 1989-90 than in 1984-85. This will not be realized without substantial increases in line capacity, motive power, rolling stock and operational performance. Seventh Plan investments to upgrade existing assets and provide additional capacity include Rs 52 billion to acquire 1,235 diesel and electric locomotives, 950 EMUs, 96,000 freight wagons and 6,970 passenger coaches; Rs 30 billion for track renewal; Rs 16 billion for line capacity works; Rs 15 billion for workshops, machinery and plant; and Rs 10 billion for electrification. No specific allocation is given in the Plan for the development for inland container depots (ICDs), although their importance in support of multimodal transportation is fully recognized. The total outlay for IR for the Seventh Plan is Rs 123 billion. Targets are set for higher rolling stock utilization, with reduction of wagon turnround time at terminals a priority, and more attention will be given to preventive maintenance of motive power and rolling stock, with the phasing out of steam locomotives to be accelerated.

E. Roads and Road Transport

16. There are about 1.8 million kilometers (km) of roads in India, equivalent to 0.54 km pr sq km of land area. The national highways network, which connects important urban centers and which accounts for 30 per cent of all road traffic is about 32,000 km in length, or about 2 per cent of the total length of the network. Furthermore, about 7,000 km of the national highway system consists of single-lane roads. These and substantial sections of two lane national highways are heavily congested and need to be widened. The total road length has increased over the past 36 years at an average annual rate of about 4.5 per cent, from only 0.4 million km in FY1950/51 to the present total of about 1.8 million km. The Government's policy under its Minimum Needs Program is to connect all villages in the country to the main highways and the railways. This policy has stimulated the impressive development of the rural and tertiary road network. On the other hand, the national highway system has grown very slowly, by only about 10,000 km over the past 36 years. The inadequacy of a well-developed main road system has often acted as a constraint on faster growth in short and medium-distance freight and passenger traffic.

17. There are about 5 million motor vehicles, of which about 825,000 are trucks and 220,000 are buses. In the past ten years, the motor vehicle fleet has grown at an average annual rate of about 10 per cent. Much of this, however, is accounted for by the very rapid increase in the number of two and three-wheelers, which comprise about half of the motorized fleet. The growth in trucks and buses has averaged about 6 per cent. In

addition, there are an estimated 15 million bullock carts. Nearly all of the domestic vehicle fleet is built in India. However, most new vehicles made in India are based on a 20-40 year old technology with some improvements. The manufacturers of trucks and buses have succeeded in reducing vehicle weight and improving component design, which has resulted in some fuel economies. However, vehicles manufactured in India still have higher operating costs and lower fuel efficiency than vehicles of similar capacity manufactured in other parts of the world. Recently, the Government sanctioned a number of joint ventures of local and foreign firms in order to modernize the industry. The Government has also revised the old axle load limit regulations, which now allow legal use of heavier vehicles up to 18 tons for a vehicle with tandem axle with eight wheels. This decision is expected to stimulate the construction of stronger road structures and act as a deterrent to the heavy overloading, reduce the high rate of road accidents and reduce recurring damages to the road structures.

18. The national highways are under the jurisdiction of the Central Government, which is responsible for related planning, financing of construction and maintenance. Construction and maintenance are undertaken by both Central and State Public Works Departments, with the states, acting as agents for the Central Government, collecting a corresponding agency fee. The various states and territories finance works for all other roads, the implementation of which is sometimes delegated to the local agencies. The Ministry of Surface Transport (MOST) plans the construction and operation of the national highways system and serves as an advisor for planning of the other roads. In 1986 the long-term "Road development Plan for India 1985-2001" was formulated. This is the third national perspective plan for the roads subsector, the first, the Nagpur Plan, having been published in 1943, and the second, the Bombay Plan, in 1961.

19. The private sector controls practically all trucking and about 60 per cent of non-urban bus services. Small truckers own about 95 per cent of the trucking fleet. State-owned bus companies operate the balance of truck and bus services, principally in the metropolitan cities. Many of these state entities have a history of poor services and high operating losses.

20. Traffic information for road transport is very incomplete. Some calculations of freight ton-km have been made by MOST based on estimated number of vehicles, their assumed annual utilization and assumed load factors. Other estimates, which produce different results, have been made on the basis of diesel and gasoline fuel consumption for the road transport sector. The output for FY1984/85 ranged between 90 and 185 billion ton-km. Passenger traffic, on the basis of ticket sales, is estimated at about 640 billion passenger-km for FY1984/85, or about three times that of the railways. There is evidence to suggest that truck traffic is growing at a rate of about 8 per cent and road passenger traffic at about 6 per cent per annum.

Traffic counts over the past five years have revealed annual growth rates of between 8 and 20 per cent, depending on location. The main constraint on traffic growth on many roads appears to be congestion, especially the mix of motorized and non-motorized traffic and local and through traffic operating at greatly different speeds.

21. Resource constraints have limited the public investment outlay for the road subsector. For SFYP, the Central Government plans an outlay of about Rs 10.2 billion, mostly for works on national highways and Rs 2 billion for road transport equipment. State government outlays are expected to be about Rs 41.8 billion of which Rs 20.5 billion is allocated for providing access roads for 26,000 villages under the Minimum Needs Program and Rs 21.3 billion for the road transport industry. At 8 per cent annual growth for the truck fleet, a net increase of about 350,000 vehicles over the SFYP period is expected. About Rs 20 billion is therefore expected to be invested in procurement of additional buses and trucks. And another Rs 6.6 billion is for replacement of old trucks. Most of which will be private sector investment.

F. Ports

22. Although ports have existed in India since pre-historic times, it was not until 1875 that the first all-weather dock, the Sassoon Dock at Bombay, was constructed. Prince's and Victoria Docks at Bombay were built shortly after, and the Kidderpore Dock at Calcutta was constructed in 1893. Indira Dock (formerly Alexandra Dock) at Bombay was commissioned in 1914 and Madras Harbor began operations in 1916. These were built to accommodate the liner trade, which in those days was mainly between India and the UK. The three main ports -- Bombay, Calcutta and Madras -- today are still the main liner ports for India, although most liners no longer bring breakbulk cargo exclusively or carry passengers, but rather containers. In 1930 an approach channel was cut through the sand bar at Cochin and dock facilities there were opened. Visakhapatnam, half way up the East Coast, was the last of the major ports to be opened in the pre-Independence era. With Independence and Partition, the Port of Karachi went to Pakistan and traffic bound for northwest India was diverted to Bombay and Calcutta. To compensate for the loss of Karachi, Kandla, a new port at the head of the Gulf of Kutch, was established in 1955 to serve the northwest. Mormugao became the seventh major Indian port, opened in 1963, followed by Paradip, opened in 1966. The ports of New Mangalore and Tuticorin were opened to traffic in 1975. The Haldia dock system was completed in 1977, becoming the eleventh major port. Nhava Sheva, under construction near Bombay, is also classed as a major port; it is due to become operational by 1989. In addition to the existing 11 major ports, there are 139 minor and intermediate ports.

23. Bombay is the largest general cargo port. It has more berths and receives more ship calls than any other Indian port; annual general cargo throughput was 6.2 million tons in 1985/86,

of which 2.4 million tons was containerized. Madras and Calcutta are the other major general cargo ports, with more than one million tons annual general cargo throughput. Next to Bombay, Madras handles the greatest number of containers, followed by Calcutta, Cochin, Kandla, and Haldia. Large quantities of liquid bulk products, mostly petroleum products, are handled at Bombay, Kandla, Madras, Visakhapatnam, Haldia and Cochin. In terms of total tonnage, Tuticorin, Mangalore and Kandla have shown the highest rates of growth over the past ten years. Although Calcutta experienced negative growth over the last decade, trade since 1980, in particular general cargo, has increased.

24. During the Fifth and Sixth Plans (1975-1985), the ports of Haldia, New Mangalore and Tuticorin became operational and new berths were commissioned at Madras (container and iron ore terminals), Paradip (multipurpose), Cochin (oil terminal) and Mormugao (oil terminal and a multipurpose berths). Early in the Seventh Plan, fertilizer berths at Cochin and Paradip and two multipurpose berths at Paradip became operational. Nhava Sheva, to be completed by 1989, will have three container and two dry bulk berths. A new oil terminal at Madras, a coal berth at Tuticorin, and a multipurpose berth at New Mangalore have been or are being completed during the current plan. In addition, the container facilities at Madras, Calcutta and Cochin, the mechanized fertilizer facility at Madras and the container facilities at Bombay will either be completed or nearly completed by the end of the Seventh Plan period. Nhava Sheva and Bombay Ports together are to receive more than 50 per cent of the outlay allocated to individual ports in the Seventh Plan. Although not included in the Seventh Plan, it is likely that the expansion of the coal terminal at Paradip Port and the construction of a new coal terminal in the vicinity of North Madras Thermal Power Station will be started during the Seventh Plan period, to facilitate transporting of coal by sea from Talcher Coal fields in Orissa.

25. Each major port is administered by a port trust, under the Major Port Trusts Act, 1963. The Central Government appoints a Chairman, Vice-Chairman and trustees, who represent various national and local interests, both official and private. The Port Trusts have responsibility for the planning, development and maintenance of port infrastructure and for administering maritime and landside port activity. The ports are empowered under the 1963 Act to engage in most port-related activities. A substantial part of Port Trusts' operational activities relate to cargo handling, which for breakbulk was labor intensive. Even today, with stagnation of breakbulk cargoes and an increase in mechanized bulk and container handling, most ports still have large permanent labor forces.

26. India's port system was developed at the peak of the breakbulk general cargo trade. A typical breakbulk berth has an annual throughput of 100,000 to 150,000 tons. Accommodating the large amount of breakbulk cargo at Bombay or Calcutta, with annual throughputs of several million tons, required many berths.

Bombay has 55 breakbulk berths and Calcutta has 31. These same berths were, and in some ports still are, used also for dry bulk cargo. In the 1970s there was considerable congestion in the ports, with some ships having to wait up to several months to obtain berthing space. Although traffic has continued to grow, berth congestion has all but disappeared. This can in part be attributed to improvements in operational efficiency, but in much larger measure to some fundamental changes in the general cargo trades, specifically with the introduction to India of containerization.

G. International Shipping

27. It is Indian shipping policy to promote the State-owned Shipping Corporation of India (SCI), which, when it was established in 1961, accounted for 19 per cent of total Indian tonnage. This has increased to 57 per cent by 1987. SCI is very diverse, operating tankers, bulk carriers, breakbulk general cargo and container ships. The company's ships not only carry India's imports and exports but also carry goods between other countries. In 1984/85, 1.4 million tons of dry bulk commodities were carried in these "cross-trades" by SCI bulk carriers. SCI has a monopoly on much of its cargo, for example, for at least half of India's petroleum. SCI is a major force in the India/Europe container trade, operating four container ships, the largest with a capacity of 1,228 TEUS, which make direct calls at Bombay, Cochin and Madras. Calcutta containers are tansshipped at Madras and move between that port and Calcutta in smaller feeder container vessels. Support for SCI is one instrument of Indian shipping policy; another is to provide Rupee finance for ship acquisition through the Shipping Development Fund Committee (SDFC) and foreign exchange through Ship Acquisition From Abroad Under New Scheme (SAFAUNS). The Government has provided large amounts of funding through these channels, but this program has not been too successful.

28. The future for Indian shipping is uncertain. It is clear that SCI will continue to expand as it has on order at least three containerships, of 1,500 TEU capacity each, seven tankers, one multipurpose general cargo vessel, and 20 bulk carriers. The Government seems to be exploring the possibility of reducing all but essential subsidies. This policy could have a significant effect on the shipping industry. Some freight rates are subsidized, and if these subsidies are removed, SCI and private companies with Government contracts would correspondingly suffer. SCI's move into bulk cross trades indicates a high degree of commercial initiative and it is likely that with sufficient commercial freedom that company could be profitable, even without direct Government support.

29. During the Seventh Development Plan period the merchant fleet will be built up, modernized, and diversified. This is expected to increase self-reliance in foreign trade and save foreign exchange. Particular stress is being placed on achieving

self-sufficiency in tankers and having sufficient ships to carry 50 per cent of dry bulk and 40 per cent of liner cargo. At present, between 26-30 per cent of these latter categories move in Indian ships. Cross-trading is to be encouraged and efforts made to improve productivity in shipping. A need is foreseen to reduce the reliance of the industry on SDFC and seek other sources of ship finance. It is expected that the Indian Merchant Shipping fleet will incease from 6.4 million gross registered tons (GRT) in 1985 to 7.5 million GRT by the end of the period.

H. Coastal Shipping

30. Coastal shipping is not adequately developed in India. In FY1984/85 the coastal fleet, totalling about 360,000 gross registered tons, carried only about 5.5 million tons of cargo, most of which consisted of petroleum products. Many coastal shipping routes in India are circuitous; a voyage from Calcutta to Bombay by sea is 3,911 km (2,112 nautical miles), while journey by road involves 2,282 km and by rail 2,174 km. The size of coastal oil tankers is, in general, economically appropriate for the annual volume of traffic, distance over which cargo is carried and the cargo handling characteristics in ports. Other commodities (coal, salt, timber, cement clinker and miscellaneous goods) are carried in ships which are generally unsuited for the trade, many being overaged. Port operations are slow and ships spend a great deal of time alongside the berths. Freight rates are high, in part a reflection of an outdated technology, but probably more directly a reflection of the monopolistic nature of the subsector, where there are few operators and few buyers of shipping services.

31. For the coal traffic originating at the Talcher fields in Orissa, there could be significant coastal movement of coal to meet the needs of the thermal power plants at Madras, Tuticorin and other destinations south of Madras on the east coast. This is in view of the need to transship cargo from broad gauge to meter gauge track in the case of rail transport to destinations south of Madras and the comparable haul lengths of rail and coastal shipping modes. A feasibility study is currently being carried out to develop a project for transporting coal between Talcher and Madras. The project comprises transportation of coal from Talcher to Paradip port by rail and thereafter by coastal shipping to Madras. This volume of traffic could be substantial, (possibly around 8 million tons by the year 2000) for the North Madras Power Station alone. As coastal shipping is essentially in the hands of the private sector, SFYP does not include any direct public investment for it, but offers support to the subsector through improvements in port and customs procedures and revision of freight rates and vessel licensing practices.

I. Inland Waterways

32. Inland waterways navigation (IWN) has hardly developed in India despite the existence of large rivers. The navigable IWN system has a total length of about 14,500 km. Mechanized craft can operate over about 5,200 km of major rivers and 485 km of canals. Nonetheless, IWN services operate in an insignificant manner from Calcutta to Bangladesh and onwards to Assam and in a more significant manner in Goa and Kerala. Until the 1960s, there was a flourishing IWN traffic in jute, tea and petroleum products on the Brahmaputra and Ganga rivers in the eastern and northeastern regions of India. However, IWN still remains important in these regions and in Goa and Kerala. Cargo services operate between West Bengal and Assam, parts of the northeastern region, and in Goa, where iron ore is transported on IWN to the Port of Mormugao, to be loaded on bulk carriers for export. The IWN of Goa carries more commercial cargo than in any other region of the country. National IWT traffic is small accounting for less than 7 per cent of total inland transport ton-km, despite the fact that on the existing IWT system bulk commodities can be moved at low cost where navigable depth of water is available year-round, if appropriate vessels are used.

33. The most common IWN craft is the country boat, which is generally powered by wind, although engines are being installed in some of these vessels. The Government-owned Central Inland Waterway Transport Corporation (CIWTC) operates a fleet of 136 mechanized vessels on inland waterways in the northeast region, most of which are old and inefficient. These carry both cargo and passengers. Organized mechanized inland water transport operations, many of these being passenger ferries, are confined to a few specific locations.

34. During the Sixth Plan period, certain waterways were designated national waterways and were thus implicitly identified as potential areas for further development. Under SFYP, a Central Inland Waterways Authority has been set up as an independent agency, and charged with maintenance and administration and finance of inland waterways. This development will help to better realize the potential benefits of this mode. An outlay of Rs 2.3 billion is planned for IWN development during the SFYP period, most of which is allocated for the acquisition of 83 new vessels for CIWTC. The states and territories will provide an outlay of about Rs 0.7 billion, most of which will be used to replace overaged vessels. By the end of SFYP, CIWTC is expected to transport about 1.1 million tons of cargo per annum.

J. Inland Container Transport

35. Containerization in India has been developing relatively slowly. Consequently, the benefits of reduced transit time and lower transport costs of general cargo are not being fully realized. The largest component of such unrealized potential benefits relates to cargo transfer between modes of transport, and damage and pilferage to cargo due to piece-by-piece handling of loose cargo at intermediate stages between

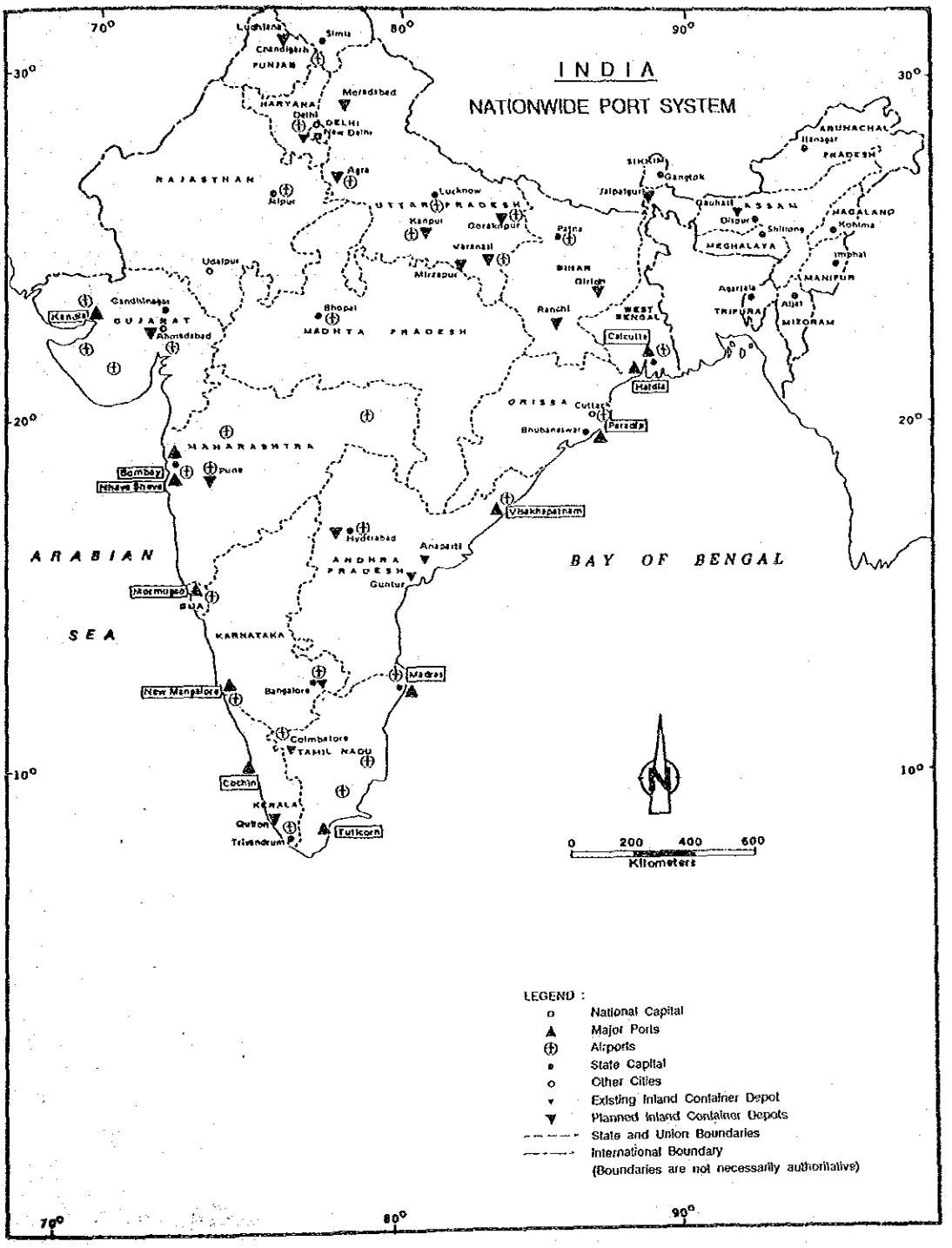
origin and destination. India is beginning to experience the container revolution. In FY1985/86, about 250,000 loaded twenty-foot equivalent units (TEUs) passed through the nation's four main container ports, namely Bombay, Calcutta, Madras and Cochin. About 200,000 of these TEUs were stripped or stuffed in the port area itself, which was an unnecessary intermediate stage between origin and destination. About 130,000 of these TEUs were full container load (FCL) shipments, which should have moved "door-to-door". The other 70,000 TEUs made up of less than container load (LCL) shipments, for some of which stripping at container yards and reconsolidation for common destination points would have been more economical. There are several reasons why containers are stripped or stuffed at ports in India, of which customs formalities, resistance from labor, and inadequacy of inland container transport infrastructure are the more significant.

36. Of the 250,000 TEUs passing through the four major container ports in FY1985/86, the contents of about 90,000 TEUs had origin and destination outside of the port city and its environs. Only about 19,000 TEUs, including empties, moved by rail between the ports and inland container depots.

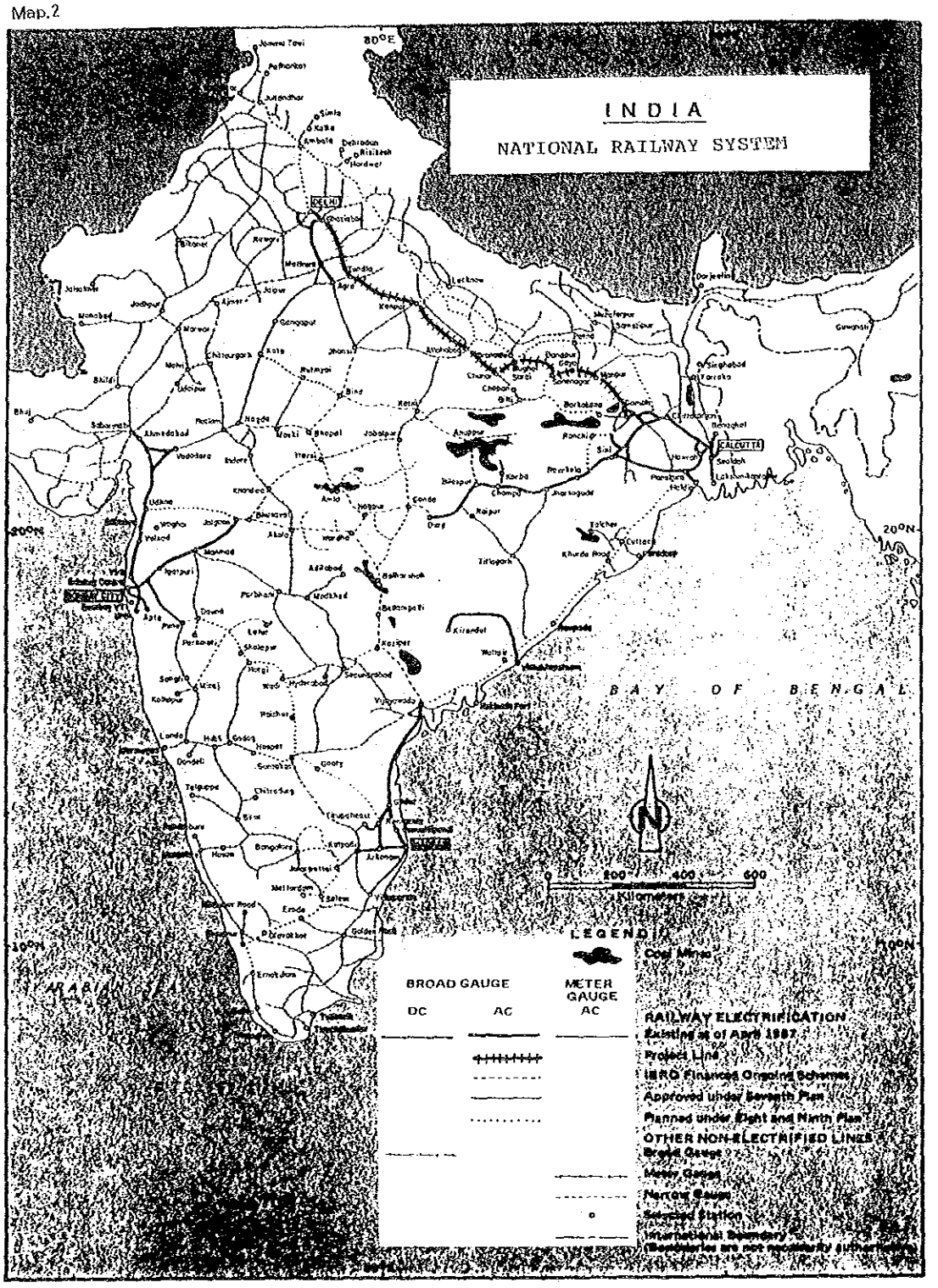
37. It is estimated that by FY1989/90, about 180,000 TEUs with cargo will move between the ports and inland points; much of this traffic could move by rail if adequate terminals and unit trains were provided, and if the service offered was adequate. To foster such transportation, it is imperative that a fast and efficient inland rail distribution system be established. This should include an extension of the existing ICD network, the provision of appropriate equipment at the ICD terminals, improving management of the ICDs, introduction of through bill of lading and the movement of containers by unit trains between ports and ICDs. In order to accommodate the forecast traffic, the ICD at Delhi needs to be expanded to be capable of handling about 50,000 TEUs per year; the ICDs at Bangalore, Coimbatore, Hyderabad and Ahmedabad needs to be expanded to handle between 10,000 and 25,000 TEUs per annum, and the facilities at Guwahati, Guntur, Anaparti, Ludhiana and other sites needs to be expanded for an annual throughput of about 10,000 TEUs.

38. Under a recent modification to the Customs Act, ICDs have been accepted as extensions to the ports for the purpose of customs clearance. It would be beneficial if container yards (CYs) at off-site locations near ports were established as extension of ICDs. Setting up these CYs, together with the existing and planned ICDs in the interior of the country, would help to decongest port areas. It has been recently decided to set up an Inland Container Corporation to promote inland transport and distribution of containers. Setting up the operational arrangements, which would involve close liaison with international shippers, freight forwarders, container owners, insuring agencies, customs, the labor unions, the transfer of know-how and management practices and cooperation of traders should receive high priority and funding support.

Map. 1


INDIA
NATIONWIDE PORT SYSTEM
70°
80°
90°
30°
20°
10°
PUNJAB
HARYANA
Delhi
DELHI
New Delhi
RAJASTHAN
Jaipur
Agra
Moradabad
UTTAR PRADESH
Lucknow
Kanpur
Gorakhpur
Varanasi
Mirzapur
Patna
BIHAR
Giridih
Ranchi
WEST BENGAL
Calcutta
Haldia
Udaipur
Bhopal
MADHYA PRADESH
Kandla
Gandhinagar
GUJARAT
Ahmedabad
MAHARASHTRA
Bombay
Nhava Sheva
Pune
ORISSA
Cuttack
Bhubaneswar
Paradip
Vishakhapatnam
Hyderabad
ANDHRA PRADESH
Anantpur
Guntur
Mormugao
GOA
KARNATAKA
New Mangalore
Bangalore
Madras
Coimbatore
TAMIL NADU
Cochin
KERALA
Quilon
Trivandrum
Tuticorn
ARABIAN SEA
BAY OF BENGAL
SIKKIM
Gangtok
Jalpaiguri
Guwahati
ASSAM
Dibrugarh
Shillong
MEGHALAYA
ARUNACHAL PRADESH
Itanagar
NAGALAND
Kohima
Imphal
MANIPUR
Agartala
TRIPURA
Aizal
MIZORAM
0 200 400 600
Kilometers
LEGEND :
National Capital
Major Ports
Airports
State Capital
Other Cities
Existing Inland Container Depot
Planned Inland Container Depots
State and Union Boundaries
International Boundary
(Boundaries are not necessarily authoritative)

Map.2


INDIA
NATIONAL RAILWAY SYSTEM
80°E
20°N
10°N
BAY OF BENGAL
ARABIAN SEA
DELHI
CALCUTTA
BOMBAY
MADRAS
Kilometers
LEGEND
Coal Mines
BROAD GAUGE
DC
AC
METER GAUGE
AC
RAILWAY ELECTRIFICATION
Existing as of April 1987
Project Line
IBRD Financed Ongoing Schemes
Approved under Seventh Plan
Planned under Eight and Ninth Plan
OTHER NON-ELECTRIFIED LINES
Broad Gauge
Meter Gauge
Narrow Gauge
Selected Station
International Boundary
(Boundaries are not necessarily authenticated)

5. INDONESIA

INDONESIA

A. Sector Overview

1. Indonesia is an archipelago comprising more than 13,500 islands stretching over a length of 5,000 km, from Sumatra in the west to Irian Jaya in the east. The country has a total land area of almost two million sq km and an estimated population of 172 million in 1987. The population is highly concentrated on the islands of Java, Bali, Lombok and Madura -- these islands represent only 8 per cent of the country's land area but account for about 65 per cent of the total population, with a density of about 690 persons per sq km. Nearly 80 per cent of the total population lives in rural areas, and agriculture, with a 24 per cent share of the gross domestic product (GDP), remains the backbone of the economy and is the main source of income for about two-thirds of rural households.

2. During the 1970s, the Indonesian economy achieved substantial development growth, with GDP increasing at an average annual rate of almost 8 per cent in real terms. The transport component of GDP grew at an average annual real growth rate of 12 per cent during the same period. To meet this rapidly growing demand for transport, the Government carried out extensive rehabilitation of existing infrastructure, particularly roads. Since 1981, the economy has undergone a marked deceleration, owing to the depressed international oil market and the decline in external demand for oil, as well as the significant decline in the prices of the major non-oil exports of the country. Under the pressure of a significant weakening in international commodity and oil market prices, growth of GDP slowed down to 2.3 per cent in 1985 and to an estimated 3.2 per cent in 1986, from an impressive 6.1 per cent increase in 1984, which is the same as the annual average estimate over the previous ten year period.

3. Due to the archipelagic nature of the country, adequate transport infrastructure is of vital importance, not only for national integration, but also for overall economic development. Road transport is the predominant mode, accounting for about 70 per cent of freight ton-kilometers and 82 per cent of passenger-kilometers.1/ Shipping is important to Indonesia's economic integration and domestic and foreign trade. Indonesia has about 450 ports, 118 of which are open to foreign trade, and numerous landing points, constituting the basic infrastructure for maritime transport. The role of inland waterways is relatively minor and is limited to certain areas of eastern Sumatra and

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1/ Percentage share of the other modes in domestic transport is:

	Passenger-km	Freight ton-km
Railways	11	3
Shipping	2	27
Aviation	5	negligible

Kalimantan. The railway network consists of about 6,700 km located in Java and Sumatra. The pattern of railway traffic has shifted over the years toward transport of bulk commodities and long-distance passenger traffic. The freight and passenger traffic on railways declined steadily from 1970 but has gradually recovered since 1979; in 1985, railways transported 6.6 million tons of freight and 47.5 million passengers, compared with 4.4 million tons of freight and 37.6 million passengers in 1979. Domestic passenger air transport is significant for both interisland transportation and long-distance intraisland movements, particularly where the road network is deficient. Air transportation has expanded considerably in recent years, carrying 65,400 tons of freight and 6.5 million domestic passengers in 1984. All transport modes -- road, shipping, rail, air and river -- play a role in the country's transport system and are generally complementary rather than competitive.

B. Planning, Coordination and Policy

4. Transport planning and policy formulation is undertaken at the national level, with responsibility divided between the Directorate General of Highways (DGH), within the Ministry of Public Works (MPW) for road planning and investment, and the Ministry of Communications (MOC) for road transport regulation and all other transport modes. Investment and regulatory proposals formulated by these agencies are reviewed and approved by the National Development Planning Agency (BAPPENAS) in consultation for investment decisions with the Ministry of Finance (MOF). MOC's Planning Bureau needs further strengthening and relies mainly on consultants, both foreign and local, to undertake policy analyses. IBRD is giving assistance under its ongoing transport projects to strengthen the Bureau.

5. Although BAPPEAS oversees and coordinates modal investment programs, planning of transport development was until 1984 undertaken by the Ministries concerned, without sufficient interministerial coordination. In order to overcome inadequacies in coordinating transport plans and programs, an interministerial committee, comprising senior representatives of MOF, BAPPENAS, Directorate Generals of Land, Sea and Air Transport of MOC, and the DGH, was formalized in 1984. This committee at present meets at regular intervals.

6. It has been recognized that comprehensive coordinated development plans for each of the modes are required if balanced and cost-effective investment in the transport sector is to be ensured. Preparation and coordination of such plans are being undertaken by MOC. A Maritime Sector Development Plan was completed in 1984. A Land Transport Development Master Plan study was established in late 1984 and its Phase I was completed in 1986. IBRD-financed studies relating to pricing, subsidy and regulatory policies for all modes have also been completed. The findings of the studies that relate to the road transport subsector are currently being reviewed by the Government in the

light of recent tax reforms, which have affected some of the study recommendations. The Government is expected to finalize its action plans and programs to systematically implement the study recommendations after the review is completed.

7. Over the past few years, the Government has taken several measures to strengthen the agencies responsible for transport policy formulation, planning and coordination. DGH now has specialized divisions for planning and preparation of road development programs. These are staffed by trained personnel and are aided by computer facilities, but still require institutional strengthening. A Research and Development Unit has been established within MOC to advise the Government on transport policy issues. In addition, a scheme to provide training for MOC staff in sector planning, programming and budgeting is being formulated. Input from the provincial and Kabupaten planning agencies, BAPPEDA I and BAPPEDA II, into the transport planning process has increased, resulting in more attention being paid to regional concerns than in the past.

C. Investment

8. Since the inception of the first five-year development plan (Repelita I),1/ the Government has continued to place significant emphasis on transport development and has allocated increased amounts in successive plans (Repelitas II to IV) for the sector, although the share allocated has decreased gradually, from 17 per cent in the first plan to 11.6 per cent in the fourth plan. In Repelitas I and II, three-fourths of the annual allocations for the transport sector were earmarked for roads, but in Repelita III, the allocation was reduced to two-thirds and in Repelita IV to about one half of the total outlay for the transport sector. In addition to these specific allocations for roads to DGH, assistance is provided through the Ministry of Home Affairs to provinces and kabupatens 2/ to support efforts at these levels of government in fostering rural development. Since these grants are primarily to be used for improving local infrastructure, a high proportion of them is allocated for kabupaten roads. The share of funds allocated to develop sea transportation (ports and coastal shipping facilities) increased steadily from 9.8 per cent of the transport sector budget during Repelita I to 21.6 per cent during Repelita IV. Because of the sharp decline in oil prices in the mid 1980s, the Government reassessed its development priorities and substantially reduced its development budget. Although significant cuts were made, the

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1/ Repelitas I, II, III and IV covered the period 1969/70 - 1973/74, 1974/75 - 1978/79, 1979/80 - 1983/84, and 1984/85 - 1988/89, respectively.

2/ A kabupaten is an administrative division within a province. Within the country, there are 27 provinces and 246 kabupatens.

transport sector still accounts for 17.3 per cent of the 1988/89 development budget and the maritime sector accounts for 12.3 per cent of the funds allocated to the transport sector:

D. Ports

9. Indonesia has some 300 public ports scattered over the archipelago. Of these, 43 are international liner service (ILS) ports; the rest are feeder and special ports, serving interisland, lokal1/ and sailing vessels. The more important ports are Jakarta (Tanjung Priok), Surabaya, Semarang and Cirebon on Java; Belawan, Padang and Panjangon on Sumatra; Balikpapan, Banjarmasin and Samarinda on Kalimantan; Ujung Pandang and Bitung on Sulawesi; Ambon on Maluku, and Sorong on Irian Jaya. Jakarta, Surabaya, Belawan and Ujung Pandang, the four largest ports, handle most of Indonesia's export and and import cargoes, except for special commodities such as crude oil, logs, timber, rubber, palm oil and fertilizer. Much of the domestic traffic originates from or is destined for these four ports.

10. Since most of the commercial ports in Indonesia were established prior to independence, the original port layout was based on design concepts and cargo handling arrangements that reflect the technologies and maritime industry customs during the first decades of this century. The first phase of port investment was mainly for the ports of Jakarta, Surabaya, Belawan, Semarang and a few specialized ports, where physical adjustments to the port system have been made over the last 25 years. Excepting these ports, the majority of Indonesia's commercial ports are, therefore, not equipped for the introduction of modern technology and efficient cargo handling methods. This contributes to the low productivity in the ports sector. The second phase is also underway and includes the preparation of master plans and detailed engineering designs for the key 43 ports identified by ISTS as requiring rehabilitation and expansion. The implementation of the resulting investment program is the third phase and is expected to provide the infrastructure necessary to improve efficiency in the port sector.

11. The AsDB has provided to the Indonesian ports sector seven loans, totalling $150.35 million and seven technical assistance grants, totalling $1.45 million. Past AsDB projects have financed the rehabilitation and expansion of the major ports -- Jakarta, Surabaya and Belawan. Two of these projects have been post evaluated, and in both cases it was concluded that the projects were generally successful, providing facilities that

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1/ Lokal vessels are small motorized vessels up to about 250 dwt capacity operating on short interisland or coastal routes. Sailing vessels are small wooden hulled vessels which mainly depend on a combination of wind power and motor propulsion.

were necessary to handle increasing traffic, and that implementation was generally satisfactory. The AsDB's sectoral lending strategy of first concentrating on improving the major ports and then systematically upgrading other ports is consistent with the Government's strategy and is in line with the conclusions of the Indonesia Country Strategy Study.

12. IBRD has funded two shipping projects and two port projects in Indonesia. The port projects have funded the expansion of facilities at Jakarta and the upgrading and expansion of four smaller ports in Perum II.1/ IBRD has been involved in the development of policies and institutions in the maritime sector. Under its most recent loan, IBRD has modified its financial evaluation criteria, recognizing that a long-term approach must be taken into account to achieve financial objectives in the Indonesian Port Sector. Several bilateral donors, particularly Japan, the Federal Republic of Germany and the Netherlands, have been involved in the maritime sector. Donor aid is being coordinated and port investments are allocated by the Government to the various donors.

E. Shipping

13. In 1986, Indonesia's shipping fleet consisted of 8,046 registered vessels, of which 255 were interisland vessels operating as part of the Regular Liner Service (RLS); 955 were lokal vessels and about 4,000 were sailing vessels (partly motorized) operating on a relatively unregulated basis. There were approximately 2,801 special carriers for bulk trade (e.g. fertilizer, cement, petroleum and logs), along with tugs, supply vessels, barges, fishing vessels and landing craft that are operated for industrial purposes. There are 35 oceangoing vessels for overseas general cargo traffic. Although the state-owned company Pelayaran Nasional Indonesia (PELNI) is the largest domestic shipping company, the shipping sector is predominantly privately owned. The lokal and sailing vessels play a key role on relatively short routes and respond quickly to changes in market forces.

14. Domestic trade in Indonesia has not yet been affected by the worldwide revolution in unitized cargo handling. Many ships spend too much time in port, either waiting for cargo or because of inefficient port operations, with the result that the ratio between sailing and port time is 1:2, compared with the commonly accepted ratio for conventional cargo vessels of 1:1. RLS is unreliable and annual ship usage was between 10 and 15 metric tons (mt) per dead weight ton (dwt), compared with an accepted norm of 25 mt/dwt. Because there are more ships for domestic shipping services than the trade requires, there is strong competition among shipping operators and discounted

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1/ Perusahaan Umum Pelabuhan II (Government Corporation for Sea Ports in Region II)

tariffs and irregular sailing schedules are common.

15. The Government's objective in shipping sector is to develop the least-cost method for sea transport of general cargo through complementary trunk-feeder shipping services and supporting infrastructure which would be conducive to reaping the benefits of seaborne cargo unitization. This will be done through better management and organization, scrapping obsolete vessels, providing adequate and more efficient shipbuilding and ship repair facilities, and improving navigational aids and other aspects related to marine safety. Shipping routes are being restructured, ship itineraries reduced, and an interisland liner service (ILS) established. Adjustment in shipping services will, however, be flexible, and based on market decisions rather than rigorously enforced by decree. Against this background, in 1984 the Government began delicensing cargo vessels more than 25 years old. In 1984 and 1985, 166 interisland vessels totalling 175,000 dwt, representing more than one third of the 1984 capacity of the interisland fleet, were delicensed. Although 36 new interisland vessels entered service, the 1986 capacity of the interisland fleet was only 79 per cent of the 1984 capacity. The policy of delicensing and selective replacement of vessels is designed to eliminate many of the surplus and obsolete vessels and improve productivity in the shipping sector.

F. Roads and Road Transport

16. The road network totals roughly 185,300 km, comprising about 12,600 km of national roads, 33,400 km of provincial roads, 113,600 km of local roads, 25,500 km of urban roads, and more than 200 km of interurban toll roads. These classifications provide the basis for defining administrative, financial and organizational procedures associated with the maintenance, improvement and construction of roads.

17. The extent and coverage of the road network is considered generally adequate for the country's road transport needs for several years to come, except in areas newly opened for regional development and transmigration, and for densely populated corridors, particularly in Java, leading to major cities like Jakarta, Surabaya and Bandung. The quality of a large proportion of the network, however, is still substandard. At the end of Repelita III, approximately 30 per cent of the national and provincial road network had been improved to a standard that would enable these roads to adequately carry traffic with a normal program of road maintenance; the proportion of local roads in this condition is considerably smaller, however.

18. In 1986 there were about 2.2 million motor vehicles classified as four-wheeled or larger and 5.1 million motorcycles registered; roughly 65 per cent of these were registered in Java. The overall rate of growth of motor vehicles in Indonesia during the period 1972 to 1986 was 15 per cent per annum. The highest

growth rate was registered by buses (18 per cent), followed by motorcycles (17 per cent), trucks (15 per cent), and cars and pick-ups (10 per cent). Despite these high growth rates, the current ratio of 43 motor vehicles to 1,000 population in Indonesia is still comparatively low, and it is likely that the size of the vehicle fleet will continue to increase in the future. However, there are moderating influences on the growth rate of the motor vehicle fleet. The Government restricts the import of fully assembled vehicles and requires that vehicles be assembled locally. Demand is also reduced by high import duties on components and by other taxation and licensing measures. The motor vehicle fleet in Indonesia is projected to reach 9.2 million vehicles by 1990, implying annual growth rates of between 6 and 10 per cent for the various types of vehicles between 1985 and 1990.

19. Road traffic grew rapidly in the 1970s, especially during the period when there was high economic growth and low fuel prices; annual growth rates of traffic reached levels as high as 20 per cent in the period 1973 to 1978. Because of slower economic growth and higher fuel prices, overall rates of traffic growth have now declined to more moderate levels. It has been observed that for many national and provincial roads, which have recently been improved, traffic volumes are significantly higher than previously anticipated, indicating greater travel after the roads were improved.

G. Railways

20. The railway system in Indonesia is operated by the Indonesian State Railways (PJKA), a state-owned enterprise, and includes about 6,700 route km -- 4,700 km of lines in Java and the remainder consisting of four unconnected lines in Sumatra and one line in Madura. The railway has deteriorated due to inadequate maintenance and equipment. Due to the poor maintenance and condition of the equipment, competition from road transport, and cancellation of some short distance services, passenger traffic declined from more than 50 million passengers in 1970 to 23 million in 1977. Since 1977 passenger traffic has been increasing steadily, reaching nearly 46 million passengers in 1983. Freight traffic, which increased from 3.9 million tons in 1970 to 4.6 million tons in 1972, declined progressively to 3.4 million tons by 1976. In 1979, 5.2 million tons of freight were carried but the volume then declined, reaching 4.7 million in 1982 which then again increased to 5.1 million tons in 1983.

21. At the beginning of Repelita II, the Government formulated a program for rehabilitating PJKA's plant and operations and for improving its performance. The program was implemented with assistance from IBRD and various bilateral donors. Under subsequent development plans the Government's efforts toward rehabilitating the existing railway network, improving operating efficiency and progressing toward adequate capacity for handling the projected traffic has continued. PJKA,

however, continues to operate at a deficit and there is further scope for reducing costs and improving operational efficiency.

H. Civil Aviation

22. The number of domestic airline passengers increased from about 3.5 million in 1977 to 6.5 million in 1981. Traffic has since declined slightly, to 6.4 million in 1983. International passengers increased from approximately 760,000 in 1977 to 1.0 million in 1983. The principal international airports in Indonesia are in Jakarta and Bali.

23. About 90 per cent of the domestic civil air traffic is handled at 27 domestic airports (out of a total 53 domestic airports in the country) by six airlines providing scheduled services supplemented by charter and air-taxi companies. Facilities at the airports vary widely and major deficiencies were identified in a study undertaken with assistance from Canada in 1971/1973. Recent efforts by the Government have been concentrated on improvement of facilities to permit use by modern aircraft to handle traffic more efficiently. Preparation of master plans and detailed designs for the first-stage improvement and development of seven domestic airports (Medan and Palembang in Sumatra, Semarang in Java, Pontianak and Balikpapan in Kalimantan and Sorong and Jayapura in Irian Jaya) have been completed under AsDB technical assistance.

24. Improvements have also been made in aeronautic communications, navigational aids and air traffic control, mainly through bilateral aid. The capacity of the civil aviation fleet has been expanded and low capacity older aircraft have been replaced by more efficient larger aircraft.

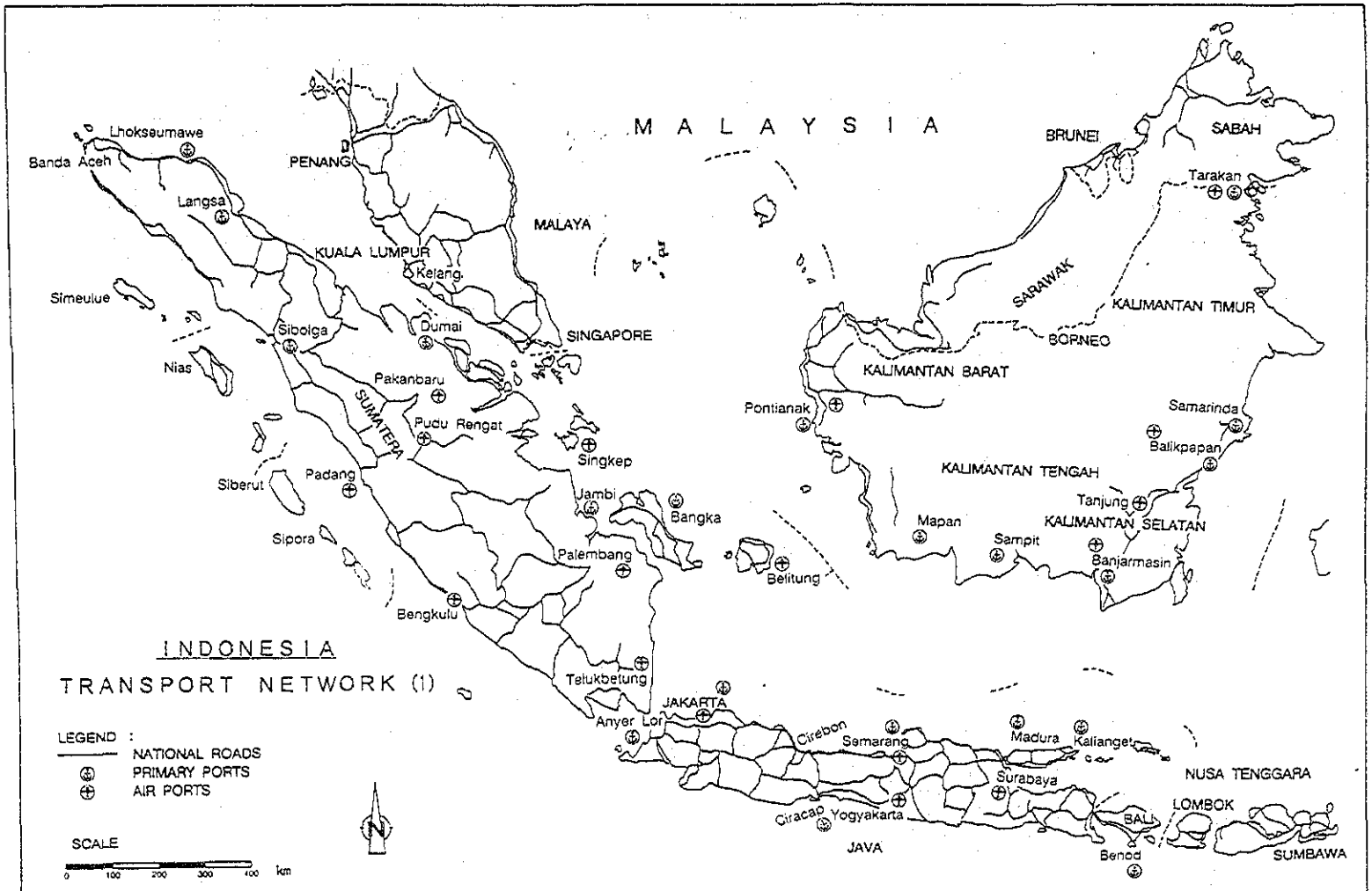
I. Inland Waterways

25. There are more than 10,000 km of navigable waterways among 50 river systems. Over half of these rivers are in Kalimantan and the rest are in Sumatra. These were originally used mainly for long transport. Most of the vessels and terminals on the inland waterways system are owned and operated by the private sector. Some infrastructure improvements have been carried out through the construction of new wharves, dredging of river channels at several river ports and installation of navigational aids. However, because of large seasonal variations in the water level of many rivers, the role of inland waterways would be limited to certain areas of Sumatra and Kalimantan without further investment for improvement of crucial sections. Aid from Belgium was used to finance a dredger and work boats while river buses and river trucks were financed by Yugoslavia. In 1985 the AsDB provided a technical assistance grant to study inland waterways in South, Central and East Kalimantan. That study identified potential projects to improve five canals connecting the Barito, Kapuas and Kahayan Rivers and

to improve the Mahakam River. The need to improve vessel safety and for institutional development were also identified. Inland waterways in West Kalimantan and Sumatra are expected to be studied under IBRD financing.

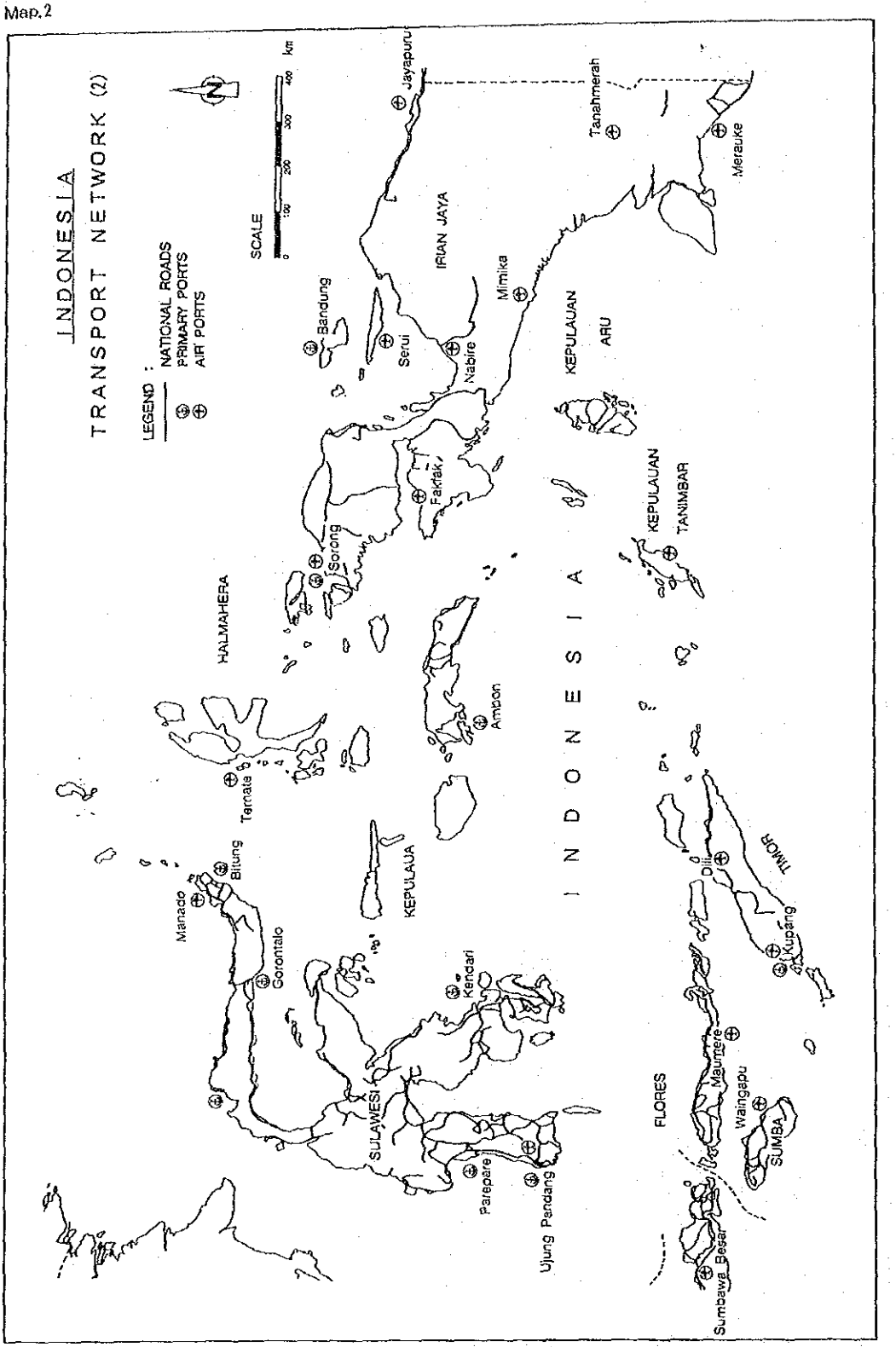
J. Pipelines

26. There are about 450 km of petroleum pipelines in operation or under construction in South-Central Java, and a few gas pipelines in Java and Sumatra. A petroleum project pipeline runs between Cilacap and Bandung. Gas pipelines are an integral part of the fertilizer plant at Palembang in Sumatra, and a pipeline is under construction that will supply gas to the West Java fertilizer plant at Jatibarang and a steel plant at Merak.


M A L A Y S I A
BRUNEI
SABAH
Tarakan
Lhokseumawe
Banda Aceh
PENANG
Langsa
MALAYA
KUALA LUMPUR
Kelang
Simeulue
Sibolga
Dumai
SINGAPORE
SARAWAK
KALIMANTAN TIMUR
BORNEO
Nias
Pakanbaru
KALIMANTAN BARAT
SUMATERA
Pontianak
Samarinda
Pudu Rengat
Singkep
Balikpapan
KALIMANTAN TENGAH
Siberut
Padang
Jambi
Bangka
Tanjung
Mapan
KALIMANTAN SELATAN
Sampit
Sipora
Palembang
Banjarmasin
Belitung
Bengkulu
INDONESIA
TRANSPORT NETWORK (1)
Telukbetung
JAKARTA
Anyer Lor
Cirebon
Semarang
Madura
Kalianget
NUSA TENGGARA
Surabaya
Ciracap
Yogyakarta
BALI
LOMBOK
JAVA
Benoa
SUMBAWA
LEGEND :
NATIONAL ROADS
PRIMARY PORTS
AIR PORTS
SCALE
0 100 200 300 400 km
N

Map.1

Map.2


INDONESIA
TRANSPORT NETWORK (2)
LEGEND :
NATIONAL ROADS
PRIMARY PORTS
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km
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I N D O N E S I A
IRIAN JAYA
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KEPULAUAN ARU
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KEPULAUAN
SULAWESI
FLORES
TIMOR
SUMBA
Jayapura
Tanahmerah
Merauke
Mimika
Nabire
Serui
Bandung
Fakfak
Sorong
Ambon
Ternate
Manado
Bitung
Gorontalo
Kendari
Parepare
Ujung Pandang
Maumere
Waingapu
Dili
Kupang
Sumbawa Besar

6. KOREA, REPUBLIC OF

REPUBLIC OF KOREA

A. Sector Overview

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 42.1 million. 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 W97.5 trillion ($118.6 billion) in 1987, resulting in per capita GNP of about $2,820. 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.

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 about 400 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 23 per cent and from 10 per cent to 39 per cent. Movements by rail, although showing growth in absolute terms, fell from 81 per cent to 38 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 1966 and 1986, the road share of total passenger-km increased from 56 per cent to 71 per cent, an annual average rate of increase in passenger-km of 10 per cent; the rail share fell from 42 per cent to 27 per cent, with an annual rate of increase of 5 per cent (including the subway in Seoul). These proportions are expected to remain with minor changes through 1991.

5. The development strategies of the SFYP, recognizing the regionally imbalanced growth strategies pursued in the 1960s and 1970s, emphasizes, 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 is 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 will seek 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.

B. Planning, Coordination and Policy

6. 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.

7. 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.

8. 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.

9. 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.

C. Investment

10. 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 have been scaled down to about 4 per cent of total national capital investment. However, the allocation for national roads, including toll roads, has been increased about threefold in current terms compared with the Fifth Plan outlay for roads. Total transport sector investment under the SFYP is expected to be about W7.0 trillion ($9.7 billion). Roads account for about 58 per cent of the transport sector plan expenditure, at W4.0 trillion ($5.6 billion).

11. 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 BPR in 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.

D. Roads and Road Transport

12. 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 1987, the total road network has doubled, from 27,200 km to 54,689 km, and the percentage of paved roads has increased from about 5 per cent in 1962 to 57 per cent in 1987. 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 82 per cent of the 13,800 km national road network (including 1,539 km of toll roads) was paved, as was about 42 per cent of the 10,328 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 17,700 km, of which 13,000 km (75 per cent) were paved in 1987.

13. 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 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 1,539 km is currently managed by KHC.

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

14. The Sixth Road Development Program (SRDP), prepared as part of the SFYP, emphasizes that the protection of existing road facilities through adequate maintenance is as important as building new and improving existing roads. SRDP also gives policy direction for road transport, which in consideration of the need to promote economic development in the less developed parts of the country emphasizes 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 has been 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 is expected that about 2,500 km of city roads will also be improved. The improvement of city roads is not included in the SRDP but is expected to cost a total of W1.4 trillion over the Plan period.

15. 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 1987, a total of 2.54 million vehicles were registered in Korea, of which abut 1.61 million were road vehicles with four or more wheels, including 844,400 cars and taxis, 200,500 buses, and 567,000 trucks; the remaining 924,000 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, is expected to increase to 3.2 million units by 1991,1/ 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 expected vehicle fleet growth under the SFYP will exacerbate the need for road investment and road safety measures.

E. Railways

16. At the end of 1986, the railway system, operated by the

1/ Comprising 1.8 million cars, 0.4 million buses and about 1 million trucks.

semi-autonomous Korean National Railroad (KNR), had a track length of 6,339 km. Of this, 825 km was double-tracked and 441 km was electrified. In 1986, KNR rolling stock amounted to 1,298 locomotives (including 618 diesel, 524 electric and 156 other, including specialty locomotives), 15,858 freight cars, and 2,213 passenger cars.

17. Rail freight traffic consists mainly of bulk commodities. Of the 12,813 million ton-kms of freight transported in 1986, 42 per cent was anthracite, 20 per cent was cement, and 8 per cent was ore. General cargo accounted for only about 20 per cent. Freight transport by rail has growth slowly during the period 1980-1986; ton-kms increasing by 18.9 per cent during the period. Passenger travel by rail also increased, but by only 8.9 per cent over the five-year 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 21 per cent in 1986. 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 38 per cent in 1986.

18. 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.

F. Ports and Shipping

19. 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 1976-1986 increased more than threefold, from 72.89 million tons to 219.95 million tons, an annual rate of increase of approximately 11.7 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.

20. 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 97.7 per cent of container cargoes in 1987, 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.

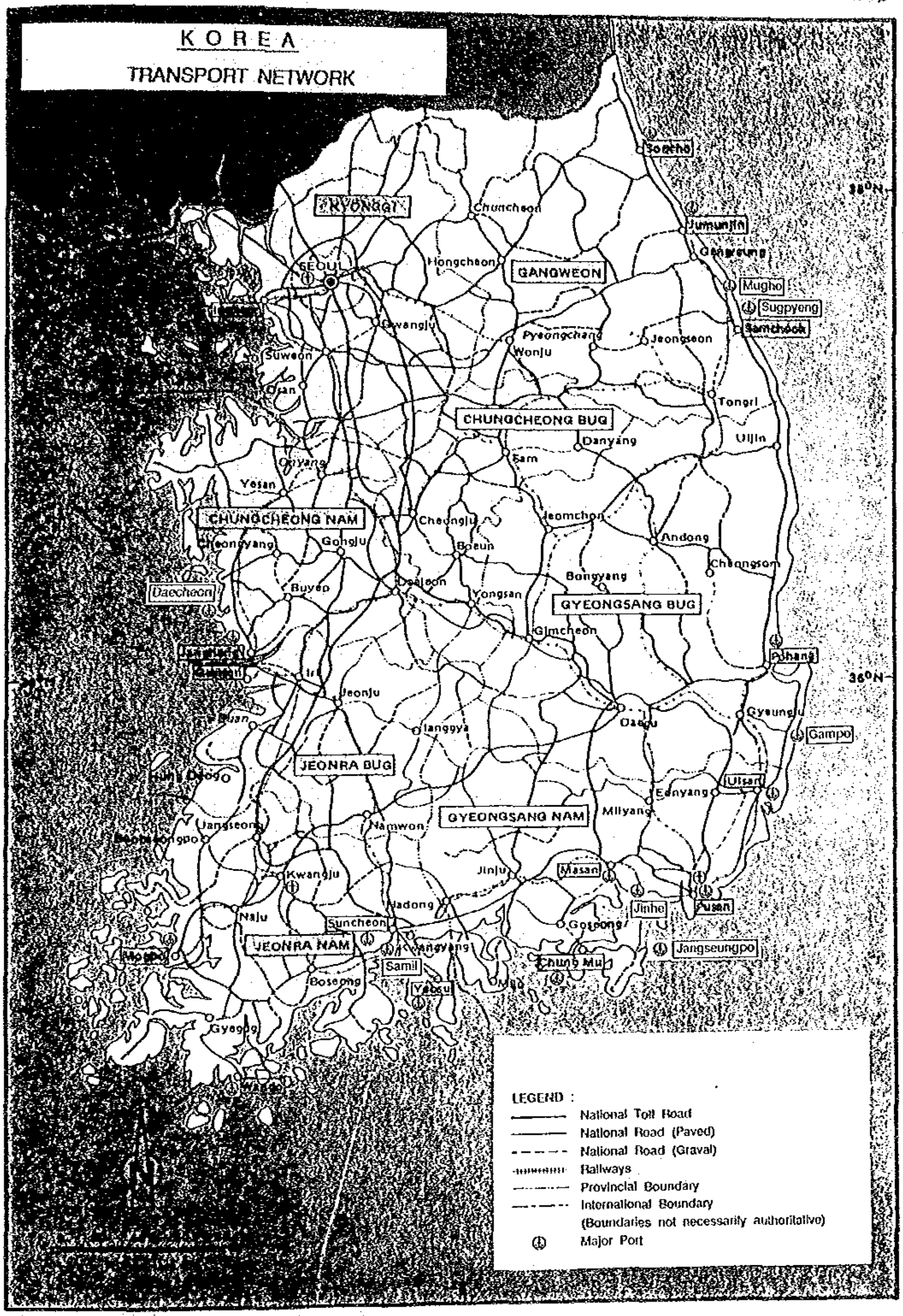
21. Coastal shipping is becoming a major mode of domestic freight transport. In 1966, only 0.7 million ton-km were transported by this mode, representing about 10 per cent of the total domestic ton-km. By 1981, coastal shipping handled about 34 per cent and by 1986, 38.5 per cent, or 12.9 billion ton-km. Much of this traffic consists of bulk commodities such as oil, cement and anthracite. In 1985, the average haul per ton of cargo was about 345 km. The share of the total domestic traffic is expected to increase to about 40 per cent, or 17 billion ton-km by 1991.

22. 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 envisages, among other things, continued development of both Pusan and Incheon ports. Under the SFYP, the Government has allocated about W1,154 billion ($1.6 billion), representing about 16 per cent of the total transport infrastructure allocation to port development.

G. Civil Aviation

23. Aviation plays a very minor role in the Korean transport system, with domestic air passenger-km accounting for only 1.3 per cent of the total in 1986. 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.


KOREA
TRANSPORT NETWORK
KYONGGI
SEOUL
Chuncheon
Hongcheon
GANGWEON
Suweon
Osan
Wonju
Pyeongchang
Jeongseon
Jumunjin
Mugho
Sugpyeong
Samcheok
Tongri
Uljin
CHUNGCHEONG BUG
Danyang
Onyang
Yesan
CHUNGCHEONG NAM
Cheongyang
Gongju
Cheongju
Boeun
Daecheon
Buyeo
Daejeon
Yongsan
Andong
Bongyang
Cheongson
GYEONGSANG BUG
Gimcheon
Pohang
36°N
Ir
Jeonju
Buan
Daegu
Gyeongju
Gampo
JEONRA BUG
Ulsan
Eonyang
Milyang
Namwon
GYEONGSANG NAM
Kwangju
Jinju
Masan
Jinhe
Pusan
Naju
Hadong
Suncheon
Goseong
JEONRA NAM
Samil
Yeosu
Chung Mu
Jangseungpo
Boseong
Mogpo
LEGEND :
National Toll Road
National Road (Paved)
National Road (Graval)
Railways
Provincial Boundary
International Boundary
(Boundaries not necessarily authoritative)
Major Port

7. MALAYSIA

MALAYSIA

A. Sector Overview

1. Malaysia, a country of about 16.5 million people (1987), is separated by the South China Sea into Peninsular Malaysia and the East Malaysia states of Sabah and Sarawak. About 83 per cent of the population reside in Peninsular Malaysia while approximately 8 per cent are in Sabah and 9 per cent in Sarawak. Malaysia is a predominantly rural country with 60 per cent of the population of Peninsular Malaysia and 80 per cent of the population of Sabah and Sarawak living in rural areas. Malays constitute the largest ethnic group (48 per cent of the population), followed by the Chinese (31 per cent), the indigenous ethnic groups (12 per cent), the Indians (8 per cent), and others (1 per cent). Within Peninsular Malaysia, ethnicity differs significantly between urban and rural areas with 73 per cent of the Malays residing in rural areas, compared with 41 per cent of the Chinese and 55 per cent of the Indians.

2. Administratively, Malaysia is divided into 13 states and the Federal Territory of Kuala Lumpur and Labuan, and 123 districts. In Sabah and Sarawak, where the population is widely dispersed, the "Division" is a third administrative level between the State and the District. Malaysia'a resources and the benefits of its economic growth have not yet been equally shared among all people and regions. Although the overall incidence of poverty has decreased substantially since 1970, there are still wide variations in poverty among regions. In 1984 approximately 25 per cent of rural households were in poverty, as compared with only 8 per cent in urban areas.

3. The political and economic development of Malaysia had a profound effect on the development of the transport system of the country. For example, until the mid 1960s, ports in the coutry were playing a comparatively minor role in the handling of the country's international trade. Approximately 45 per cent of the total Peninsular Malaysia's international seaborne trade were handled through Singapore. With the formation of Malaysia (comprising the Federation of Malaysia, Singapore, Sabah and Sarawak in 1963); Singapore, which had long since established herself as the leading entreport of South East Asia, continued to play a dominant role in the handling of Malaysia's seaborne trade. However, the secession of Singapore from Malaysia in August 1965, led to a change in the Malaysian Government's policies in the handling of its increasing seaborne trade. At the same time, the diversification of the country's economy to include manufacturing activities resulted in increased demand for the transport system.

4. During the 1970s the economy of Malaysia grew at an average rate of 7.8 per cent per annum with significant shifts in the structure of the economy as well as diversification of its export base. The share of manufacturing in the Gross Domestic

Product (GDP) increased from 16.4 per cent in 1975 to 20.9 per cent in 1986 while that of agriculture declined from 27.7 per cent to 21.4 per cent. Foreign trade, which accounts for nearly 50 per cent of the country's GDP, has greatly influenced the pace and direction of economic growth. In Peninsular Malaysia the location of the major ports on the west coast has, therefore, played an important role in the development and quality of inland transport as well as in the pattern of urbanization in the country. As a result the inland transport system is relatively better developed in the States where the larger urban centers (Kuala Lumpur, Penang and Ipoh) are located (i.e., in Selangor, Penang and Perak States) than in the central and eastern States of Peninsular Malaysia and in Sabah and Sarawak. These three States account for about 15 per cent of manufacturing output and 54 per cent of GDP but only 34 per cent of the total population of the country. The Government's objectives in transport development are the improvement of infrastructure in the less-developed States to provide good access and transport services, and the elimination of transport bottlenecks which have hindered socio-economic development in these States.

5. The rapid growth in transport demand has led to an increasing use of petroleum products. A major portion of energy-use is related to freight transportation. A recent study examined, among others, the possible savings in energy through higher utilization of the railways for freight transport. The study concluded that rail transport should be limited to specialized bulk cargo and that road transport would remain the dominant mode for freight due to its competitiveness and flexibility particularly for short and medium hauls. The Government recognizes the need for efficient use of energy and is planning to undertake a study of the energy sector, which would include energy-use in transport.

6. Most of the major transport development programs of the Government under the Second (1971-1975) and Third (1976-1980) Malaysia Plans were based on the recommendations of the General Transport Survey of Malaysia completed under UNDP financing. Regarding roads in Peninsular Malaysia the Survey concluded that the primary network was mostly complete, but stressed the need to improve the existing network and undertake new construction in new growth areas particularly in the less-developed east coast States. The recommendations for the road sector were aimed at: (i) upgrading of the road network to meet the projected growth in transport demand; (ii) removal of constraints on the existing facilities; (iii) improvement of rural and village roads to support agricultural programs and improve the socio-economic well-being of the rural people; and (iv) construction of development and feeder roads to open up new areas. The Government's road development programs under the Fourth Malaysia Plan (1981-1985) largely followed the same strategy with emphasis on reducing the locational disadvantages of the less-developed States, with the aim of narrowing income disparities among the regions.

7. Significant improvements were made during the Second and Third Malaysia Plans periods to the country's transport systems. Among the transport modes, roads accounted for about 50-60 per cent of the total allocations under each Plan period. Under the Fourth Malaysia Plan about M$4,20 billion (nearly 11 per cent of the total development budget) were allocated for the transport sector with about 58 and 21 per cent for road and port development, respectively. This trend is followed by the current Fifth Malaysia Plan (1986-1990). Although the share of the transport sector in the total development budget declined over the respective Plan periods, it still ranks third after agriculture and rural development and commerce and industry.

B. Planning, Coordination and Investment

8. The planning and coordination of transport in Malaysia involve the cooperative efforts of a number of agencies of the Government. The Transport Section of the Economic Planning Unit (EPU) in the Prime Minister's Department is responsible for the formulation of macroeconomic plans and also for the overall sectoral planning in collaboration with the ministries and departments concerned. In addition, EPU prepares basic guidelines for the use of the ministries and departments and liaises with the various modal agencies and State Governments to ensure coordination of sectoral development plans and consistency between sector and subsector plan.

9. The Ministry of Transport (MOT) is responsible -- directly or through the modal agencies -- for planning and policy formulation for air, rail and road transport (with the exception of planning of road infrastructure facilities) and for ports and shipping. A Planning Division established within MOT assists in the formulation, evaluation and implementation of transport policies, development programs and capital projects. While road transport is regulated by the Ministry of Public Enterprise, the planning and development of roads is carried out by the Ministry of Works and Public Utilities (MWPU) which has large and well staffed departments. The Highway Planning Unit (HPU) in MWPU assesses the adequacy of the existing road systems, and plans and formulates future road programs commensurate with the transportation needs of the country. The various planning agencies have from time to time been assisted by foreign experts and local consultants for specific feasibility studies as well as general studies.

10. The General Transport Survey of Malaysia considered the separation of planning for roads from other transport modes to be an anomaly in the organizational structure for transport planning. The Survey pointed out that MOT's Planning Division (in conjunction with EPU's Transport Section) was the proper agency for planning relating to all transport modes. However, the overall framework for transport development recommended by the Survey and the existing arrangements for transport planning have been satisfactory.

11. Since the beginning of the Second Malaysia Plan in 1971, the Government has received assistance from the AsDB, IBRD and bilateral sources for the improvement and expansion of its transport network. Bilateral assistance for the road programs has been provided by Australia, Canada, Denmark, the Federal Republic of Germany, Japan, the United Kingdom, and the United States.

C. Roads

12. At the end of 1980 the public road system in Malaysia consisted of about 20,500 km, of which about 85 per cent was paved. The roads are classified into Federal, State, and Municipal depending on their function and the administrative responsibility for their maintenance, improvement and construction. Federal roads generally provide connections between the States or major ports; State roads serve regional and inter-district traffic and also provide access to villages, farms and markets; and municipal roads are mostly city roads. Of the total network in 1980 about 4,800 km were Federal roads, 14,000 km State roads, and the remainder (1,700 km) Municipal roads. It is estimated that about 75 per cent of passenger traffic and 60 per cent of freight traffic in Peninsular Malaysia use the road system.

13. During the Second and Third Malaysian Plans period good progress was made in the upgrading and improvement of the road system to cater to the rapidly growing demand for road transport. Most of the development during the Second and Third Malaysia Plans was focused on upgrading those parts of the road network connecting production areas and raw material sites to ports and markets and on the construction of new roads to serve land development and settlement shemes. To provide improved transport facilities in rural areas an Accelerated Rural Roads Program was undertaken during the Third Malaysia Plan. The program envisaged the construction of about 1,250 km of new roads and upgrading of about 1,350 km of existing roads. The Government pursued a similar balanced road development program during the Fourth Malaysia Plan (1981-1985). Besides completing the various projects carried over from the Third Malaysia Plan, the program included upgrading and improvement of the existing road network, rehabilitation of about 1,100 km of roads, the building of about 1,400 km of new rural roads particularly in the less-developed States, construction of about 1,080 km of development and feeder roads in the various regional development schemes, improvement of village roads, and improved maintenance of the road network.

D. Railways

14. Railway services are available only in Peninsular Malaysia and are provided by the Malayan Railway (MR), an autonomous Government enterprise with a rail network (meter gauge and mostly single track) consisting of about 1,760 route km. The

railway system is roughly Y-shaped, with Singapore at the base and the two arms extending from Gemas (210 km north of Singapore), one along the west coast and the other through the central part of the Peninsula; both arms link with the Thai railway system. In recent years railway development focused on the improvement and modernization of existing facilities. The dieselization program of MR was completed by 1976. As a result of the development programs, an upward trend in passenger travel has been evident with the passenger-km of travel increasing from roughly 620 million to 1,356 million between 1970 and 1980. However, the increase in goods transport during the same period -- from about 1,200 million ton-km in 1970 to 1,640 million ton-km in 1980 -- was at a low rate indicating that the railway is still in a relatively unfavorable competitive position vis-a-vis road transport. The overall financial performance of MR has not been satisfactory. During the Fourth and Fifth Malaysia Plan period (1981-1990) MR pursued its operational targets of; (i) purchase of additional rolling stock; (ii) renewal and doubling of track and rehabilitation of bridges; (iii) provision of rail links from Tampoi to Johor port, from Sungai Way to Kuala Lumpur International Airport; (iv) modernization of the Sentul workshop; and (v) modernization of signalling and communications and conversion of open level-crossings.

E. Shipping

15. During 1980s, expenditure on shipping continued to contribute to almost 50 per cent of the country's services deficit. In early 1980s the Government introduced a policy of confining domestic shipping to locally registered ships with the result that since the inception of the policy, licenses have been issued to more Malaysian than foreign registered vessels. While in 1971 MISC had a fleet of only six vessels with a tonnage of 65,000 dead weight tons (DWT), by June 1983 it owned and operated a diversified fleet of 45 vessels with a total tonnage of about 1,450,000 DWT which is more than 80 per cent of Malaysia's total volume.1/ During FMP the activities of MISC continued to expand further and diversified in order to increase its participation in both domestic and international shipping. An additional fleet of 46 vessels was added to the current fleet of 31 vessels to reach a target of 2,500,000 DWT by the end of 1985. The expansion was intended in container, RoRo, tanker, bulk and coastal vessels. Another priority area of MISC's involvement was in the shipment of LNG, from Bintulu/Sarawak, which commenced with the delivery of three LNG carriers in 1981 and 1982; two more carriers were delivered during 1984. With this policy of expansion, the Government intends to reduce its large deficit in the balance of

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1/ The MISC-fleet consisted in 1980 of six conventional liner ships, two third-generation container ships, two fully cellular container ships, two container feeder vessels, three parcel tankers, one ore-oil carrier, two woodchip carriers, eight bulk carriers and five coastal ships.

services.

F. Ports

16. There are 103 areas designated as "ports" in Malaysia. However, these ports can be broadly categorised into three groups, i.e. major ports serving both international and domestic trade, principal minor ports handling domestic trade and minor ports or jetties. There are nine port authorities in Malaysia of which five are federal ports (Port Klang, Penang Port, Johor Port and Kuantan Port in Penninsular Malaysia and Bintulu Port in Sarawak) responsible to the federal Ministry of Transport. In Sarawak, the three port authorities fall under the authority of the State Ministry of Infrastructural Development whilst in Sabah, all ports are grouped in the Sabah Ports Authority under the control of the Sabah State Ministry of Communications and Works. Minor ports in Peninsular Malaysia are administered by the Marine Department. The financial status and autonomy of the port authorities vary from port to port. Penang Port Commission and Klang Port Authority do not receive any financial grants from the Federal Government. Major development expenditure are financed from internal resources and by external loans. However, newly established port authorities such as Johor, Bintulu and Kuantan Ports received federal grants as start-up costs. All port authorities are required to pay income tax of 35 per cent on their net profits. The annual financial budgets are approved by the Minister of Transport.

17. Port Klang, the premier port of Malaysia, is strategically located on the west coast of Peninsula Malaysia bordering one of the busiest shipping lanes of the world, the Straits of Malacca. It is also the main port of call to vessels in the Europe-Far East route. Port Klang is 40 kilometers to the west of Kuala Lumpur, the capital city of Malaysia and has the biggest and fastest growing industrialised hinterland. Port Klang is only 26 kilometers from the country's main International Airpot. In 1988, Port Klang handled 15.9 million tons of cargo including 325,000 TEUs containers. The container traffic of the Port is two-third of the country's container traffic and is expected to grow at a rate of 18 per cent for the next two years to reach a figure of 450,000 TEUs.

18. The expansion program for Penang Port during 1970s was assisted by the AsDB through two loans, included the construction of a bulk cargo terminal, a vegetable oil berth and a Container cum Roll-on/Roll-off Berth. The cargo handling capacity of Penang Port (excluding private facilities) was increased from about 2.0 million tons in 1970 to about 5.5 million tons by 1980/81. It was further increased to about 9.0 million tons mainly through the conversion of the existing general cargo berths to container berth and the construction of an additional berth for the existing bulk cargo terminal. In 1988 the Port handled 8.4 million tons of cargo which is about 12 per cent of the Malaysia's annual total throughput.

19. The expansion program for Johore Port, which aims to increase its capacity from 3.5 million tons in 1980 to about 7.5 million tons during the FMP-period, includes the construction of an additional multi-purpose berth (for breakbulk cargo and containers), two berths for dry bulk cargo and a dangerous cargo jetty. In 1988, the Port handled 7.3 million tons. Kuantan Port, located on the east coast of Peninsular Malaysia has been developed with financial assistance of the AsDB and has been fully operational since January 1984. The deepwater port facilities in Kuantan now comprise four cargo berths backed up by a transit shed, container freight station and container stacking yard, a dolphine berth for palm oil shipments, a mineral oil jetty, port buildings and other ancillary facilities and port equipment. The Port's annual throughput in 1988 was 1.8 million tons.

20. With the discovering of oil and gas off the coast of Sarawak, a new port was completed at Tanjong Kidrong, Bintulu, the only deepwater port in East Malaysia under financial assistance jointly provided by AsDB, IsDB and OECF in December 1982, and has been fully operational since January 1983. The Port was developed to serve the growing import/export traffic of the port hinterland and provide facilities for the export of LNG from an offshore gas field. The present port facilities comprise an LNG jetty for 70,000 dwt LNG tankers, a bulk cargo berth with alongside depth of 13.5 m, three general cargo berths, a Ro-Ro ramp, port buildings, other ancillary facilities and port equipment. The Port is the first Federal Port in Sarawak and is well managed and operated by Bintulu Port Authority, established in August 1981. The annual throughput of the Port amounted to 9.5 million tons in 1988, which is 13 per cent of the country's total cargo throughput of the year.

21. In Sabah, four ports namely Kota Kinabalu and Labuan on the west coast and Sandakan and Tawau, are grouped in the Sabah Port Authority, of which Kota Kinabalu is the largest to be followed by Sandakan. These latter two ports were developed to the current status during 1970s under IBRD assistance. The total cargo handled by the Sabah Ports amounted to 12.5 million in 1988.

22. In addition to the major ports referred to above smaller ports, Kemasin and Kamanan, on the east coast of Peninsular Malaysia have been developed. These two ports however, are more specialized in nature. A single berth with a conveyor belt installation, designed primarily to handle cement clinker has been developed at Kemasin. The other small port at Kemanan was developed by partly utilizing some of the facilities for a petroleum supply base at the same location. The basic objective is to provide a deepwater berth for iron-ore carriers which will deliver ore to the sponge iron plant planned to be located in the industrial estate close to the petroleum supply base. In addition, iron billets will be shipped out to steel rolling mills in Malaysia, including Malayawata Steel Mill in Butterworth.

23. Apart from recently completed Bintulu Deepwater Port at Taujong Kidrong, the coastline of Sarawak is shallow and exposed, lacking natural harbors. Only the Sarawak and the Rajang rivers are sufficiently deep to permit the entry of ocean-going vessels to Kuching and Sibu ports which are located 35 and 88 km from the sea, respectively. However, even at these ports, ships can arrive and depart only during high tide. The difficult approach channels to these ports generally limit movements to daylight hours. Coastal trade and communications depend on small vessels which ply regularly between Kuching, Sibu and the minor coastal and river ports. Most of these privately-owned local craft act as feeders to ocean-going vessels calling at Kuching and Sibu. Both ports, administered by the Kuching and Rajang Port Authorities, operate effectively and efficiently to serve their respective hinterlands. Miri, in the northeast, is accessible only by vessels of very shallow draught (2 m maximum). Larger ships must be handled at anchorage about 5 km off the Baram River entrance; loading and unloading is done by lighterage with the attendant high levels of damage. Lighterage offshore is very sensitive to weather conditions with bad weather preventing lighterage about 20 per cent of the time. Not only are vessel operations interrupted frequently, but it is not uncommon during bad weather for Miri cargo to be overcarried to Labuan (Sabah) and transhipped and trucked back to Miri at considerable additional expense and increased cargo damage and cargo loss.

G. National Port Plan for 1990s

24. Recognising the importance of a far-sighted plan to guide the future development and management of the country's ports, the "National Port Plan" study was commissioned in 1986 by the Malaysia Government with the IBRD's financial assistance. The main objective of the study was to prepare a master plan for "systematic and coordinated development" of ports in the country in order to avoid duplication and under-utilisation of existing port facilities as well as to establish coordinated port expansion strategies in the context of increasingly expensive port development technology. One of the major recommendations of the study is the direction and specific role in which the major ports be developed in the 1990s.

25. Whilst each port continues to service its own regional areas, three ports have been identified and recommended as principal (but not exclusive) concentration centres for particular cargo categories, namely: Port Klang for containers, Johor Port for dry and liquid bulk and Kuantan Port for sawn timber. With the completion of the road between Bintulu and Brunei, Bintulu Port will be the regional gateway for eastern Sarawak. The remaining major ports of Penang, Kuching and Kota Kinabalu will continue to retain their current roles as multipurpose ports and regional gateways of their respective trade areas.

26. Based on the overall Master Plan and consistent with

the recommended future role of each port, the following main port infrastructure developments have been identified from now to the year 2000, namely: Port Klang for additional container berths and expansion of port facilities at Pulau Lumut, an island about 2 kilometers from the North Port, Penang Port for three new container berths at North Butterworth, and Johor Port for additional liquid and dry bulk berths including container facilities. With the completion of the current expansion works at the other ports, no major development is foreseen in the immediate future. The total capital expenditure for additional facilities for the next ten years is estimated to be in the region of M$1.2 billion.

H. Civil Aviation

27. There are sixteen commercial airports in Malaysia, providing a comprehensive air transport network for scheduled air services. The airports at Kuala Lumpur and Penang in Penninsular Malaysia and Kuching and Kotakinabalu in East Malaysia serve both domestic and international flights. Passenger traffic increased at the rate of 15.8 per cent per annum between 1970 and 1980 while air freight increased at 26 per cent per annum. Passenger traffic in 1980 totalled 3.5 million (in and out) and air freight handled was 35,200 tons. In Peninsular Malaysia, the construction work for the expansion and development of Penang Airport was completed in December 1978 with the AsDB assistance. To meet the ever increasing traffic demands, the Kuala Lumpur International airport was also expanded in early 1980s. Recognizing the importance of air transport for both passenger and freight traffic and in line with the rapid growth of such traffic, the Government is planning to carry out further improvements and upgrading of existing airports and to construct additional STOL (Short Take-Off and Landing) air strips (particularly in Sabah and Sarawak) to give improved access to remote areas.

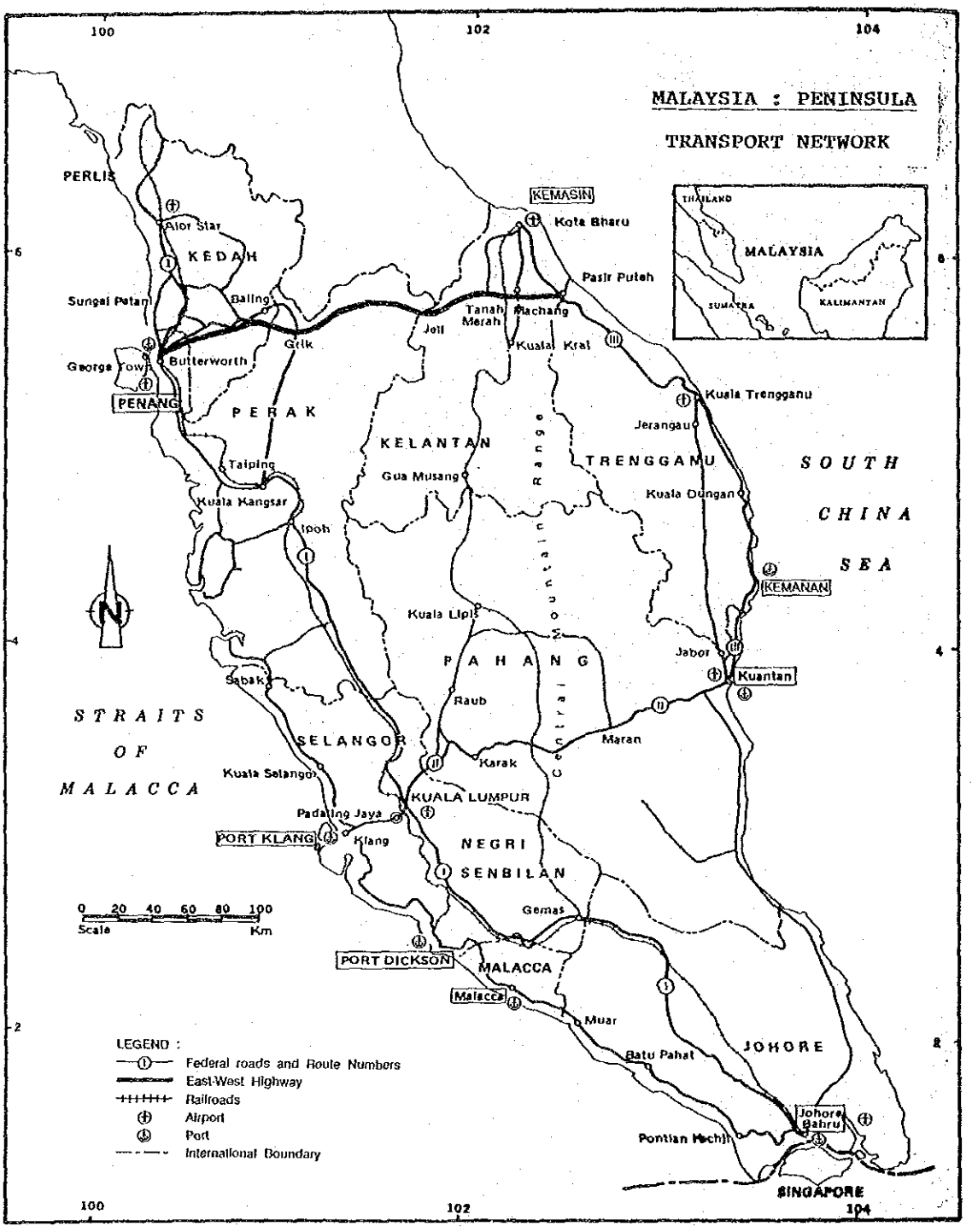
I. Transport Network in Sarawak

28. Sarawak is situated on the northwest coast of the island of Borneo in the South China Sea. With an area of 121,600 sq. km. Sarawak comprises 38 per cent of the total area of the Federation of Malaysia but only about one tenth of the total population. The population, which was estimated at 1.31 million in 1987, is distributed unevenly over the State. Population concentrations occur around Sibu, and to a lesser degree near Miri in the northwest. The major urban centers are Kuching (the State capital) and Sibu located in the southwest region. In 1987, Kuching had a population of about 160,000. The State is segmented by mountain ranges and a large number of rivers which flow generally from the southeast to the northwest toward the South China Sea. The coastal areas of the State are flat and low-lying with extensive peat swamps and crisscrossed by large sluggish rivers. From the alluvial coastal plains the terrain

changes to undulating foot hills and eventually forms the rugged mountainous interior. Due to the nature of the terrain and the distribution of the population, Sarawak's State transportation network until recently was, and in some areas still is, rudimentary. Historically, transport within the State has depended upon the inland river network. This pre-eminence of river transportation has recently begun to change with the development of alternative modes of transport, especially road transportation.

29. The inland waterways system of Sarawak penetrates deeply into the interior. Almost all settlements are located on or close to rivers and are accessible from the coast. Most rivers, however, have sandbars at their mouths which restrict the size of vessels entering them, and the lower courses of many rivers have frequent shallows, mud flats and swift currents. Only the Sarawak and Rajang Rivers are sufficiently deep to permit the entry of ocean-going vessels to the general cargo ports of Kuching and Sibu. Rapids hinder movement inland on some rivers, and river transport is sometimes hampered by lack of water during the dry season. A pattern of internal water transport using 250 to 500 ton-barges has developed which involves expensive transhipment and multiple handling of cargo between the coast and final destinations. Once an adequate road network is developed, this situation is expected to change for incoming general merchandise and the export of manufactured goods. However, since many of the large resource areas (e.g., for logs and palm oil) presently existing, under development, or planned are located near navigable rivers, large scale transport operations for a greater part of the State's export goods will remain less costly if transported by barge rather than by road.

Map. 1


MALAYSIA : PENINSULA
TRANSPORT NETWORK
100
102
104
6
4
2
PERLIS
KEDAH
Alor Star
Sungai Petani
Baling
Gurik
Butterworth
George Town
PENANG
PERAK
Taiping
Kuala Kangsar
Ipoh
KEMASIN
Kota Bharu
Pasir Puteh
Tanah Merah
Machang
Jeli
Kuala Krai
KELANTAN
Gua Musang
Range
Kuala Trengganu
Jerangau
TRENGGANU
Kuala Dungun
SOUTH
CHINA
SEA
KEMAMAN
Kuala Lipis
PAHANG
Jabor
Kuantan
Raub
Maran
Karak
Central
STRAITS
OF
MALACCA
SELANGOR
Sabak
Kuala Selangor
KUALA LUMPUR
Padang Jaya
PORT KLANG
Klang
NEGRI
SENBILAN
Gemas
PORT DICKSON
MALACCA
Malacca
Muar
Batu Pahat
JOHORE
Johore Bahru
Pontian Kechil
SINGAPORE
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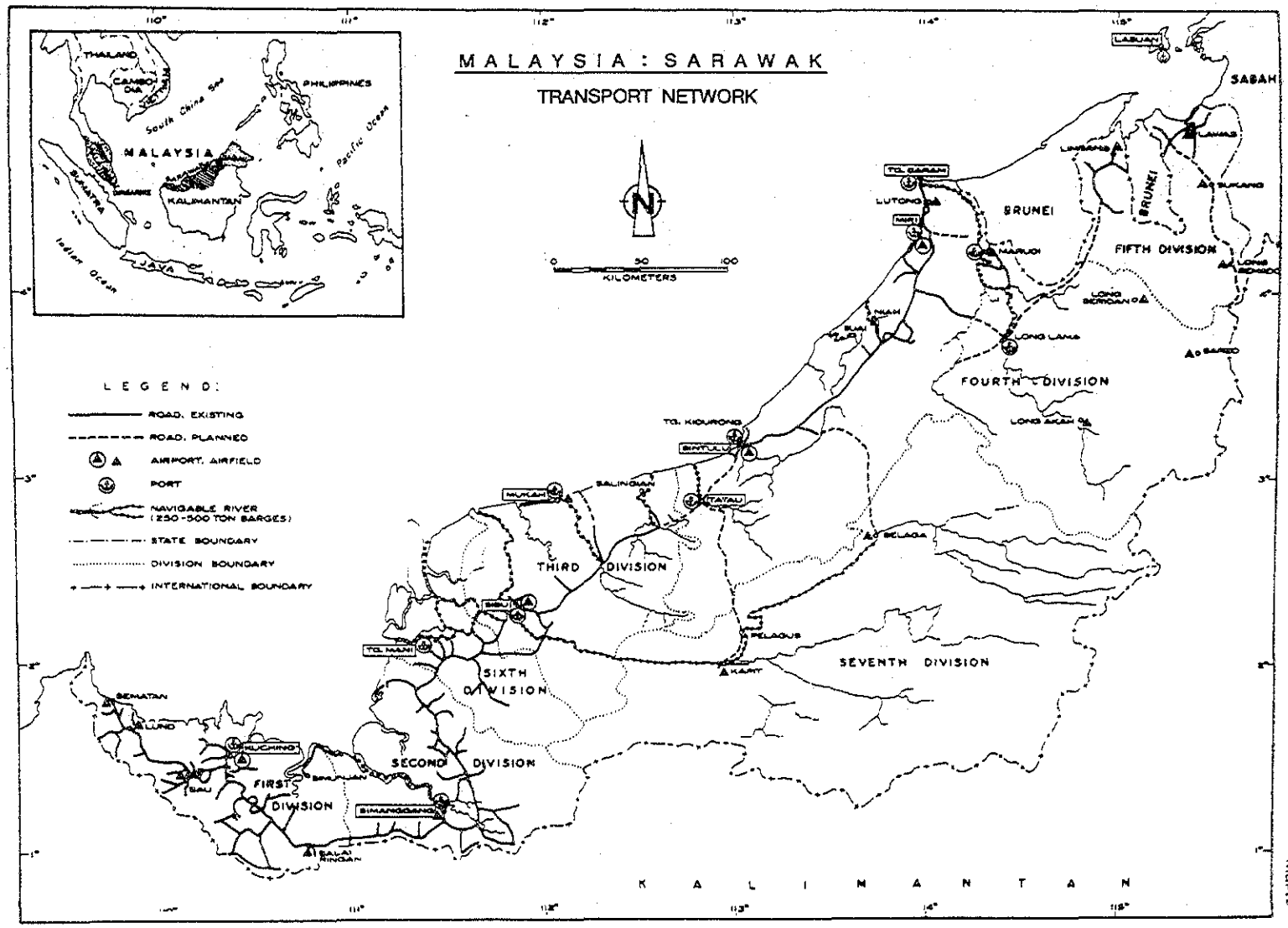
Railroads
Airport
Port
International Boundary
THAILAND
MALAYSIA
SUMATRA
KALIMANTAN


MALAYSIA : SARAWAK
TRANSPORT NETWORK
THAILAND
CAMBODIA
VIETNAM
PHILIPPINES
South China Sea
Pacific Ocean
MALAYSIA
SUMATRA
KALIMANTAN
JAVA
Indian Ocean
N
0 50 100
KILOMETERS
LEGEND:
ROAD, EXISTING
ROAD, PLANNED
AIRPORT, AIRFIELD
PORT
NAVIGABLE RIVER (250-500 TON BARGES)
STATE BOUNDARY
DIVISION BOUNDARY
INTERNATIONAL BOUNDARY
LABUAN
SABAH
TG. GARAM
LUTONG
MIRI
BRUNEI
MARUDI
FIFTH DIVISION
LONG LAMA
FOURTH DIVISION
TG. KIDURONG
BINTULU
MUKAH
SALINGAN
TATAU
BELAGA
THIRD DIVISION
SIBU
TG. MANI
PELAGUS
KAPIT
SEVENTH DIVISION
SIXTH DIVISION
SEMATAN
LUNDU
KUCHING
SAU
FIRST DIVISION
SECOND DIVISION
SIMANGGANG
SALAK RINGAN
K A L I M A N T A N

Map.2

8. MYANMAR (BURMA)

MYANMAR (BURMA)

A. Sector Overview

1. Myanmar has an area of approximately 678,000 sq km, consisting of lowlands in the basins of the Irrawaddy, Chindwin, Sittang and Salween Rivers, hills and mountains to the north, east and west, and a dividing range of hills running north-south in the central region. About 75 per cent of Myanmar's population of about 38 million (1987) is scattered in predominantly rural agricultural areas located in the river basins and in the Irrawaddy Delta area. The country is rich in natural resources, with good agricultural land and exploitable forests and minerals. From about 1974 to 1987, economic growth was relatively modest, with an annual GDP growth rate of about 5.3 per cent. During the Third Four-Year Plan (1978/79-1981/82), there was a significant upturn in economic activity, with GDP increasing in real terms at 6 per cent annually and with this economic expansion, the demand for transport increased appreciably. However, during the subsequent years, the economy has lost gradually its momentum and currently it appears to be at its lowest reflecting the serious balance of payments situation and the political instability in the country.

2. Major goods movements include the transport of rice, forest products and crude oil. Rice and paddy are transported from the main production areas in the Irrawaddy Delta and central Myanmar to Rangoon for local consumption and for export, and to the deficit areas in the northern and eastern regions for consumption. Forest products move from the central and northern regions to Rangoon for consumption and export and crude oil is transported from the fields located near the Irrawaddy River in central Myanmar to Rangoon for refining and distribution.

3. Due to the topography and the demographic characteristics of Myanmar, river and road transport are the dominant modes. Railways are limited to serving the major population centers; domestic air transport is relatively insignificant compared with other modes. There is a network of about 8,000 km of navigable inland waterways, 28,000 km of roads and 3,200 km of railways. Of the nine ports, Rangoon is the most predominant, handling almost 80 per cent of the total seaborne trade; about 75 per cent of all exports are agricultural products, mainly rice and teak. One international airport and 44 domestic airports cater to air transport.

4. Inland waterways was the dominant transport mode until the early 1970s. Since then, particularly with the improved economic performance of the country, road transport has rapidly increased its share of traffic over that of inland waterways. Between 1971/72 and 1980/81, freight carried by inland waterways rose from an estimated 1,200 million ton-km to about 1,500

million ton-km (i.e., an annual average growth rate of about 2.5 per cent) whereas during the same period, the amount of goods transported by road increased from about 600 million ton-km, to roughly 2,900 million ton-km (about 19 per cent per annum). The amount of freight transported by railways declined from about 780 million ton-km in 1971/72 to about 390 million ton-km in 1974/75, but then increased to nearly 700 million ton-km by 1980/81. Air freight traffic is relatively negligible -- about 5,000 tons in 1980/81. At present, it is estimated that in terms of ton-km, road transport accounts for about 50 per cent of all freight transport and more than 80 per cent of total land transport. No reliable data is available regarding passenger traffic by road or by inland waterways. Railway passenger traffic increased from about 53 million in 1971/72 to 57.7 million in 1980/81; there was little increase in the number of passengers using air travel during the last decade (0.50 million in 1971/72 and 0.53 million in 1980/81).

5. Although the Government favors public ownership of all commercial transport, it has, at the same time, permitted private sector operations in trucking, inland water transport and coastal shipping. Due to the greater efficiency and competitiveness of the private sector, the private sector share of freight transport by all modes has increased significantly, from about 35 per cent of the ton-km in 1971/72 to an estimated 66 per cent in 1976/77. The Government has recognized this situation and has implicitly changed its policy with regard to allocating commodities to different carriers by decontrolling more goods. The Government has also increased the availability of spares to private sector road and inland water transport operators.

B. Planning, Coordination and Investment

6. Two Government ministries are mainly responsible for transport planning and coordination -- the Ministry of Constructions (MOC) for roads, and the Ministry of Transport and Communications (MOTC) for the other modes. Planning for road development is the responsibility of MOC, while MOTC, with the assistance of the respective modal agencies, is responsible for the other modes. When accepted by higher authorities -- the Cabinet and the State Peoples' Council -- as conforming to the overall development objectives and the targets for the transport sector, these plans become integral parts of the national four-year plans. MOTC, in consultation with the Ministry of Planning and Finance, also approves the budgets of the transport agencies, appoints officers of the transport agencies, sets tariff and tariff policy, and enforces regulations pertaining to transport operations.

7. The agencies under the control of MOTC include Myanmar Airways Corporation (MAC), the Road Transport Corporation (RTC), the Myanmar Railways Corporation (MRC), the Inland Water Transport Corporation (IWTC), the Myanmar Five Star Shipping Corporation (MFSSC), the Posts and Telecommunications

Corporation, the Myanmar Port Corporation (MPC) and the Myanmar Dockyard Corporation. MOTC enforces regulations for the operation of the transport and communications sector, sets tariffs and tariff policies and, in consultation with the Ministry of Planning and Finance, approves the budgets of the agencies under its control.

8. In the past, the transport sector has generally been neglected and expenditures on transport development did not keep pace with the development requirements of the country. Capital expenditure on roads was low and allocations for maintenance were not sufficient to prevent road deterioration. As a result of the inability of existing systems to satisfactorily cope with the recent increases in demand for transport, particularly road transport, the Fourth Four-Year Plan (1982/83 to 1985/86) emphasized the need to develop transport to provide adequate support to the production sectors. Accordingly, the transport sector was allocated the third highest share of the investment expenditure, after agriculture and industry, under the Fourth Plan, -- K4,116 million, -- which represents a real increase of 43 per cent over the Third Plan (1978/79 to 1981/82) allocation of K2,192 million. Approximately 50 per cent of this was earmarked for the roads subsector, reflecting the important supporting role road transport plays in the development of agriculture and other natural resources.

C. Roads and Road Transport

9. Of the 28,000 km of roads in Myanmar, about 3,900 km are classified as union (national) highways, 18,600 km roads, and 5,500 km as township/local roads. The union highways form the trunk route system in the country, with the main roads functioning largely as primary and secondary collector roads. Some main road sections, however, lack continuity due to the absence of bridge or adequate ferry crossings and consequently operate as local roads. About 9,600 km of the road network are bituminized, 6,000 km are gravel surfaced, and the rest are earth roads. Two trunk roads from Rangoon to Mandalay (one via Toungoo and the other via Prome) serve the important north-south transport corridor between Rangoon and Mandalay, east of the Irrawaddy river.

10. The road network is in a generally deteriorated condition largely because of a lack of funds for rehabilitation and maintenance as well as institutional and technological shortcomings. There is a considerable backlog of road rehabilitation work and the more important trunk roads like the Rangoon-Pegu-Toungoo-Mandalay and Rangoon-Prome roads warrant urgent improvement. The need for upgrading these roads has assumed added significance in view of the recent upturn in economic activities and the corresponding increases in transport demand.

11. MOC is responsible for the design, construction and

maintenance of the road network. It carries out these tasks through the Construction Corporation (CC), a statutory entity within MOC providing such services to the Government. CC is also responsible for the design, construction and maintenance of public buildings, including schools, offices and factories; only about a third of the CC budget is spent on roads. Normally, about 75 per cent of road construction and 90 per cent of road maintenance in Myanmar is done by CC. Funds to administer main roads are provided from the Government's consolidated fund; minor and local roads outside the purview of MOC are administered by the Township People's Councils and municipal authorities. Township People's Councils also construct and administer village roads, receiving technical advice from CC. Some minor road programs are funded by the Ministry of Religion and Home Affairs.

12. Road transport services are provided by the state-owned RTC and by private operators who collectively carry more than 80 per cent of road freight traffic. RTC is having difficulty in maintaining its capacity due to a lack of spare parts while the privately-owned vehicles are generally over-aged. Despite these problems, the share of road transport traffic compared with other transport modes has been increasing and accounts for about 43 per cent of the total freight traffic of the country. The total number of motor vehicles in Myanmar, including motorcycles, was estimated at about 92,000 in 1978 (compared with 56,000 in 1976). Vehicle density is one per 350 inhabitants. Privately-owned vehicles outnumber publicly-operated ones by a ratio of 4:1 in the case of trucks and 3:1 in the case of passenger buses. The road system totals about 27,400 km; of which about one-third each consists of bituminous surface, stone or gravel, and earth roads respectively.

D. Railways

13. Rail transport is provided by the state-owned MRC, which operates nearly 3,200 km of meter-gauge lines. The main trunk line of the system connects Rangoon with Mandalay and Myitkina and about 400 km of the line between Rangoon and Pyinmana is double-tracked. Branch lines connect the trunk line with Bassein, Prome, Kayaukpadaung, Lashio, Taunggyi and Ye. Generally, the railway tracks are in fair condition, but the rolling stock is in need of improvement.

14. Passenger traffic declined from 53.4 million in 1971/72 to 34.5 million in 1977/78 but has since increased to an estimated 57.7 million in 1980/81. Likewise, goods transported by the railways declined from 2.9 million tons in 1971/72 to about 1.6 million tons in 1974/75, owing partly to slow economic activity. There has been a recovery since then, however,and the 1980/81 freight transport tonnage of 2.3 million was still less than the 1971/72 figure, indication that the railway is in a relatively unfavorable competitive position vis-a-vis inland water transport and roads, particularly the latter. A study completed in 1978 under CIDA funding attributed the poor performance of the railways to the priority given to short-haul

movement, generally less than 80 km, of rice and sugar (which account for nearly half the total freight volumes) over long haul goods transport. Other problems include greater emphasis on passenger traffic over goods traffic, and planning, technical and administrative deficiencies.

15. The Government has taken action to improve the railway rolling stock and is planning to cut back the uneconomic slow-moving passenger-cum-mail services on most lines. The Government has also accorded priority to the improvement of the Rangoon-Mandalay line because of the longer haul distances and the larger volume of bulk cargo.

E. Inland Waterways

16. The Irrawaddy River, along with its Chindwin tributary, is the most important inland waterway in Myanmar; other major rivers, like the Sittang and the Salween, also have navigable sections. About 8,000 km of waterways are navigable during the wet season and approximately 6,000 km in the dry season.

17. Inland water transport services are provided largely by the state-owned IWTC and by private sector companies. IWTC carries mainly long haul cargo; private operators concentrate on short- and medium-haul traffic and cater to a large proportion, an estimated 80 per cent, of passenger and freight movements. The present IWTC fleet consists of 169 passenger-cum-cargo vessels, 90 powered cargo barges, 192 non-powered barges, 15 oil barges and 45 tugboats. IWTC freight traffic, which was about 2.16 million tons in 1971/72, decreased to 1.75 million tons in 1975/76 partly due to lower economic activity and to direct participation by other Government corporations in inland water transportation. Freight traffic further declined to 1.04 million tons in 1977/78 with the transfer of oil barges to the Petro-chemical Industries Corporation. Passenger traffic, however, increased from 9.7 million passengers carried in 1972/73 to 11.2 million in 1975/76 and 11.7 million in 1977/78.

18. Inland waterways are the primary mode for passenger and goods transport in the lower Irrawaddy delta region. In spite of the assistance provided by IDA ($16.3 million in 1973), operation of inland water transport services continues to be constrained, among other things, by a fleet of vessels that is old and shortages of spare parts.

F. Ports

19. Ports in Myanmar come under the control of MPC. The main international port in the country is Rangoon Port, which handles over 80 per cent of the total seaborne trade of the country.1/

1/ The Rangoon Port handled about 2.44 million tons and the Outports about 0.55 million tons in 1980/81, the year when GDP was at its highest during the last ten years. To meet

the shipping demands, including container traffic, the Rangoon Port has been rehabilitated under IDA assistance. All the imports are handled at Rangoon Port for distribution to other parts of the country. Exports are handled at Rangoon Port and at three of the four major outports, namely, Akyab, Bassein and Moulmein. The other major outport is Mergui but, owing to draft restrictions, cargo from this port is brought to Rangoon by coastal ships before being exported. Of the other outports in Myanma, namely, Kyaukpyu, Sandoway, Tavoy and Kawthaung, Tavoy is the most important in terms of cargo traffic volume.

20. Outports play an important role in the overall transportation ystem of Myanmar in that they serve areas which are not otherwise linked to the national transport network (as in the cases of Akyab, Kyaukpyu, Sandoway and Kawthaung) or where alternative transport modes are unreliable (as in the cases of Tavoy and Mergui). The area served by Bassein Port basically includes the Irrawaddy Division which is the most important rice producing area in Myanmar, while that served by Moulmein Port includes Mon and Karen States and the navigable reaches of the Salween River and its tributaries. The hinterland of Bassein Port comprises an area of about 18,100 sq. km and a population of about 2.55 million while that of Moulemein Port comprises an area of about 42,500 sq. km and a population of about 2.67 million. Although rice, cement, logs and jute are the main exports from the hinterland of Bassein, the hinterland also produces pulses, ground nuts and chillies. The main products of the hinterland of Moulemein are rice, logs, timber and rubber.

21. The ports of Akyab, Kyaukpyu and Sandoway collectively serve the state of Arakan which is separated from the rest of Myanma by the Arakan Yoma mountain range which runs north-south along the whole length of the state. Arakan ports serve a total area of about 36,900 sq. km and a population of about 2.10 million. The main export from Arakan State is rice, which is harvested and exported from Akyab Port during the dry season. The combined hinterland of the ports of Tavoy, Mergui and Kawthaung basically consists of the Tenasserim Division with a total area of about 27,500 sq. km and a population of about 900,000. The Tenasserim Division is an elongated coastal strip about 320 km long and is backed by a north south mountain range which continues up to the border with Thailand. The main products of the hinterland, are paddy, rubber, timber and salt; some minerals (mainly zinc, tin and lead) and fish are also produced in this area.

22. In the light of the important role for the Outports expected to play, the AsDB provided financial assistance with MPC for the rehabilitation of the Outport facilities including wharves, jetties, pontoons and mooring and channel bouys and for procurement of floating craft (tugboats, pilot and harbor launches and dredgers) and cargo handling equipment. The rehabilitation works and procurement of harbor craft and port equipment have been recently completed and are contributing to the operational improvements of the Outports. The AsDB also

assisted MPC in improving its communications system with ships, within port areas and between the ports and MPC headquarters in Rangoon.

23. The Outports suffer from siltation problems due to inadequate maintenance dredging. Siltation is a particularly serious constraint at the export-outports of Akyab, Bassein and Moulmein 1/ where foreign going ships loading export cargoes cannot load to their full capacities because of inadequate depths of water. Topping up operations are therefore still necessary and are carried out at Rangoon.2/ Apart from the fact that heavy additional costs are incurred in transporting cargoes originating from the hinterlands of these ports to Rangoon, poor port productivity results in slow turnround of vessels and, correspondingly, heavy demurrage costs for the economy of Myanmar.

24. Currently access to Bassein and Moulmein is restricted to about two meters by shallow flats in the approach channels due to lack of maintenance dredging which lasted for many years. Dredging operations are currently ongoing at these outports, deploying dredgers newly acquired under AsDB assistance, a grab-dredger at Akyab Port and a trailing hopper suction dredger for Bassein and Moulmein Ports. However, the serious shortage of fuel oil supply in the country has been preventing full utilization of these dredgers.

25. Ship and cargo handling operations at the Rangoon Port and the export-outports (Bassein, Moulmein and Akyab) are carried out by MPC using both its own staff and casual labor, while those at the other outports are undertaken directly by the ship owners under the overall supervision of MPC. while port operations have been substantially improved as a result of recently completed rehabilitation works in the Rangoon Port and Outports, overall procuctivity of cargo handling is still low because of low gang hour productivity and also because often only two hatches of the ship are worked simultaneously rather than three or four (as at most other ports) primarily because of inadequate barges or lighters 3/ for transporting cargo between storage areas and shipside. In addition, cargoes are often loaded manually from these barges or lighters compared with direct loading operations from the wharves under MPC administration.

1/ Coastal shipping is also affected to some extent at the ports of Akyab, Kyaukpyu, Tavoy and Mergui due to depth constraints in the access channels or in the berthing areas.

2/ Topping up operations involve taking part loads at the Outports and the balance at Rangoon with a view to load the ships to their capacity. These two-port operations lead to high freight rates or, alternatively, lower f.o.b. prices for the export cargoes.

3/ Barges or lighters, owned and operated by Inland Waterway Transport Corporation are mainly used for the movement of

cargo between the processing centers (such as rice mills or sawmills) and storage areas in the port.

G. Shipping

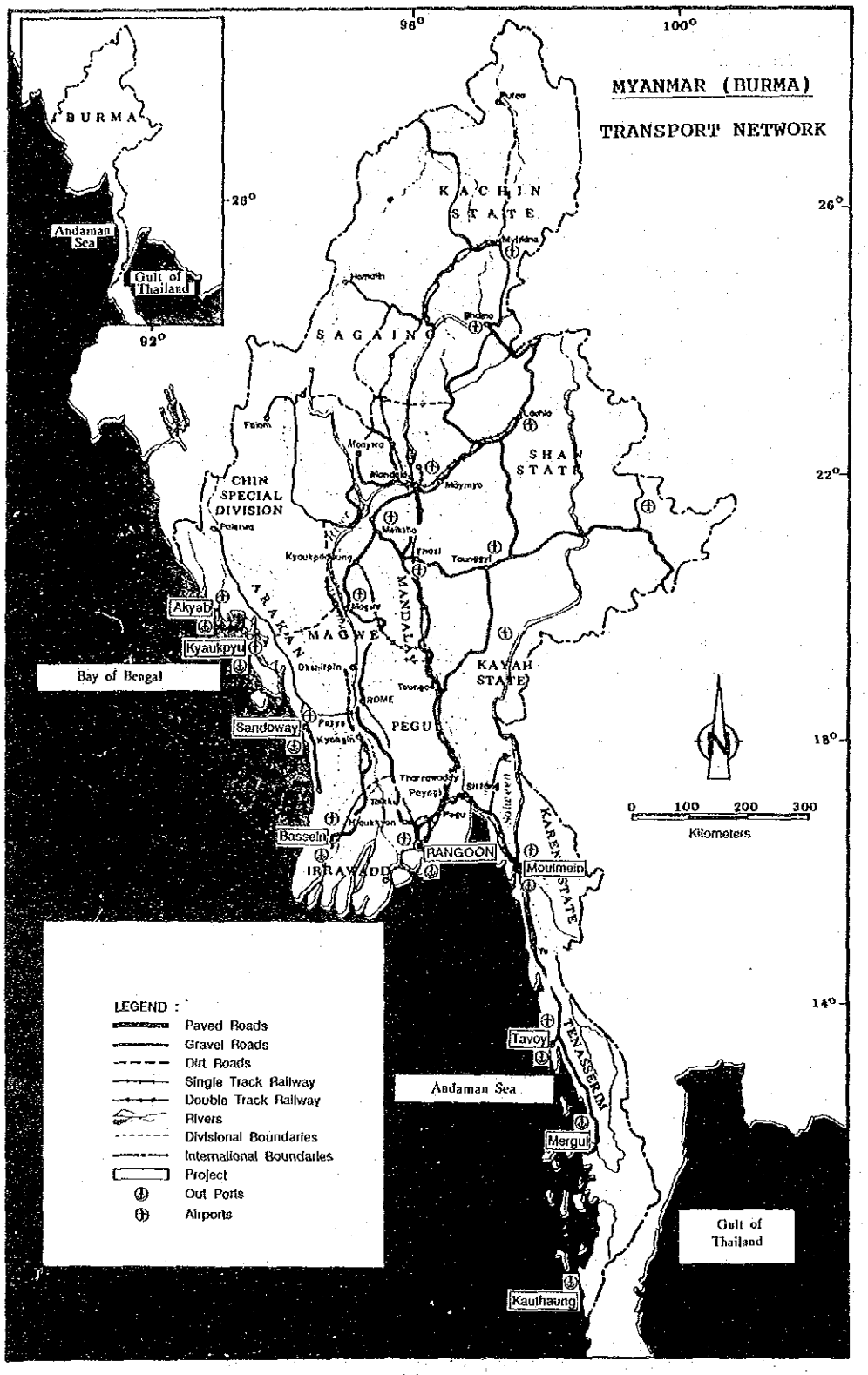
26. The state-owned MFSSC owns and operates nine ocean-going ships with a total capacity of about 64,000 dwt and five coastal ships with a total capacity of about 5,000 dwt. Vessels owned or chartered by MFSSC carry about 35 per cent of Myanmar's imports and about 23 per cent of exports with the balance being carried by foreign-owned ships. Owing to poor facilities, particularly at the Outports, ship turnround times are very slow. This, coupled with an inadequate number of coastal ships available with MFSSC to serve the Outports, has resulted in unreliable shipping services to these ports; where possible, traffic has diverted to road transport or inland waterways and in certain cases ships (mainly diesel engined craft with wooden hulls; known locally as "schooners"). To improve coastal shipping services, MFSSC has acquired 8 new coastal ships totalling 10,500 dwt (2 cargo ships, 3 passenger/cargo ships and tankers). To increase its share in international cargo traffic, MFSSC has also acquired 4 new ocean-going ships with a total capacity of about 53,400 dwt.

27. The average size of foreign-going ships calling at the export ports of Bassein, Moulmein and Akyab is about 6,000 dead weight tons (DWT). Apart from limited tonnages carried by MFSSC ships, most of these ships are foreign owned. The ports of the Arakan coast, namely, Akyab, Kyaukpyu and Sandoway are serviced by MFSSC vessels. The Andaman Sea ports, namely, Moulmein, Tavoy, Mergui and Kawthaung are served both by MFSSC vessels and by privately owned schooners which carry almost 90 per cent or the total domestic trade of these ports.

H. Civil Aviation

28. Myanmar has an international airport at Rangoon and 44 domestic airports. Domestic air services are provided by MAC which also operates international flights to Bangkok, Calcutta, Kathmandu and Singapore. MAC's fleet consists of seven Twin Otters, seven Fokker F27 (turbo-prop), three Fokker F28 (jets) and three helicopters. The country is also served by three international airlines. In 1980/81, there were about 585,000 passenger trips by air (536,000 internal and 49,000 external) compared with about 500,000 in 1971/72. Air freight traffic is negligible, about 5,000 tons in 1980/81.

Map


MYANMAR (BURMA)
TRANSPORT NETWORK
BURMA
Andaman Sea
Gulf of Thailand
96°
100°
28°
26°
22°
18°
14°
92°
KACHIN STATE
SAGAING
SHAN STATE
CHIN SPECIAL DIVISION
MANDALAY
MAGWE
ARAKAN
KAYAH STATE
PEGU
KAREN STATE
TENASSERIM
IRRAWADDY
Akyab
Kyaukpyu
Sandoway
Basseln
RANGOON
Moulmein
Tavoy
Mergui
Kauthaung
Bay of Bengal
Andaman Sea
Gulf of Thailand
0 100 200 300
Kilometers
LEGEND :
Paved Roads
Gravel Roads
Dirt Roads
Single Track Railway
Double Track Railway
Rivers
Divisional Boundaries
International Boundaries
Project
Out Ports
Airports

9. NEPAL

NEPAL

A. Sector Overview

1. Nepal, a landlocked country bounded by China on the north and by India on the west, south and east, has a total land area of 147,000 sq km. The population was 17.6 million in 1987 and is growing at about 2.7 per cent a year. The country is divided into three distinct physical regions running in almost three parallel bands from south to north: the Terai plains, in the south; hills, in the center; and mountains, in the north. Respectively, these regions constitute 22 per cent, 44 per cent and 34 per cent of the country's total area and contain 34 per cent, 58 per cent and 8 per cent of the total population. The population is predominantly rural, with almost 90 per cent of the work force employed in agriculture, a vital sector of the economy, accounting for about 60 per cent of gross domestic product (GDP) and 70 per cent of exports. During the Sixth Plan period (FY 1980/81 through FY 1984/85), GDP grew in real terms by an average of 4.4 per cent per annum, and in 1984 per capita income was estimated at $164. The Seventh Plan (FY 1985/86 through FY 1990/91) projects economic growth of 4.5 per cent per annum. The main development objective is to achieve gains in agriculture, which among other measures would require year-round access at reasonable cost to areas with agricultural potential.

2. Due to the rugged nature of the country's topography, mule tracks and trails have been the principal means of transport; an estimated 15,000 to 20,000 km of tracks and trails still exist, playing an important role in serving the hill and mountain regions. The transport pattern began changing about 25 years ago when the Government initiated planned development; road transport and civil aviation are now emerging as the main modes of transport. To this end, the AsDB has provided seven loans, four for air transport and three for roads. Other modes include ropeways, though their roles are relatively minor. The Government recognizes the need for a well-coordinated cost-effective transport system to be developed in the future and it will soon be undertaking, with AsDB assistance, a transport sector profile study to outline an investment strategy for the transport sector covering the period 1990-2010. The Government is expected to formulate its future transport sector investment strategy based on the findings of consultants upon completion of the study.

3. Most international passenger transport is by air, while overseas trade is handled mainly through Calcutta port, in India, with goods in transit carried by rail and road. A multi-modal containerization study, financed by UNDP and administered by the IBRD, was undertaken to identify improved methods of transit to and from the port, with a view to reducing transit costs, and to be completed by the end of 1986.

4. Aggregate travel demand in Nepal has increased

significantly during the last decade. Road transport is the dominant mode, accounting for more than 90 per cent of total freight and passenger transport, followed by air transport. Since FY 1975/76, road transport has been growing at about 6 per cent per annum, compared to the 4 per cent growth of GDP. In FY 1982/83, roughly 75 per cent of passenger-km were by bus, 19 percent by light vehicles and the remainder by air and rail. Virtually all freight was carried by road, with less than 1 per cent of total ton-km carried by ropeway and rail. Considering the rugged nature of the country's topography, it is likely that road transport will continue to dominate and it is expected that aggregate road transport demand will continue to grow for several years at a rate higher than the growth rate of GDP.

B. Planning and Coordination

5. The Ministry of Works and Transport (MWT) has the main responsibility for planning, coordinating and formulating policies for all modes of land transport, while civil aviation is the responsibility of the Ministry of Tourism (MOT). The National Planning Commission influences the transport planning process by setting overall development objectives, reviewing proposed investment plans, and coordinating between MWT and MOT. Problems of intermodal competition are, however, minimal because of the relative infancy of the transport system and the dominant role of road transport. Final approval for implementation of new projects and policies with financial implications is given by the Ministry of Finance.

C. Investment

6. During the first four development plans (FY 1956/57 through FY 1974/75), transport was given highest priority; under the Fourth Plan, 40 per cent of the total public development expenditure was devoted to transport. After FY 1974/75, agriculture received increasing attention; the current Seventh Plan (FY 1985/86 through FY 1990/91) assigns highest priority to the development of agriculture, and of the total Plan outlay about 31 per cent has been allotted to agriculture, and the allocation to transport has been reduced to about 16 per cent. Although the declining allocation to transport partly reflects revised priorities, it mainly indicates that the basic transport infrastructure that had required significant investment in the earlier years is being progressively completed. Within the transport sector, roads continue to receive the highest priority; under the Seventh Plan, of the total allocation for transport nearly 74 per cent has been allocated to roads.

D. Roads

7. The road network totals about 5,500 km, of which 2,500 km are asphalted, 800 km gravel-surfaced and 2,200 km earth

roads, motorable only in dry weather. The main network comprises the East-West Highway in the Terai and north-south roads providing connections to India and China and linking the East-West Highway to the hills in the Central and Western Regions. In addition, some north-south roads have been constructed or are under construction connecting the East-West Highway with the hills in the Eastern and Mid Western Regions; improvement of the road to Ilam (with a link to Pashupatinagar) in the Eastern Region and that to Dandeldhura (with extension to Patan) in the Far Western Region is expected to start soon with the AsDB assistance. The East-West Highway (1,040 km) is complete except for the section between Kohalpur and Mahendranagar (204 km) in the far west, which is under construction, administered by the IBRD, with a grant from India and a credit from IDA.

8. The road network has grown substantially since the mid-1950s, but motorable access to the hill and mountain areas is still limited. Parts of the existing network are in poor condition and do not satisfactorily meet current traffic demand; even on the East-West Highway, transport is constrained because of the poor road conditions on several stretches, resulting in high transport costs and excessive travel times. The Government's current emphasis is on the systematic extension of the network to population centers and to areas with agricultural potential in the hills, while at the same time focusing on the overall improvement of the network through gradually improving sections which are at present in a badly deteriorated condition and which cannot be maintained economically. In addition, emphasis is given on the rehabilitation and resealing to remedy the effects of backlog of periodic maintenance.

E. Tracks and Trails

9. Tracks and trails remain important in hill and mountain areas and their estimated length ranges between 15,000 km and to 20,000 km, more than three to four times the length of the total road system. Tracks and trails play an important role in unifying the country since often there is no other means of access. However, during the rainy season, crossing the numerous rivers is difficult or impossible and many villages are isolated during a significant part of the year. The Government recognizes the need to make movement of people and goods easier in the hills and mountains. In the past, particular emphasis has been placed on the construction of suspension bridges, mostly funded by external donors. Under the Sixth Plan (1980/81-1984/85) the Government has constructed about 4,000 km of foot and mule trails and about 300 new suspension bridges.

F. Ropeways

10. Apart from porterage, the first ropeway, built in 1928 to serve the Kathmandu corridor, was for many years the only means of transporting freight to and from the Kathmandu Valley.

The present ropeway between Kathmandu and Hetauda, which was opened in April 1964, has a length of 42 km and a design capacity of nearly 22 tons per operating hour. The ropeway is competitive only for the transport of bulk commodities. General cargo is invariably shipped by road. Traffic declined from about 18,400 ton in FY 1977/78 to 8,700 ton in FY 1980/81, and the ropeway ceased operations altogether in FY 1980/81 until FY 1982/83. Annual financial losses over the same period increased from Rs1.6 million to Rs2.7 million. In 1981, the ropeway was rehabilitated and has since recaptured an increasing volume of traffic, at present about 40,000 tons per annum.

G. Civil Aviation

11. Air transport in Nepal has played an important role in the economic and social development of the country during the past two decades. The land transportation systems have not been adequately developed mainly because of the topography of the country and the high cost of road construction and maintenance. The administrative, economic and social progress in the more remote parts of the country owe much to the air transport services. At present, besides the Tribhuvan International Airport (TIA) at Kathmandu, there are 16 domestic airports in the country. TIA is the center of domestic traffic and the main international gateway to Nepal, providing direct air connections to Bangladesh, Burma, Hongkong, India, Pakistan, Singapore, Sri Lanka, Thailand and the United Arab Emirates (Dubai). In addition to the national airline, Royal Nepal Airlines Corporation (RNAC), which operates both international and domestic services, five international airline companies operate scheduled flights to Nepal. One European charter airline operates a weekly flight to Nepal. TIA is currently handling 396 scheduled flight a week, of which 128 are international flights.

12. During the current Seventh Plan period, the major objective of the civil aviation subsector is to complete the TIA terminal complex for which about 60 per cent of the total civil aviation plan allocation of Rs 839 million has been earmarked. Other programs under the Seventh Plan include the improvement of selected domestic airports and STOL airstrips and increased efficiency of RNAC's operations.

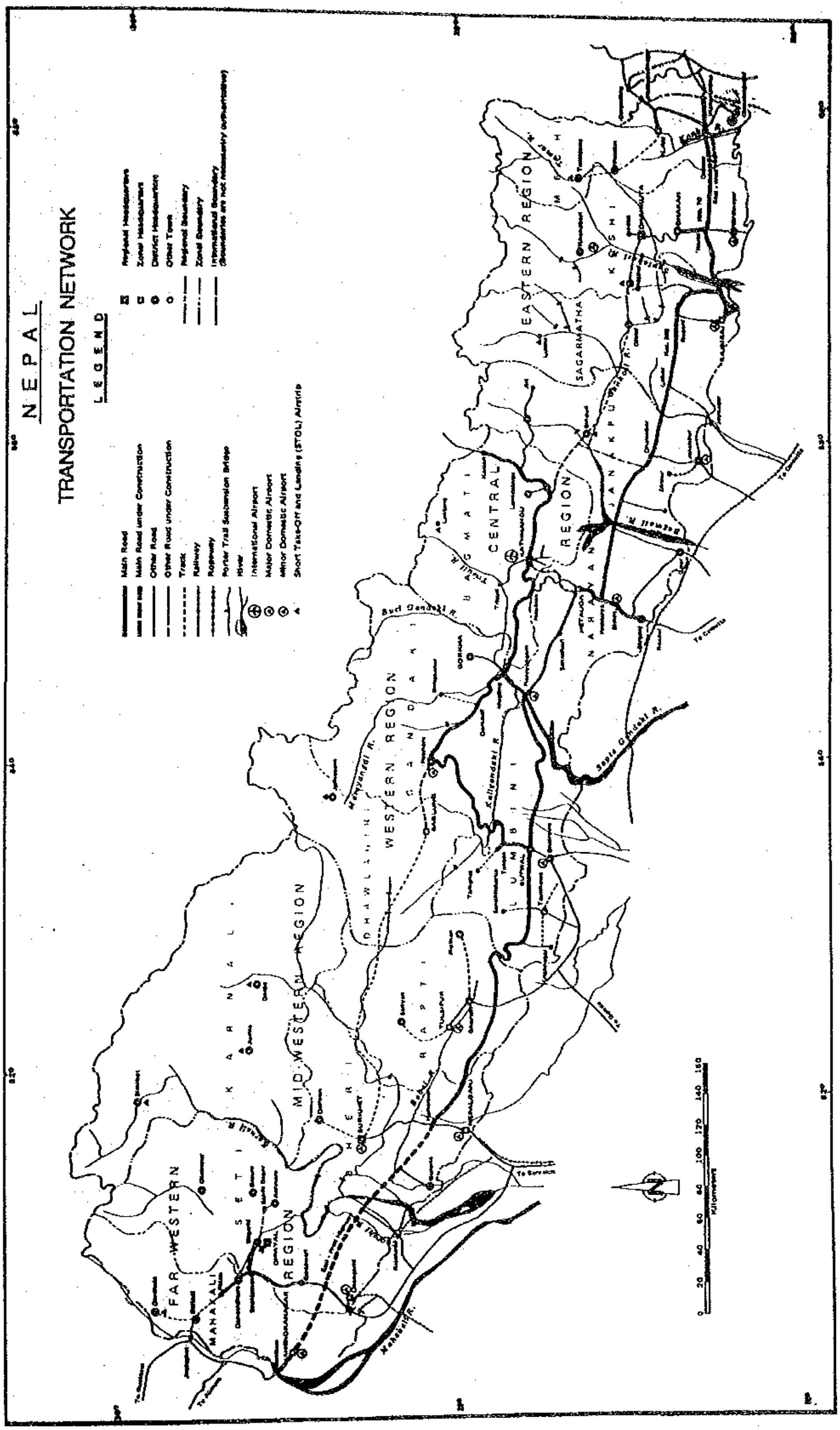
13. The government-owned RNAC, which commenced operations in 1958 mainly as a domestic airline, now has a fleet of 16 aircrafts and operates international, regional and domestic services. Between 1968/69 and 1978/79 RNAC's domestic passenger traffic registered an average growth of 4 per cent per annum from 160,000 to 239,000 passengers; however, following a decline, domestic passengers increased again in 1984/85 to 258,000. International passenger traffic handled by RNAC on all routes increased by 18.5 per cent annually from 1969/70 (32,000) to 1979/80 (173,000). In 1984/85 international passengers totalled 174,000.

14. A study of civil aviation in Nepal undertaken in 1984 by the International Civil Aviation Organization (ICAO) identified areas requiring assistance including training in air traffic control, communications, freight operations, airworthiness, fire, rescue and security at a total cost estimated at $8.6 million. Certain areas of the programs proposed are currently under consideration by ICAO and UNDP.

15. Besides the AsDB foreign assistance has been provided to the civil aviation subsector by Australia (radio equipment, navigational aids, airfield lighting and fire services), France (radio equipment and navigational aids), Canada (aircraft and aircraft maintenance) and U.K. (aircraft). RNAC until late 1985 had a contractual arrangement with Lufthansa German Airlines for the latter to provide maintenance, operational and management assistance.

H. Railways

16. There are two narrow gauge railways, operated by Nepal Transport Corporation: the Janakpur line (53 km), and the Raxaul-Birganj line (18 km). The Janakpur line is an extension of the Indian railway line from Jaynagar and mainly serves pilgrims. There are no competing transport facilities and passenger traffic increased from 1.11 million passengers in 1976/77 to 1.25 million in 1981/82. Freight traffic declined during this period from about 28,000 tons to 18,000 tons and the line operates mainly as a passenger railway. The Raxaul-Birganj railway line carries no passengers, and freight traffic in 1982 was only 28,000 tons. Both lines earn revenue sufficient to more or less cover operating expenses, but not depreciation and interest charges. Both railway lines have reached the point where most physical assets require replacement; the Government is considering purchase of used equipment for the Janakpur line and conversion of the Raxaul-Birganj line to meter gauge to avoid cumbersome transshipment at Raxaul in India.


NEPAL
TRANSPORTATION NETWORK
LEGEND
Main Road
Main Road under Construction
Other Road
Other Road under Construction
Track
Railway
Ropeway
Porter Trail Suspension Bridge
River
International Airport
Major Domestic Airport
Minor Domestic Airport
Short Take-Off and Landing (STOL) Airstrip
Regional Headquarters
Zonal Headquarters
District Headquarters
Other Town
Regional Boundary
Zonal Boundary
International Boundary (Boundaries are not necessarily authoritative)
EASTERN REGION
CENTRAL REGION
WESTERN REGION
MID WESTERN REGION
FAR WESTERN REGION
MAHAKALI
SETI
KARNALI
BHERI
RAPTI
DHAWALAGIRI
GANDAKI
LUMBINI
BAGMATI
NARAYANI
JANAKPUR
SAGARMATHA
KOSHI
MECHI
KATHMANDU
Mahakali R.
Sapta Gandaki R.
Kaligandaki R.
Budi Gandaki R.
Kilometers