10. PAKISTAN

PAKISTAN

A. Sector Overview

1. Pakistan has a land area of about 804,000 sq km and an estimated mid-1988 population of 104 million, growing at about 3 per cent a year. The country, which has a federal system of government, is administratively divided into four Provinces, Baluchistan, North West Frontier (NWF), Punjab and Sind, and Federally-administered areas. Geographically, the country comprises six regions; the Lower Indus Plain; the Upper Indus Plain; the Salt Range; the Baluchistan Plateau; the Western Border Mountains and the Northern Mountain Zone. In the west, the country is bounded by a frontier of 800 km passing through desert along the Iranian border and by the Durand Line drawn in 1897 along the Afghan border. In the north, the Karakorams form the border with the People's Republic of China while in the northeast and east, the border with India runs south through the Punjab and the Thar Desert to the Arabian Sea. In the south, the coastline is 800 km long.

2. Agriculture continues to provide the bulk of employment for the labor force, accounting for about 54 per cent of total employment, compared to 13 per cent for manufacturing. Although agriculture remains the most important component of the gross domestic product (GDP), its importance has declined steadily from about 44 per cent in 1960/61 to the current level of 24 per cent. In contrast, over the same period, the contribution of the manufacturing sector has increased significantly from 13 per cent to 21 per cent of GDP. Despite the declining trend of agriculture, the sector still accounts for 70 per cent of the total value of exports. Overall, GDP is projected to grow at 6 per cent a year during the Seventh Five-Year Development Plan period (1988/89-1992/93), compared to 6.9 per cent during the Sixth Plan (1983/84-1987/88). The current Plan envisages a higher growth rate for agriculture (4.4 per cent a year) as compared to the Sixth Plan's 3.9 per cent a year. To achieve this growth, while at the same time improving social services including education, the thrust of the overall development strategy of the Government is on employment generation, increased productivity of agriculture, export-oriented growth related to agricultural and industrial goods, and further energy generation.

3. Despite a relatively rapid rate of urbanization, Pakistan's rural areas and its rural population continue to be the mainstay of the country's economy. Some 72 per cent of the total population live in the rural areas, most of them directly or indirectly dependent on agriculture for their livelihood. However, in contrast to the rural areas' contribution to the overall economy, the population living in these areas has a low per capita income, underemployment is prevalent and there is a lack of basic physical and social infrastructure. Rural poverty remains significant due to low average levels of productivity and

income as well as poor access to income-generation opportunities. Apart from the available labor force, the other major resource in the rural areas is a cultivated area of 20.3 million ha, of which 16.2 million ha are irrigated, mostly in Punjab Province. the levels of agricultural production include 13.5 million mt of wheat, 3.0 million mt of rice, 3.6 million mt of seed cotton and 26.8 million mt of sugar cane, as well as a variety of other crops. Livestock is an integral part of the rural economy and very few farmers are totally without livestock which mainly meets basic dietary and draught-animal requirements, generation of cash income being generally a secondary objective. Although agricultural productivity has steadily increased in recent years, it is still below the country's potential.

4. During the 1960s and 1970s, Government development efforts in the rural areas largely focused on the expansion of major physical infrastructure, in particular irrigation, in the extensive agricultural areas of the Indus Basin. This resulted in relative neglect of basic physical and social infrastructure and regional imbalance between the Indus Plains and other areas. These imbalance aspects were addressed by the Government in the Sixth Plan and are also being given attention in the current Plan, which includes not only programs for increasing agricultural productivity but also substantial expansion of basic infrastructure to improve the delivery of services, including farm-to-market roads, for support of agricultural and rural development. The Government's special Five-Point Programme over the four-year period (1986/87-1989/90), of which the period from 1988/89 to 1989/90 is now included in the Seventh Plan, focuses particularly on rural development, including improvement of farm-to-market roads, education, health, electrification, water supply and sanitation.

5. The transport sector, which accounts for 6 per cent of GDP, is characterized by the co-existence of non-motorized transport such as bullock carts and horse-drawn carriages, and mechanical modes. While information on these traditional modes of transport is sketchy, the available data on modal aspects among the motorized modes shows that road transport dominates. Over the past 15 years there has been a considerable switch of traffic from rail to road. In 1971/72, road transport's shares of total traffic movements were 51 per cent for freight and 79 per cent for passengers, compared to 76 per cent (excluding transport of oil by pipeline which now amounts to about 5 per cent of total freight traffic) and 82 per cent respectively in 1986/87.1/ The gradual decline in the traffic share of the railways over the years has been caused by: the development of

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1/ The shares of domestic air transport are negligible; in 1986/87, they were 1.9 per cent for passengers and 0.1 per cent for freight traffic. Coastal shipping and inland water transport have not developed to any significant degree, while pipeline for transport of gas and oil are being expanded.

the road network and of the road transport fleet; the flexible, reliable door-to-door services provided by road transport at competitive costs over short and medium distances; and the inability of railway's to meet freight traffic demand, because of , among other things, capacity constraints on the main line between Karachi and Lahore. This bottleneck for freight traffic by rail is partially caused by the railway's policy of cross-subsidizing passenger travel by train.

6. During the period 1971/72-1986/87, the gross national product (GNP) grew at 6.4 per cent a year, while over the same period the overall annual demand for transport increased by 5.6 per cent for freight traffic and 5.7 per cent for passenger movements. The annual growth of road transport alone during this period was 8.5 per cent for freight and 6.0 per cent for passengers. It is expected that aggregate transport demand will continue to grow at a rate around the growth rate of GNP, because of the increasing geographical dispersal and diversification of industries, and the specialization of agricultural production which will require increased transport of foodgrains from Punjab and Sind to Baluchistan and NWFP, and of cash crops from their areas of concentration in certain parts of NWFP, Punjab and Sind. It is also likely that roads will continue to absorb an increasing share of the growth in overall transport.

7. Pakistan's transportation system has been constructed in accordance with the geographical distribution of population and the location of agricultural and industrial activities. The overwhelming concentration of population and economic activity is in Punjab and Sind Provinces which respectively have about 56 per cent and 23 per cent of the country's population. The two Provinces also account for the majority of the country's agricultural and industrial production. Punjab produces almost three quarters of Pakistan's wheat and sugar cane, two thirds of its cotton and 45 per cent of its rice, with Sind producing about one half of this latter product. In the industrial sector, Punjab accounts for almost 60 per cent of the country's edible oil; half the refined sugar; two thirds of its fertilizer; 70 per cent of its iron and steel; and all the country's crude oil production. Sind, on the other hand, produces almost 40 per cent of the country's refined sugar; 53 per cent of its cement; 35 per cent of its fertilizer output; 27 per cent of its iron and steel; and almost 90 per cent of the country's refined petroleum products. The only major activities in the other two Provinces are those of coal mining and natural gas production in Baluchistan. Generally, no significant changes in the existing distribution of economic activities are expected, except for increased production of refined sugar in NWFP and of cement in both NWFP and Baluchistan. In line with the above distribution patterns of population and economic activities, the major transport routes have a north-south direction. More than 90 per cent of exports and imports is handled at the ports of Karachi and Qasim, and more than 50 per cent of the international trade has its origin or destination in Punjab Province, whose capital, Lahore, is 1,200 km from Karachi. As a result, goods move long

distances over a few major routes.

8. The transportation system is both extensive and diversified, comprising 134,350 km of roads; 8,775 route km of railway lines; two major seaports (Karachi and Qasim); and 33 airports of which five are equipped to handle international traffic (Islamabad, Karachi, Lahore, Peshawar and Quetta). Natural gas is distributed through a pipeline system from the main fields at Sui in eastern Baluchistan to the major population centers, and a pipeline (870 km) to transport petroleum products is operated between Karachi and Multan. Coastal shipping along the coastline of Baluchistan and Sind is negligible, and inland water transport has not been developed because most rivers are shallow during the dry season and crossed by numerous irrigation dams and barrages. The system provides a relatively satisfactory level of service in many respects, but considerable potential remains for reducing transport costs and improving the quality of services, mainly through removal of capacity bottlenecks, upgrading of infrastructure and vehicles, construction of parallel rail tracks on heavy traffic density lines, provision of high capacity highways, and construction of farm-to-market roads to serve villages not yet connected to the system.

B. Planning, Coordination and Policy

9. Responsibility for transport planning, coordination and policy at the Federal Government level is divided among five Federal ministries, with the Planning Commission (PC) having an overall transport planning and coordinating function. The Ministry of Communication (MOC) is responsible for national highway development and maintenance through the National Highways Board (NHB), and for road transport regulations and policies, shipping and ports. All railway operations and planning aspects are under the Ministry of Railways. The Aviation Division of the Ministry of Defense is in charge of airport development, maintenance and administration, and civil aviation, while pipelines are the responsibility of the Ministry of Petroleum and Natural Resources. The Ministry of Local Government and Rural Development (MLGRD), which is entrusted with rural development at the Federal level, assists the Provincial Governments and District Councils in planning and coordination of farm-to-market road projects. Minor roads in other areas are the responsibility of MOC.

10. The PC formulates Pakistan's Five-Year Plans, finalizes the Annual Development Programs (ADPs), prepares guidelines on planning aspects and carries out technical and economic appraisal of major development projects. Federal investment proposals originating from the respective ministries or departments are, on the basis of the Planning Commission's Proforma 1 (PC-1), assessed by PC which endorses those proposals considered technically and economically justified and costing more than Rs60 million ($3.4 million) for submission to the Executive Committee of the National Economic Council (ECNEC) through the Central

Development Working Party (CDWP) chaired by the Secretary of the Planning and Development Division in the Ministry of Planning. Following approval of PC-1 by ECNEC, the project is included in ADP of the Federal Government and budgetary provisions are made by the Ministry of Finance and Economic Affairs.

11. In 1974 the Government established the National Transport Research Centre (NTRC) under PC with the aim of improving transport planning and modal coordination. NTRC mainly concentrates on multi-modal transport research and coordinates similar efforts undertaken by other Government agencies. NTRC undertakes work on technical manuals and reports on standards, planning aspects, traffic safety and formulates guidelines for transport policies.

12. The development of industry, agriculture and other sectors of the economy requires an efficient transportation system to handle movements of goods and passengers across the country, including access to rural areas. The overall policy objective is to provide efficient transport services to the nation at minimum cost and strategies are thus aimed at: (i) improving the performance of the transportation system, particularly roads, railways, shipping and ports where public investment is large and where there is a substantial need for financial and operational improvements; (ii) rehabilitation of existing assets which have deteriorated over the years; (iii) provision of adequate maintenance funds to prevent the deterioration of existing, costly assets; (iv) application of efficient operating techniques and modern management practices to transport services which have expanded and become very complex; (v) cost recovery through rational pricing policies; (vi) self-financing of public sector corporations; and (vii) increased private sector participation in the transport sector investments.

C. Investment

13. The Seventh Plan recognizes that transport infrastructure requires adequate maintenance outlays (financed from current revenues) and continued improvement to cater effectively to the growing demands of an expanding economy. Inadequate past investment in the transport sector has not only caused the augmentation of the infrastructure capacity to lag behind the growth of transport demands but has also exposed the system to a substantial rate of deterioration. Recognizing these needs, the Seventh Plan provides Rs 48.3 billion ($2.7 billion) in 1988 prices to the public share of the transport sector, representing 13 per cent of the public sector outlay. The largest part of the allocation for transport is for roads and road transport which will receive Rs 29.7 billion ($1.7 billion) or 62 per cent of the total public outlay for the transport sector, compared to 40 per cent in the sixth Plan. The increased allocation for the road subsector reflects the importance accorded to this subsector, compared to railways which are receiving a decreasing share, 18 per cent under the current Plan.

In addition to the allocation for roads under the transport sector, rural roads (farm-to-market and village roads) receive Rs 3.9 billion ($0.2 billion) under the Seventh Plan's rural development sector, thereby bringing the total allocation for roads transport to 64 per cent of the transport sector's public outlay.

D. Roads and Road Transport

14. Although the country's roads are not classified functionally, particularly the rural roads, the public road network falls into three main categories: (i) the primary system of national highways, mostly serving inter-provincial long-distance traffic and linking important cities and freight terminals; (ii) the secondary system consisting of provincial roads which serve inter-provincial traffic; and (iii) the tertiary system comprising rural roads (also called farm-to-market and village roads). In addition, are the "other roads" including municipal and canal roads, and roads in Federally Administered Tribal Area (FATA). The total network of national highways and roads under the provincial Communications and Works Departments (CWD) grew from 22,136 km in 1947 to 51,237 km in 1986, a growth of 2.2 per cent a year. The road network in 1986 consisted of about 134,350 km, 6,150 km being national highways, 47,700 km provincial and farm-to-market roads under the administration of provincial Highway Departments under CWDs, 60,300 km farm-to-market and village roads under the administration of District Councils, and 20,000 km other roads.

15. Overall, only 43 per cent of the entire public road network is paved with bitumen. The national highways are all paved, while paved roads under the administration by Municipal Governments, CWDs and District Councils constitute 87 per cent, 63 per cent and 14 per cent of these administrations' respective networks. While national and provincial roads are adequate in extent though not in quality, rural roads are inadequate in both extent and quality to serve the needs of rural areas where more than 70 per cent of the country's population live; less than 30 per cent of the rural population is served by all-weather roads. Deficiencies in the farm-to-market road network seriously constrain the delivery of agricultural inputs and the marketing of produce, as well as hamper the accessibility of rural communities to regional health, education and social services.

16. At Independence in 1947, in the western part of the country Pakistan had on the road about 30,600 motor vehicles which, by 1986, had increased to 1,258,000, an overall growth of 10 per cent a year. Of the 1986 fleet, buses and trucks accounted for 3 per cent and 4 per cent respectively, cars and vans 26 per cent, motorcycles, scooters and autorickshaws 48 per cent; the remaining vehicles were mostly agricultural tractors accounting for 13 per cent. Almost 50 per cent of Pakistan's motor vehicle fleet is registered in Punjab, while Sind has 38 per cent, NWFP 9 per cent and Baluchistan 3 per cent. During the

period 1980-1986, the overall growth of the fleet was 11 per cent a year, with cars and vans growing at 8 per cent, buses at 6 per cent and trucks at 7 per cent. Motorcycles, scooters and autorickshaws have become increasingly popular over the same period growing at 11 per cent a year. The highest growth rate was that for agricultural tractors at 16 per cent a year, so indicating their versatility -- both for tilling the soil and for towing trailers to market centers -- and importance in rural areas, and the increased investment and other activities taking place in the agriculture sector throughout Pakistan. The average ownership of motor vehicles, including motorcycles, scooters, autorickshaws, tractors and trailers, is 12.8 vehicles per 1,000 population. With this relatively low level of vehicle ownership, it is likely that the per capita size of the national fleet will continue to increase.

17. Traffic volumes vary considerably over the road system. Annual average daily traffic (AADT) on Pakistan's most important highway (NH5) between Karachi and Peshawar via Lahore is as high as 8,000 motor vehicles per day (vpd) on the sections between Karachi and Hyderabad and between Lahore and Gujranwala, and around 5,000 vpd elsewhere on NH5. Certain sections of other national highways have AADTs between 2,000 and 3,000 vpd, but most sections have between 400 and 900 vpd. Provincial roads typically carry between 200 and 1,000 vpd while traffic on farm-to-market roads varies between 50 and 200 vpd. About 60 per cent of the traffic volumes on all non-urban roads consists of buses and trucks. The national highways constitute only 5 per cent of the total road network in the country, but carry about 30 per cent of the total passenger traffic and 40 per cent of the total freight transport.

E. Railways

18. The railway system in Pakistan is operated by the Government-owned Pakistan Railways (PR). The railway network consists of 8,775 route kilometers, mostly broad gauge track. Some 1,040 km of trunk lines are double tracked and a section of 283 km between Lahore and Khanewal is electrified.

19. During 1986/87 rail carried about 85 million passengers (17.8 billion passenger-km) and 13.3 million mt of freight (8.4 billion ton-km). Passenger traffic by rail increased during 1971/72-1986/87 at an annual rate of four per cent, largely due to subsidized fares and emphasis on passenger services. Freight operations, on the other hand, suffered a severe setback mainly due to competition from road transport (both public and private) and the 870 km long pipeline (for transport of petroleum products) between Karachi and Multan, resulting in a declining share of the railway's freight traffic; during 1971/72-1986/87 freight ton-km by rail increased at only 0.6 per cent a year. About 80 per cent of the total freight ton-km of PR is accounted for by the transport of cement, fertilizers, coal, cotton, firewood, rice and paddy, petroleum products, salt, sugar, wheat

and railway materials.

20. The Seventh Plan proposes to make railway operation, especially the freight service, more attractive through improved efficiency, quality of service and elimination of delays. An investment of Rs 8.5 billion is envisaged in the railway subsector for the Plan period, including completion of construction of a locomotive factory, rehabilitation and augmentation of diesel and electric locomotives and upgrading of tracks and signal systems.

F. Ports

21. Karachi Port and Port Qasim, Pakistan's two international ports, are operated by the Karachi Port Trust and the Port Mohammad Bin Qasim Authority. Karachi Port, with a total of 28 berths, excluding four oil piers, handled 16.3 million mt in 1986/87 of which 81 per cent was imports, while the throughput at Port Qasim was 3.9 million mt of which 71 per cent consisted of imports. Dry cargo increased at an annual rate of 4.7 per cent during the 1980/81-1986/87 period, while bulk cargo (liquids, iron ore and coal) increased at 5.5 per cent.

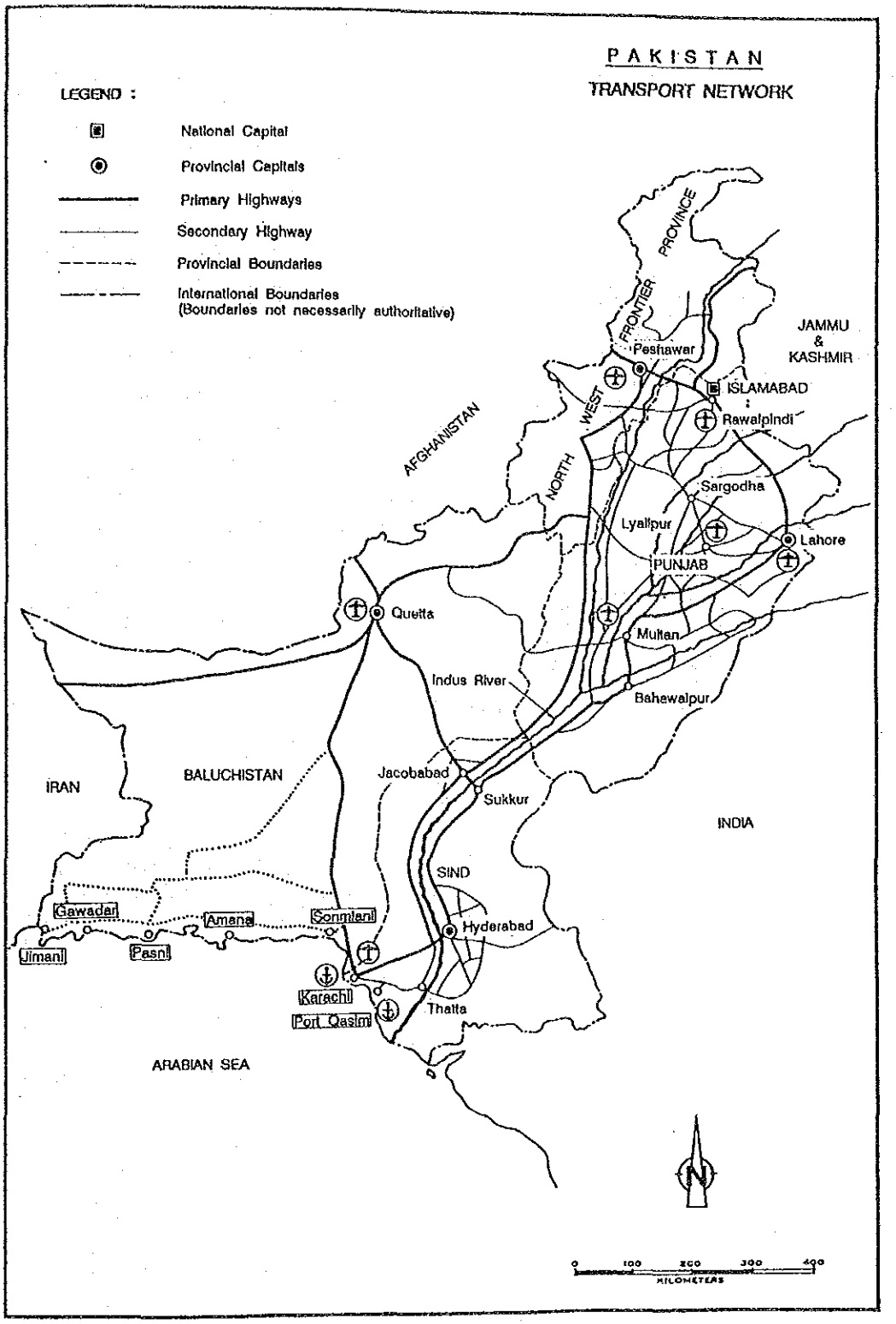
22. During the 1970s the operational performance of Karachi Port deteriorated, partly due to its physical congestion. While a number of measures were taken to improve operational efficiency in the port, the construction of a new port some 40 km east of Karachi at Qasim was started in 1976 with assistance of the AsDB and several bilateral donors. Following the start of full operations in 1981/82, Port Qasim has mainly been handling bulk commodities such as coal and iron ore imports to serve the steel mill located near the port and import of wheat and export of rice and fertilizers. Port Qasim was intended to be commissioned as a bulk cargo handling port, thus allowing Karachi Port to specialize in the handling of general cargo and the rapidly increasing container traffic. Arrangements for mobilizing necessary private sector financing for a container terminal at Port Qasim are being finalized. The Seventh Plan notes that policies will have to be formulated to ensure the optimum utilization of the two ports through cross-subsidization of tariffs and by creating a central port authority to manage both ports. The AsDB is currently assisting the port subsector through technical assistance, and IBRD is formulating a port project for provision of cargo handling gear, navigational aids, a dredger, management assistance and access roads at Karachi Port, and construction of a container terminal at that Port.

G. Civil Aviation

23. The total of 33 airports in the country are operated by the Civil Aviation Authority (CAA). Scheduled international services are provided at five airports: Islamabad, Karachi, Lahore, Peshawar and Quetta. The Government-controlled Pakistan

International Airline (PIA) operates both international and domestic services.

24. Although the role of air transport in the transport network is limited, domestic passenger traffic by air increased at an annual rate of 13.7 per cent from 0.3 billion passenger-km in 1971/72 to 2.1 billion passenger-km in 1986/87. Following extensive construction of terminals by CAA during the Sixth Plan, the infrastructure at most of the airports is generally adequate to accommodate the existing air transport. However, work carried over from the Sixth Plan, including the Karachi terminal complex, will be complete, some minor improvements to the terminal buildings at Lahore and Islamabad will be implemented, and Peshawar airport and some of the other northern minor airports will be upgraded to serve larger aircraft. In addition, air navigational and communications systems will be augmented and upgraded to ensure greater operational safety. Furthermore, cargo handling systems at major airports, including Karachi, Lahore, Peshawar, Faisalabad and Multan, will be improved and airports for feeder services will be established at Kotli, Loralai, Mansehra and Ormara under the current Plan.


PAKISTAN
TRANSPORT NETWORK
LEGEND :
National Capital
Provincial Capitals
Primary Highways
Secondary Highway
Provincial Boundaries
International Boundaries
(Boundaries not necessarily authoritative)
NORTH WEST FRONTIER PROVINCE
JAMMU & KASHMIR
Peshawar
ISLAMABAD
Rawalpindi
AFGHANISTAN
Sargodha
Lyallpur
Lahore
PUNJAB
Quetta
Multan
Indus River
Bahawalpur
IRAN
BALUCHISTAN
Jacobabad
Sukkur
INDIA
SIND
Gawadar
Amana
Sonmiani
Hyderabad
Jiwani
Pasni
Karachi
Port Qasim
Thatta
ARABIAN SEA
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KILOMETERS

11. PAPUA NEW GUINEA

PAPUA NEW GUINEA

A. Sector Overview

1. Papua New Guinea (PNG) is a land of rugged mountain ranges, rich upland valleys, coastal plains and swamps, and numerous islands. The total land area encompasses some 461,910 sq km and supports a population of about 3.51 million. Population growth between 1966 and 1983 was 2.3 per cent annually. Although regional differences are marked, the majority of the population lives in rural areas and only about 15 per cent are classified as urban-dwellers. Of the 1.1 million people defined as economically being active (between 15 and 64 years old), it is estimated that about 80 per cent employed in the agriculture sector. Economic activity centers upon exploiting the country's agricultural potential, timber and fisheries resources, and rich mineral deposits. The major economic activity for most of the population is, however, subsistence agriculture which accounts for almost 40 per cent of total agricultural production.

2. Although development potential is considerable, accessibility to many of the areas is difficult due primarily to severe topographic features. The transport system reflects the geographic, topographic and demographic characteristics of the country and its improvement has been limited to centers of population and areas with high potential for development. With the country's heavy dependence on foreign trade, imports and exports generate by far the largest volume of freight traffic for both road hauliers and coastal and interisland shipping. As PNG is an archipelagic nation with scattered concentrations of population and economic activities, emphasis is placed by the Government on improving and maintaining regional road networks and their connecting port facilities serving agriculturally rich and productive hinterlands; air transport, however, is often the only means of carrying passengers and freight to many outlying areas. There are no railways in PNG and only a few rivers are navigable. The AsDB supported the Government's efforts for the improvement of transport infrastructure by financing four projects in the road subsector and two in the ports and shipping subsector. Financial assistance has also been provided by other external agencies including IBRD, KfW, EEC and the Kuwait Fund for Arab Economic Development.

B. Policy and Planning

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

adequate port and shipping facilities throughout the country.

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

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

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

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

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

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

C. Investment

9. In recent years, about 16 per cent of total planned Government expenditure has been allocated to the transport sector.1/ In view of the high priority accorded by the Government to improving transport infrastructure, it is expected that this proportion will remain largely unchanged in the near future.

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

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

D. Ports

1/ In comparison, about 27 per cent has been allocated to agriculture, forestry and fisheries, 16 per cent to education, 8 per cent each to health and urban services, 6 per cent to energy, 5 per cent to minerals and industry, and 14 per cent to other sectors.

12. While there are some 50 public ports scattered throughout PNG, the 17 Papua New Guinea Harbor Board (PNGHB) administered ports account for the bulk of overseas and domestic trade.1/ The remainder, mainly wooden jetties and landings, are either privately owned or are administered by the provincial governments. The most important facility belonging to the private group is the overseas wharf located in Anewa Bay (near Kieta), North Solomons which is owned and operated by Bougainville Copper Ltd. (BCL).

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

14. In 1983, the 17 ports under PNGHB served a total of about 7,100 ship calls. Of these, 1,300 were from overseas ships and 5,800 from domestic ships. The cargo volume handled by these ships totalled 2.5 million revenue tons (rt) of which 72 per cent was overseas and 28 per cent domestic. Dry general and bulk cargo accounted for 81 per cent and liquid bulk for 19 per cent of the total cargo volume. The main export commodities are copper,2/ copra, coffee, palm oil and timber. Imports consist mainly of manufactured goods, foodgrains, fertilizers, cement, chemicals and petroleum products.

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

1/ The PNGHB ports are: Aitape, Alotau, Bialla, Buka, Daru, Kavieng, Kieta, Kimbe, Lae, Lorengau, Madang, Oro Bay, Port Moresby, Rabaul, Samarai, Vanimo and Wewak

2/ Handled by BCL in Anewa Bay.

E. Shipping

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

17. Foreign bulk carriers cater to the export trade in copper, copra, logs and palm oil. While bulk carriers in the world's oceangoing fleet have steadily increased in size over the last two decades, this trend is not fully reflected in the ships calling at the PNGHB ports which were mainly designed for smaller ships: this restrains shippers from benefiting from economies of scale associated with the use of large bulk carriers. As the Government is determined to eliminate such constraints, sizes of ships calling at the PNGHB ports are expected to grow in the future.

F. Civil Aviation

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

19. Currently, there are about 420 operational airports and airstrips. Air Niugini operates scheduled services to 18 airports covering the routes with the highest transport demand. On these routes, Air Niugini operates as a monopoly and scheduled services are provided by a combination of F28, F27 and Dash-7 aircraft. The third-level services, which are dominated by Talair and Douglas Airways, operating smallaircraft on a regular basis, serve almost 150 airports and airstrips. This service provides the major -- and often the only -- means of access between the remote rural areas and the regional centres.

20. Airline operating costs are high, which is due to a combination of difficult flying conditions, high capital and infrastructure costs, variations in seasonal demand, high costs of labour, unbalanced load factors and a lack of effective

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

G. Roads and Road Transport

21. Roads in PNG are administratively classified as either national roads or provincial roads. For planning purposes, DOT separates roads into three functional categories: (i) trunk roads, mainly serving inter-regional transport; (ii) collectors, which connect main population or commercial centres to trunk roads; and (iii) feeders, which serve rural areas and usually connect to collectors. The overall network consists of approximately 18,550 km, of which about 5,000 km are trunk roads and the rest collectors and feeders. Only about 5 per cent of the network is paved, with the remainder consisting of gravel and earth roads. The network is highly fragmented, mainly serving areas with greater population densities, and is concentrated around provincial capitals, coastal communities and in the Highlands.

22. Rugged terrain conditions pose constraints to extensions of the network. The average road density of 0.04 km of road per sq km of land area is one of the lowest in the Southeast Asian and Pacific regions. PNG has 0.04 km of road per sq km, while Indonesia has 0.05 km, Thailand 0.17 km and the Philippines 0.05 km.

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

24. The truck fleet increased steadily throughout the 1970s and early 1980s, at an overall rate of approximately 6 per cent

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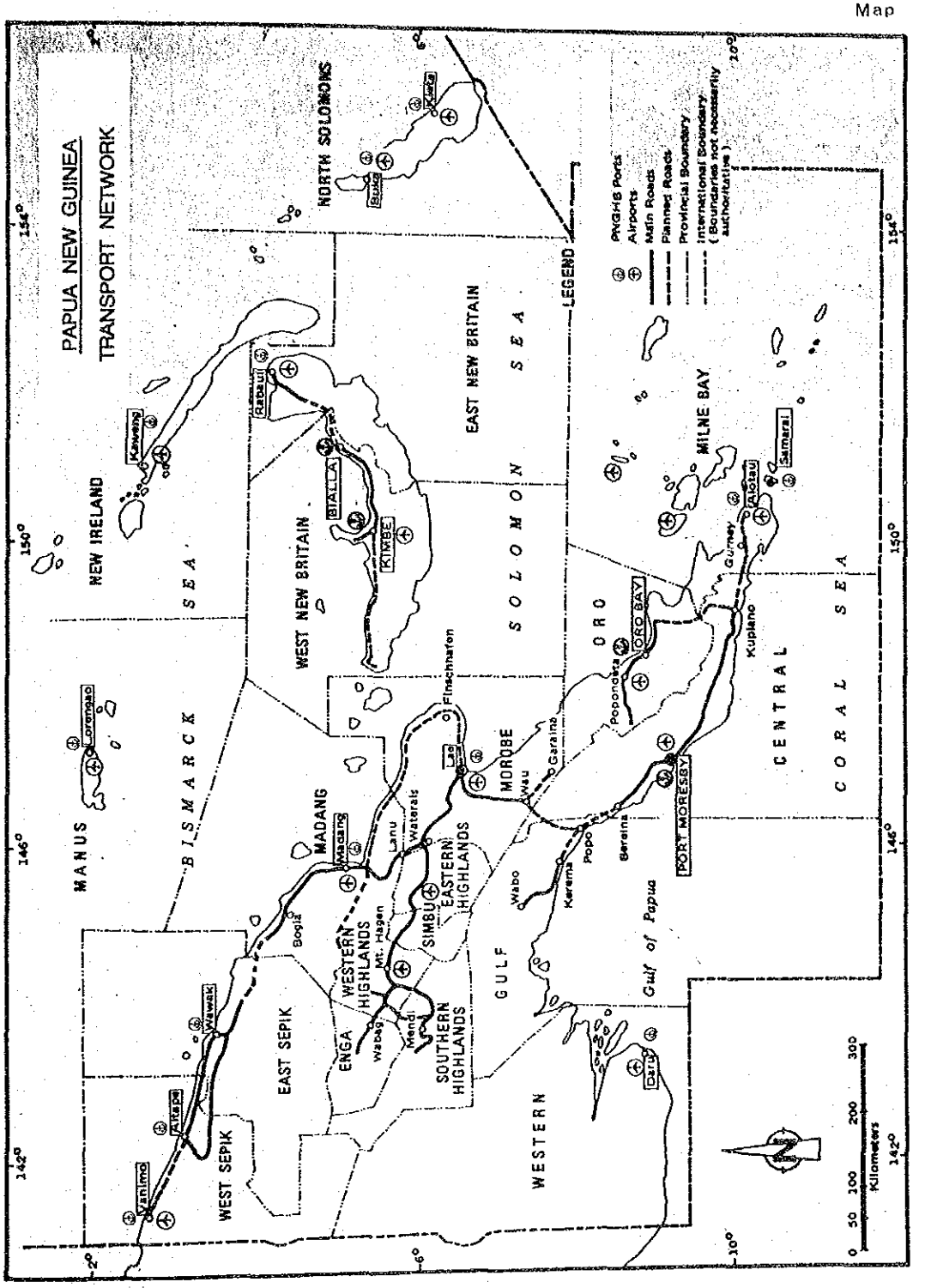
1/ The Air Niugini domestic airline tariffs in PNC are, on average, 150 per cent higher than those in the Philippines, 100 per cent higher than those in Indonesia and approximately 65 per cent greater than those in Malaysia.

per year. By 1981 the truck fleet comprised about 24,900 vehicle, of which 30 per cent were categorized as medium or heavy. These medium and heavy trucks dominate long-haul inter-urban freight movements. Light trucks are generally of the small utility variety and are popular due to their ability to carry both passengers and freight.

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

Map


PAPUA NEW GUINEA
TRANSPORT NETWORK
LEGEND
PNG/HIS Ports
Airports
Main Roads
Planned Roads
Provincial Boundary
International Boundary
(Boundaries not necessarily authoritative)
NORTH SOLOMONS
NEW IRELAND
MANUS
BISMARCK SEA
WEST NEW BRITAIN
EAST NEW BRITAIN
SOLOMON SEA
MILNE BAY
ORO
CENTRAL
CORAL SEA
MADANG
MOROBE
EASTERN HIGHLANDS
WESTERN HIGHLANDS
SIMBU
ENGA
SOUTHERN HIGHLANDS
EAST SEPIK
WEST SEPIK
WESTERN
GULF
Gulf of Papua
Kavieng
Rabaul
Kieta
Buka
Lorengau
Wewak
Aitape
Vanimo
BIALLA
KIMBE
Finschhafen
Lae
Wau
Garaina
Popondetta
ORO BAY
Kupiano
Gurney
Alotau
Samarai
Madang
Lanu
Watarais
Bogia
Mt. Hagen
Wabag
Mendi
Wabo
Kerema
Popo
Bereina
PORT MORESBY
Daru
Kilometers

12. PHILIPPINES

PHILIPPINES

A. Sector Overview

1. The Philippines is an archipelagic country of 300,000 sq km with a population of 57.4 million (mid-1987), giving an average density of 191 people per sq km. About two-thirds of the population lives in rural areas. Agriculture (including livestock, fisheries and forestry) accounts for 29 per cent of the gross domestic product and employs 46 per cent of the work force, including part-time employment. Agriculture also constitutes about 35 per cent of the total value of exports -- mostly through coconut, forestry and sugar products -- and is the main source of income for most rural households. In sharp contrast to average annual real growth rates of the gross national product of 5.0 per cent and 6.0 per cent in the 1960s and 1970s respectively, growth contracted to an annual average of 3.0 per cent during 1980-1983 under the influence of the worldwide recession that followed the second oil shock and of the debt crisis in 1983 and was negative for almost three years from late 1983 to mid 1986.

2. Only about 25 of the 7,100 islands of the Philippine archipelago have economic activity and population concentrations sufficient to generate demand for transport that would require substantial development of infrastructure. Movements of freight and passengers on most of these islands are oriented toward larger trade centers outside the islands, entailing a need for intraisland road transport and interisland sea transport. About ten of the larger islands have developed a degree of internal economic integration that requires substantial land transportation.

3. The major transport routes mostly follow the north-south pattern of population distribution and location of other traffic generating sources. Over the years the transport system has evolved around these routes and road transport has emerged as the dominant mode within islands, accounting for 60 per cent of total freight movements and 85 per cent of total passenger traffic. The modal shares of interisland and coastal shipping constitute 40 per cent and 10 per cent respectively for freight and passenger movements. Railways are of marginal importance while domestic aviation provides extensive links between the different islands. Domestic freight transport by air and rail and passenger traffic by rail are not significant, while domestic passenger traffic by air accounts for 5 per cent of all passenger movements in the country. It is anticipated that road transport will continue to dominate both freight and passenger transport in the foreseeable future.

4. In 1985, the public road network totaled 161,600 km. In the port subsector, there are 94 national ports, 232 registered private ports and more than 500 municipal ports. The national ports in particular require improvements. The

Government intends to improve the railway network, of which 750 km is currently in use. Regarding the 87 airports in the country, no major improvements are envisaged since the existing facilities are generally sufficient for the present and immediate future level of traffic.

B. Planning and Coordination

5. Responsibility for transport planning, regulation and coordination at the national level is shared by the National Economic and Development Authority (NEDA), the Ministry of Transportation and Communications (MOTC), the Ministry of Public Works and Highways (MPWH), and the Ministry of Local Government (MLG). NEDA, the highest planning body in the country, serves as a program-review and coordinating agency for all line ministries involved in transport planning. In addition, NEDA is responsible for macro-level planning to assist in identifying areas for funding priorities and coordinates formulation of medium- and long-range planning of infrastructure investments. NEDA also formulates guidelines on post-evaluation studies and monitors such studies carried out by line ministries. National investment proposals originating from the respective ministries are assessed and approved by NEDA.

6. MOTC is vested with the responsibilities of policy planning, programming, coordination, regulation, and administration of a dependable and coordinated network of transport and communications taking into account intermodal aspects. MOTC has under it the following agencies associated with transport: the Land Transportation Commission (LTC) entrusted with regulation of the road transport industry, registration and licensing of vehicles and issuance of driver licenses; the Bureau of Air Transportation (BAT) which plans, designs and maintains airports and their facilities; the Toll Regulatory Board for supervision and regulation of road tolls of the Luzon expressway system under a 30-year franchise agreement (1977-2006) with the Philippine National Construction Corporation; the Metro Manila Transit Corporation operating bus transport in the Metro Manila area; the Philippine National Railways; the Light Rail Transit Authority in Metro Manila; the Maritime Industry Authority; the Philippine Ports Authority (PPA); and the Philippine National Line serving shipping between the country and overseas destinations.

7. MPWH is responsible for detailed planning of national roads and barangay roads.1/ In addition, MPWH's responsibilities

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1/ The main classification of roads divides the network into: (i) national roads (primary and secondary); (ii) provincial roads; (iii) city and municipal roads; and (iv) barangay roads. Barangay roads are mostly of the farm-to-market type. Barangay is the smallest administrative subdivision in the country numbering about 40,000 in total.

include design and construction of ports, public buildings and water supply infrastructure as well as construction of airport facilities such as runways, taxiways, aprons and terminal buildings, while planning, design and maintenance of airport facilities are under BAT. The planning and upkeep of provincial roads is carried out by provincial governments, while that of city and municipal roads is the responsibility of the respective local governments under the monitoring and supervision of MLG, which also coordinates planning efforts at the local level.

8. In the past there was parallel and duplicated efforts among modal agencies in transport planning. This problem was aggravated by the shortage of experienced planning staff in most agencies. These deficiencies were recognized by the Government; with the establishment of MOTC in 1979 and the merger of the defunct Ministries of Public Works and Public Highways into MPWH in mid-1981, the Government took active steps to address the need for coordinated transport planning. Within MPWH, the Planning Service and the Project Management Office for Feasibility Studies were strengthened and are now actively involved in the planning process. To improve the effectiveness and coordination of transport planning and to provide on-the-job training to local staff, from 1977-1982 IBRD assisted MOTC under the National Transportation Planning Project (NTPP) and is currently assisting MOTC under the Programs and Projects Formulation Study for Transportation (PPFST).

C. Investment

9. In view of the high share of road transport and the need for improvement and maintenance of the road system, the National Government allocated P 23.5 billion ($1.9 billion) to the road subsector during the period 1981-1985, corresponding to 72 per cent of the total national allocation to the transport sector. Railways and ports received 12 per cent each and airports 4 per cent. The Government has recently finalized a medium-term development plan covering the period from 1987 to 1992. This plan indicates that the Government intends to allocate P42.8 billion ($2.1 billion) for the transport sector (26 per cent of the total planned outlay for all sectors), of which P30.3 billion ($1.5 billion), or 71 per cent, is for road improvements, reflecting the continued high priority given to the road subsector. To achieve the abovementioned targets and the objectives of investments in other sectors, the Government is planning to finance the programs envisaged in the development plan, partly through internal sources (58 per cent) and partly with the use of external borrowings (42 per cent).

10. It is anticipated that during 1987-1992, improvement of primary national roads and bridges will receive 55 per cent of the planned road investments, while secondary national roads and provincial roads will be allocated a 20 per cent share and barangay roads a 25 per cent share. In the port subsector, public investments will mostly focus on the national ports while

the main emphasis in the railway subsector will be on completion of the ongoing rehabilitation of the southern main line. Following improvement and expansion of airports during earlier years, development efforts will be concentrated on completing the ongoing upgrading of air navigational aids and improvement of some runways, taxiways and aprons.

D. Roads and Road Transport

11. The systematic development of the road network started in the early 1970s and focused initially on improving national roads of importance in Luzon and Mindanao serving priority production areas and population centers. This emphasis, which was later expanded to cover the national roads in the Visayas,1/ was based on recommendations of the Philippine Transport Survey completed in 1970, and continued through the 1970s and the early 1980s. Since 1979, the Government has been according increasing importance to improving the rural network with the objective of distributing the benefits of improved transport services to the segments of population that had not been fully integrated into the mainstream of economic activity.

12. The public highway network, consisting of a total of about 162 thousand km of roads, comprises 26,000 km of national roads including 122 km of toll expressways north and south of Manila, 29,000 km of provincial roads, 17,000 km of city and municipal roads, and 90,000 km of barangay roads. Since 1981, national roads have increased by 2,770 km and all other categories of roads have increased by a total of 7,172 km. Less than half of the road network is all-weather standard. About 45 per cent of the national roads are paved, an increase from 39 per cent in 1975. Although for the most part sufficient in location and extent, the condition of main roads, particularly barangay roads, is unsatisfactory and missing bridges effectively isolate many rural communities. The poor condition of the roads is mainly due to: (i) inadequate drainage, embankment and pavements; (ii) lack of proper maintenance; (iii) damage from frequent overloading (many of the trunk roads were built long ago and intended to carry only a small number of lighter vehicles); and (iv) insufficient funds to repair flood damage caused during the rainy and typhoon seasons. Because of the deteriorated nature of the road network, vehicle operating and travel costs are generally high.

13. The major emphasis of the Government is on agricultural and rural development. To support its development objectives, the strategy for the road subsector will have a six-pronged approach: (i) road maintenance activities will be strengthened and given high priority to preserve the considerable road investments that have already been made; (ii) emphasis will be

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1/ Comprises the islands of Bohol, Cebu, Leyte, egros, Panay and Samar, and some smaller islands nearby.

given to rehabilitation of existing roads for restoring the road network to an economically maintainable standard; (iii) improvement of selected national roads will be undertaken where the existing pavement is unable to adequately and economically carry the present and immediate future traffic volumes; (iv) replacement of temporary and weak bridges with permanent structures will be carried out through a nationwide bridge replacement program; (v) consistent with the stress on agricultural and rural development, emphasis will be given to gradually upgrading rural roads to all-weather standard and expanding the rural road network, particularly in economically less-developed areas with low road densities but with good agricultural potential; and (vi) low-cost but high-return traffic management schemes will be adopted in urban areas to encourage the use of high-occupancy public passenger vehicles. The road improvement program will be complemented by road accident preventive schemes to reduce the rate of accidents and improve road traffic safety. Furthermore, the private sector will continue to provide financing for implementation of extensions of the toll expressway system in Luzon.

14. In 1985, about 1.12 million motor vehicles were registered in the Philippines, including 0.24 million motorcycles/tricycles and ten thousand non-motorized trailers. The overall rate of growth in the number of motor vehicles, including trailers, over the period 1981 to 1985 was only 3 per cent a year because of the major economic recession in the country over the recent several years. Registration of cars, utility vehicles and motorcycles/tricycles increased annually by 2 per cent, 3 per cent and 7 per cent respectively over the same period, while the bus and truck fleets contracted by 5 per cent and 2 per cent a year respectively. The average ownership of motor vehicles (including motorcycles/tricycles and trailers) in the Philippines is 20 vehicles per 1,000 population. Corresponding figures are 19 vehicles per 1,000 population in Pakistan, 34 in Indonesia and 38 in Thailand. In view of this relatively low level of vehicle ownership there is substantial potential for future increase in the size of the fleet.

15. Traffic volumes on trunk roads outside urban areas vary from 2,000 four-wheeled motor vehicles per day (vpd) to more than 15,000 vpd near large urban centers. Traffic volumes within large urban centers are considerably higher; in Metro Manila the traffic on some of the arterial roads reach up to 110,000 vpd. On provincial roads, traffic volumes are typically less than 200 vpd and on barangay roads less than 50 vpd.

E. Ports

16. The port network in the Philippines is composed of 622 public ports and 314 private ports. The public ports consist of 19 major or base ports, 75 subports (national/municipal), and 528 minor municipal ports. Many public ports have inadequate wharf working areas and transit sheds, inadequate back-up space,

obsolete cargo handling equipment, inadequate dredging, badly maintained access roads, and insufficient lighting and communications systems. These deficiencies restrict ship and cargo handling operations, resulting in both low productivity and slow ship turnaround time. Most cargo handled at private ports consists of bulk commodities such as fuel oil, limestone, iron ore, sugar, bananas, and copper concentrates. Total traffic handled at Philippine ports reached 72.1 million tons in 1982 declining slightly to 69.2 million tons in 1983. Reflecting the national economic recession, traffic fell to 62.6 million tons in 1984 and 61.8 million tons in 1985. Total traffic increased to 63.3 million tons in 1986. As the economy recovers, port traffic is forecast to increase gradually, to reach 73 million tons in 1990, equivalent to a 3.7 per cent average annual growth rate. In 1986, 56 per cent of the cargo (35.2 million tons) was domestic cargo and 44 per cent (28.0 million tons) foreign cargo. In 1986, about 27.3 million tons of cargo was handled at Government ports and 35.9 million tons at private ports. Manila is by far the largest port handling 31 per cent of all traffic (33 per cent of domestic traffic and 30 per cent of foreign traffic). The next largest ports are Batangas (15 per cent of total traffic); Cebu (13 per cent); Cagayan de Oro (11 per cent); Davao (5 per cent); Tacloban (5 per cent); and Iloilo (5 per cent). In addition to cargo, 16.1 million passengers embarked/disembarked at Philippine ports in 1986. The ports handling the largest number of passengers are Cebu (3.5 million); Manila (3.1 million); Iloilo (2.3 million); Batangas (1.9 million); and Zamboanga (1.1 million).

17. For the ports sector, a major objective in the MTDP is to rehabilitate port facilities to provide better access from rural areas to markets. The MTDP recognizes that Manila is the major and focal point for distribution in the Philippines. The Government has, therefore, placed priority on rehabilitating Manila Port, with a total of P1.8 billion included in the Public Investment Program for this purpose. In addition to rehabilitating and completing ongoing projects at major and secondary ports, the Government's strategy calls for the rehabilitation and improvement of a large number of feeder ports, which are outside PPA's management structure. The latter is viewed as an essential part of the Government's strategy to promote economic development in rural areas. MTDP also calls for increasing port management efficiency and the adoption of measures to improve and sustain the financial viability of the ports. The MTDP Port Program will require a total investment of P9,658 million. Of this amount, 52 per cent will be used for major ports, 14 per cent for secondary ports, 28 per cent for feeder ports, and 6 per cent for regional fishing ports and the construction and improvement of lighthouses. About 57 per cent of the investment will come from foreign sources and 43 per cent from domestic sources.

18. Since the late 1970s, AsDB has been fully involved in the improvement of Manila Port. Funds were provided in 1979 for the expansion of Manila International Containers Terminal (MICT)

under the Manila Port Project. The expansion of MICT will allow most of the international containers to shift from South Harbor to MICT, thereby decongesting South Harbor and allowing it to be rehabilitated without disrupting port operations. However, long delays have been experienced with the ongoing Manila Port Project during the early 1980s and substantial progress has been made only after the change of the government in 1986. The Project is now nearing completion and MICT is expected to be fully operated in 1989. In 1987, AsDB extended financial assistance to PPA for rehabilitation of North and South Harbours which is consistent with the MTDP and Public Investment Program.

19. In addition to the AsDB IBRD has actively assisted in the development of the ports sector. IBRD has funded four port projects, three of which have been completed with the fourth approved in May 1987. The completed projects financed the rehabilitation and expansion of General Santos and Davao ports, dredging equipment and container facilities at Cebu, Cagayan de Oro, Iloilo and Zamboanga ports. The fourth IBRD Port project will finance the expansion of six ports (Calapan, San Jose, Tagbilaran, Nasipit, Surigao, and Palupandan) and the rehabilitation of 16 smaller ports. IBRD was instrumental in establishing PPA's institutional framework and capability. IBRD's strategy of developing secondary ports complements the AsDB's strategy focusing on the development of Manila. Bilateral assistance for the port sector has been received from Japan, for the ports of Batangas, San Fernando and Irene, for the Leyte Industrial Estate port, and for the provision of cargo handling equipment and dredgers. The Federal Republic of Germany assisted in the development of the ports of Manila, Davao and Iligan, in the funding of the preparation of a master plan for Manila Port and in the provision of dredgers.

F. Railways

20. At present there is only railway system in the country, the Government-owned and -operated Philippine National Railways (PNR).1/ The Panay Railways Incorporated, which was 80 per cent owned by the Philippine Sugar Commission and 20 per cent by private shareholders, is no longer in operation.

21. Presently, PNR operates a network of about 670 km of main line 2/ and 80 km of single-track branch lines, including the 55-km line from Tarlac to San Jose. The main line connects Dagupan City (195 km north of Manila) on the northwestern coast of Luzon via Manila with Legaspi (475 km south of Manila) in the southeast. Most of PNR's branch lines and sidings are closed to

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1/ In addition, the Government-owned Light Rail Transit system operates in Metro Manila on a 15-km elevated double-track.

2/ Of which 30 km are double-tracked (Caloocan-Manila- and 640 km single-tracked.

traffic and some have been totally abandoned such as the Cavite-Batangas line. The traffic volumes on PNR's network have been declining over the past years and it now carries about 75,000 mt (17 million freight ton-km) and 4 million passengers (205 million passenger-km) a year, of whom almost 80 per cent are commuters traveling within Metro Manila.

22. PNR's network has many operational deficiencies, such as speed restrictions and periodic closures because of poor condition of the track and rolling stock, insufficient maintenance of the infrastructure, and occasional collapse of temporary wooden bridges. PNR also operates a limited passenger commuting service in the Metro Manila area which partly helps to alleviate urban traffic congestion. This, together with the potential of the railway to meet long-distance transport requirements, has led to a Rehabilitation Plan for PNR. This Plan envisages rehabilitation of PNR's tracks, bridges and telecommunications system, and introduction of a number of reforms in respect of its technical and operational practices, management and organization. As of July 1986, the accomplishments were rehabilitation of tracks and some bridges from Manila to Naga, partial rehabilitation of tracks from Naga to Legaspi, and rehabilitation of telecommunication lines from Manila to Legaspi. There are tentative plans to also rehabilitate the northern line from Dagupan to San Fernando, to reopen some branch lines and to expand the railway system through Cagayan Valley to Cabanatuan and to Laoag and to Matnog (Sorsogon Province).

G. Shipping

23. The domestic shipping fleet consists of about 740 vessels of more than 50 gross tons (GT). Of these, about 100 are passenger-cargo ships of more than 250 GT; 200 are ferries mainly of less than 250 GT; 400 are cargo ships, including liners and tramps; and 40 are tankers. In addition, there are a large number of barges and smaller vessels. During the past decades, the major change in the domestic fleet resulted from the introduction of container-carrying vessels. The first such vessels was introduced in 1875 and at present there are 45 full container ships and 20 roll-on-roll-off (RoRo) vessels in operation. The container ships are self-sustaining (i.e., containers are loaded and unloaded with ship's gear), and are mostly converted second-hand vessels. The liner fleet is dominated by about 15 privately owned companies, the largest of which are Sulpicio, William, Aboitiz, Negros Navigation and Sweet Lines; most vessel acquisition is financed from commercial sources. Domestic shippers are represented by the Conference on Interisland Shipowners and Operators (CISO), which has a permanent secretariat in Manila. Tramps are owned by shipping companies and chartered out, or are owned by industries, and carry grains, minerals, cement, fertilizer, sugar and forest products.

24. MARINA is responsible for developing shipping, shipbuilding and repair facilities; setting policies and regulations governing passenger fares, freight rates and route franchises; and coordinating maritime training. For domestic shipping, MARINA's objectives are to restructure domestic shipping tariffs, rehabilitate and modernize the domestic fleet, improve passenger safety, develop a ship breaking industry, and upgrade the training of seafarers and shipyard personnel. The Philippines Coast Guard (PCG) formerly was solely responsible for the registration and inspection of ships, though safety standards were not strictly enforced, resulting in a high incidence of accidents and casualties. These functions are gradually being transferred from PCG to MARINA. With IBRD assistance, the Government was expected to develop a plan of action by June 30, 1988 to improve the safety of operations in domestic shipping.

25. Between 1978 and 1986, the oceangoing fleet registered in the Philippines increased from 81 to 397 and the total deadweight tonnage increased from 1.22 million to 12.7 million. This large increase reflects Government efforts to encourage Philippine ownership and chartering of oceangoing vessels to increase the proportion of cargo carried on Philippine vessels. In 1986 there were 5,614 foreign vessel calls at Philippine ports, of which 2,187 were at Manila. About 60 international liner vessels call at Manila Port, providing regular services connecting the Philippines with Asia, Europe, the Middle East, North America and Australia. Many of these vessels provide feeder services to and from major transshipment ports such as Hong Kong, Kaohsiung, Keelung, Busan and Singapore.

26. During the period from 1978 to the mid-1980s, the share of containerized cargo through the main domestic ports increased from 7 per cent to about 55 per cent. The containerized domestic cargo is being carried by 33 liner vessels, including four RoRo ships with an average capacity of about 110 TEU. Almost all the container vessels have been converted from general cargo or lumber carriers imported secondhand from Japan. This modernization has been financed almost entirely from commercial sources. It is notable that the rapid growth in containerization took place without any substantial complementary investment in port handling equipment at the nine ports served by the vessels. Future changes in the fleet structure are likely to be dominated by the steady growth of container shipments. An analysis carried out by the Philippine Ports Authority (PPA) shows that 75 per cent of the domestic cargo by sea is suitable for containerization. Such a high container penetration percentage, however, is possible only with additional investment in container ships with a TEU capacity above the present average, port handling equipment to supplement the ships' lifting gear, expansion of the port working areas, and an increase in the number of ports serving container vessels.

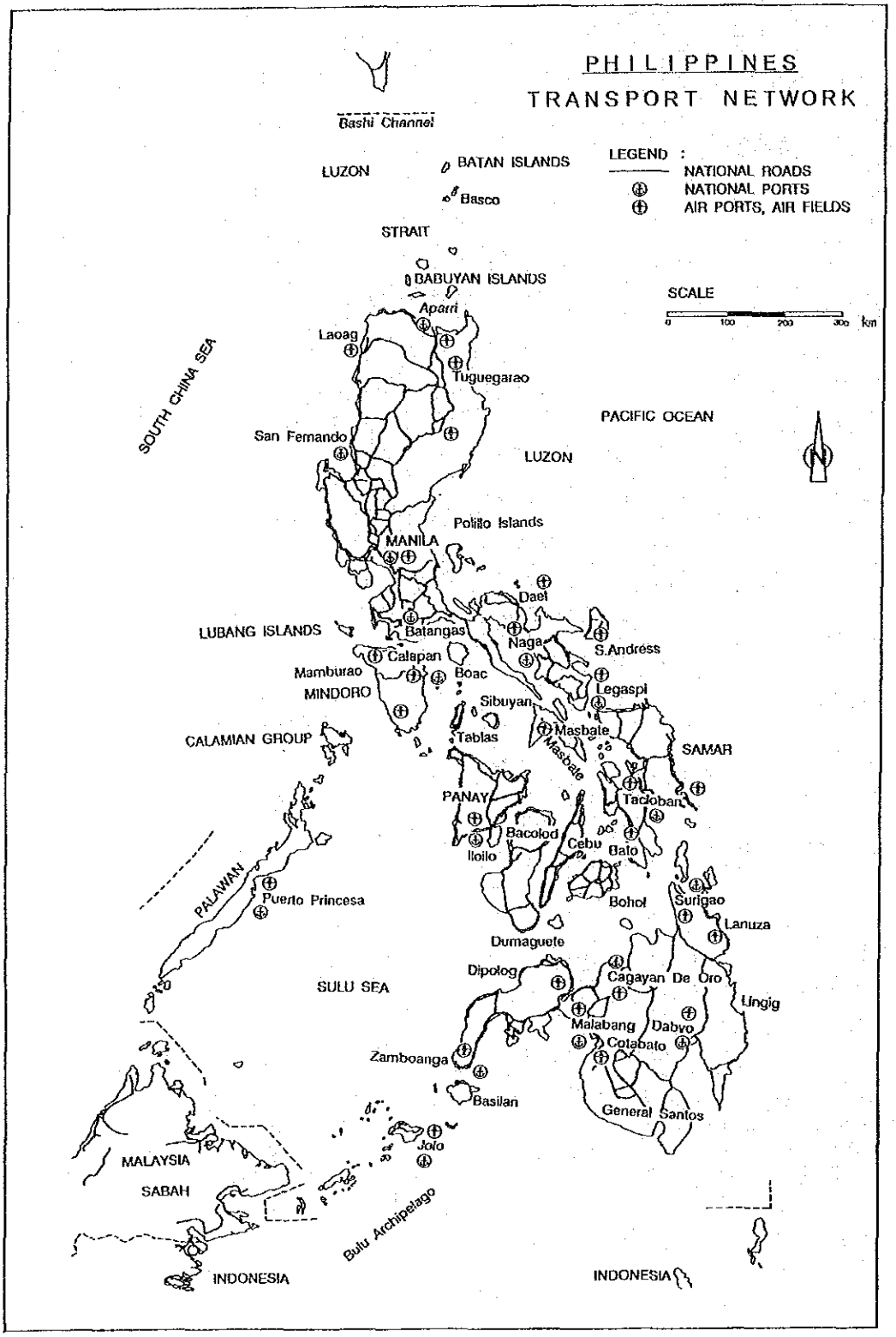
H. Civil Aviation

27. In the country there are 87 national airports, operated under the jurisdiction of the Bureau of Air Transportation (BAT), 120 private airports and landing strips, and 20 heliports (mostly in Metro Manila). Only ten of the national airports' runways are 2,000 m or longer, and only five runways have a pavement bearing strength sufficient to support aircraft heavier than the BAC 1-11. Twenty airports have runways that are partially or completely unpaved, of which 12 during dry weather conditions support the schedule services by HS-748 turbo-props of the sole domestic carrier, Philippine Airlines (PAL), which is a Government corporation. Only about one-half of the national airports are operational under all-weather conditions; the balance lack sufficient and reliable navigational aids and meteorological equipment. The national airport network is classified by BAT into four categories: (i) international airports (Five) serving international aircraft movements -- Manila International Airport (MIA), Mactan (Cebu), Davao, Zamboanga and Laoag; (ii) trunkline airports (11) serving the principal commercial centers of the country; (iii) secondary airports (37) serving towns and cities with lower air traffic densities; and (iv) feeder airports (34) serving towns and rural communities with limited air traffic potential. Mactan Airport serves as a hub station for Visayas and Mindanao airports. The network is considered adequate for present traffic levels.

28. Although the share of airfreight in total freight transported in the country is negligible, air transport is important for long- distance passenger movements between the numerous islands throughout the archipelago. In 1985, PAL carried 3.3 million passengers (1,552 million passenger-km) on domestic scheduled flights and 49,000 mt of domestic cargo (27 million freight ton-km). PAL's domestic fleet comprises 11 BAC 1-11 aircraft (turbo-fan) with 109 seats each, and nine HS-748 aircraft (turbo-prop) with 48 seats each. From time to time some capacity (e.g., Airbus 300) is released from PAL's international routes to supplement the domestic operations, particularly between Manila and Mactan. In 1985, the BAC 1-11 fleet accounted for 85 per cent of all flown domestic aircraft-km. MIA is the only international airport in the country being served by scheduled international flights.

29. Aircraft types are likely to remain more or less unchanged in the immediate future, except for the introduction of regular Airbus capacity on the Manila-Cebu route. To serve the existing fleet there is only minor need for improvement of runways; some paving and widening of runways, taxiways and aprons are required for all-weather operations at certain trunkline and secondary airports. Other improvements planned include new domestic passenger terminal buildings at Manila and some trunkline and secondary airports, air navigational aids and air traffic control services.

Map


PHILIPPINES
TRANSPORT NETWORK
Bashi Channel
LUZON
BATAN ISLANDS
Basco
STRAIT
BABUYAN ISLANDS
LEGEND :
NATIONAL ROADS
NATIONAL PORTS
AIR PORTS, AIR FIELDS
SCALE
0 100 200 300 km
Aparri
Laoag
Tuguegarao
SOUTH CHINA SEA
PACIFIC OCEAN
San Fernando
LUZON
Polillo Islands
MANILA
Daet
LUBANG ISLANDS
Batangas
Naga
S.Andress
Calapan
Mamburao
Boac
MINDORO
Legaspi
Sibuyan
Masbate
Tablas
CALAMIAN GROUP
SAMAR
Masbate
PANAY
Tacloban
Bacolod
Cebu
Iloilo
Bato
PALAWAN
Puerto Princesa
Bohol
Surigao
Lanuza
Dumaguete
Dipolog
Cagayan De Oro
SULU SEA
Lingig
Malabang
Davao
Cotabato
Zamboanga
Basilan
General Santos
Jolo
MALAYSIA
SABAH
Bulu Archipelago
INDONESIA
INDONESIA

13. SRI LANKA

SRI LANKA

A. Sector Overview

1. Sri Lanka measures about 400 km from north to south and 250 km from east to west, encompassing a land area of nearly 65,610 sq km. The topography of the country is flat in the coastal areas and mountainous toward the center of the island. Rivers flow in a radial pattern from the mountains and have no navigational significance. Sri Lanka's transport infrastructure is extensive and well laid out, with a road and rail network providing relatively easy access to even the mountainous areas. Both the road and rail network traverse a terrain rising from mean sea level to an altitude of about 2,000 meters above sea level, crossing areas with rainfall as high as 4,200 mm (200 days) to low as 990 mm (80 days) per annum. The population -- estimated to be about 16.4 million in 1987 -- is relatively evenly spread over the country, with some concentration in the southwestern and northern parts. The densely populated southwestern coastal strip of the country is largely devoted to coconut and rubber production for export, and paddy and vegetable production for domestic consumption. Tea is grown in the mountainous interior of the southern half of the country and subsidiary food crops in the dry northern part, where paddy is also cultivated under irrigation. Manufacturing is located mainly in and around Colombo, the capital and the principal port of Sri Lanka.

2. The most important sector in the economy is agriculture, which provides employment for almost half of the active labor force and contributes about 25 per cent to gross domestic product (GDP). Agricultural products also generate about 50 per cent of the country's export earnings, with tea as the most important export commodity. The growth rate of GDP in 1986 was about 4 per cent, which is below the average growth achieved during the last eight years (5.4 per cent per annum). A number of factors have contributed to the relatively unfavorable performance of the economy in 1986 -- adverse weather affecting agricultural output, deterioration of commodity prices, and the civil disturbances, among others. The 4 per cent growth in GDP resulted mainly from an expansion of the service and industrial sector, particularly the export-oriented garment industry.

3. From 1979 to 1985, overall transport sector output rose by about 7 per cent per annum, to reach an estimated 33 billion passenger-km and 1.8 billion ton-km of freight in 1985. A rapid increase in road transport accounted for the significant overall growth while the market share of the Sri Lanka Government Railway (SLR) shrank steadily. In view of the geography and structure of the economy, most movements of goods and passengers involve relatively short distances and small consignments; both these factors favor road transport. Freight moved by SLR has been stagnant over the past five years, at a level of 1.6 million tons per annum, while passenger traffic has dropped from about 70

million passengers in 1981 to 59 million passengers in 1985. The decline in railway traffic is due to a combination of interrelated factors, of which inadequate quality of service, institutional weaknesses, and the greater competitiveness of road transport are the most important. Nonetheless, SLR still has an important transport task to fulfill. Rail transport is the most suitable form of inland transport for long-distance passenger service, suburban commuters, and bulk goods traffic over long distances. The Government is currently reviewing a number of the investment strategies that emerged from the IBRD-financed Transport Sector Planning Study which aim at making greater use of the railway's limited comparative advantages. While it may thus be possible to arrest the observed declining trend of SLR operations, it is unlikely that SLR will regain its dominant position of three decades ago.

4. Roads represent the principal mode of transport. Road traffic has grown rapidly since 1977, when the Government first permitted relatively unrestricted importation of private motor cars, trucks and buses. Modes of transport other than roads and railways are insignificant. A domestic airline service linking Batticoloa, Trincomalee and Jaffna was discontinued at the outbreak of the civil disturbances in Sri Lanka. Currently, there is no organized domestic air transport, and coastal shipping is of marginal importance. However, the ports and international shipping subsector plays a vital role in the country's economy which is largely oriented toward international trade. Among the three deep-sea ports -- Colombo, Trincomalee and Galle -- Colombo accounts for more than 90 per cent of the overall cargo throughput.

B. Planning and Coordination

5. Over a long period, the development of the transport sector has been influenced by a lack of intermodal coordination and ineffective planning. The multiplicity of agencies concerned with transport has often resulted in weak intrasectoral coordination, with this situation rendereding difficult the development of an integrated policy for the sector. Realizing the need for a high level coordinating mechanism, in 1984 the Government set up the Inter Ministerial Committee for Coordination and Planning of Transport (IMCCPT) charged with responsibility for preparing the groundwork for coherent sector plans and programs, recommending appropriate sector policies, and specifying the institutional arrangements required. Related issues are realistic transport pricing, including appropriate charges for users of roads, as well as means of cost recovery, efficient utilization of energy, and the demarcation of the roles of private and public sectors in the development and supply of transport services. Membership of this Committee consists of senior representatives from the Ministries of Transport, Transport Boards and Private Omnibus Transport, Local Government, Power and Energy, and Finance and Planning.

6. In late 1985, IMCCPT, in pursuit of the above objectives, commenced a comprehensive Transport Sector Planning Study. The focus of the study is on intermodal coordination, i.e., defining the most appropriate role for each mode of transport, in view of the respective economic advantages, and establishing an investment plan and an associated transport policy in line with an optimal modal split. Major issues addressed by the Study include (i) optimum utilization of existing capacities through intermodal coordination and improvement in productivity; (ii) defining the future role of the SLR in each of its main market segments -- intercity and suburban passenger services and freight transport; (iii) coordination of private and public bus services; (iv) road user charges and funding requirements for highway maintenance; and (v) traffic planning in the Greater Colombo area. The study will present an indicative investment plan and a set of policy recommendations for the 1987-1996 period, based on economic criteria. It will then be the task of the decision makers to integrate these objectives with various social and political considerations, so as to formulate the most effective transport policy in line with overall national policy priorities. The various Ministries and agencies concerned with transport within the Government are currently reviewing the recommendations made by the study.

C. Investment

7. The Government's general objective in the transport sector is to rehabilitate and improve existing assets. This policy, which is applicable to both roads and railways, has evolved following a long period of neglect of transport sector needs, resulting in run-down facilities and deterioration of services. The upsurge in economic activity from 1977 to 1982 triggered by the Government's economic liberalization program in 1977 has generated an increased demand on transport services with which the transport sector -- as a consequence of the neglect in the past -- is unable to cope. Recognizing this, in 1983 the Government began to place greater emphasis on the rehabilitation of transport infrastructure. The increased priority accorded to this is reflected in the annual budget allocations to the transport sector, which rose steadily between 1982 and 1986, accoounting for 3.6 per cent of the overall capital budget in 1983, 6.7 per cent in 1984, 8.8 per cent in 1985, and 12.2 per cent in 1986. The total allocation to the transport sector in 1986 amounted to Rs 3.7 billion ($132 million), of which about one-third was for roads.

8. The Government's objectives and strategy for the road subsector are consistent with those for the transport sector as a whole. Based on the Transport Sector Planning Study's recommendations, the Government has prepared a Medium-Term Investment Program for the Highway Sector (1987-1991) which, among other things, covers the rehabilitation of about 12,000 km of high priority roads. This Program involves a total investment of about Rs 12 billion, which will be funded from general revenue

and from external sources. The importance which the Government attaches to road rehabilitation and maintenance is highlighted by the recent revision of the Public Investment Program for 1988. As a result of the relatively unfavorable overall economic performance in 1986, the Government had to reduce its budget allocations by an average of 30 per cent, as against the requests made by the various Ministries. However, reductions were not made across the board, but on the basis of priorities determined by the Committee of Development Secretaries. Overall allocations to the road subsector have been among the least affected. The allocation of funds for rehabilitation and maintenance for fiscal year 1986 totals Rs 960 million, as compared with Rs 660 in the previous year.

9. Following the signing of the Peace Accord in late July 1987, a National Task Force (NTF) was appointed by the Government in early August 1987 to assess the losses to private assets, lives and livelihood, and the damages to public assets and infrastructure, over the past four years of civil disturbances. NTF was headed by the Secretary of the Ministry of Rehabilitaion, and the secretaries of line ministries were given responsibility to assess the damages to public assets under their respective ministries. Soon after the submission of the NTF report, at the request of the Government, a joint IBRD AsDB mission visited Sri Lanka from September 1987 to assist the Government in assessing the cost of rehabilitation of various sectors affected by the civil disturbances and in preparing a report for consideration by a Special Meeting of the Aid Group for Sri Lanka. At this meeting the rahabilitation and reconstruction requirements were estimated in the order of $400 - $500 million, spread over the three-year period 1988-1990; this includes an expected contribution from the Government of 20-25 per cent.

10. In the process of formulating a comprehensive program encompassing various sectors for the economic recovery and social rehabilitation of the Northern and Eastern Provinces, it has been recognized that a functioning transport system was a pre-requisite for implementing the comprehensive program and reestablishing economic activity in the two Provinces. With this in view, the Government has prepared an Emergency Road Restoration Program to expeditiously restore road infrastructure in these Provinces to a motorable standard. The Progrm, which covers severely damaged sections of the network, envisages, over the three-year period 1988-1990, the restoration of about 900 km in the Northern Province and 1,000 km in the Eastern Province, including repair and/or reconstruction of culverts and bridges. The Program also provides for 12 ferry vessels and a motor launch. The total cost of the Program will be in the order of $60 million. AsDB has extended a loan amounting to $20 million which provides for the restoration of the main traffic arteries and some of the principal roads covered under the Program and will help restore road transport over a major portion of the two Provinces. Apart from the AsDB assistance, other donors including IDA and India are expected to extend assistance for the Program.

D. Roads and Road Transport

11. Sri Lanka has a relatively well developed and dense road network that provides access to all parts of the country and that comprises about 83,000 km of roads -- equivalent to 1.3 km of road sq km of territory. Nearly 30,000 km are paved bituminous roads and 53,000 km gravel and earth roads. The roads are ranked in a hierarchical order as 'A', 'B', 'C', 'D' and 'E' class roads. Class 'A' and class 'B' roads represent the backbone of the road transport system, connecting the National Capital with the District Capitals (class 'A') and linking the latter to other important district towns and villages (class 'B'). The remaining three categories comprise minor local and agricultural roads, some of which are motorable during dry weather only. About 25,100 km of the roads -- of which 8,800 km are class 'A' and class 'B' roads -- are administered by the Road Development Authority (RDA) under the Ministry of Highways (MOH); the rest are under the jurisdiction of the Ministry of Local Governments and other Government agencies.

12. The introduction of an economic liberalization program in 1977 reducing existing restrictions on vehicle imports gave rise to an upswing in vehicles imports and registrations in the subsequent years, leading to the modernization of the vehicle fleet, which until then had largely become obsolete. By the end of 1986, the motor vehicle fleet totalled about 560,000 vehicles, compared with 208,000 vehicles in 1977. Of the total registered fleet in 1986, passenger cars accounted for about 28 per cent, trucks 19 per cent, buses 7 per cent, motorcycles 33 per cent, and tractors and other motor vehicles 13 per cent.

13. Current traffic volumes in terms of average daily traffic (ADT) vary considerably on different routes. Main routes radiating from Colombo and the central part of the island to the northern, western and southwestern parts register the highest traffic flows, with ADTs often exceeding 3,000 vehicles per day (vpd). Traffic tapers off to an average of 400 vpd on routes leading from the center to the eastern parts. The share of heavy vehicles on the main routes is generally high, with an average of 40 per cent of total motorized road traffic. However, the share of heavy vehicles in total traffic -- if measured in terms of equivalent standard axles -- would be much higher, probably about 80 per cent. The number of standard axles, among other factor, determines the wear and tear that vehicles inflict on road pavament. The rapid growth in heavy commercial vehicles that have been imported in the years following 1977 has dramatically increased the number of standard axles on the roads and, as a consequence, has accelerated the pace of pavement deterioration. This situation has been exacerbated by the frequent practice of loading vehicles beyond the legally prescribed weight limit. With a view to setting a limit on the maximum permissible axle load of heavy commercial vehicles and to amending the existing legislation accordingly, the following actions, which are prerequisite to the proposed revision of legislation, have been initiated by the Government: (i) a review of the Transport

Sector Planning Study in the light of the proposed design strategy for roads; (ii) traffic counts and axle load surveys to ascertain the number of standard axles and the amount of overloading and, based on this, to determine appropriate pavement designs; and (iii) an evaluation of existing road pavement and bridge conditions in order to establish the actual carrying capacity of both bridge and road pavament as against anticipated traffic volumes. Traffic counts and axle load surveys are being carried out under the ongoing AsDB financed technical assistance for institutional strengthening of the Traffic and Planning Unit within the Road Development Authority (RDA), which is also responsible for carrying out the pavement and bridge survey.

E. Railways

14. The railway system in Sri Lanka is operated by the Sri Lanka Railways (SLR) as a Government department under the Ministry of Transport. The SLR network comprises a total of 1,420 track kilometers, of which 1,359 km are broad gauge and 61 km narrow gauge. The system connects about 130 stations for both passenger and freight services.

15. Over the past three decades, SLR encountered serious difficulties in retaining its traditional role as the principal carrier of both passengers and freight. Freight traffic declined steadily from 351.2 million ton-kilometers in 1974 to an estimated 232 million ton-kilometers in 1985. During the same period, passenger traffic decreased from about 3,000 million passenger-kilometers to 2,100 million passenger-kilometers. With regard to freight, SLR has steadily lost part of its traditional main commodities, particularly plantation crops. The principal flow of traffic consists of a few main commodities that make up more than 90 per cent of the total freight traffic. These commodities are petroleum, fertilizer, clinker, clay, cement, flour and limestone.

16. The decline in railway traffic is due to a combination of interrelated factors. SLR has been exposed to growing competition from the road transport industry that has not only captured a part of SLR's short-distance traffic for which railways are normally considered to be relatively less cost-efficient, but apparently also longer-haul freight traffic-reflected in a steady decline in the average lead of goods carried. The average journey length of passengers has likewise decreased, from about 70 km in 1981 to 43 km in 1985, which partly explains the success of bus transport in making inroads into SLR's passenger traffic. As an added reason, SLR's quality of service is widely considered to be inadequate and it has established a reputation as an unreliable carrier. Poor signalling, inadequate maintenance, and non-availability of sufficient rolling stock, as well as institutional weaknesses, have exacerbated this situation. As a consequence, the financial performance of SLR has constantly deteriorated, culminating in overall loss of Rs 1,057 million in 1985.

F. Ports and Shipping

17. Three ports handle deep-water vessels: Colombo, Tricomalee and Galle. The ports are planned, managed and operated by the Sri Lanka Port Authority (SLPA); Colombo is operated directly by SLPA, while the other two ports are operated through regional managers. SLPA was set up as a statutory body in 1979 and since then has streamlined port operations, speeded up development of ports under its jurisdiction, and established an effective planning system, and remits substantial tax revenues to the Government.

18. Colombo has the equivalent capacity of 15 deep-water berths, with mooring inside the breakwaters for 22 ships. It has two container terminals. The first terminal completed in 1980, Queen Elizabeth, has been developed from existing breakbulk quays and has limited land area. It consists of two berths with 10.5 m of water and equipped with 2 cranes, with a third due to be operational by 1989. A container freight station is located adjacent to the berths and there is storage for 2400 TEU. The second terminal, Jaye Container Terminal, was purposely built and presently consists of two berths (620 m) with 4 jumbo cranes. Depth of water alongside is 13 m. There is storage for 5256 TEU and a container freight station is located on the terminal. In 1986 the port handled 341,000 TEU, of which approximately 65 per cent were transshipment with approximately 50 per cent handled at each terminal. 1987 throughput was around 400,000 TEU, with 60 per cent handled at the Jaye terminal. Trincomalee has a natural harbor able to provide anchorage for more than 100 ships. Colombo is the most important port in Sri Lanka, followed by Tricomalee and Galle.

19. The Government-owned Ceylon Shipping Corporation (CSC), established in 1971 and now under the Ministry of Trade and Shipping (MOTS), constitutes the National Merchant Marine. In 1981 CSC had in its vessel fleet a total of eight break-bulk cargo vessels with a freight capacity of 86,000 dwt (or 111,000 cubic meters of dry cargo space), most of the ships having been built some 20 years ago. There is a tanker service with a capacity of 30,000 dwt owned by the Lanka Tankers (a subsidiary of CSC), used to import about one-fourth of the country's crude oil from the Persian Gulf. Total tonnage carried by CSC has grown significantly, from 305,000 tons in 1977 to about 800,000 tons in 1982, equivalent to a share of about 13 per cent in the total Sri Lankan marine freight.

G. Civil Aviation

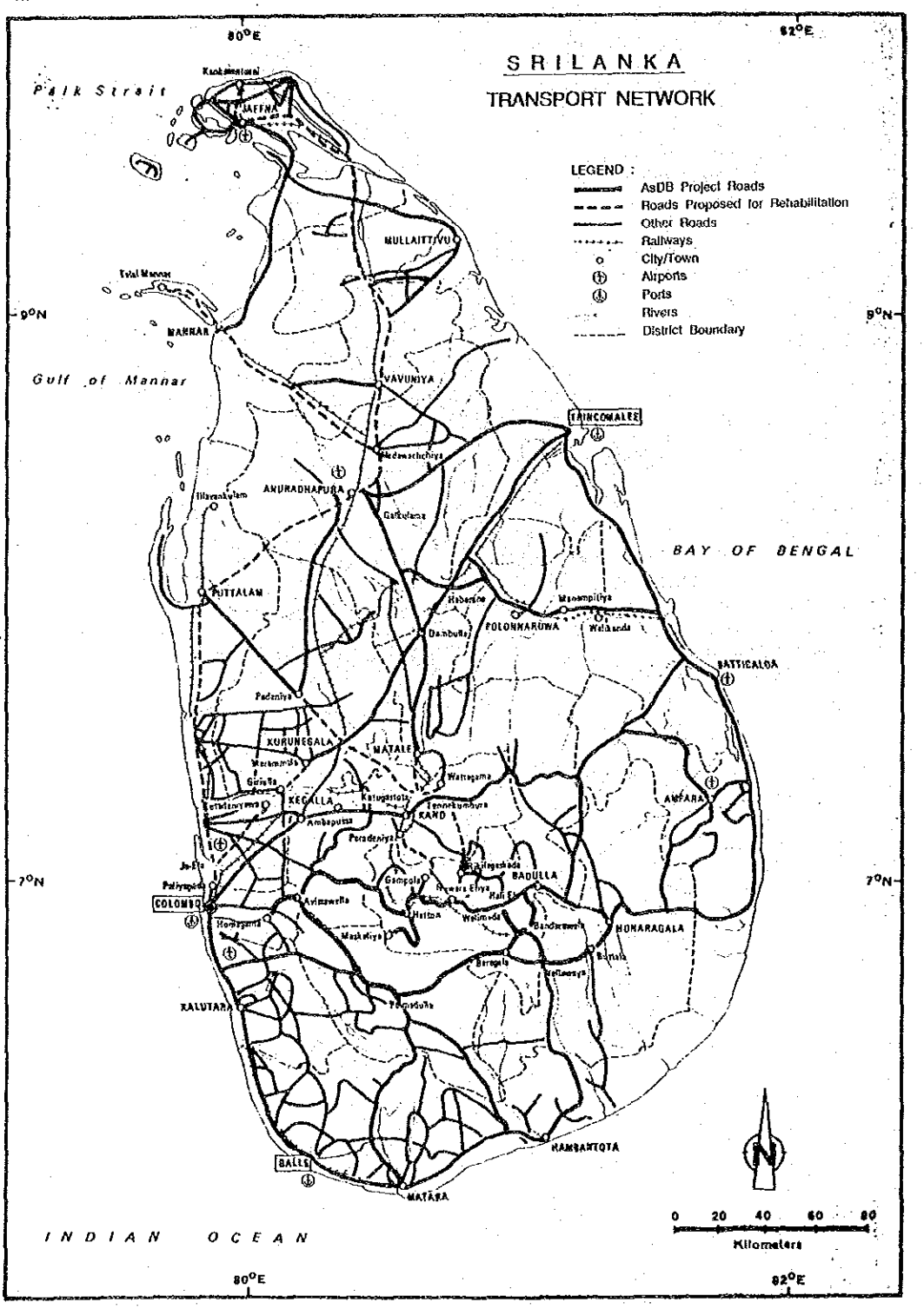
20. Responsibility for airports rests with the Director of Civil Aviation (DCA) under the Ministry of Defence. During the 1970s and early 1980s, the DCA headed an Airports Authority (AA), a statutory Government authority that administered all airports on behalf of the Minister of Defense. In March 1983 the Authority was registered as a company under the Companies Act and

renamed Airport and Aviation Services (Sri Lanka) Ltd. (AAS Ltd.); this company now performs all the administrative duties of the former AA. The company is jointly owned by the Government (98 per cent of the shares) and Air Lanka, the national carrier, and has directors appointed by the Government and acts on the direction of the Minister of Defense. This arrangement appears to be working satisfactorily.

21. Colombo is the only international airport, but suffers from a weak runway. Consultants have been provided under Canadian bilateral assistance to prepare an airport master plan to cover necessary runway repairs and upgrading of facilities to cater for traffic up to year 1990 (Phase I) and eventually to 2000 (Phase II). The master plan was revised by another group of consultants, partly financed under Norwegian bilateral assistance, who are currently helping AAS Ltd. implement Phase I of the Plan. A new passenger terminal building was completed in April 1987.

22. Apart from a thrice-weekly ferry to India from Talai Manner, virtually all passenger traffic into and out of Sri Lanka is by air. Air Lanka, created in 1979, is the national airline. Its total fleet comprises five aircraft. Although the ownership of the airline was originally planned as a 60/40 joint venture between the Government and private investors, so far the Government capital contribution has been limited to Rs 300 million and no private investor has in capital. The airline has thus turned to heavy borrowing from commercial banks, leaving it in a rather precarious financial situation.

. Map


SRILANKA
TRANSPORT NETWORK
LEGEND :
AsDB Project Roads
Roads Proposed for Rehabilitation
Other Roads
Railways
City/Town
Airports
Ports
Rivers
District Boundary
80°E
82°E
9°N
7°N
Palk Strait
Gulf of Mannar
BAY OF BENGAL
INDIAN OCEAN
JAFFNA
MULLAITTIVU
MANNAR
VAVUNIYA
TRINCOMALEE
ANURADHAPURA
PUTTALAM
POLONNARUWA
BATTICALOA
KURUNEGALA
MATALE
KEGALLA
KANDY
AMPARA
BADULLA
COLOMBO
MONARAGALA
KALUTARA
GALLE
MATARA
HAMBANTOTA
0 20 40 60 80
Kilometers

14. THAILAND

THAILAND

A. Sector Overview

1. Thailand has an area of about 542,000 sq km and is divided into the Southern, Central, Northern and Northeastern Regions. The population in mid-1987 was estimated at about 54 million and has been growing at an average annual rate of 1.9 per cent during 1982-1987. Except for some hilly areas in the Northern and Southern Regions the terrain is generally flat and there is little variation in climate. During 1979-1983 Gross Domestic Product (GDP) increased at a rate of 6.1 per cent annum in real terms and since 1984 at an annual rate of 6.1 per cent. GDP per capita was $810 in 1986. Agriculture plays a major role in the economy of Thailand accounting for about 22 per cent of GDP, 64 per cent of employment and about 46 per cent of export earnings in 1986. The sector has been growing at an annual rate of about 2 per cent since 1980. The manufacturing sector has been growing rapidly averaging an annual rate of about 8 per cent since 1975 and in 1980 accounted for about 21 per cent of GDP. Although industry is generally concentrated in Bangkok, the Government is encouraging its dispersal to other areas.

2. The relatively rapid growth of Thailand's economy has caused significant demands on the transport sector. Increasing manufacturing and agricultural production led to a growing demand for transportation facilities both in respect of transport from local market to internal consumption centers and points of exportation. During the period transport demand steadily grew both in terms of ton-km and passenger-km. The growth performance of the overall economy has required substantial infrastructural support in all transport modes including a systematic road improvement and maintenance program.

3. The main modes of transport in Thailand are roads, railways and inland waterways. The highest concentration of traffic is over the main arteries consisting of national highways, railways and inland waterways. The total length and coverage of the transport network appear adequate for the next several years, but the condition of the network particularly of provincial and rural roads needs substantial improvement.

4. Of the freight transport on all modes roads generated about 76 per cent in terms of ton-km, followed by railways at about 15 per cent and inland water-ways at about 9 per cent. freight traffic is concentrated in the northern corridor extending from the Gulf of Thailand and along the traffic axes radiating from Bangkok to the south and northeast. The direction, composition and size of traffic flows reflect Bangkok's central location and dominance as the country's principal port and consumption center, the generally rural character of the economy and the importance of the Central Region in agricultural production. About 30 to 50 per cent of all freight is agricultural produce, of which about one half is

exported, mostly through the Port of Bangkok and the Ports of Si Racha and Sattahip along the eastern seaboard. Of the total public passenger traffic for both road and rail, road transport is estimated to account for about 85 per cent.

5. The distribution of freight traffic between roads, rail and waterways during the 1990s is likely to follow the general trend of the last ten years. With the improvements made in the 1980s to inland waterways and railways under assistance from IBRD, these transport modes are expected to serve as medium to long distance bulk carriers, and roads will increasingly dominate short haul and low volume traffic. Nevertheless, roads would continue to absorb the largest part of freight transport because of the competitiveness and flexibility of the trucking industry, its ability to economically handle small consignments, and the continued growth, dispersal and diversification of agricultural activities.

B. Planning, Coordination and Policy

6. The Ministry of Communication (MOC) is responsible for transport planning, coordination and policy. Through its own departments, or through transport enterprises under its jurisdiction, it is concerned with all transport operations. The National Economic and Social Development Board (NESDB), which is under the Office of the Prime Minister, participates in transport planning by setting overall development objectives and by coordinating sectoral development plans. NESDB also liaises directly with the modal agencies to achieve consistency among sectors and within the subsectors. In addition, a Transport Planning Unit (TPU) was set up within MOC in 1975 to act as the focal point for transport planning and coordination. TPU, through its Transport Management Information System, is providing an improved data base for decision-making to MOC and the various transport agencies.

7. In the development of the various modes the Government has allowed the transport industry, particularly freight transport, to develop in a relatively unregulated and unrestricted manner. As a result, the road transport industry is competitive, in particular for the short-to-medium-haul higher value commodities, the railway and inland waterway transport have retained a significant share of transport for certain lower value bulk commodities while coastal shipping mainly serves the ports on the east coast of the southwestern peninsula.

8. To assist with transport planning and the formulation of future Government policies with regard to road, rail and inland waterway transport, specific studies were undertaken. TPU undertook two studies: (i) a study of road and inland waterway user charges which will review and analyze current levels of taxation, adequacy of revenues and effects of taxation on modal development, and recommend an improved taxation and collection system; and (ii) a study relating to energy conservation in the

transport sector with the objective of recommending medium and long-term measures aimed at saving energy in the transport sector and facilitating the fuller development of energy efficient transport. These studies have been completed by mid 1980s. The marketing policy of the State Railway of Thailand (SRT) has also been reviewed. Subsequently comprehensive studies were undertaken and completed for development of coastal shipping (1984), repair facilities for dredging plants (1986), and container handling systems (1988) under JICA technical assistance. A study is currently underway for development of effective port management and operations system. While recommendations of these studies had been expected to form the basis of the overall sectoral policies of the Government when the studies were initiated, the Government's action on these aspects are yet to be seen.

C. Investment

9. The share of the transport sector in development expenditures, which was 20 per cent during the Third Plan (1972-1976), declined to about 15 per cent in the Fourth National Economic and Social Development Plan (1977-1981) mainly because of the comparatively heavy earlier investments in the national highway network which tapered off during the Fourth Plan. The resource allocations under the Fifth Plan (1982-1986) were made with emphasis on energy efficient modes i.e., water and rail transport including inland waterways, shipping and ports. Under the Sixth Plan (1987-1991), the Government intends to achieve further structural adjustment required for attaining higher economic growth in the context of public sector reform and changes in economic policy including deregulation and the further liberalization of economy, thus the energy sector being given the critical role in the industrialization program of the Government. Transport and communications have also been identified as a crucial areas for the growing industrial sector.

D. Roads and Road Transport

10. In terms of traffic volume, network length and investments, roads represent the most important transport infrastructure in Thailand. National highways, which constitute the primary road system, total about 15,700 km, of which about 98 per cent is paved to bitumen standard. They generally radiate from Bangkok to the major towns and cities and the nation's borders. The national highway system has been largely improved and paved. However, it is expected that a few sections will need capacity expansion or strengthening to meet increasing traffic volumes.

11. Provincial roads -- the secondary road system -- connect provincial towns and other major population centers with the national highways, and total about 29,900 km. Despite increasing traffic requirements most provincial roads are in poor

condition. About 50 per cent of the secondary road system is of bitumen or poor gravel standard; the remainder is unpaved and often impassable in the wet season. The provincial road network has been increasing by 1,000-2,000 km a year, as the more heavily trafficked rural roads are reclassified as provincial roads. Improvement of the provincial road system will be a major part of the road development program over the next few years.

12. Rural roads -- the tertiary road system -- provide local access and connect villages and hamlets with the national highway and provincial road network, railways and inland waterways. The total length of rural roads has been estimated at 40,000 to 60,000 km; but inventory data are incomplete. Most of such roads are unpaved and are not passable in wet weather. Rural roads are administered by a number of national, provincial and local agencies. The Government with assistance from IBRD has engaged consultants to undertake a study of the rural road network which will cover, inter alia: (i) a complete inventory of such roads; (ii) development of road classification criteria; (iii) review of existing organizations and their responsibilities; (iv) recommendations regarding appropriate institutional arrangements; (v) maintenance methods and programs; and (vi) a long-term program for improvements.

13. During the 1970's in line with Thailand's industrial development and continued agricultural growth, the number of trucks has increased from 36 per cent of total vehicles in 1970 to 50 per cent in 1979; cars accounted for 47 per cent and buses for 3 per cent. The vehicles registered outside the Bangkok metropolitan area increased from about 60 per cent to 70 per cent of total registrations during the period indicating an increasing need for transport in rural areas. There are no restrictions limiting the supply of motor vehicles except that the importation of types of vehicles which are assembled in Thailand is prohibited and the duties and taxes are high for imported vehicles in order to protect the local motor vehicle assembly industry. The total number of registered motor vehicles is estimated to have increased from 833,000 in 1979 to the order of 1.7 million in 1986.

14. Traffic flows on the network reflect the dominant position of Bangkok in the economy. Traffic is highest on the approach roads to Bangkok, where it ranges from 10,000 to 30,000 vehicles per day (vpd) and decreases sharply as the distance increases from the capital . Traffic on some provincial roads is over 1,000 vpd. Traffic on rural roads is often less than 100 vpd. Average annual traffic growth has been generally higher than both the increases in the motor vehicle fleet and the motor fuel consumed which indicated a slightly more intensive utilization of existing vehicles and growing uasage of energy efficient vehicles. Growth rates on individual roads have varied widely, but have been higher in the Northern, Northeastern and Southern Regions, particularly on roads that have been improved recently.

15. Public bus transport is closely regulated. The Government-owned Transport Company, Ltd. has the franchise for all main routes but operates on only a few highly trafficked routes and subcontracts operations on most others. Bus fares vary according to road conditions and distances.

16. The authority to limit the number and size of trucking firms and control of freight rates is vested in the Government, but the trucking industry has developed without restrictions. The Government-owned Express Transport Organization (ETO), the largest trucking firm, owns about 1,500 trucks and hires 5,000-6,000 others. Under the Government-sponsored service agreements ETO has sole rights for access to the Port of Bangkok, transit traffic to the People's Democratic Republic of Laos and traffic of the Government-owned manufacturing companies. While ETO's services are generally satisfactory, its rates are usually higher than those of private truckers. Most private commercial vehicles are owned and operated by small entrepreneurs (usually having one or two trucks). Medium and large firms (having 10 or more trucks) are generally concentrated in the Bangkok area except for a few large firms performing specialized functions in the other region. The small entrepreneurs are often freight agents, obtaining cargo for themselves and for independent truckers. Freight rates are usually negotiated and not advertised, but are competitive and cost-related. In rural areas, the freight transport rates on unimproved roads are two or three times those on improved roads.

E. Railways

17. The State Railway of Thailand (SRT), an autonomous state enterprise, is mainly a trunk line carrier with a network length of about 3,800 route-km. The lines are single track except for a double track section of some 100 km near Bangkok. Four lines radiate from Bangkok to the north, northeast, east and south of the country. Following a recent decision to develop Sattahip as a commercial deep-sea port, the extension of the railway line from Chachoengsao on the Eastern Line to Sattahip port was undertaken in 1981, being entirely financed by the Government.

18. SRT carried about 6.5 million tons (2,600 million ton-km) and 87 million passenger (9,600 million passenger-km) in 1986. The freight transport comprises mainly bulk cargo, such as cement, petroleum products, clinker and marl and rice products. While roads and, to a lesser extent, inland waterways compete with rail, SRT has generally maintained its market share of transport of these commodities.

19. SRT is generally a well-managed enterprise. Because of generally low tariffs which are not in line with operating costs, SRT has incurred losses over the past few years and the shortfalls have been met by the Government. SRT is improving its operational performance through, inter alia, modernizing rolling

stock and rehabilitating and strengthening track and bridges to meet the increasing traffic demand with the assistance of IBRD. Further assistance from bilateral agencies is also being sought. Also, upward adjustment and simplification of tariffs is now under consideration by the Government. SRT is developing a plan for its continued improvement under the Fifth Plan.

F. Ports

20. During the last 10 years the volume of Thailand's dry imports has grown at the high rate of about 11 per cent a year and its exports have increased by 9-10 per cent a year. The available port facilities are rapidly approaching their capacity and further expansion and improvement of port facilities is considered vital to avoid the lack of adequate port facilities becoming a constraint to the expected expansion of the seaborne trade of the country.

21. The seaborne trade of Thailand includes: (i) conventional breakbulk and containerized imports and exports mainly shipped through the public port facilities at Bangkok (Klong Toei); (ii) agricultural produce exported in bulk through a private pier at Mah Boon Krong (Si Racha) and the deep sea anchorage at Ko Sichang; and (iii) rubber and tin exports shipped through Songkhla and Phuket Ports. Petroleum products are mainly handled through Si Racha on the eastern seaboard and Songkhla and Phuket.

22. There are some 35 sea ports in Thailand which can be broadly divided into two groups according to location, size and function. The first group includes Bangkok, Si Racha and Sattahip--all of which are within 200 km of the capital and serve as Thailand's main external trade outlets. Bangkok Port (Klong Toei), operated by the autonomous Port Authority of Thailand (PAT), is the main international public port of the country. It is a river port situated about 30 km upstream from the mouth of the Chao Phraya River and its approaches need constant dredging. The Bangkok port system (inclusive of the private wharves located along Chao Phraya River) handles about 90 per cent of Thailand's international seaborne traffic and about 35 per cent of its coastal traffic. In 1979 imports (excluding bulk liquids) handled by the Bangkok port system totalled 6.40 million metric tons (mt) while exports (including tapioca, maize, sugar and rice) totalled 12.70 million mt. Bulk agricultural exports are handled at a deep water anchorage off Si Racha. Si Racha is also the port of discharge for most oil imports.

23. The traffic through the Port of Bangkok has been growing at 9-10 per cent annum in recent years and its capacity to handle increasing external trade is now approaching its limits and costs arising from port congestion are expected to reach uneconomic levels in the near future. As an interim solution to avoid congestion at Bangkok, the Government has improved the former naval port at Sattahip, for general cargo and container

traffic. Sattahip, which was originally developed as a naval port under the control of the Royal Thai Navy, was eventually was handed over to civilian control (under PAT) in late 1979. However, mainly because of the lack of port related infrastructure and of incentives to port users, even after completion of some improvement works by the government, the port is still grossly underutilized. As a long-term measure, a plan to develop a second public port at Laem Chabang (about 120 km south of Bangkok and 50 km north of Sattahip) was subsequently decided. It took more than ten years for various studies and discussions before the final decision was made and construction works have been recently initiated under OECF assistance.

24. The second group consists of the southern ports, which are scattered over 750 km of the southern coast. These ports have primarily regional significance. About half of them serve exclusively as fishing ports, while the other half serve coastal transport, imports, and exports and as fishery ports. To improve coastal port operations and capabilities, IBRD provided assistance mainly to improve maintenance performance. further, to provide a more efficient and economic outlet for export traffic from the Southern Region, to stimulate industrial development in the Region and to encourage direct imports from overseas (thereby avoiding the need for transshipment through Bangkok Port), the Government proceeded with the development of deepwater ports at Songkhla and Phuket. In 1978 the AsDB extended financial assistance for the preparation of long-term master plans and detailed engineering of the first phase development of these two deep sea ports at Songkhla and Phuket. This was followed by an AsDB loan for the construction of these ports in 1982. The deepwater ports at Songkhla and Phuket were completed in 1988 and have been fully operational since early 1989.

G. Shipping

25. A number of foreign shipping lines provide services to the main ports of the country including over 20 lines which call at the main ports of the Southern Region of which 10 are for serving Japan and the Far East, 9 for Europe and the USA and one for Black Sea destinations. Thailand's own foreign-going mercantile fleet includes 111 vessels totallig 547,400 deadweight tons (dwt). Of these, 57 are breakbulk cargo carriers (totalling 307,600 dwt), 52 bulk carriers (totalling 238,300 dwt) and 2 specialized coastal gas carriers (totalling 1,500 dwt). The cargo vessels range in size from about 5,000 to 15,000 dwt. In addition, there are between 20 to 30 small locally owned coasters and bulk carriers with tonnages ranging from 1,000 to 5,000 dwt.

26. With a view to promoting shipping and shipbuilding industries and co-ordinating projects and plans related to the merchant marine and maritime navigation, the Mercantile Marine Promotion Commission Board was set up in 1979 in accordance with the Royal Decree of the Mercantile Marine Promotion Act (1978).

This was followed by establishing the office of Mercantile Marine Promotion Commission (MMPC). In 1983, the Government decided that MMPC should be responsible for policy-making and supervision of coastal shipping in Thailand. While the promotion of merchant marine and coastal shipping needs to be supported, at present the number and capacity of shipyards are not adequate to meet the requirements for building and repairing ships for both coastal and international shipping. Various studies have been undertaken by the MMPC, the Board of Investment and other government agencies concerned in this connection, however, the Government's action thereon is yet to be seen.

H. Inland Waterways

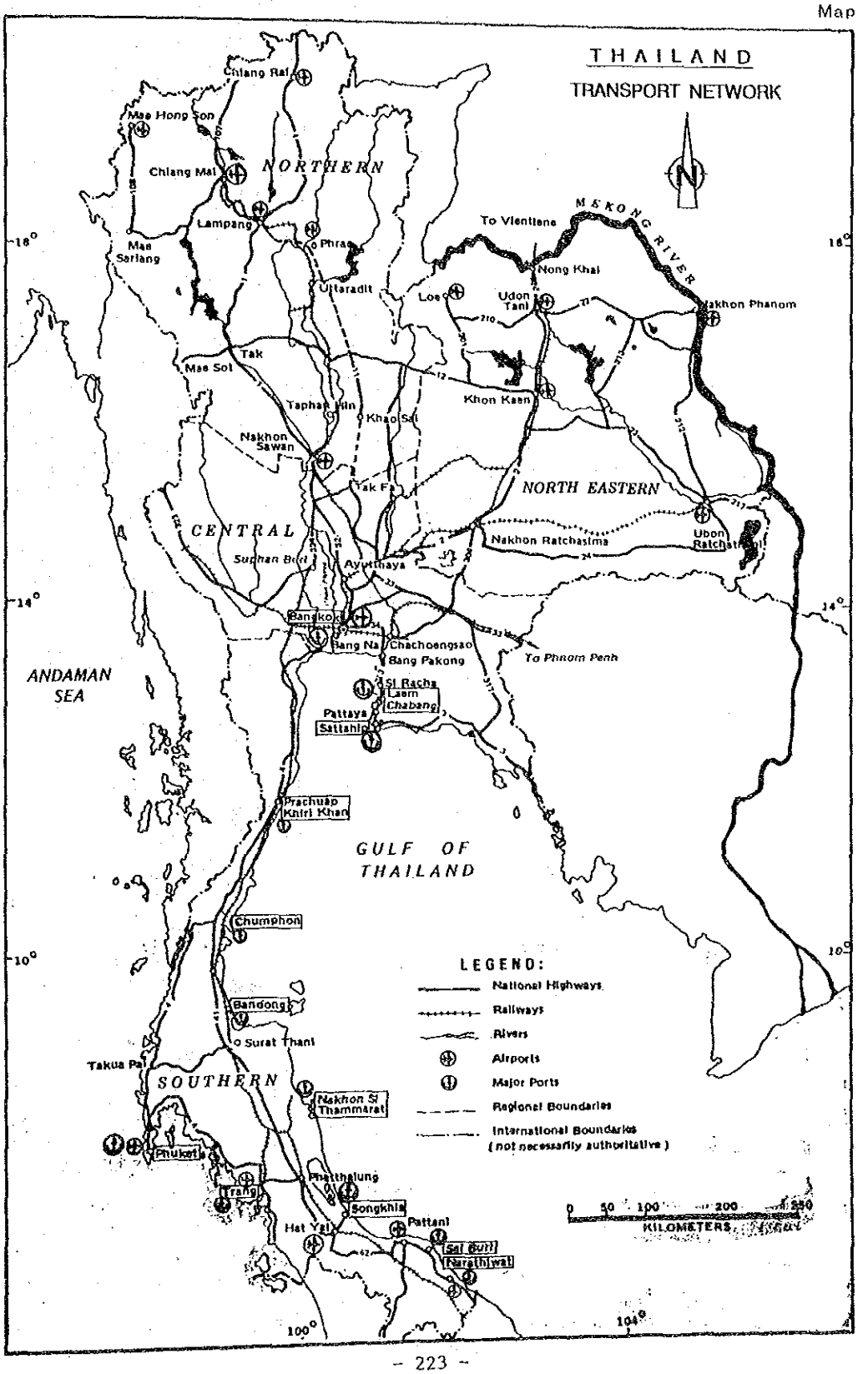
27. The main inland waterways network consists of the Chao Phrya River system in the Central Plain, with inter-connecting canals. About 1,600 km are navigable in the wet season and 1,100 km in the dry season. Of the 8.6 million tons transported abut 6 million tons are sand and gravel extracted from the rivers for use in construction in Bangkok. The remainder consists of agricultural commodities, mainly rice, also being transported to Bangkok. Traffic is unbalanced with about 93 per cent southbound and 7 per cent northbound. Lack of year-round navigability , the high cost of dredging and needs of water for increased irrigation and power generation are the main limitations on inland water transport. As a result, inland waterways traffic is decreasing to the north of Ayutthaya (about 110 km north of Bangkok) even though this section reaches into the heartland of Thailand's most productive agricultural region; and large quantities of agricultural and other bulk commodities, which are in principle suitable for barge traffic, are carried mainly by road.

28. To increase utilization of the inland waterways potential for low-cost transport, IBRD financed a project under which the shallow river sections were deepened. The project also included, inter alia, improvements at two river ports, Nakhon Sawan and Taphan Hin, to facilitate transshipment between water and road or rail. This project originally scheduled for 1981-1983 was completed with several years delay. While traffic (excluding sand and gravel) from the area north of Ayutthaya was expected to increase fourfold from the previous level of 0.6 million tons per year, mostly consisting of rice and maize, such an impact of this Project is yet to be seen.

I. Civil Aviation

29. Thailand's international and domestic air transport is centered at Don Muang airport near Bangkok. International passenger traffic at Don Muang has grown at an annual average rate of 14.7 per cent since 1967 and totalled about 5 million passenger movements in 1979. Following a study which considered alternatives of either building a new airport, or expanding existing facilities, the Government has decided to improve Don

Muang at an estimated cost of B5.074 billion. The first stage of this improvement program involving mainly the construction of a new runway and ancillary facilities was completed under OECF financial assistance. Two other international airports, Hat Yai in the south and Chiang Mai in the north, are capable of handling commercial jet aircraft. In addition, there are 40 airfields of various sized of which 17 handle scheduled flights. Domestic public air transport is being provided by Thai Airways Company, Ltd. and Thai Airways International, Ltd. is the international carrier. Both companies are Government-owned.


THAILAND
TRANSPORT NETWORK
N
NORTHERN
NORTH EASTERN
CENTRAL
SOUTHERN
MEKONG RIVER
To Vientiane
Chiang Rai
Mae Hong Son
Chiang Mai
Lampang
Phrae
Mae Sariang
Uttaradit
Loei
Nong Khai
Udon Thani
Nakhon Phanom
Tak
Mae Sot
Khon Kaen
Taphan Hin
Khao Sai
Nakhon Sawan
Tak Fa
Nakhon Ratchasima
Ubon Ratchathani
Suphan Buri
Ayutthaya
Bangkok
Bang Na
Chachoengsao
Bang Pakong
To Phnom Penh
ANDAMAN SEA
Si Racha
Laem Chabang
Pattaya
Sattahip
Prachuap Khiri Khan
GULF OF THAILAND
Chumphon
Bandon
Surat Thani
Takua Pa
Nakhon Si Thammarat
Phuket
Phatthalung
Trang
Songkhla
Hat Yai
Pattani
Sai Buri
Narathiwat
LEGEND:
National Highways
Railways
Rivers
Airports
Major Ports
Regional Boundaries
International Boundaries
(not necessarily authoritative)
0 50 100 200 250
KILOMETERS
16°
14°
10°
100°
104°