

Report No. 7063-MA

Malaysia National Transport Policy Review

June 1988

Infrastructure Division
Country Department II
Asia Regional Office

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CURRENCY EQUIVALENTS

Currency Unit = Ringgit (M\$)
M\$1.0 = US\$0.40
US\$1.0 = M\$2.50
(as of July 1967)

FISCAL YEAR

January 1 - December 31

WEIGHTS AND MEASURES

km = kilometer (0.62 miles)
ton = metric ton (1,000 kilograms)

ACRONYMS AND ABBREVIATIONS

ATS	-	Air Traffic Services
DCA	-	Department of Civil Aviation
EPU	-	Economic Planning Unit
GRT	-	Gross registered tonnage
HPU	-	Highway Planning Unit
JKR	-	Road Department
KLIA	-	Kuala Lumpur International Airport
KN	-	Kontena Nasional
KNS	-	Sabah State Railways
KTM	-	Malayan Railway
LLM	-	Malaysian Highway Authority
MAS	-	Malaysian Airlines System
MCW	-	Ministry of Communications and Works (Sabah)
MID	-	Ministry of Infrastructure Development (Sarawak)
MOT	-	Ministry of Transport
MPE	-	Ministry of Public Enterprises
MPW	-	Ministry of Public Works
RTLB	-	Road Transport Licensing Board
TEU	-	Twenty foot equivalent unit

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MAPS Peninsular Malaysia (IBRD 20248)
 Sabah and Sarawak (IBRD 20249)
 Freight movements within and between Traffic Corridors of Peninsular Malaysia (IBRD 19999).

Documents and Data in the Report File

- 1. Background Paper on Freight and Passenger Transport in Peninsular Malaysia
- 2. Background Paper on Railways Transportation
- 3. Background Paper on the Aviation Subsector in Malaysia
- 4. Background Paper on Transportation in Sabah and Sarawak
- 5. Background Paper on Capacity Requirements in Transportation
- 6. Background Paper on East-West Malaysia Freight and Passenger Traffic
- 7. Technical Notes:
 - (1) Transportation and Economic Efficiency in Sabah and Sarawak
 - (2) Privatization in Transport for Sabah and Sarawak
 - (3) Transport Intensity in Peninsular Malaysia with some International Comparisons
 - (4) Traffic Forecast for East-West Malaysia Trade
 - (5) Pricing and National Transport Policy in Malaysia
 - (6) Forecast of Rail Traffic in Peninsular Malaysia
 - (7) Forecast of Container Traffic in Peninsular Malaysia
 - (8) Coastal Traffic Projections in Peninsular Malaysia
 - (9) Air Traffic Forecast for Peninsular Malaysia
 - (10) Road Transport Forecast
 - (11) The Impact of the North-South Toll Expressway on Transportation Costs

MALAYSIA

TRANSPORT POLICY REVIEW

INTRODUCTION

i. Over the last 15 years, Malaysia's economy has undergone fundamental changes. With the oil crisis of the early 1970s and the country's development of its own petroleum industry, Malaysia found itself in a situation of rapidly increasing revenues and high economic growth. As the economy expanded, pressures on the transport system began to be felt and major investments in transport were subsequently undertaken.

ii. With the collapse of the oil price and declining terms of trade for its other exports, Malaysia is now suffering from a rather severe economic slowdown which is forcing the Government to find ways of meeting its transport requirements without relying solely on additional infrastructure investments. Strategies are also needed to deal with the problems brought about by the rapid and often uncoordinated development of the transport system during the past decade.

iii. This report, which attempts to respond to these needs, represents the outcome of the first serious dialogue between the Bank and the Malaysian Government on the domestic transport sector in over 15 years. As a sector document it differs from the usual Bank report in that it is a cooperative effort between the Government and the Bank. A team in the Ministry of Transport (MOT) was set up with four full-time ministry staff, supported by technical assistance, to fully participate in data collection, analysis and report writing. Consultants were also engaged by the Bank to produce background papers on specific topics, and these papers combined with the MOT team's output form the basis of the report. It should be noted, however, that the views expressed in the report, the issues singled out, and the recommendations made, all reflect the Bank's own position.

iv. From the beginning, the main objective of the report was to identify the critical bottlenecks to transport efficiency given that Government was interested in minimizing required investments and maximize the utilization of the existing systems and infrastructure. However, serious data deficiencies arose requiring that the initial work program be modified somewhat, but this did not affect the overall requirement to identify the short-term system deficiencies and make recommendations on how to address them.

v. This review of the sector is also somewhat different in that significant resources were allocated to analyzing transport flows through an extensive origin/destination survey by mode, commodity and corridor. Each mode was also analyzed from the point of view of transport services and physical infrastructure capacity to determine sectoral investment needs up to the year 1995.

vi. In conjunction with the review, three Bank missions visited Malaysia in November 1986 and in February and May 1987. The mission members included Maurice Le Blanc, Maria Kiwanuka, Laszlo Lovei (transport economists) Lance Morrell (financial analyst) and Maysoon Sukkar (operations assistant) from the

Bank and the following Bank consultants: Richard Fisher, Alan Mulgrew (aviation specialists), Stein Hansen (transport economist), Soren Hoff (organizational specialist), William Thompson and Milo Melrose (railways specialists). The MOT team comprised Anuar Kassim, Helen Goh, Long See Wool, Maisarah Ali, Mimi Ismail and Wahid Don. Two consultants provided by the Canadian International Development Agency, Dr. J.F. Gautrin and Dr. I. Chrzanowski, acted as Project Director and Senior Economist, respectively, for the study team. The report was edited by Patricia Brereton.

vii. The report is in seven chapters, preceded by a summary of the issues and recommendations. The first chapter deals with transport and the economy and is intended to give a perspective on the role of transport in the country's economic development and the Government's objectives for the sector under the Fifth Development Plan (1986-90). Chapter II presents an analysis of transport flows by mode. Chapter III describes the transport system in Peninsular Malaysia, while Chapter IV reviews the situation in Sabah and Sarawak which, because of a lack of data for those States and their fundamental differences from Peninsular Malaysia, require special attention. Transport capacity needs and investment requirements up to 1995 are identified in Chapter V, and Chapter VI focuses on the major issues to be addressed in the sector and provides recommendations for their solution. Chapter VII suggests how the Bank might assist the country to move from its present concentration on infrastructure investment to the promotion and implementation of policy and institutional changes.

viii. The report was reviewed by Government and many useful suggestions have been incorporated in the final version. Government is in substantial agreement with the conclusions but in some cases differs on the method of implementation proposed or the speed at which recommendations can be implemented. The final conclusions, which reflect the views of the Bank are intended only as a guide to decision making by Malaysian Government officials who must weigh the socio-political needs of the country in opting for the best solutions.

EXECUTIVE SUMMARY AND RECOMMENDATIONS

1. Despite rapid and substantial progress in the Malaysian transport sector, many needs remain to be met. Changing economic conditions both within and without Malaysia require the country to take a more prudent approach than before in developing its transport system so as to optimize the use of scarce investment capital in a very capital-intensive sector. In addition, the increasing complexity of the transport system, the higher traffic densities and the need to provide economical transport services to the country call for greater efforts than in the past to maximize the efficiency of service. In particular, it will be crucial in the years ahead to improve transport planning and coordination, reduce excessive regulations, improve the institutional environment of transport agencies and rationalize transport user charges among modes. Based on the analysis undertaken for this report, the only investments in additional capacity required between now and 1995 will be in roads, primarily along the west coast of Peninsular Malaysia, where traffic is growing very rapidly, and in Sarawak, where road infrastructure is still rudimentary. For the other modes, only upgrading and efficiency improvements will be needed. The analysis of port infrastructure requirements is being addressed in the just completed National Ports Study and therefore is excluded from this report.

2. The proposed approach is in line with objectives of the Fifth Malaysia Plan (1986-90) which in general focuses on the promotion of domestic adjustment policies and strategies to contain deficits and debt service obligations. For the transport sector, the Plan emphasizes establishment of a more integrated approach to transport system development in order to improve overall system efficiency and promote economic growth. To do so, investments under the Plan are focused on maximizing the efficiency of the existing transport system and completing projects which were begun earlier but could not be finished due to drastic budgetary cuts following the 1983 oil price shock. Efforts will also be directed at identifying areas where private sector involvement in both financing and management should be sought or expanded.

Recent Development of Malaysia's Transport System

3. Malaysia's rapid economic growth during the 1970s was accompanied by a similarly rapid development of the transport sector. Largely fueled by major government investments in the sector, output of transport, storage and communications increased at 12% annually, compared to 8% for the economy overall. During the decade, the sector's share of GNP increased from 5% to 7%. The Government attaches great importance to the role of transport in the economic development process, and under its four previous development plans (1966-85) channeled over M\$14.5 billion to the sector. Under the current development plan (1986-90), allocations to transport amount to 15% of the development budget, second only to agriculture. As a result of this investment, the system is now relatively well developed for a country of Malaysia's size and income level. The major exceptions to this are the transport systems serving the states of East Malaysia, i.e., Sabah and Sarawak, on the island of Borneo. Partly due to historical reasons, these states have not developed at the same rate as the 11 states comprising West Malaysia on the Malaysian Peninsula.

4. The past decade was a period of high traffic growth and changing modal distribution, with the railways losing substantial traffic to road transport, which is now the overwhelmingly dominant mode. Because Malaysia's international trade is served mainly by air for passengers and sea for freight, the post-1975 period saw major increases in capacity in these modes. However, due to recent decreases in traffic, some facilities for both air and sea transport are now underutilized.

5. The current economic downturn in Malaysia has perhaps had one positive benefit in that it has caused Government to reassess its strategy toward the sector and recognize the need to curtail new investment and instead improve transport productivity. The latter will require a variety of measures both to increase operational efficiency, and to address key issues in the sector.

6. Conclusions and Recommendations. The findings of this report focus on the major areas where action will be required over the next seven years to address the issues identified in this report. The main conclusion from this review is that the principal thrust during this period is not the requirement for new investments but rather in improving the efficiency of the existing transport system, which, except for some additional road capacity, is adequate to meet the needs expected to be imposed on it up to 1995. While there are numerous minor recommendations throughout the report and its annexes, they mostly fall into three broad categories of key recommendations, namely those affecting: (i) transport planning and coordination; (ii) regulations; and (iii) financial and economic issues.

7. The first of these conclusions which emerge from this review is the inadequacy of the institutional aspect of the transport sector. This has given rise to numerous problems which are now being felt and if not corrected, will have a continuing impact on future transport performance and cost. The main recommendations emerge relate to the need for a transport policy, the need for improved transport planning and coordination and the need to urgently address the dearth of data and information on the transport system.

Recommendations

8. Transport Planning and Coordination. Transport planning in Malaysia is generally weak. The overall plan is not well integrated, investment proposals are not always economically justified, and the various modes are not treated consistently. As a result, some misinvestments have been made. The major factors responsible for the poor planning are weak institutions in the sector and the fragmentation of their responsibilities which renders modal coordination very difficult. Although the Economic Planning Unit (EPU) in the Prime Minister's Office is responsible for reviewing all federal government investments and, for transport, coordinating investments among modes, the EPU lacks suitably qualified staff to carry out this function effectively. In consequence, investments in each mode are decided without reference to overall transport capacity and requirements, and some political considerations have intruded in investment decisions.

9. If transport planning is to be improved, one central agency should have sectorwide responsibility for planning and coordination; the EPU should be concerned mainly with the broader economic issues and leave the micro level planning to the sector ministry. The EPU would, however, still be responsible for the final evaluation of investment proposals as they relate to overall national priorities. Since the Ministry of Transport (MOT) would seem to be the logical agency for this task, it is recommended that a Transport Planning and Coordination Unit be established within MOT to carry out this function. Since MOT is not currently equipped for the proposed new role, a training program should be defined to send local staff abroad for specialized training in transport economics and planning. During the training period, planning would be carried out by expatriate experts provided under a technical assistance program which, to be effective, should cover a three- to five-year period. To provide the proposed Unit with up-to-date information on the sector, a Transport Data Unit should also be established as part of the Planning Unit.

10. The proposed MOT Transport Planning Unit would be expected to work closely with relevant agencies in Sabah and Sarawak to ensure consistency in data and analysis. It is therefore recommended that a coordinating committee be established between the federal MOT and the state agencies in Sabah and Sarawak and that periodic staff exchanges be encouraged in order to improve coordination between the transport systems of East and West Malaysia.

11. Transport Policy. A contributing factor to the planning problem has been the lack of a clearly enunciated transport policy. At present, there is no overall statement on the role of the transport sector, its relationship with other sectors, or how investments are to be financed. With no long-term objectives governing policy and investment decisions, fundamental issues such as pricing, subsidies, and regulation are dealt with unsystematically, on an ad hoc basis. Although a few sectoral issues have been addressed in specific legislation, broad questions relating to transport economics, competition and user charges have been ignored. It is therefore recommended that a National Transport Act be drawn up and approved as an umbrella for all existing transport legislation. The Act should define a national transport policy, which conforms to economic principles and promotes competition, while addressing issues in the sector such as compensatory tariffs, user charges, services provided on social grounds, subsidies, regional economic development, and safety regulations.

12. Transport Regulation. The second major set of conclusions which come out of this report has to do with transport regulation. Economic regulation of the road transport industry in particular imposes a heavy cost burden on the economy. On the other hand, insufficient control of axle loads for the heavy trucks operating on Malaysia's road system are also causing much higher costs to the economy in reduced life of the network itself and very high maintenance costs. These are areas where changes in current practice could lead to substantial benefits to the economy.

13. The original objectives behind the regulation of transport in Malaysia have become confused over the years, and the regulations no longer seem aimed at efficiency or cost-effectiveness. Government exercises particularly close control over road freight transport by setting prices and limiting

entry into the industry. This system has encouraged the proliferation of "own use" vehicles for which restrictions are less stringent, but since these vehicles are usually loaded in only one direction, major inefficiencies have resulted. Also, because small vans under 2,500 kg are unregulated, their numbers have increased disproportionately, thereby increasing the cost of transport due to the higher cost of operating these vehicles and the increased handling of goods required. Government has also used the licensing system as a form of economic protection for disadvantaged groups in the population, but at a high cost to the economy.

14. The most heavily regulated segment of the transport industry is container haulage by road, for which only three carriers are licensed in West Malaysia. This oligopolistic market has resulted in such high costs for the movement of containers that, once landed in a port, most containers are unstuffed and the goods transferred to conventional general cargo trucks which have lower tariffs. The benefits of containerization have therefore bypassed Malaysia, and the price of Malaysian exports and locally-consumed imported goods has been unnecessarily increased.

15. Since the container haulage industry no longer deserves infant industry protection, it is recommended that container transport by road should be deregulated as soon as possible, and the carriers allowed to set their own tariffs. While the conventional cargo segment of the industry is more competitive, the regulatory framework imposes too many uncertainties for the industry to operate efficiently. It is therefore recommended that a five-year program be undertaken to phase out the present system of entry and price controls on the conventional trucking industry. The phased deregulation would allow Government to monitor the effects of the new policy in its initial years and to make necessary adjustments as needed. The Road Transport Licensing Board, which issues vehicle licenses, should be restructured to include a monitoring capability to assess the effects of the policy changes.

16. The current regulatory policy has had as one of its objectives the protection of Bumiputera operators. Evidence indicates, however, that this has merely become a form of transfer payment from one segment of the population to another as many licenses held by Malays are leased out to others, further adding to the cost of transportation. Since the licensing system does not seem to have helped the Bumiputera to establish themselves in the industry, it is recommended that the Government undertake a program of assistance which includes loans and management assistance to those Malays wishing to enter the road transport industry. In this way, the industry and the consumer will benefit through better services and lower costs.

17. One area where insufficient attention is being paid to existing and necessary regulation is the control of axle loads. Recent early failures of road sections and the high maintenance costs attest to the importance of more efficient control of heavy vehicles, especially logging trucks in order to preserve the very large investment in the road network. Since there are various ways to achieve this objective, it is recommended that the government agencies responsible, i.e. MOT, JKR and the States establish a program to review pavement standards taking into consideration the results of the recently completed Axle-Load Study as well as review the heavy vehicle importation standards to urgently limit the excessive damage to the nation's road

network. Enforcement of existing axle loads which is seriously lacking also needs immediate attention to stem further deterioration of the road network, and reduce the high road maintenance costs. In view of the vital importance of the road network to the country's transport system, it is recommended that additional funds be provided for enforcement of axle loads and improvement of road maintenance standards.

18. Financial and Economic Issues. The third area where improvements have been identified as needed is the financial and economic aspect operations and project evaluation. Of particular significance here is the need to adjust relative levels of user charges among modes to more accurately reflect the cost of providing these services as well as the need to give more serious consideration to adopt criteria for economic evaluation of proposed projects before including them in the government development plans.

19. Transport User Charges. There is considerable diversity in the extent to which users of the various modes contribute to the cost of the transport facilities provided by the Government. Road users contribute by far the most while aviation users contribute the least toward developing and operating modal infrastructure and services. Ports and marine services provide a positive return on operations but, when development expenditures are included, the results are also negative. The Malayan Railways show an even poorer record of cost recovery, having for some years incurred large annual losses on operations and accumulating an unmanageable overall deficit. Continuation of this unequal treatment of the modes will lead to further price distortions and increased government financial obligations to maintain the system.

20. It is recommended that MOT undertake a detailed review of cost recovery in the transport sector to determine adequate user charge levels which will allow the modes to compete on an equal basis. It is also recommended that, even before the study is carried out, aviation user charges are increased in recognition of the fact that Malaysia has the lowest level of such charges in the region.

21. Evaluation of Transport Investments. The projects included in Malaysia's transport investment program are not ordinarily subjected to an appraisal of their economic justification, and as a result past investment mistakes have occurred. The introduction of a routine economic appraisal of proposed projects would not only indicate the soundness of investments, but would also allow Government to prioritize investments so that logical choices can be made in times of resource constraint. At present, the transport investment proposals most in need of economic appraisal are the planned expansion of airport facilities at Ipoh, Sibul and Tawau, which are all likely to lose traffic to planned road improvements. It is recommended that the economic justification of the proposed airport investments and any possible alternatives to them be investigated before a final decision is made on the type and magnitude of investments to be carried out. For all other sectoral investments aimed at providing additional capacity, economic analysis should be carried out to determine the most cost-effective transport solution.

The Bank's Future Role in the Sector

22. To date, the Bank's role in Malaysia's transport sector has been relatively modest. Bank lending to the sector began in 1971, and since then, US\$231.6 million has been provided in support of four highway projects, three ports projects, two railway projects and an urban transport project. Two projects, the Sabah-Sarawak Road Project (Loan 2291-MAL) and the Port Kelang Project (Loan 2687-MAL) are still under implementation.

23. Now, as the country reaches a critical juncture in its transport development, there is scope for the Bank to assist the Government in formulating its policies for the purpose of improving efficiency and thus increasing export competitiveness by lowering the transport cost component of Malaysian exports. To this end, a sector loan and time-slice financing of investments in Peninsular Malaysia should be considered. In East Malaysia, the more traditional approach of project lending should be continued, the objective being poverty alleviation, particularly in Sarawak where basic infrastructure is still needed. Potential areas for future Bank involvement include: (a) transport planning and coordination; (b) road maintenance, rehabilitation and upgrading; (c) riverine transport in Sarawak; (d) port rationalization and efficiency improvements; and (e) railway efficiency improvements.

24. Some of the objectives to be pursued in conjunction with any future lending operations include:

- (a) improvement of the country's transport planning capacity to allow intermodal coordination and improve system efficiency;
- (b) encouragement of federal-state transport coordination through the development of multimodal regional transport projects;
- (c) integration and coordination of subsectoral investment programs through a more appropriate institutional framework;
- (d) removal of licensing restrictions on container haulage by road and encouragement of competition among operators to reduce transport costs;
- (e) initiation of a five-year program to phase out entry restrictions to the road transport industry in order to stimulate competition;
- (f) establishment of cost-based tariffs for the railways; and
- (g) adjustment of user charges for roads and airports to cover the cost of the use of (or damage to) facilities.

I. TRANSPORT AND THE ECONOMY

A. Country Background

1.1 The Federation of Malaysia comprises 13 states in two separate geographical areas of Southeast Asia. Eleven states^{1/} on the Malay Peninsula comprise West Malaysia (51,000 sq mi). Two states, Sabah and Sarawak, comprise East Malaysia (77,000 sq mi) on the northeastern part of the island of Borneo, some 400 mi to the east of West Malaysia across the South China Sea. Malaysia has land borders with Thailand to the north on the peninsula and with Indonesia to the south on Borneo. It is separated by a narrow sea channel from the island State of Singapore at the southern tip of the peninsula.

1.2 Only about 20% of Malaysia is cultivated; the remainder is covered by tropical forest. West Malaysia is generally mountainous, with over two thirds of its area above 300 m. A central mountain chain divides West Malaysia into a west and an east coast region. Protected by the mountains against severe monsoons and bordering on one of the world's most important shipping routes (the Straits of Malacca), the west coast has developed faster than the rest of the country. Two thirds of the population live there and work either in the main urban centers where industrial zones have developed or in the important agricultural and mining areas, which produce, among other things, rubber, palm oil and tin for export. East Malaysia is also mountainous, with a long coastline and numerous rivers. Economic activity in East Malaysia and the east coast of the peninsula is centered on the production of oil, gas, timber, cocoa and palm oil, as well as fisheries.

1.3 Malaysia's population in 1985 totalled some 15.8 million, reflecting an average 2.6% annual increase from 1981. This rate of growth is expected to continue until 1990. About 82% of the total population lives in Peninsular Malaysia while Sabah and Sarawak account for only about 8% and 10%, respectively. Population density is about 120 persons per sq km in West Malaysia compared to 12.5 Sarawak and 17.4 in Sabah.

B. Economic Setting

1.4 By most economic indicators, Malaysia's economic performance was outstanding in the 1970s when per capita GNP growth averaged 4.9% p.a. This sustained good performance was a reflection of several factors, including the country's wealth in natural resources, especially ample reserves of cultivable land and oil and gas; an outward-oriented growth strategy; favorable developments in the world economy; good economic and financial management; and stable social and political institutions. Three specific elements were important: first, substantial attention and priority went to agriculture, resulting in high productivity gains in the sector which cushioned it against occasional steep price declines; second, manufacturing growth was rapid, at about 12% p.a. in the last two decades; and third, in a very open economy, with exports

^{1/} Perlis, Kedah, Penang, Perak, Selangor, Negri Sembilan, Melaka, Johor, Kelantan, Trengganu, Pahang, and the Federal Territories of Kuala Lumpur, and Labuan.

and imports recently averaging more than 50% of GNP, exports have been diversified from an initial large dependence on rubber and tin to include palm oil, petroleum and manufactured goods.

1.5 While real GDP in Malaysia continued to grow at an impressive average of 6.7% p.a. in 1980-84, performance in 1985 was its worst in over two decades, with real GDP falling by 1.0%. This downturn resulted from continued adjustments in public sector expenditures to reduce growing annual deficits, lower international commodity prices, stagnant manufacturing exports and higher interest payments on external debt. Due to the continuing weakness in commodity prices, particularly the precipitous drop in petroleum prices since early 1986, the economy remained sluggish in 1986, with marginal growth of about 0.8% in real GDP. Table 1.1 gives a breakdown of GDP by industry during 1978-87.

1.6 The geographical distribution of economic activity in Malaysia is very uneven. About 84% of GDP in 1985 was generated by West Malaysia, including nearly 37% by the central region, 23% by the north, 14% by the eastern part of the peninsula and 10% by the south. Sabah and Sarawak's participation accounted for only 7.6% and 8.0%, respectively.

C. Transport Investments

1.7 The expansion of transport infrastructure and facilities in Malaysia has been seen by the Government as an integral element in the country's overall development and critical to economic growth. During its first four five-year development plans (1966-85), the Government provided some M\$14.5 billion for transport investments to support economic growth, particularly through the development of ports. The first three plans concentrated on establishing the basic road network, upgrading the railway and providing sufficient port and airport capacity to meet the growing needs of the economy. During this period, the economy almost trebled, while the transport sector grew almost sixfold at an annual average rate of 12%. During the Fourth Plan (1981-85), in line with Government's stated objective of continuing to expand and improve the transport system in order to accelerate the country's socioeconomic development, the transport sector grew at an average annual rate of 8.4% in real terms while the economy grew at 5.8%. As indicated in the following table, during this period, transport investments accounted for 9.7% of Government's total development budget or M\$7.2 billion. A summary of public sector transport-related revenues and expenditures during 1982-86 is given in Table 1.2.

TRANSPORT INVESTMENTS, FOURTH AND FIFTH PLANS
(M\$ million)

	4th Plan original	4th Plan expended	5th Plan original	5th Plan revised
Roads	2,467	4,167	7,644	4,228
Rail and rapid transit	300	651	1,049	232
Ports and marine services	736	1,484	401	497
Civil aviation	612	874	1,667	1,568
<u>Total Transport</u>	<u>4,116</u>	<u>7,172</u>	<u>10,761</u>	<u>6,524</u>
<u>Total Plan</u>	<u>49,025</u>	<u>74,063</u>	<u>69,000</u>	<u>43,181</u>
Transport as % of Total Plan	8.4	9.7	15.6	15.1

Sources: Fifth Malaysia Plan and EPU.

1.8 Under the Fifth Plan (1986-90), M\$10.7 billion or 15.6% of total plan expenditures was originally allocated for transport but, due to growing fiscal constraints, this was revised to M\$6.5 billion, although the share of transport in total plan investments remained substantially unchanged. Further changes are likely during annual plan reviews. Government's overall objective under the Fifth Plan is to promote domestic adjustment policies and strategies to contain deficits and debt service obligations. This implies slow growth for the economy during the next four years. For the transport sector, the Government intends to concentrate on (a) developing an integrated approach to coordinate development of the transport system; (b) completing ongoing programs and projects; (c) improving operations and management of the transport system; and (d) identifying and implementing programs for private sector financing and management. At present, the national transport system comprises some 42,330 km of roads, two thirds of which are paved, 1,021 miles of railway on Peninsular Malaysia and 96 miles in Sabah, 55 major and secondary ports, as well as 18 airports and 37 airstrips. Road transport is the dominant mode in West Malaysia and Sabah while Sarawak still relies on marine and river transport.

Review of Fourth Plan Expenditures

1.9 In its mid-term review of the 1981-85 Development Plan, Government reassessed the achievements and expenditures up to 1983 and revised the allocation for 1984-85. In the transport sector, by the end of 1983, more than the full 1981-85 allocation had already been spent, necessitating the provision of additional funds for 1984-85 to allow completion of works already started. Almost all other projects included in the Plan but not yet started had to be deleted, for possible inclusion in the Fifth Plan. Actual costs significantly surpassed estimated expenditures under the Plan due to a variety of factors including: inadequate original cost estimates, changes in project

standards during implementation, poor project supervision and, in many cases, the start up of project implementation even before project preparation was completed. Cost overruns on individual projects often reached 300% of planned costs, thereby reducing the project's economic viability.

1.10 Several major investments initiated under the Plan do not seem to have been economically justified or were poorly planned. Documentation of economic justification was not, in fact, required for inclusion of projects in the Development Plan. Disregarding the possible political justifications, a clearly uneconomic investment was the 14-km Penang Bridge at an expected cost of M\$1.2 billion, far higher than justified by the project feasibility studies. In the road sector, construction was initiated of a 900-km North-South Expressway spanning the length of the country along the western coast of the Malaysian Peninsula. However, the uniform design standard adopted for the entire Expressway length will not be needed for some road stretches until the year 2015, and the use of a closed toll system on the Expressway is expensive and may contribute to the diversion of traffic to nontolled roads, leading to additional maintenance and operating costs. A less-costly alternative would be the use of taxes (like those on automobiles, fuel, etc.) to cover the cost of maintaining the Expressway. The east coast line of the railway is also being upgraded, at an estimated cost of M\$400 million, although the line carries very little traffic and was recommended for closure by consultants in 1978. In the ports subsector, despite excess ports capacity due to the economic downturn, construction of a new port for Kuantan and container facilities at the port of Johor (Pasir Gudang) was undertaken. Transport coordination also appears to be a problem with respect to government investments along the west coast, where construction of the North-South Expressway is expected to divert traffic from the railway and airlines. Nevertheless, substantial investment has been made for railway passenger equipment, and M\$40 million has been allocated to upgrade airport facilities at Ipoh, which is expected to lose much of its traffic to the Expressway, once it is completed.

D. Transport Administration and Planning

1.11 Responsibility for administration of the transport sector is dispersed among a number of ministries and agencies at both the federal and state levels. The Ministry of Transport (MOT) is responsible for all matters relating to ports, railways and aviation, although the Malayan Railways, Malaysian Airline System and nine port authorities operate with considerable autonomy. Responsibility for various aspects of shipping matters is shared among three principal agencies--MOT, the Ministry of Trade and Industry, and the Implementation Coordination Unit in the Prime Minister's Department. The Ministry of Public Works, which includes the Malaysian Highway Authority, is responsible for the planning, design, construction and maintenance of the federal road system. The state governments, responsible for 70% of the country's road network, independently plan and execute their own road investments, often resulting in situations where simultaneous shortages of capacity in one transport mode and surpluses in other modes exist in certain corridors. The Ministry of Public Enterprises is responsible for the licensing of road transport operations; the Ministry of Forestry regulates sizes and weights of timber trucks while the Federal Police are responsible for enforcement of traffic and safety matters relating to road transport. A number of autonomous ports are involved in multimodal operations that require coordination with

road and rail transport; however, this is often difficult under the present arrangement.

1.12 In view of this dispersed administrative structure, the Economic Planning Unit (EPU) in the Prime Minister's Office, which is responsible for reviewing all Federal Government investments, has taken on the task of coordinating transport investments among modes. However, as the transport sector has grown more complex, the EPU has not been able to keep up with the demands imposed on it due to a lack of sufficient numbers of suitably qualified specialists (e.g., to evaluate technical design standards, engineering feasibility, etc.). As a result, and as indicated above, many projects are over-designed and are not always oriented to least-cost solutions, and transport capacity is not spread evenly, resulting in costly duplication in some areas. Review and coordination of nonfederal public investments are similarly inadequate. Consequently, the key weakness in sector administration is the lack of a central agency responsible for overall transport coordination, planning and policy formulation. To address this issue, the Bank has initiated a sector dialogue with the Government to establish responsibility for transport planning and coordination within a line ministry, preferably MOT.

II. TRANSPORT FLOWS IN PENINSULAR MALAYSIA

2.1 This chapter summarizes various analyses of transport flows by mode and corridor which were carried out as part of the overall transport review exercise. Government's Axle Load Study and data supplied by the Malayan Railways have proven particularly helpful. These and other sources as well as the methodology employed in the analysis are discussed in Annex 1 in the Report File. Due to the very different characteristics of transport flows and the network in Sabah and Sarawak, the discussion here and in Chapter III focuses primarily on Peninsular Malaysia while Chapter IV gives details of the situation in East Malaysia. One of the major findings of this exercise was the extreme paucity of data on the sector, particularly for road freight operations.

A. Freight Flows

2.2 An overwhelmingly large proportion of freight traffic in Malaysia is transported by road. Of the 76.2 million tons of freight carried in 1986, 68.7 million tons (90.1%) went by road, 4.8 million tons (6.3%) by coastal shipping and 2.8 million tons (3.7%) by rail.^{2/} Air freight traffic of about 23,000 tons (0.03%) was insignificant in terms of volume, but involved commodities of higher unit value compared to other transport modes. In terms of ton-km, road freight traffic comprised 73.5% of total freight, rail 8.0%, coastal shipping, 18.4%, and air transport, 0.1%. The share of road traffic in terms of ton-km is smaller than its share by volume due to the shorter average distances of road transport hauls (139 km) compared to rail (370 km), coastal shipping (497 km) or air (463 km). These figures suggest that rail and coastal shipping are competitive over longer distances (300-400 km), while road transport competes with rail over shorter distances (up to 200 km) and

^{2/} Data on rail traffic are for 1985.

where service is an important factor in terms of time of delivery, speed and custom handling.

Commodities Carried

2.3 In terms of commodity structure, road freight transport was predominantly used for general cargo which in 1986 accounted for about 45% of total road freight traffic by volume (Table 2.1). Other important commodities carried by road were: palm oil, 10.8%; petroleum, 9.5%; logs, 6.9%; and grains, 6%. Rail transport was dominated by cement haulage (41.2%) with grains and basic food products, petroleum, and rubber each accounting for about 12%, and logs, 7%. Coastal shipping was mainly used for haulage of petroleum (73.4%), cement (10.0%), palm oil (3%), and rubber (0.9%). Air freight traffic was composed mainly of paper and mail, fruit, and fragile or highly perishable commodities like vegetables and seafood.

Trends

2.4. Substantial changes in the modal distribution of freight traffic are illustrated by rail freight statistics for 1976-85 (Table 2.2). Between the peak year of 1979 when the railway handled 4.2 million tons of freight, and 1985, overall rail freight traffic declined by 1.3 million tons or 30%. By commodity, the volumes of palm oil, petroleum and timber carried by rail between 1977 and 1985 decreased by 75%, 59% and 60%, respectively. Only cement volumes remained unchanged. The fall-off of rail freight largely resulted from the country's recent economic slump, the increasingly obsolete character of the national railway, and, most important, the increasing competition of road transport, now the dominant mode.

2.5 Projections of future freight traffic flows indicate the continued growth of road transport which is expected to increase by about 4.0% p.a. up to 1995 when total road freight is expected to reach 98 million tons. An optimistic forecast of rail freight puts traffic at 2.9 to 3.2 million tons by 1990, slightly higher than the 2.9 million tons carried in 1985. Air freight traffic is expected to grow by 5.4% p.a. up to 1990, then to drop to 4.2% during 1990-95. Coastal shipping movements are difficult to predict due to the wide annual fluctuations possible (see Table 2.3 for cargo movements between the four major ports during 1980-86). Aside from petroleum and cement, coastal movements fluctuated between 24,000 and 67,000 tons in 1980-86. By 1995, coastal movements of cement are expected to amount to 0.6 million tons, petroleum to 4 million tons and palm oil to 400,000 tons. Among the more significant coastal movements is the petroleum transported from Singapore which in 1986 amounted to 2.5 million tons (Table 2.4) and could reach 4.1 million tons by 1995. However, this figure will depend on whether or not a refinery currently being considered for Malacca is actually built.

B. Passenger Traffic

2.6 Passenger movements in 1986 totaled an estimated 183 million. Of this number, 175 million, or 95.5%, moved by road, including 144 million (82%) by private car or taxi and 31 million (18%) by inter-city bus. Bus trips averaged 135 km while taxi and passenger car trips averaged 77 km. The remaining 8.3 million passengers were carried by rail (64%) or air (36%).

Coastal shipping is not involved in passenger transport except for ferry connections which are typically of a commuting nature and not analyzed here. Like the rail freight services, passenger rail transport has declined rapidly in the last few years, losing about one million passengers between 1981 and 1985. More positively, newly-introduced express services have shown popularity for longer trips, with passenger levels increasing by 28% in 1985 over 1984, the first year of operation. While the absolute number of passengers is down since 1981, rail transport in terms of passenger-km increased by 23% between 1981 and 1985 due to the increased average distances traveled. Thus, the overall dominance of road transport for freight is even more evident for passengers.

2.7 In the future, bus traffic is expected to increase by about 2.5% p.a. to some 38 million passengers a year by 1995, compared to 30 million passengers in 1986. Car and taxi flows are expected to increase by about 2.3% p.a. using very conservative assumptions and by 5.3% under more optimistic assumptions. The railway is expected to continue losing passengers to roads as construction of the North-South Expressway (para. 1.10) progresses. Passenger movements by air are expected to grow at a rate of 6.1% p.a. up to 1990 (down from the 12.3% p.a. recorded in 1985-86), then to drop further to 4.6% p.a. until 1995.

C. Transport Corridors

2.8 To trace these flows and determine the intensity and type of transport demand by zone, traffic movements were broken down into five primary transport corridors (Map), based on the main traffic corridors where two or more transport modes run parallel. The corridors are: (I) Perlis in the north to Kuala Lumpur, Johor Bharu and Singapore in the south. This corridor is closely aligned with Federal Route 1 and the main west coast rail line running parallel to the road; (II) Kuala Lumpur east to Kuantan, essentially Federal Route 2; (III) Kuantan on the east coast to Kota Bharu in the northeast, essentially Federal Route 3; (IV) Kuala Lumpur to Kota Bharu; and (V) Kota Bharu to Penang on the west coast. Air corridors are closely aligned with the land transport corridors. The only significant maritime corridor for Peninsular Malaysia is along the west coast.

Modal Split by Corridor

2.9 As would be expected, traffic in Peninsular Malaysia is highest in Corridor I, which spans the more-developed west coast (see Table 2.5). About 76% of all road freight traffic by volume and 82% of all rail freight (in ton-km, 63% and 69%, respectively) used Corridor I. Corridors II, III, and IV accounted for 1.2%, 4.0% and 1.6%, respectively, of all road freight, while traffic on Corridor V was negligible. Corridor IV, the other main rail corridor, carried only 3.5% total rail freight or less than 100,000 tons (1985), of which 96% was logs. Corridor I also carried the highest amount of passenger traffic, accounting for about 87% of all bus trips, 75% of all car and taxi trips and 75% of all rail passengers. For Corridors I and IV, the two corridors that show competition between rail and road transport, road transport is absolutely dominant in all but one commodity, minerals. The only significant commodities carried by rail were cement, grains and basic food products, petroleum and rubber on Corridor I and logs and sawn timber on Corridor IV.

The following table gives a breakdown of the importance of rail, road and coastal shipping for the three most important commodities carried on Corridor I.

CORRIDOR I - MAJOR COMMODITIES BY TRANSPORT MODE
(%)

Commodity	Rail	Road	Coastal shipping	Total
Petroleum	4.0	57.2	38.8	100.0
Cement	26.0	56.8	17.2	100.0
Palm oil	0.0	97.5	2.5	100.0

2.10 For passenger traffic, the modal split for Corridors I and IV is as follows:

PASSENGER TRAFFIC ON CORRIDORS I AND IV
BY TRANSPORT MODE

Mode	Corridor I (%)	Corridor IV (%)
Road	95.1	95.3
Rail	3.0	3.4
Air	1.9	1.3

III. THE TRANSPORT SYSTEM

A. Road Transport

Motor Vehicles and Motorization

3.1 In 1985, some 3.8 million motorized vehicles were registered in Malaysia, of which cars comprised about 31%, motorcycles 60%, buses 4%, and trucks and vans 5%. Excluding motorcycles, the ratio of vehicles per 1,000 persons in Malaysia was 97, which is considered relatively high for the region. During 1980-85, the number of registered vehicles increased by 9.1%

annually, higher than the 7.9% increase in the road network during the same period. From 1980 to 1985, the number of private cars increased at an annual average of 8.8%, resulting in an average 81.6 cars per 1,000 population. Motorcycles increased by 9.5% annually, buses by 5.2%, and trucks and vans by about 7.5%. The dominance of motorcycles in the fleet is expected to subside as average income levels rise.

Highway Network and Traffic

3.2 In 1985, Malaysia had a total road network of 42,330 km, comprising 28,045 km of paved roads, 13,030 km of gravel roads and 1,255 km of earth roads (see following table). About 70% of the roads are the responsibility of the States, 22% are under the Federal Government and 8% are municipal roads. The network on Peninsular Malaysia is about 80% paved and extends to most cities, towns and villages. Almost half of the total network (20,105 km) is on the west coast of the peninsula. Table 3.1 gives a breakdown of the network by State, surface type and jurisdiction.

ROAD DISTRIBUTION BY TYPE AND JURISDICTION
1980 and 1985
(Km)

Surface	Federal roads		State roads		Municipal roads		Total	
	1980	1985	1980	1985	1980	1985	1980	1985
Paved	4,940	7,060	15,550	17,390	-	3,595	20,490	28,045
Gravel	760	1,820	5,300	11,210	-	-	6,060	13,030
Earth	520	295	1,800	960	-	-	2,320	1,255
<u>Total</u>	<u>6,220</u>	<u>9,175</u>	<u>22,650</u>	<u>29,560</u>	<u>-</u>	<u>3,595</u>	<u>28,870</u>	<u>42,330</u>

Source: Highway Planning Unit, Ministry of Works.

3.3 To keep up with the country's rapid rate of motorization, the Government has concentrated on expanding the road network, and during the Fourth Plan period (1981-85), the network increased at a rate of 7.9% a year. Federal roads increased at almost twice the rate of state roads. The length of gravel roads more than doubled while paved roads increased by almost 50% between 1980 and 1985. Primary roads in Peninsular Malaysia are generally in fair to good condition. While network coverage is adequate overall, capacity constraints in sections of main arteries on the west coast caused Government to begin construction of the North-South Expressway in 1978 and to improve the most congested roads. About 340 km of the 900-km Expressway have already been constructed but, due to unresolved financing problems, completion is not expected until the mid-1990s. Table 3.2 shows the Expressway construction schedule.

3.4 According to information supplied by Government, in 1985 slightly more than half (52%) of all federal roads in West Malaysia were in good condition while more than a third (36%) were in fair condition and 12% were poor. The high proportion of roads in fair condition points to a neglect of periodic maintenance. Budgetary allocations for maintenance since 1982 have in real terms been reduced as a result of the economic downturn, and in 1985 expenditures for routine maintenance of federal roads averaged M\$3,500 per km. This decline in maintenance occurred at a time when maintenance needs were increasing due both to the expansion of the network and the damage incurred on parts of the system owing to traffic levels which exceeded road design capacities and the widespread overloading of heavy trucks which is not being addressed by the government. As a result, the Ministry of Public Works has not been able to keep up with road maintenance requirements and a substantial backlog is accumulating. If this backlog is not soon addressed, the roads will need to be completely rehabilitated at a cost which is ten times greater than if regular maintenance had occurred. The road maintenance issue is potentially a very serious one in view of the importance of the road network in Malaysia's total transport system.

Road Transport Industry

3.5 Freight. During 1982-86, the truck fleet in Peninsular Malaysia increased by an average of 16.3% p.a., with some 120,800 trucks registered in 1986 (see Table 3.3). The fleet was comprised of small vans weighing less than 2,500 kg (71%); 2-axle, 6-wheel rigid vehicles (21%); and 3-axle, 10-wheel articulated vehicles (6%). The industry operates mainly in Peninsular Malaysia, since poor road conditions and difficult terrain constrain road transport in Sabah and Sarawak.

3.6 Commercial road transport in Malaysia is tightly restricted through a licensing, regulation and taxation system which has served to suppress effective competition in commercial road transport and neglect the needs of transport users (see paras. 3.13-3.18). Operating licenses to act as for-hire or private carriers are required for all vehicles weighing 2,500 kg or more. Of the 29% of the truck fleet above this limit, 21,072 (17%) are registered as own-account vehicles (with "C" licenses) and only 14,381 (12%) are registered as for-hire commercial carriers (with "A" licenses) (Table 3.3). The higher number of own-account carriers reflects government restrictions on the number of commercial licenses approved. In 1985, for example, only 8% of all applications for common carrier licenses were approved, compared to 21% for own-account vehicles. Since the enforcement of operating licenses is very difficult, own-account operators often provide common carrier services.

3.7 Truck operating licenses specify the number of trucks to be operated and the type and size of equipment permitted. The size of conventional vehicles is generally restricted to two or three axles and trailers to 27 feet, a carrying capacity that is often too small to be economical. This and other types of regulation have led to widespread overloading of conventional trucks by as much as 100%.

3.8 Freight rates are set by Government at a maximum of M\$0.25 per ton-km, but actual rates charged are lower. Operating costs are estimated to be about M\$0.95 per km for 2-axle, 6-wheel trucks and can vary between M\$0.80 and

M\$1.40 per km for 3-axle, 10-wheel trucks. Operators indicate that the break-even rates on one-way long hauls are in the range of M\$0.13-0.16 per ton-km. Thus, the maximum rate set by Government is high enough to allow competition; however, the restrictive licensing and regulatory environment raises the cost of operations so that actual rates charged are higher than would be the case in a more open market. Table 3.4 shows a comparison of Malaysia's common carrier rates with those of Thailand, where conventional trucking services are unregulated and prices are lower.

3.9 The maximum laden weight limit set by the Government is 22 tons, with a 9-ton limit for a single axle and 14 tons for a tandem axle. Enforcement of these limits is the responsibility of the police who, because of understaffing and a lack of resources and equipment allocated for this purpose, provide only sporadic coverage. As a result, overloading of trucks, particularly logging trucks, is commonplace. This has caused a number of roads to fail prematurely. To address this problem, the Government has undertaken an Axle Load Study with the assistance of consultants. The Study, completed in early 1988, recommends a 12-ton single axle-load limit. It also proposes new vehicle configurations and axle spacing to provide a more economical load capacity for carriers. Enforcement of these limits, however, will still be an issue and a program to deal with this matter as well as the role of the police in enforcement and the penalties to be exacted will have to be drawn up and acted upon. It is recommended that MOT, JKR and the states establish a coordinated program to deal with this issue, including the review of heavy vehicle importation standards to urgently limit the excessive damage to the nation's road network.

3.10 Passenger Service. The bus industry in Peninsular Malaysia is composed of publicly- and privately-owned bus companies ranging from large-size firms with a total fleet of 200 buses to medium- and small-size firms with 20 to 60 buses. There are six categories of buses in Malaysia: express (no stops), stage (limited stops), excursion (for tourism), school, factory and mini. During 1981-85, the bus fleet expanded by an annual average of 5%. In 1984, the fleet totaled 16,944, including 4,582 stage buses, 1,243 express buses, 491 excursion buses, 8,692 school buses, and 1,427 factory buses. According to Government's Road Transport Department, 295 companies operated express and stage bus services in Peninsular Malaysia in 1984, with 5,825 buses. One of the largest operators was the MARA group, a public corporation which claims to control about 60% of all long-distance passenger traffic in Peninsular Malaysia. In Sabah, about 10 bus companies operated express and stage services, with three companies operating 75% of the State's total fleet. Sarawak had about 22 bus companies, with the largest company controlling 50% of the total state bus fleet.

3.11 All buses have to be licensed. The license is issued to a specific vehicle on the basis of defined areas, designated routes and points served, a timetable indicating the frequency of service as well as assigned bus depots for departure and return destinations. Express buses operate on the main roads while stage buses operate in rural areas and make frequent stops. Express buses operate between 180,000 and 200,000 km p.a. with peak and off-peak load factors of 65% and 30%. Stage buses cover 50,000 to 65,000 km a year with peak and off-peak load factors of 30% and 14%.

3.12 Bus fares are also regulated. Fares are determined on the basis of distance, and are identical for all bus sizes and services, which favors express bus operators on high density routes and penalizes small operators on less traveled routes. The current maximum fare is M\$0.20 for the first 3 km, M\$0.05 for each additional km, and M\$0.04 per km for any distance exceeding 20 km. Rates are 20% higher for air-conditioned buses. Bus fares have not been revised since 1984, although operators claim that their operating costs have increased by 15%. The Peninsular Malayan Road Transport Operators Association has repeatedly applied for fare increases, but its requests have been denied.

Road Transport Regulatory System

2.13 Administration. The Road Transport Licensing Board (RTLB) regulates all for-hire and own-account trucks as well as bus services. The Board controls entry into the passenger and freight transport markets through the issuance of licenses and sets maximum tariffs as described above (paras. 3.8 and 3.12). MOT's Road Transport Department is responsible for the enforcement of transport regulations, such as axle load standards, collection of road taxes, speed limits, etc. The Licensing Board is chaired by an appointee of the Minister of Public Enterprises, with the members drawn from MOT, the Road Transport Department, and other ministries. The Road Traffic Ordinance also provides that the Minister can appoint two members based on their experience or special knowledge in matters relating to transport. The Board meets periodically with bus operators, operator associations, vehicle assemblers and individuals to hear complaints/grievances and to provide feedback on market demand conditions and/or problems encountered.

3.14 Licensing Practices. Road transport licenses are issued to the vehicle, and not to the owner of the vehicle or the firm. Trucking licenses specify routes, types of cargo and even engine type, while bus licenses define areas of operation, routes, timetables, and the number of vehicles to be in operation at a specific time. A license is valid for seven years, and upon expiration can be renewed for another seven-year period. A replacement license is required upon retiring a vehicle and purchasing a new one. No fee is charged for the license application or the license itself. An individual freight operator may apply for several licenses to purchase several vehicles. Since the Licensing Board normally approves only a small number of licenses for the same operator, freight operators apply for a larger number of licenses in the expectation that only a few will be granted to them. Since renewal applications have not always been automatically approved, operators felt uncertain about their future operations and often hesitated to make additional capital investments, given the high cost of new vehicles. Processing time for issuance of a license is also very long, sometimes taking one year or more.

3.15 In the past, the licensing system was particularly rigid for articulated trucks and contrary to the concept of tractor units and semi-trailers, which are meant to be interchangeable. In Malaysia, a tractor-trailer combination was considered an inseparable part of the same vehicle (an exception is made for containers), rather than each tractor being registered as having two or more trailers. This has served to restrict the share of heavy trucks in the total truck fleet to about 6%, which increases capital and transport costs. Consequently, there are insufficient tractor-trailer units due to the rigidity of regulations which have distorted the supply of freight vehicles in

favor of rigid vehicles. Recent liberalization of the licensing system now allows any trailer to be pulled by any prime mover as long as they both belong to the same license holder.

3.16 Licenses are supposed to be issued on the basis of objective criteria and RTLB's assessment of market demand for various types of transport services. For example, an applicant to carry goods for hire must show evidence of a contract from shippers to transport their goods. He must be in good financial standing, be registered as a business enterprise and own a 10-20% equity in the business, have a bank account, pay income taxes, etc. The criteria for an own-account vehicle are not as stringent, and these operators pay lower road taxes than do common operators, another reason for the higher demand for own-account licenses. In practice, however, licenses are not granted on the basis of market demand and supply conditions, but rather on an ad hoc basis and on equity considerations. Although the rule for approving a license states only that the Licensing Board "should ensure that they are bona fide operators," interpretation of this criterion has been subjective. The Licensing Board in fact acknowledges that it is obligated to meet the objectives of the New Economic Policy to ensure that Bumiputera ownership and participation in the transport sector reaches a 30% level by 1990. As such, it utilizes the licensing mechanisms to allocate licenses commensurate with the achievement of this goal. This indirect form of assistance seems to have neither improved the economic condition of the Bumiputera nor provided better service. Direct forms of assistance, both technical and financial, might do more toward helping these groups.

3.17 The regulatory practice also seems to have led to a black market for trucking licenses which fetch from M\$300 to M\$400 per month. A black market has similarly developed within the bus industry, with an express bus license costing M\$200 to M\$300 and a mini bus license M\$500 per month. This amounts to a transfer payment from one segment of the population to another as a result of government regulation of the road transport market. The cost of these illegal payments, which cannot appear in truckers' or bus operators' financial statements, are ultimately passed on to transport users in the form of higher transport charges.

3.18 In summary, Malaysia's transport licensing restrictions seriously constrain the efficient allocation of transport resources by:

- (a) limiting competition among bus and freight operators through the rationing of licenses;
- (b) providing no objective criteria for the approval of licenses, which are provided more on political and equity grounds than on an assessment of consumer demand;
- (c) creating uncertainty about license renewals and the duration of license validity periods;
- (d) requiring bus operators to provide year-round service according to predetermined timetables, with no allowance for flexibility to modify the frequency or number of buses at a particular time when consumers' needs require it; and

- (e) limiting freight operators in the type of truck used, the selection of routes and the type of cargo carried.

Road Safety

3.19 Road safety is an increasing problem in Malaysia. As the country's road network was expanded and improved during the 1970s and early 1980s, the vehicle fleet increased correspondingly as did the number of accidents. In 1983, the fatality rate was about 9.8 per 10,000 vehicles or three times higher than in Japan, with about 3 fatalities per 10,000 vehicles. Although Malaysia's chief traffic regulatory law, the Road Traffic Ordinance, provides for the establishment of speed limits, no limits have been gazetted for roads outside urban areas. This, combined with the high proportion of motorcycles in the fleet and their lack of road discipline on heavily trafficked roads as well as the public's perception that high road user taxes and road tolls allow them to speed, has resulted in the unacceptably high accident rate. There is now an urgent need for both a driver education program aimed at increasing public awareness of highway dangers and the clarification of police responsibilities in enforcing the traffic laws. Improvement in road geometry in some areas will also contribute to accident reductions.

Institutions in the Subsector

3.20 Responsibility for administration of roads and road transport is shared by a number of agencies. The Ministry of Public Works (MPW) is responsible for the planning, design, construction and maintenance of the federal road system through its Road Department (JKR). The Malaysian Highway Authority (LLM), which is under MPW, is responsible for all expressways. JKR and LLM have adequate technical staff for road design, construction, and maintenance but lack the capability to plan road investments in a multimodal environment. The State Governments independently plan and execute their own road investments. However, the state public works departments are in effect extensions of the federal JKR although working for the States. State technical staff are adequate in numbers and quality but, again, are weak in planning and coordination. The Ministry of Public Enterprises is responsible for the issuance of road transport permits and MOT's Road Transport Department issues vehicle and operators' licenses. The Ministry of Forestry regulates the sizes and weights of timber trucks while the Ministry of Public Works is responsible for the size and weight regulation of all other trucks operating on public roads.

3.21 The maintenance, administration and budgeting unit of the federal JKR's Road Branch is responsible for the programming, coordination and administration of all maintenance work on federal roads, including rehabilitation and improvement. However, no physical maintenance works are carried out by this unit. The 13 state JKR's have been delegated this responsibility, along with maintaining all state roads, except those maintained by several municipalities. Most routine maintenance operations are performed by the 67 state JKR districts while periodic maintenance is done under the direct supervision of the state JKR headquarters. Large-scale periodic maintenance and rehabilitation works are carried out by contract and supervised either by the state JKR headquarters or by the federal JKR. In 1985, JKR, assisted by

consultants, developed a pavement maintenance management system to properly plan, program, control and report maintenance activities.

Planning, Finance and Expenditures

3.22 Planning. Highway planning is done by the Highway Planning Unit (HPU) in MPW. The HPU is responsible for identifying and justifying all federal highway projects, which are ranked based on traffic levels and an annually revised analysis of road capacity. No other form of economic analysis is carried out. Very often, projects are included in JKR's program as a result of political pressure, and more justified projects are given a lower priority ranking.

3.23 Five-year road investment programs are prepared for inclusion in the five-year development plans and are reviewed by the EPU without reference to intermodal considerations, overall transport needs or the state road programs. As a result, there may be simultaneous shortages in some areas and overcapacity in others while the least-cost transport solutions are ignored.

3.24 Finance. The federal road investment program is financed through the development budget, and maintenance is normally financed through the recurrent budget which is approved by the Treasury. The Government has a policy of not borrowing for expenditures financed under the recurrent budget. With the exception of Bank-financed road projects amounting to US\$141.7 million, the Government has provided all investment funds from its own resources.

3.25 Revenue and Expenditures. The structure of road user taxes in Malaysia is shown in Table 3.5. The revenues earned from these taxes are substantial and have grown rapidly in the past years. Between 1982 and 1986, a total of M\$10.7 billion was collected from road-transport-related sources, growing at an average annual rate of 11%. As illustrated in Table 3.6, import duties and excise taxes provided the bulk of these revenues or about 66% of the total. But while revenues from the subsector have averaged M\$2.3 billion p.a. over the last four years, federal expenditures on roads averaged only M\$1.7 billion (M\$1.4 billion for development and M\$307 million for operations and maintenance), including salaries and overhead (see Table 3.7). During 1981-85, maintenance expenditures for federal roads increased by 167% from M\$38 million to M\$101.6 million, during which time the federal road system expanded by about 54%. The ratio of maintenance to development expenditure funding remains low and should be improved.

B. The Railway Subsector

The Rail Network

3.26 The Malayan Railways (Keretapi Tanah Melayu (KTM)), comprising 1,643 route-km (1,021 miles) of meter-gauge track, consists of a main line running north from Singapore and separating into two lines, one running up the west coast and the other traversing the peninsula towards the northeast. Both lines are linked to Thailand's rail system.

3.27 KTM has 3,447 bogie (four-axle) wagons, about 50% of which are over 25 years of age. Included in this group are 440 container flat cars and 94

guard cars. It has another 2,019 two-axle wagons, of which 75% are over 25 years old. Passenger services are provided by 332 coaches.

3.28 The condition of the rail infrastructure and track maintenance is generally good. Signalling will eventually be converted to a tokenless block system, with electronic relay interlocking at all stations. This will eventually allow increased train speed and reduce station staffing. A poor communication system, however, is impairing the productivity of operations. On the west coast line, the system consists of two pairs of pole line wires, one for the train controller and one for the token block operation. A buried coaxial cable is used on the east coast line. An improved signalling VHF communication system and communication program are recommended to complete the tokenless block installation.

3.29 Service Levels. Traffic on the railway reflects the pattern of economic activity in Peninsular Malaysia, with the western line carrying the bulk of the volume (see para. 2.9). During the past decade, rail services in terms of passenger and freight volumes have stagnated. In 1985, the railway handled 6.4 million passengers or 1.4 billion passenger/km for a revenue of M\$63.6 million (Table 3.8). As compared with 1981 (the heaviest travel since 1973), the number of passengers and passenger/km has declined by 14%. At the same time, a 1984 fare increase and the changing travel mix resulted in a 5% increase in revenues in 1985 over 1981. Travel by third class has declined by 37%, driven by the discontinuance of branch line passenger services and diversion to highway buses, while express trains with comfortable seating have increased second class travel by 50% and constitute over 50% of passenger revenue (Table 3.9).

3.30 Freight traffic in 1985 totaled 2.9 million tons, down from 4.2 million tons in 1979. Five commodities accounted for about 85% of the traffic but only about 70% of freight revenue. Cement alone accounted for 41% of freight traffic and less than 35% of freight revenue. Since 1979, freight tonnage has declined by about 30%; ton-kilometers have declined by 25%, and revenue has declined by 23% (Table 2.2). While part of this contraction has been due to the economic downturn, there has also been an erosion to competitive forms of transport, i.e., highway and feeder ships. Further development of the North-South Expressway is also likely to have a negative impact on rail transport, particularly of passengers and high-value freight.

The Malayan Railways

3.31 KTM is a department of the Malaysian Government. It is headed by a General Manager who reports to the Minister of Transport and is advised by a Railway Board concerning policy, tariffs, estimates of revenues and expenses. The railway has no autonomy in deciding on tariffs, the hiring and dismissal of personnel or its investment program. This has resulted in unreasonably low tariffs, overstaffing, and substantial investment to rebuild the railway's eastern line to heavy high-speed standards, even though traffic on the line is not sufficient to cover even operating costs. Procurement of motive equipment and rolling stock is often decided by Government without consideration of standardization or the need for specific equipment; this is a major constraint to efficient operations. KTM has no borrowing power, and must operate on internally-generated funds and government loans. Although the railway is one

of the largest owners of land in the country, the 1948 Railway Ordinance prevents KTM from turning railway land into revenue-generating assets. Overall, KTM operates as a bureaucracy, is slow to react to innovation and has not been able to reverse a deteriorating trend in its operations and finances.

3.32 Financial Situation. The financial condition of KTM has been very weak for the past several years. During 1981-85, its annual operating and net losses have averaged in excess of M\$37 million and M\$52 million, respectively, and its working and operating ratios of 116% and 136%, respectively, at end-1985 are representative of the period. Data on KTM's financial condition, including ratios and key statistics, income statement and balance sheet are shown in Tables 3.10 - 3.12. Details of revenues and expenditures are shown in Tables 3.13 and 3.14.

3.33 While the Government does not directly subsidize KTM's operations, the railway is totally dependent on the Government for its survival. The Government has provided indirect subsidies in the form of exemptions from all sales taxes and duties since 1982, cancellation in 1982 of M\$128.5 million in accumulated pension liabilities owed by KTM to Government, and release from subsequent pension liabilities in 1983-87. KTM is also reimbursed for 50% of its losses on uneconomic passenger services. In addition, Government provided KTM with loans totalling M\$514 million from 1981 to 1985.

3.34 The combination of large government loans and KTM's large annual net losses has produced a capital structure consisting of 92% government debt, 7% foreign debt and 1% capital. At end-1986, KTM had an accumulated loss of M\$349.4 million, which is forecast to grow to M\$646.8 million by 1990. For the five years ending in 1985, KTM's operating revenue was virtually unchanged but operating expenses had increased at an annual average rate of 8.8%. The main factors contributing to this fall-off in performance are (a) steadily declining volumes of rail passenger and freight traffic; (b) the lack of any freight tariff increase since 1976; and (c) increased depreciation expenses which have grown at an annual rate of 15% since 1981. The 36% annual growth rate in interest owed on government loans has also been a major factor in the growing net losses. In 1985, the ratio of loan interest payments to revenue was 27% and the debt to equity ratio was 255% (compared with an average of 40% for U.S. railways). This situation is expected to continue until KTM can begin to produce a positive cash flow from its operations and reduce the level of new investment--the net increase in fixed assets in service since 1981 is 50% or M\$357 million. Until that time, KTM will not only be totally dependent on the government for its long-term survival but will also be dependent on regular infusions of cash for day-to-day operations. As a first step toward regaining financial soundness, the railway is carrying out a costing study which is expected to be completed by the end of 1987. Based on the findings of the study, Government intends to revise the rail tariff structure. In the longer term, Government is considering the possibility of privatizing the railway, and a report has been submitted by consultants who carried out a feasibility study.

The Future of the Railway

3.35 If KTM is to survive, it should seek to provide an efficient and low-cost service for those goods for which it has a competitive advantage. Given

the relatively short distances in Malaysia, the railway will have to become highly specialized to attract those commodities being transported over long distances and in large quantities. The railway should therefore initiate a program to improve its efficiency through productivity gains and better management. Many improvements of this type require no capital costs since they concentrate on operational changes which can be made immediately. However, some physical changes will eventually have to be made to improve overall efficiency. Consultants have designed a three-phase program for this purpose which could be carried out in five to eight years at a cost of M\$376.5 million. The recommended program would modernize the railway without requiring major investments (like the double tracking that had previously been recommended and which is considered uneconomic). Details of the program are given in Annex 2 of the Report file.

3.36 To initiate action on its financial problems, it is recommended that KTM identify its true costs of operations by carrying out a revaluation of its assets. This should determine the replacement cost of all fixed assets, net of a revalued amount for accumulated depreciation, and each asset's estimated remaining useful life. The revaluation should also attempt to estimate the salvage value of all personal and real property belonging to KTM to allow Government to determine whether or not the benefits of disposing of KTM's assets and reinvesting them in other transport modes would exceed the costs of continuing railway operation. The revaluation of assets would have the additional benefit of increasing KTM's capital by the amount of the revaluation.

3.37 Once the assets have been revalued and the true operating cost of each line and/or service is determined, those lines and services should be continued that have been found economic, i.e., covering their full operating costs and providing KTM with a return on its investment. For uneconomic services that the Government believes must be provided as a social service, the Government should contract with KTM to provide the service in return for a fee which together with the revenue from sales will provide KTM with a reasonable return on its investment. All other uneconomic services should be terminated.

3.38 In 1985 KTM received over M\$12 million in rent. Consideration should be given to developing KTM's nonoperating assets and treating them as a separate profit center and managing them for profit maximization.

3.39 KTM should also be permitted to increase its tariffs annually. These rate increases should be based on a marketing survey of those areas where KTM has a pricing advantage. The railway should adopt a policy of implementing small regular increases that will not be disruptive to the users.

3.40 KTM's capital structure needs to be modified. The Government should agree to capitalize approximately 50% of the debt owed by KTM and agree to a no-interest, 25-year amortization rate for the remaining debt. This would place KTM in a much better position to be privatized, if that course is pursued. Privatization could begin by selling approximately 40% of KTM's common stock to the public for new capital. As an inducement to purchase the stock, the Government should agree to provide subsidies for uneconomic lines and services being provided by KTM if those services are deemed necessary for

social needs. The subsidy should be directly related to a specific service and should be sufficient to cover KTM's costs of providing the service and be subject to annual negotiation between the railway and the Government. The sale of stock would provide KTM with new capital and encourage the careful evaluation of the costs and benefits of providing specific services. In addition, by providing reasonable compensation to KTM for these services, it will begin instilling the concept of cost consciousness that should eventually minimize direct subsidies.

3.41 In order to raise additional capital, KTM should explore the possibility of selling some of its wagon fleet to its customers and leasing it back. This will allow KTM to get some operating cash out of its inventory of fixed assets, and its customers will have greater control over the equipment used to move their products, thereby assuring themselves of a higher level of service and car availability. This same argument could also be used in the purchase of new equipment, in which case, investors would purchase the equipment and lease it back to the railway.

3.42 If the Government decides not to privatize the railway, KTM should be converted into a separate corporate entity with the objective of providing transportation services at a profit. As a separate corporation, KTM should then be exempted from civil service requirements and other restrictions related to government agencies.

3.43 To survive as a viable business, KTM should provide a better quality service at the lowest possible cost. To help reduce its operating costs, KTM should determine the optimum number of employees required to provide the required services. Any employees determined to be in excess of the required number should be transferred to other agencies, or the Government should look into the establishment of a separate holding company to which it would pay subsidies to maintain the salaries of the redundant employees. Government's current requirement that KTM maintain more employees than necessary affects the overall productivity of the railway and ultimately increases the cost of providing service, thereby making it impossible for KTM to be competitive with other transport modes.

C. The Aviation Subsector

Infrastructure and Equipment

3.44 Malaysia has adequate civil aviation infrastructure, with four international airports capable of handling wide-bodied aircraft, 14 domestic airports served by scheduled aircraft, 25 short take-off and landing (stol) airports, and 12 rural airstrips. The international and domestic airports are equipped with various radio and navigational aids (see Table 3.15) while the stol and rural airstrips are operated under visual flight rules with minimum navigational facilities. The vast majority of flight services within Malaysia are provided by the Malaysian Airlines System (MAS), a Government-controlled national corporation. MAS operates a fleet consisting of 36 wide- and narrow-bodied aircraft including Boeing 747s, 737s, DC-10s, Airbus, Fokker F-27s and Twin Otters. The standard of service provided by the different airports varies considerably in terms of terminal facilities, navigational equipment

and operational restrictions, depending on the type of aircraft served. Annex 3 provides details of facilities at the major airports.

3.45 Government allocations and expenditures for the aviation subsector have increased appreciably under the past three Development Plans (see Table 3.16). But while expenditures reached an all time high at M\$871.4 million in 1981/85, total demand for air transport by passengers (freight traffic is insignificant) remained almost static for the last five years (Table 3.17), due both to the economic recession and the effects of competition from road transport which has sharply reduced traffic at several points (notably Melaka, Tawau and Lahad Datu). The completion of the North-South Expressway by the mid-1990s should have a similar negative effect on domestic passenger demand at Johor, Kuala Lumpur, Ipoh, Penang and Alor Setar. Future improvements based on traffic forecasts should therefore be re-examined on the basis of changing conditions, especially as they relate to intermodal developments.

Institutions in the Subsector

3.46 The Department of Civil Aviation (DCA), which comes under MOT, suffers from some of the same problems as the railways. DCA is responsible for the administration of Malaysia's airports. Its staff exceeds 6,000 people. While DCA has introduced a form of commercial accounting, it still comes under Treasury control for budget and financial policy. Fees and charges for facilities and services must therefore be approved by the Government on the recommendation of the Ministry of Transport. Some of the rates and fees charged by DCA have not been revised since 1975, despite the appeals of the Department to the Finance Ministry on this issue over the years. DCA landing fees, for example, have not been changed in ten years and are now among the lowest in East Asia.

3.47 Like the railways, DCA's investment program is determined by Government and is often not geared to needs. Investment in airport construction frequently exceeds traffic requirements, while the much-needed upgrading of the country's antiquated traffic control system has been ignored. With the current system approaching saturation, the issue of traffic control and management requires urgent attention in the interest of safety.

3.48 In 1986, DCA had revenues of M\$64.9 million, of which 77% was contributed by Kuala Lumpur International Airport (see Table 3.18). While operating revenues during 1982-86 grew by 38%, operating expenditures increased by 69%, resulting in operating losses averaging about M\$275.0 million a year during the period (Table 3.19). Including development expenditures, the overall deficit reached M\$1.1 billion. Unless DCA is able to gain Government's agreement to increases in all of its fee rates, the Department's financial position is not likely to improve. DCA management recognizes this issue as the most pressing one it faces.

3.49 Malaysian Airlines System. Between 1976 and 1986, MAS was profitable in all but one year, 1982, and it has been able to realize steady annual increases in operating revenue and stockholder equity. This positive financial history is a reflection of the airline's successful operations and the annual increases in network size, available capacity, available passenger capacity, as well as the number and volume of passengers and cargo trans-

ported. These operational improvements have also coincided with steadily increasing passenger and overall load factors and a level of employment that has been virtually constant since 1981. Tables 3.20 - 3.22 show financial data for MAS, including ratios and key statistics, balance sheet and income statement. The following table summarizes the airline's operating and financial results:

MAS OPERATING AND FINANCIAL RESULTS, 1977/78 - 1985/86

	1977/78	1979/80	1981/82	1983/84	1985/86
Total revenue (M\$ '000)	418,063	581,527	995,345	1,237,302	1,326,003
Net profit (M\$ '000)	21,576	16,468	<35,168>	95,190	104,904
Return on equity (%)	18.5	10.1	<26.1>	39.7	16.3
Network size (km)	58,720	78,399	87,467	88,512	91,776
Passenger-km ('000)	2,170,665	3,061,890	4,810,862	5,624,476	6,195,474
Cargo ton-km ('000)	53,243	81,572	132,925	178,519	212,216
Overall load factor (%)	63.8	67.5	70.9	69.8	74.0

3.50 Approximately 77% of airline operating revenue comes from passenger transport while international operations, which carry about 45% of all passengers, provide in excess of 73% of total passenger revenue. Although MAS has a monopoly in its domestic market and is a small international carrier in very competitive and established markets, its international operations account for more than 75% of total revenues.

3.51 During the last five years, MAS has been successful in controlling the annual growth rate of its operating expenses to approximately 4% while at the same time achieving a 7% annual growth rate in revenue. This improvement, which was mostly the result of a 6.5% annual growth rate in passenger-km, improved its operating ratio from 103% in 1982 to 89% in 1986. It should be noted, however, that this period began in a year that reported a net loss, 1982, and ended in a year, 1986, in which the overall levels of profitability declined (Table 3.22). The decline in profitability in 1986 was largely due to a reduction in passenger and cargo yields resulting from a change in the traffic mix and slight decline in the number of passengers. The reductions in operating income were, however, partially offset by a continued decline in the amount of interest expense paid by the company. MAS's interest expense in 1986 was 34% less than the level in 1983 due to a reduction in worldwide interest rates and a 12% decline in MAS's level of indebtedness between 1983 and 1986.

3.52 In 1986, MAS's stockholder equity was increased by over 70% as a result of a sale of common stock that reduced the Government's ownership in the airline to 70%. As a result of the stock sale, the company's long-term debt-to-equity ratio improved from 2.1:1 to 1.2:1, but the level of debt is still too high. This high degree of financial leverage has produced high returns on equity (ROE) in FY84 and FY85 of 40% and 35%, respectively. ROE declined to 16.3% in 1986 largely due to the increased level of stockholder's

equity that year. If the ratio of indebtedness to total equity were reduced even further to a more conservative level of 0.85:1, the ROE for 1986 would have dropped below 15%. An additional benefit to the sale of stock was that the company's liquidity improved significantly, as measured by the current ratio, from a level of 0.6:1 in 1984 to 1:1 in 1986.

3.53 MAS's financial performance has generally been very good, considering that the only government capital contributed was the original asset base in 1972 and that the level of tariffs has not been increased since 1982 for domestic operations and since 1972 for rural air services. In its 15 year life, MAS has become a modern airline with a strong management structure supported by a good computerized information system. However, in the future, it will need to continue to improve its level of profitability through a combination of tariff increases and continued cost control and reductions in the level of debt in its capital structure to a more conservative level.

D. Maritime Transport

3.54 Malaysia has a fairly extensive port system, with 25 ports in Peninsular Malaysia, 17 in Sabah, and 13 in Sarawak. The various ports are grouped under nine Port Authorities: four in the Peninsula, four in Sarawak and one in Sabah. The Peninsular Authorities at Kelang, Penang, Johor and Kuantan are all federal ports responsible to MOT. In Sarawak, Bintulu is a federal port while Kuching, Rajang and Miri Port Authorities come under the State Ministry of Infrastructural Development. In Sabah, all ports come under the Sabah Port Authority in Kota Kinabalu under the control of the Sabah State Ministry of Communications and Works.

3.55 Ports play a crucial role in Malaysia's import and export trades which are predominantly seaborne. As a result of the growing economy port throughput was fast increasing: 38.1 million tons in 1970, 50.8 million tons in 1980 and 70.5 million tons in 1985. Allowing for domestic trades that are estimated at 10 million tons Malaysia's seaborne trade amounts to about 60 million tons. More than half of Malaysia's total port throughput was handled in Sabah and Sarawak. However, hydrocarbons and timber amount to nearly 90% of the 38 million tons handled by the ports of East Malaysia.

3.56 Four major ports in Peninsular Malaysia: Port Klang, Penang, Johor and Kuantan handled in 1985 about 20 million tons, using only 3/4 of their total handling capacity. The utilization of the container capacity was much lower: 47.5%. On the other hand, ports like Kuching or Kota Kinabalu still operate at or near capacity. Underutilization of facilities of certain ports in Malaysia has resulted from the stagnating market for the country's exports, poor port planning and the lack of coordinated transport planning to facilitate intermodalism. An overview of the throughput of some of Malaysia's major ports in 1985 is shown in Table 3.23.^{3/}

^{3/} It should be stated in a note under Table 3.23 that port throughput only reflects cargo handled at berths in certain of Sarawak's and Sabah's ports (excluding logs). It might be worthwhile including Table 3.23A showing total port throughput in Malaysia in 1985.

3.57 In addition to the principal ports administered by the various Port Authorities, numerous minor ports come directly under MOT's Marine Department. These minor ports mainly serve passenger needs and cargo handling undertaken by private companies. There is very little data on movements through the minor ports which play a secondary role to the main ports. While fees are prescribed for the use of these facilities, there is very little accounting and control. Many of the facilities are severely neglected since the operating funds to maintain them are often not available. There is no planning for the use or improvement of these facilities, and no concept of how they fit into the maritime or the overall transport system.

3.58 Despite the overall underutilization of port capacities, federal ports in Malaysia generated an operating surplus of more than M\$500 million in 1982-86 (Table 3.24). During the same period, Government investment in ports facilities in Peninsular Malaysia exceeded M\$1.0 billion (Table 3.25). While the larger ports were on average able to cover their operating costs, smaller ports under the Marine Department showed both operating deficits and overall losses when investment expenditure is included (Table 3.26).

3.59 Issues related to the ports subsector are addressed in the National Ports Study, financed under Bank Loan 2291-MA. The objective of this study was to formulate a systematic and coordinated port development plan and strategy to improve the operation and management of existing ports. In so doing, the study assesses the role of major and minor ports and related marine and land transport systems needed to meet the internal distribution and foreign trade requirements of the economy. Consideration is given to the appropriate policy, financing and administrative structure required for major and minor ports and the funds required to carry out future port development. The study also assesses the capacity of individual port authorities to fund their own improvements, including an examination of tariff and user charge structures, tax policies and revenue-surplus generating capacity. The study was completed in late 1987. In view of the comprehensive scope of the ports study, no recommendations regarding the maritime subsector have been included in this review.

E. Intermodalism and Containerization

3.60 Intermodalism was introduced in Malaysia in 1974 when KTM first handled ocean-going containers, but the rate of its development has not been as rapid as in other countries, largely due to inadequate container-handling capacity on the railway and government regulations restricting road container haulage. In 1986, some 345,500 twenty foot equivalent units (TEUs) were transported in Peninsular Malaysia by Malaysian carriers, 60% by road, 31% by coastal shipping and 9% by railway. Road container traffic, although the most important, involves shorter hauls, making coastal shipping and railways competitive for longer distances.

Rail Transport

3.61 In 1986, KTM handled about 32,000 containers, down from its peak of about 45,000 in 1984 (Table 3.27). The proportion of laden to empty containers was 1.04:1 in 1984, 0.91:1 in 1985 and 0.81:1 in 1986, indicating

that KTM is currently carrying 20% more empty containers than loaded units, an unfavorable trend from the point of view of revenues. Most of the empty units are being ferried back to Singapore to be returned to the shipping lines. KTM's capacity to handle container traffic is weak--container handling equipment is rather rudimentary, rolling stock capacity is insufficient, and no through-waybills are used. KTM has also failed to market its intermodal services. As a result, KTM is not able to price its services competitively and loses customers to the road.

Road Transport

3.62 Road container transport in Malaysia is provided by three licensed operators: Kontena Nasional (KN), Shapadu and Konsortium. KN carry containers throughout the whole peninsula, while Shapadu is restricted to a 20-km radius around Port Kelang and Konsortium operates in the North-Western states of the Peninsula only. KN was established in 1972 and had a total monopoly on road haulage for ten years, until 1982 when Shapadu was licensed to handle the increasing volume of container traffic coming from abroad. Konsortium was licensed in 1984. In 1986, 222,023 containers were carried by road, with KN having 65% of the market, Shapadu 23% and Konsortium 12% (Table 3.28). KN is indirectly controlled by the Government which holds 70% of its shares through its trust agencies and 30% directly. Shapadu and Konsortium are privately held.

3.63 The container rates originally established for KN were known to be high, but it was believed that as an emerging industry KN needed this protection. Because of its high tariffs and the lack of competition, KN never had the incentive to become an efficient, cost-conscious organization, responsive to customer needs. The tariff structure has changed very little since 1972, and the three current operators have no reason to reduce their rates. Since KN continues to report operating losses, its rates are kept high to generate revenues. The two private companies will not reduce their own rates, which are in line with those of KN, because their smaller and more efficient operations in combination with the price ceiling developed and maintained for KN provides them with substantial profits.

3.64 The oligopoly in road container transport in Peninsular Malaysia has made the cost of this service more expensive than that in neighboring countries like Singapore and in Sabah and Sarawak where rather marginal container traffic volumes are moved by a larger number of suppliers in competition. Even compared to local common carrier services, which themselves are regulated to a degree, the cost of container haulage is exorbitant. For example, the official rate for hauling a container from Johor Bharu to Kuala Lumpur is M\$1,200 while the same 15 tons of cargo carried as break-bulk are transported for M\$500, even though container haulage should offer the lower rate since less handling is involved.

3.65 One effect of the high container haulage rates has been that a rather large amount of container traffic is unstuffed at the ports or in warehouses for furtherance by lower-cost conventional trucks. This is contrary to the concept of containerization whereby the goods are shipped from origin to destination in one container to reduce handling costs, prevent pilfering and provide a quicker and more reliable service.

Coastal Shipping

3.66 Coastal container traffic involves three main routes: Port Kelang-Singapore, Penang-Singapore and Port Kelang-Penang. In 1986, total coastal container traffic on the three routes was 91,480 TEUs, with the Port Kelang-Singapore route by far the most significant with about 75,000 TEUs and an annual growth rate of 63% during 1981-86 (Table 3.29).

IV. TRANSPORT IN SABAH AND SARAWAK

A. Macroeconomic Perspective

4.1 Sabah and Sarawak, on northeastern Borneo, comprise 60% of Malaysia's total area. With their large mountain ranges and long coastlines, both states are more densely settled along the coast and rivers. Sabah's population of 1.3 million and Sarawak's 1.5 million together represent 18% of Malaysia's total population. Population density in 1985 was 17.4 persons per sq km in Sabah and only 12.5 persons per sq km in Sarawak, compared to Peninsular Malaysia with 120 persons per sq km. Both states are primary resource suppliers, with agriculture and forestry as the main sources of economic activity. Sabah and Sarawak each contributed 8% to Malaysia's GDP in 1985, with exports outpacing imports 2.3 to 1 in Sarawak and 1.38 to 1 in Sabah.

B. The Transport System

Introduction

4.2 Sabah's transport network consists of about 7,555 km of roads, a 134-km railway and three major ports. Sarawak has only about 4,620 km of roads, no railway and six sizable ports. Both states have numerous smaller ports and anchorages serving coastal and riverine traffic. Maritime transport is, in fact, the dominant mode in both states. International air services are provided at Kota Kinabalu in Sabah and Kuching in Sarawak, complementing the domestic services provided by a fairly extensive network of airports and airstrips throughout the two states.

4.3 The split of federal and state responsibilities for Sabah and Sarawak, which joined the federation at a later stage than the rest of Malaysia, is different from that for the states of West Malaysia. The East Malaysian states have retained some powers not given to the other states, and exert a greater degree of independence and control over the administration of their transport networks (except for aviation which comes under the federal authorities). While well intended, this special treatment has stunted the development of their transport systems, and their road networks, particularly that in Sarawak, are well below the standards of roads in West Malaysia. The general effects of the lack of transport development in both states of East Malaysia is higher transport costs and less than optimum service. A detailed description of the transport sectors of Sabah and Sarawak is given in Annex 4 and Technical Note 4 in the Report File.

Roads and Road Transport

4.4 At the end of 1985, the total length of roads in Sabah and Sarawak was 7,555 km and 4,620 km, respectively, about a third of which were paved (Table 3.1). This compares with about 80% paved in West Malaysia. In terms of road network density per sq km of land area, Sabah and Sarawak have ratios of 0.10 and 0.04, respectively, compared to the national average of 0.13. However, in terms of road length per capita (km/1,000 population), Sabah and Sarawak have ratios of 5.90 and 2.99, respectively, well above the national average of 2.68 due to their small populations in relation to size. Of the total network in Sabah and Sarawak, 77% and 63%, respectively, have now been taken over by the Federal Roads Department (JKR) for maintenance purposes. Road standards in East Malaysia are below those in Peninsular Malaysia and many of the roads are in poor condition and often impassable during the rainy season. The Bank-assisted Sabah-Sarawak Road Project (Loan 2291-MA) is currently assisting the Government to upgrade the network and strengthen the local maintenance capability. While the particularly limited development and poor condition of the network in Sarawak has been a major factor in restricting the state's development, Government has been attempting to rectify the imbalance by channeling a higher proportion of road investments to the state. Thus, during the Fourth Plan (1981-85), the network was increased by 22% p.a. in Sarawak, 10.6% p.a. in Sabah and 7.9% p.a. nationwide.

4.5 In 1986, Sabah's road transport fleet comprised 14,642 commercial goods vehicles, of which 94% were either under 2,500 kg (and not requiring a license) or licensed for own-account service. Only 878 vehicles provided for-hire services, reflecting the general desire of truck operators to circumvent the regulatory system (paras. 3.14-3.18). Due to the economic slowdown, Sabah's commercial fleet has contracted considerably from its peak level of 26,065 units in 1984. However, Sabah's public passenger carrier fleet increased by 50% during 1982-86, with stage buses accounting for 97% of the total. About two thirds of the buses are small units with less than 30 seats, reflecting the State's sparsely settled population.

4.6 In Sarawak, the commercial vehicle fleet in 1986 totaled 8,417, of which only 12% held for-hire licenses. Between 1982 and 1986 the number of smaller vehicles not requiring licenses grew rapidly, again to avoid regulation. Public passenger vehicles in Sarawak increased by 33% from 1982 to 1986. Stage buses accounted for 88% of the fleet, indicating the local nature of trips.

Rail

4.7 The only rail system in East Malaysia is the Sabah State Railway (KNS), which operates 134 km of meter gauge track from Tanjung Aru, its main base of operations and workshop, to Tenom. The railway first runs southwest along the coast to Papar and Beaufort on flat terrain, then turns to run southeasterly up the tortuous Padas Gorge to Tenom, a distance of 49 km from Beaufort. Overall track condition is poor--necessitating speed restrictions, drainage is bad, and tall grass covers the sleepers, obscuring the rail fixings. At end-1984, the KNS fleet comprised one steam and 14 diesel locomotives, 6 diesel train units, 17 passenger coaches and some 200 freight wagons. Much of this equipment was old.

4.8 KNS aims to provide cheap transportation for the general public as an alternative to the road. The railway is not profit-oriented but only concerned with providing a well-maintained social service. While this objective has been achieved, the railway has also not been able to operate profitably. As indicated in Table 4.1, in 1986 KNS operating expenditures totaled some M\$7.5 million while revenues came to only M\$1.3 million and losses totaled M\$6.96 million. The high proportion of staff salaries in total expenditures (77%) indicates significant overstaffing.

4.9 A small railroad can usually be operated profitably if it has large volumes of assured traffic. However, KNS has neither a strong freight nor passenger business. Between 1980 and 1986 total freight in tons declined by about 75%, total freight revenue decreased by 69%, and the total number of passenger journeys fell by about 70%. Faced with an overall decline in revenues from M\$3.9 million in 1981 to M\$1.3 million in 1986 and a simultaneous increase in expenditures from M\$7.1 to M\$7.5 during the same period, the KNS management seems to have made no attempt to reduce expenditures or cut back on its relatively large amount of equipment. In addition, KNS bases its maintenance program on a fixed schedule rather than on need, with the result that in 1985, the cost of maintenance of civil structures and mechanical equipment was five times greater than the total revenues received for the year. KNS thus has neither a strong market, nor a management equipped to run the railroad in an efficient manner. From a financial perspective, the State Government would be better off by closing KNS, selling the assets, and using the savings to construct a road link from Beaufort to Tenom. A covenant under the Bank's Third Highway Project (Loan 1379-MA) to phase out the railways' operations between Papar and Beaufort has not been honored.

Air Transport

4.10 In general, Sabah and Sarawak are relatively well equipped with airport facilities, having nine major airports operated by DCA and 39 rural airstrips operated by various public and private concerns, including 15 under DCA. Only Kota Kinabalu airport in Sabah and Kuching in Sarawak are operated on a 24-hour basis and have facilities for wide-bodied aircraft. Details of the facilities available at the major airports are included in Table 3.15.

4.11 As in Peninsular Malaysia, DCA is responsible for airport administration. During 1982-86, DCA's operating revenues accounted for only a small portion of expenditures, in 1986 comprising only 23% of total outlays.

4.12 Scheduled air services are provided by MAS, which operates three B737s, seven F27s and four Twin Otters for the East Malaysian air routes. The fleet is adequate for current demand.

Coastal and Riverine Transport

4.13 Sabah has seven seaports, including major ports at Kota Kinabalu, Sandakan and Tawau which are equipped with facilities capable of accommodating ships up to 10,000 dwt. Containers are handled by feeder container vessels equipped with ship-based cranes and are currently limited to 20 ft boxes. Tawau and Sandakan are also equipped with liquid cargo handling facilities.

Sepangar Bay, located some 17 km from Kota Kinabalu, is a new industrial site with an oil jetty and two bulk jetties to handle cement. Minor ports in Semporna, Kudat, Lahad Datu and Kunak primarily serve their respective immediate hinterlands.

4.14 Sea and river ports dot the 970 km coastline and numerous river systems in Sarawak. Of these, only six ports, which are administered by four port authorities, are significant in terms of international and coastal shipping. These are the Kuching Port Authority; Sibuan, Sarekei and Binatang ports under the Rajang Port Authority; the Miri Port Authority; and the Bintulu Port Authority. With the exception of Bintulu, which is a federal port, the rest are under the supervision of the Sarawak state authorities. Bintulu has a specialized liquified natural gas (LNG) terminal capable of handling vessels of up to 60,000 dwt and is also equipped with three general cargo and one bulk cargo berths. Facilities elsewhere are often rudimentary, in poor condition and congested since insufficient funds are allocated for their maintenance and upgrading. This is partly due to the lack of a consistent monitoring system for river transport activities. Due to the paucity of information on the overall role and impact of river transport in the state transport system, very little forward planning is being done on the future development of the system.

4.15 Information on the shipping fleet serving East Malaysia is sketchy. Of some 2,000 ships of 15 tons or more registered in the two states, about 70% are registered in Sarawak reflecting the importance of water transport there. Log carriers and general cargo ships dominate the fleet. While river passenger boats are insignificant in Sabah, they are important in Sarawak as a major form of transport.

Regulatory Environment

4.16 The licensing and regulatory problems that severely curtail competition in the road transport industry on West Malaysia are also felt in East Malaysia, but with some significant exceptions. In East Malaysia, due to a lack of enforcement, mini bus operators compete with regular bus services, a practice which does not exist in West Malaysia. This permits the operators to tailor their services to the routes and results in lower costs to consumers. Greater competition is also allowed among carriers licensed to haul containers. With over 222,000 TEUs handled in Peninsular Malaysia in 1986, only three carriers were licensed to provide service. In Sabah and Sarawak, where less than a thousand TEUs are transported monthly, 8 and 16 trucking companies, respectively, are licensed to carry containers. In addition, due to lack of enforcement by the regulatory authorities, a number of pirate truckers undercut the licensed operators in this very limited market. As the following table indicates the relative lack of regulation in East Malaysia benefits the consumer.

CONTAINER HAULAGE RATES BY AREA

Location	Rate (M\$)
Singapore 10-15 km	M\$90
Kota Kinabalu 10-20 km	M\$70-100
Kuching 10-20 km	M\$100
Port Kelang 8-10 km	M\$140

C. Traffic Flows

Sabah

4.17 Road and marine transport dominate traffic flows in Sabah. In 1986, road transport carried an estimated 4.6 million tons of freight and 3.5 million passengers of whom 0.5 million travelled by bus. Up to the year 2000, road freight traffic is expected to increase by 4.8% p.a. and passenger traffic by 5.8% p.a. Data on coastal traffic in Sabah indicate total freight transport of about 120,000 tons, consisting mainly of cement, petroleum, cereals and timber. River transport is mostly confined to the movement of logs and, to a smaller extent, palm oil products, fertilizers and passengers. Railway traffic in Sabah is insignificant and still declining, with about 20,000 tons of freight transported and about 500,000 passengers.

4.18 Air freight traffic in Sabah totals about 5,000 tons annually and for various routes is expected to grow between 2.5% and 4.9% p.a. during 1987-95. Air passenger traffic stood at about 885,000 passengers in 1986 and is expected to grow at an average of 4.1% p.a. up to 1995. Four routes account for about 90% of total passenger traffic. Rural air services operated by MAS, while accounting for only about 8% of East Malaysian traffic, are often the only link to some communities. Many other private operators also provide service. Funding should be provided to ensure that, in the absence of all-weather roads, air service continues but is not a burden to MAS. The cost of this operation should be clearly identified and, if necessary, subsidized.

Sarawak

4.19 In Sarawak, road transport plays a lesser role than in Sabah due to the state's limited road network, its extensive river transport system and the fact that most people live close to the coast or along the navigable rivers. So little data exist on coastal and river traffic, however, that no reliable estimates of water-borne traffic can be made. As for roads, freight traffic in 1986 amounted to 2.8 million tons and is expected to grow at an average of 7.2% p.a. up to the year 2000. Passenger traffic in 1986 stood at 1.4 million, up 12.4% over 1985. Forecasted growth until the year 2000 is 7% p.a.

The potential for increased road transport in Sarawak is large and the ongoing Bank-financed Road Transport Review funded under Loan 2291-MA has identified a program of road infrastructure development up to the year 2000.

4.20 Air freight traffic in Sarawak is relatively insignificant, amounting to only 3,307 tons in 1986, two thirds of which was carried on the Kuching-Miri and Kuching-Sibu routes. Air freight is likely to lose traffic to road transport as the network expands. Passenger traffic in 1986 stood at about 675,000 for Sarawak as a whole, with Kuching-Sibu and Kuching-Miri accounting for 50% of the total. In addition to regular air services in Sarawak, MAS also provides Rural Air Services (RAS) as an important link in the transport system. These services are provided with Twin Otters and as such are limited in the amount of freight they are able to handle. In 1986, about 685 tons of freight were transported compared to 554 tons in 1976, an average 4% annual growth. Future growth up to 1996 is projected at only 1.6% p.a. RAS passenger traffic during 1976-86 increased threefold to about 145,000 passengers p.a. Future growth is expected to decelerate to about 5.4% p.a. The RAS play a vital role in providing transport to areas with no other reliable transport arteries.

D. Transport Expenditures and Financing

4.21 The federal government has traditionally provided a substantial share of development expenditures for transport in East Malaysia to supplement state and private financing. However, budgetary allocations under the Fifth Malaysia Plan show a total transport investment for Sabah of M\$883 million, including a federal share of 39%, substantially less than the 48% of federal financing available under the previous plan. For Sarawak, total funding under the Fifth Plan is M\$676 million, of which 58% is from the federal government compared to 76% under the previous plan (Table 4.2). Total absolute amounts provided under the Fifth Plan for Sabah and Sarawak are 29% and 53%, respectively, less than the amounts provided under the Fourth Plan.

4.22 As indicated in Table 4.2, allocations under the Fifth Plan are heavily skewed in favor of roads, with only small allocations to other modes. Significantly, no federal allocations have been made for ports and marine services in Sarawak, despite the importance of riverine transport in the state. This would seem to indicate a need to improve both investment planning and the coordination of planning between federal and state authorities.

4.23 During the Fourth Plan period, about 39% of Sabah's total transport expenditure was financed by the state and about 13% by own sources. This will change under the Fifth Plan to 49% and 11%, respectively. Sarawak financed some 19% of transport expenditures under the Fourth Plan (5.5% came from private sources) and is expected to finance 31% during the Fifth Plan (with 11% coming from the private sector).

E. Transport Agencies

4.24 The Ministry of Communications and Works (MCW) in Sabah and the Ministry of Infrastructure Development (MID) in Sarawak are the chief transport agencies in their respective states, responsible for formulating, planning, coordinating and monitoring the sector. In addition, State Planning Units in both states have overall responsibility for preparing the five-year development plans and ensuring overall planning coordination. While these units should play an important role in transport planning, they do not have staff trained as transport economists and planners and their effectiveness is very limited. They are also hampered by a lack of data. There is thus a need to establish a coordinating mechanism with the federal MOT to ensure data consistency and adequate modal coverage. Consideration should also be given to staff exchanges between federal and state officials to improve sector knowledge and provide better channels of communication.

4.25 Subsectoral responsibilities in each state are largely handled by: (a) Marine Departments, which are federal departments accountable to MOT in Kuala Lumpur and, in that they also perform state functions, MCW and MID; (b) Road Transport Departments, also accountable to the federal department in Kuala Lumpur; (c) Public Works Departments; and (d) regional offices of the Department of Civil Aviation.

V. TRANSPORT CAPACITY ANALYSIS

5.1 This chapter identifies critical bottlenecks in the Malaysian transport system over the short term up to 1992-95. The intention here is not to give precise subsectoral master plans but to provide decision makers with some possible solutions to deal with the transport deficiencies or capacity shortages that are likely to arise. For a more detailed capacity analysis, see Annex 5 in the Report File.

A. Road Transport and Infrastructure

Road Transport Industry

5.2 In order to determine whether there was over- or under-capacity in the road freight and passenger transport industry, a number of indicators were calculated to serve as proxies of measurement, namely, (a) an overall capacity utilization indicator; (b) an annual rotation and lapse time factor; and (c) an empty trip indicator. The overall capacity utilization indicator measures total actual ton-km over the theoretical capacity of the available fleet. Table 5.1 shows that in 1986 the utilization rates for medium and large trucks were 0.24 and 0.62, respectively, indicating ample reserve in the fleet to handle expected traffic up to 1995. The annual rotation and lapse time factor provides yet another dimension of the utilization of vehicles. The average rotation for medium, heavy and all trucks (assuming empties) is 248, 575 and 322 trips/vehicle/year, respectively, indicating that heavy vehicles make 2.3 times as many trips as medium vehicles. Without empties, the average rotation is lower at 171, 370, and 216 trips for medium, heavy and all trucks, respectively. The time lapse for vehicle trips carrying all cargo (excluding empties) is 2.13, 0.99 and 1.69 days for medium, heavy and all

trucks. Without empties, the time lapse is 1-1/2 times higher. Finally, the empty trip indicator shows that about 33% of all trips by medium size trucks on the routes studied carried no loads, while 25% of heavy vehicle trips were empty.

5.3 For bus passengers, similar fleet capacity utilization indicators were calculated. Table 5.2 indicates the need for about 1,850 express buses in 1995, assuming that capacity utilization remains constant at 1986 levels. However, if utilization is assumed to reflect past trends, then the utilization rate would fall and a greater number of buses would be needed, in this case, 1,946 express buses in 1995.

5.4 Although the data available do not permit definite conclusions on fleet capacity, computations suggest little overcapacity in the trucking and express bus industries. As these industries are mostly in the hands of the private sector, it is anticipated that they will continue to be able to adjust to the demand for transport in the future, barring any drastic changes in governmental regulations, including axle-load limitations. However, since any change in the axle-load configuration would be implemented over a fairly long period, the impact on future road capacity requirements is not expected to be drastic. In the short term, the effect of increased axle load limits will likely only postpone congestion. The greatest impact will be on the road maintenance program.

Road Infrastructure

5.5 In Peninsular Malaysia, the majority of roads to be built by Government between now and 1995 form parts of the North-South Expressway. The various sections would be justified on the basis of an untolled highway with some sections to dual carriageway standard. However, the government opted to construct the entire length to the same standard making some stretches uneconomic. Approximately 636 km of new roads are planned at an estimated cost of M\$3.2 billion (Table 5.3). Another M\$167.0 million is allocated for major improvements to existing roads to be carried out by 1992. Aside from these planned investments, the only investment needs foreseen, based on capacity calculations carried out by the Department of Public Works and preliminary findings of the Axle Load Study, are three road stretches in the Kelang Valley which will have reached their carrying capacity by 1990 and eight road sections that will require upgrading by 1995 (Table 5.4). An additional M\$32.0 million will also be required to upgrade bridges on safety grounds and meet axle load requirements which may be adjusted.

5.6 For Sabah and Sarawak, proposed road projects are presented in Tables 5.5 and 5.6 totaling more than M\$4.5 billion. These are long-term plans as only about M\$530.0 million have been allocated under the Fifth Malaysia Plan. With the completion of trunk roads financed under the ongoing Bank loan (2291-MA), Sabah will have a completed basic network traversing the state. Sarawak, on the other hand, has yet to begin construction of its trunk road system, and the Road Transport Review financed under the Bank loan will identify priority investments needed to provide the required transport capacity.

B. Rail Fleet and Infrastructure

The Rail Fleet

5.7 In determining the adequacy of the rail system, it must be kept in mind that there is a certain interdependence between the rail fleet and the rail infrastructure, and any changes in the size and composition of one part of the system will affect utilization of the other. Despite some expected improvements in locomotive availability between now and 1990 (67% in 1987 and 73% in 1990), KTM will continue to suffer a shortage of motive power. The situation is similar with freight wagons where availability has been decreasing due to delayed maintenance, reductions in maintenance budgets and spare parts as well as inadequate maintenance facilities. (See details in Chapter 4 of Annex 5 in the Report File.) In addition, KTM's fleet turnaround time is very poor, with only 15% of wagon time spent in transit and 85% either in terminals or intermediate yards (see Table 5.7). Other factors affecting the productivity of KTM's rolling stock include: (a) the obsolete character of much of the stock; (b) the extremely unfavorable structure of operating time where the proportion of movement to station time stands at 1:5.7; (c) low utilization of wagon carrying capacity (net-to-gross load of wagons represents only 52% of carrying capacity); and (d) the very low number of rotations per wagon (three round trips per month). As a result, KTM is barely utilizing 50% of its available carrying capacity for freight. Passenger movements show much the same. The average occupancy rate is about 73%, although higher for ordinary trains than for express trains and higher for second than for first and third class. The future of passenger services is very uncertain as the impact of the North-South Expressway is likely to divert passenger traffic, particularly from ordinary trains. Regarding the Sabah State Railways (KNS), there is currently a large surplus of rolling stock and, since maintenance of this stock is economically unjustified, KNS should take immediate steps to scrap or sell less suitable or obsolete wagons which have no cargo to carry.

Infrastructure

5.8 There are indications that KTM has considerably more carrying capacity than is presently being used. This, however, does not imply that its operations could not be improved through efficiency measures such as equipment modernization, improved signalling and communications, increased length of block sections, provision of crossing facilities at some stations, etc. In the past it was suggested that KTM could improve its productivity by double tracking, but this is the most costly way of approaching the problem and would not address the other operational issues which result from the outdated equipment and infrastructure. Forecast traffic levels are also not sufficient to justify the investment required for double tracking. Overall, KTM should be able to double its cargo traffic and increase its passenger traffic by 50% before additional infrastructure investments are required.

5.9 The greatest challenge to KTM in the near term will be to retain its current level of traffic given the increasing competition from road transport. Currently, only 4% of all cargo and passengers in Peninsular Malaysia is carried by rail, and current rail freight traffic is in no way assured unless a concerted effort is made to adapt to intermodalism.

5.10 Given the present financial and operating condition of KTM, it is unlikely that the Government's plan for privatization (para. 3.34) will succeed without massive subsidies which might negate the objective of cutting costs. Also, since transfer of the railway would take at least two years to accomplish, action would still be needed in the interim to avoid further traffic slippage. If Government does decide to proceed with privatization, the railway should first be modernized. This would be a monumental task requiring full government support and investments in the short term. Estimates of the cost of such a program vary considerably, from KTM's own estimate of M\$3.4 billion over five to eight years to a more modest basic program of M\$376.5 million (Annex 2 in the Report File). The latter would allow KTM to significantly improve its operations without major infrastructure investments such as double tracking. Considering the very uncertain future of the railway, any further investment in infrastructure or rolling stock should be justified on economic grounds and the railways' demonstrated ability to retain and attract traffic. Given current circumstances and the traffic mix, this is highly unlikely during the period under review.

C. Coastal Shipping Fleet and Port Infrastructure

5.11 The following discussion deals with the fleet and infrastructure involved in coastal trade. Traffic to and from Singapore is included since the bulk of coastal trade within the peninsula consists of petroleum shipments from Singapore in addition to some break-bulk and container traffic. These cargoes are shipped by both Malaysian flag vessels and foreign flag ships.

The Fleet

5.12 Malaysia's licensed coastal shipping fleet in 1986 consisted of 329 vessels totalling about 807,000 GRT of which 274 ships of 572,000 GRT were Malaysian flag vessels. The remainder were foreign-flag ships chartered on spot basis to make up for sudden and abrupt shortfall in capacity due to unavailability of suitable Malaysian tonnage at a particular time. Due to the introduction of the Cabotage Laws in 1980 there has been a dramatic decline of foreign-registered ships which have suffered an 86% drop in available GRT.

SHIPS LICENSED FOR COASTAL TRADE, 1981 AND 1986

	1981		1986	
	No.	GRT	No.	GRT
Malaysian registered vessels	45	30,016	274	571,747
Foreign registered vessels	52	1,674,478	55	235,078

5.13 About 40% of the Malaysian fleet is dedicated to the transport of petroleum products, 50% to dry cargo and the remainder to palm oil, passengers and other commodities. As far as the tanker fleet is concerned, its present theoretical capacity is estimated at 4.5 million tons, assuming a 72% load

factor and an average 40 trips per year. Expectations are that prior to 1990 the existing capacity would be able to meet demand by more efficient utilization (i.e., better scheduling of loading and unloading, an increased number of round trips, etc.). While construction of a refinery at Malacca, which is planned to begin operations in 1991, will affect capacity requirements in the 1990s, up to 1990 there should be no critical shortage of tanker capacity to meet the needs of Peninsular Malaysia.

5.14 For the dry cargo fleet is enough capacity for bulk trades which consist mostly of cement and clinker movements from Telok Ewa to Sabah and Sarawak. In terms of general cargo trades container capacity is sufficient for the present level of traffic but as the degree of containerization increases there will be a shift from break-bulk ships to container ships. The former represent the major part of the supply of shipping services in general cargo trades and match the demand side, but their overall productivity is low.

Infrastructure

5.15 Most of Malaysia's ports serve both international and domestic shipping. Only two of the major ports, viz. Port Klang and Pasir Gudang have dedicated facilities to serve coastal ships. Elsewhere both types of ships share port facilities and as long as there is enough berth capacity coastal shipping does not encounter congestion. Based on findings of the National Ports Study and other estimates of coastal throughput (Annex 6, Technical Note 8 in the Report File), capacity projections for the particular ports are as follows:

- (a) Port Kelang handles the bulk of Malaysia's coastal trades. Presently, only the South Port has facilities dedicated for coastal break-bulk trades with an overall capacity of some 0.565 million tons, which is utilized in 60%. However, coastal container traffic, palm oil and petroleum cargoes are currently sharing port facilities with international shipping. Since there are still considerable reserves of handling capacity in Port Klang for these cargoes, traffic increases in coastal trades can be met up to 1995.
- (b) Penang Port, which now handles about 1.9 million tons of coastal cargoes, will have adequate capacities until 1995 when coastal trades are expected to reach 2.9 million tons. These trades are currently handled in Penang at both public and private facilities.
- (c) Johor Port (Pasir Gadang) has dedicated coastal facilities at two berths. Palm oil (mostly shipments from Sabah and Sarawak) constitutes the bulk of coastal cargoes handled at Johor Port, followed by petroleum shipments from Singapore. Break-bulk and containerized cargoes, which share port facilities with foreign-going ships, represent only a small portion of coastal trades, for which adequate handling capacity will be provided until 1995. However, utilization of the present coastal capacity from palm oil approaches a point of saturation and an additional vegetable oil berth is proposed for construction between 1988 and 1990 at the cost of M\$2.5 million

- (d) Kuantan Port handled 278,000 tons of coastal cargo in 1986 with a total capacity of 529,028 tons. Even assuming that coastal tonnage grew at an average 5% p.a. until 1995 when traffic would reach 403,000 tons, capacity would be more than adequate.
- (e) Kuching Port has a total coastal throughput of 544,000 tons in 1986 of which 280,000 tons was dry cargo, for which the existing facilities are insufficient. A project involving the construction of three additional berths on the left bank of Sungei Kuap is currently under way and, when completed in 1988, will provide dry cargo facilities that will be sufficient to meet traffic increases until 1995 and beyond that year. It is also anticipated that private facilities will continue to handle significant volumes of coastal traffic.
- (f) Sibu Port had a coastal throughput of 84,000 tons in 1986 representing about 49% of its total coastal traffic capacity of 165,071 tons. Projections of traffic increases indicate the port will have sufficient capacity to 1995.
- (g) Bintulu Port, which specializes in LNG operations, has also adequate facilities for coastal trades. The port handled 52,000 tons of coastal cargoes in 1986, most of which were dry bulk urea, sand and gravel. Although urea volumes are expected to increase, the bulk wharf capacity of 972,000 tons is sufficient to meet additional demand.
- (h) Kota Kinabalu Port handled in 1986 some 244,000 tons of coastal dry cargo. Although port capacity for these cargoes is at present nearly fully utilized, the expansion of the Port currently under way and expected to be complete in 1988 will add enough capacity to accommodate traffic increases up to 1995.
- (i) Sandakan, Sabah's second major port, has a dry cargo capacity of 287,000 tons, and in 1985 and 1986 handled 306,272 and 271,181 tons, respectively. Dry cargo throughput in 1985 obviously exceeded recommended levels. The Port's coastal traffic capacity is 120,540 tons, and in 1986 113,663 tons were handled. With such high utilization rates, it is unlikely that increased productivity alone would forestall capacity constraints by 1995. It is therefore recommended that a detailed feasibility analysis be carried out to determine the timing of additional investment.
- (j) Tawau Port, also in Sabah, handled 418,000 tons of coastal cargo in 1986, including 150,045 tons of dry cargo. With a dry cargo coastal capacity of 200,099 tons, the utilization rate was 75%. Capacity should continue to be adequate to 1995.

D. Air Fleet and Airport Infrastructure

Aircraft Fleet

5.16 The factors which influence the type and level of service provided by an air transport system are varied and complex. In addition to financial and

economic costs, other factors, including route structure, traffic flow and composition, existing traffic volumes, future potential growth and runway requirements of airports, must be taken into consideration in determining the type of aircraft a carrier is to provide.

5.17 The workhorses of MAS's domestic fleet are B-737s and F-27s. But with average ages of 11 and 14 years, respectively, they will eventually have to be replaced as increasing maintenance costs, technology gaps, operational capability, passenger appeal and resale value become problems. The load factor for B-737 domestic operations is 73% while F-27s achieve 68% and 76% load factors in Peninsular and East Malaysia, respectively (Table 5.8). Utilization factors, on the other hand, are 8.37 and 6.75 hours per day for the B-737 and F-27, respectively, although utilization is also a function of infrastructure, as operations are often limited to daylight hours due to the unavailability of night landing facilities. The Rural Air Services (RAS) operated by MAS in Sabah and Sarawak use four Twin Otters purchased in 1983-84. These flights operate with average load factors of 72% and are utilized an average of 6.5 hours per day.

5.18 As indicated in Table 5.9, MAS's fleet development plan for 1987-92 anticipates some changes in the mix. The choice is largely a reflection of developments at specific airports (since MAS must tailor its domestic fleet to the country's airport system) as well as very conservative traffic growth assumptions (0% growth in 1987 and 2% to 4% until 1991/92). Based on traffic forecasts and the consistently high load factors achieved by the B-737, two additional planes will be required to meet demand up to 1991/92. Regarding the F-27, MAS plans to replace its existing fleet with a new generation of more efficient turboprops in the near future. The type of aircraft selected could have a strong bearing on the type of airport improvements required in those airports now considered to have reached their saturation or are marginal for B-737 services. Concerning RAS, the Twin Otter is well suited to this type of operation and is not expected to be replaced during the study time horizon. Although development of the road network in Sabah will probably cause some reduction in RAS there, any excess capacity could be diverted to Sarawak which is expected to require a longer period to complete its basic road network.

Airport Infrastructure

5.19 Malaysia has already invested heavily in airport infrastructure (see Table 3.16) and has a relatively good air transport system (para. 3.44). To some extent there has even been overinvestment in facilities, forcing Government to justify similar levels of investment for cities that do not need such high standards. Examples of overbuilding include airports at Johor Bahru, Langkawi and Sandakan. At the same time, airports like that in Tawau are serving B-737s although the operational capabilities of the facilities there are stretched to the point of jeopardizing safety.

5.20 Based on assumptions detailed in Annex 5 in the Report File, only the airports at Sibul and Ipoh are unable to meet air transport demand and will require some investments in the near future. This finding differs from that of the National Airport Master Plan and some earlier studies which were generally overoptimistic in their traffic projections and as a result recommended a

higher level of investment than was economically justified. The present recommendations, however, are based on more recent traffic data and expected traffic developments as a result of other modal considerations. Kota Kinabalu and Kuching airports are excluded from this discussion since they both have recently completed new facilities which are expected to meet traffic requirements well into the next century. The capacity situation at the country's other major airports is summarized below and detailed in Annex 5 in the Report File.

- (a) Kuala Lumpur International Airport (KLIA) was slated for major expansion under the Airport Master Plan Study, but revised traffic forecasts indicate that the existing facilities will be adequate until 1995, provided that physical improvements are made to the runway/taxiway system as well as the check-in and baggage facilities in Terminal 1. An apron management plan should also be implemented to enhance the existing capacity of the parking apron. The plan to transfer general aviation out of KLIA should proceed without delay. The proposed lengthening of the runway to accommodate the 747-400 at a cost of M\$25-30 million is questionable since only MAS plans to use that airplane type at KLIA. It might be prudent to impose operating restrictions on the 747-400 until it is clear that DCA can recapture the costs of improvements for the 747-400 through higher landing charges for the type.
- (b) Penang Airport has considerable excess capacity, and the only investment needed is completion of runway rehabilitation and resurfacing to correct the continued differential settlement.
- (c) Kota Bahru Airport will require runway resurfacing between 1988 and 1995. Other facilities are adequate to handle the existing and projected traffic.
- (d) Kuantan Airport is adequate to handle projected traffic to 1995. Only minor improvements to extend the parking apron will be required. An earlier plan to provide facilities for B-747s cannot be justified on economic grounds.
- (e) Johor Bahru Airport is operating at about 12% of its capacity, and will be more than adequate for the next 15 years.
- (f) Ipoh Airport, the third busiest in terms of passenger traffic in Peninsular Malaysia, is not equipped to handle B-737 jets since all MAS traffic is by F-27s. Most of this traffic consists of commuters traveling to and from Kuala Lumpur. The National Airport Master Plan Study forecast a 15.3% annual growth in traffic at Ipoh to 1990; however, the Study's 1986 forecast was 56% higher than the actual. Furthermore, future traffic at Ipoh is uncertain since the North-South Expressway, when completed, will make Kuala Lumpur less than a two-hour drive away. As a result, forecasts of air traffic growth at Ipoh have been revised downwards to 5.6% p.a. up to 1990 and 4.9% p.a. till 1995. In view of the uncertainty in future traffic patterns, it is not recommended that Government go ahead with a proposed M\$40 million investment to upgrade the airport to handle

jets. New technology is available to allow F-27s to operate more safely, and the hours of operation can be extended by introducing Instrument Flight Rules (IFR) capabilities. This would markedly improve services and allow Government to monitor traffic developments in order to assess the impact of road development.

- (g) Tawau Airport traffic does not justify the construction of a proposed new airport costing M\$232 million. Instead, alternatives to improve airport capacity for B-737s should be examined, including the widening and lengthening of the existing runway. In the short term, Government should take immediate remedial action to service or replace unreliable navigational aids and relocate the VASIS (visual approach slope indicator system). Runway resurfacing is also required to ensure the continued safety of B-737 operations.
- (h) Lahad Datu Airport has experienced a precipitous drop in traffic as a result of road improvements between Lahad Datu and Tawau, and traffic is expected to remain static up to 1995. Consequently, the proposed construction of a M\$17 million terminal and control tower complex is not justified. However, the existing terminal building is inadequate and needs renovation.
- (i) Sibu Airport served some 356,000 passengers in 1985. The airport is equipped to handle only F-27s, which provide more than 100 flights weekly. The existing infrastructure is marginal even for F-27s which are often subject to payload restrictions. Because of the lack of visual landing aids and a poor airfield lighting system, MAS is restricted to daylight operations. There is thus a need to improve airport facilities which can be done in a number of ways ranging from upgrading the existing facilities for F-27s, to providing facilities for B-737s, or constructing an entirely new airport. As MAS intends to replace the F-27 with a more efficient turboprop, any decision on upgrading Sibu Airport should take this factor into consideration as the operational requirements of the newer generation aircraft are different and could have a substantial effect of the type of infrastructure required.
- (j) Bintulu Airport traffic in 1985 was 53% below traffic forecasts included in the National Airport Master Plan. This was due to the opening of the road between Bintulu and Miri. Taking into account the recent downward trend in traffic as well as traffic forecasts and the continuing road improvements in Sarawak, there seems to be no economic justification to construct the proposed new airport at Bintulu at an estimated cost of over M\$150 million. While the present airport has a number of operational restrictions, it does provide efficient F-27 services. The only immediate requirement is to resurface the runway at an estimated cost of M\$750,000.

5.21 Other Infrastructure. With the steady increase in air traffic and consequent aircraft movements over the last two decades, Malaysia has fallen seriously behind in its air traffic services (ATS) system. West Malaysia's primary radar is expected to be saturated by the end of this decade and an air space reservation system has had to be implemented to cope with civil and

military traffic. Sabah and Sarawak do not have even a radar system and must rely on a procedural separation system which is reaching saturation, resulting in costly economic disbenefit to airspace users. This problem was quite rightly pointed out in the National Airport Master Plan Study which recommended a phased upgrading of the system to the year 2000 and a revision of the present air navigation facility charge, which would fund the upgrading and management of the ATS so that it could eventually become self-financing. Government has in the first part of 1988 approved an allocation of M\$35 million towards the upgrading of the ATC system at Kuala Lumpur and Kota Kinabalu.

5.22 The financial cost of the ATS system was estimated by consultants at M\$320 million in 1985 ringgit and its implementation was to be carried out in three phases up to the year 2000. The first phase, costing M\$146 million, was slated for implementation in the Fifth Malaysian Plan but only a token M\$10 million was allocated. MOT has since requested M\$35 million for priority investments to deal with radar needs. It is recommended that the entire ATS system be reviewed by MOT, Treasury and EPU officials to agree on an implementation schedule for the program. ATS is considered to have the highest priority of all air transport investments in the Fifth Plan. The second priority need in the subsector is to provide up-to-date training for the DCA personnel providing services. Studies have shown the need to upgrade the Civil Aviation College facilities, and M\$50 million was requested under the Fifth Plan. It is recommended that Government also consider the needs of the College in the context of its overall air transport management system.

VI. RECOMMENDATIONS

6.1 To date, development of Malaysia's transport sector has largely taken place on an ad hoc basis, with no integrated national transport policy or plan. This lack of a clear direction has resulted in a variety of inefficiencies and, above all, in increased transport costs. In an open economy like Malaysia's, the impact of this less than optimal development will inevitably be felt in terms of reduced competitiveness of exports and higher costs for domestically produced goods and services. If the effectiveness of the transport sector is to be improved, appropriate policies for operations and the provision of infrastructure will need to be defined and adopted. The following are some of the more critical issues which need to be addressed in the short to medium term.

Lack of a Cohesive National Transport Policy

6.2 One of the fundamental issues that has emerged from this review is the lack of a comprehensive national transport policy in Malaysia. Evidence of this lies in the fact that the institutions dealing with transport are uncertain as to their objectives, lack coordination, and react to issues inconsistently. As a result, there has been overinvestment in the more "hardware oriented" modes like the railway and air transport which have been allocated resources out of proportion to their importance in the total movement of freight and passengers (paras. 3.34 and 3.48). At the same time, little attention has been paid to total transport system efficiency and the formula-

tion of policies on sectorwide matters such as subsidies, pricing, cost recovery and modal competition. Without such policies, no amount of investment will significantly improve sector performance.

6.3 The definition of national policies for the transport sector which promote sector efficiency is also in keeping with Government's objectives in the Fifth Malaysia Plan which focuses on the promotion of stable growth and efficient management of the economy, the achievement of which will require an optimum allocation of resources. For the transport sector, this means the formulation of policies which provide an economically efficient transport system free of price distortions and investments which produce competitive services in tune with the demands of transport users. While the Government has made a considerable effort over the past decade to improve transport infrastructure, this effort should now be complemented by a comparable effort to ensure that transport operators can use that infrastructure in an efficient manner.

6.4 Given these needs, it is recommended that a National Transport Act be drawn up and approved as an umbrella for all existing transport legislation and to clearly delineate the role of the Ministry of Transport. The Act should define a national transport policy which addresses issues in the sector such as compensatory tariffs, user charges, services provided on social grounds, subsidies, regional economic development, and safety regulations. The strategy adopted in the policy should be geared to the following objectives:

- (a) Increased Competition. Competition between transport operators is the most effective means of reducing costs and enhancing services. In Malaysia, this means the removal of obstacles to the expansion of existing transport services, including: licensing regulations, which form a barrier to market entry; regulated fares and tariffs, which keep prices higher than necessary; and agreements to restrain trade, which have the effect of discouraging new enterprises.
- (b) Minimum government involvement in transport operations. In general, government should become involved in business affairs only when its action will result in benefits which meet specific national objectives. Following this criterion, the Malaysian Government should reconsider its involvement in two areas--direct production of transport services and transport controls, taxes and subsidies which affect prices. There is no need for the Government to provide transport services if private operators are available. It need only ensure that the private sector can compete freely in the provision of those services. Government interference in the pricing mechanism of transport operations distorts the market economy and in most cases produces negative effects.
- (c) Cost recovery. Users and beneficiaries of government-funded transport infrastructure and related facilities and services should either directly or indirectly pay the avoidable costs associated with this use. Avoidable costs include those for maintenance, operations and capital investment. If the users of one transport mode pay a lesser percentage of the avoidable costs than those using other modes, this

reflects a discriminatory subsidy and distorts the efficient allocation of resources. There should consequently be a consistent user charge policy across all modes.

- (d) Targeted subsidies. In some instances and for special reasons, government may decide to subsidize a particular transport service either through a direct subsidy or through a cross-subsidy. The result is an economic distortion in the allocation of resources to a particular mode, a region or a group of people. Such subsidies should be made explicit, be quantified and made subject to periodic review to ensure that the objective of the subsidy is served. The price of the subsidized service should be made competitive through periodic competitive tendering for the services in question.
- (e) Justification of investments. Investments in infrastructure and associated facilities should be based on a strategy that emphasizes: (i) allocation of investment capital to earn the maximum economic rate of return; (ii) establishment of criteria for transport investment in specially designated regions of the country; (iii) encouragement of private investment where possible; (iv) management and maintenance of infrastructure; and (v) the need to meet appropriate safety requirements.
- (f) Performance targets. To determine how successfully a policy is being implemented, performance indicators should be established against which progress can be measured and judged. In the transport sector this would require the monitoring of data on tonnages and passengers moved by mode, frequency of transport services, price levels, etc.

These are some general norms for the formulation of a National Transport Act and are implicit in the recommendations proposed for the following other issues.

Transport Sector Data

6.5 National development of Malaysia's transport sector and measures to improve the efficiency of its operations are constrained by a lack of data to support decision making in the sector both by Government and operators. While a good deal of transport data already exists for some modes and areas, information on transport in Sabah and Sarawak is almost nonexistent and the amount of information available on the country's most important subsector, roads and road transport, is more limited than that available for other subsectors. It is therefore recommended that a Transport Data Unit be established within MOT to follow up on the data generated by this study, refine it and eventually set up a computerized system available to all users of the data base. The staff of this unit should include a statistician, an econometrician, two or three data and computer specialists to build up and maintain the data bank, two or three engineers to compile highway statistics, and one transport data clerk for each mode. The MOT should also set up a statistical coordinating committee to periodically review transport data needs and oversee the output of the transport data bank.

Planning and Coordination

6.6 The number of agencies currently involved in transport matters makes sectorwide transport planning and coordination almost impossible (see paras. 1.11 - 1.12). There is thus a need for both a strong central planning unit to guide overall sector development in Malaysia and the unification of all sub-sectoral transport planning and coordination under one ministry. The appropriate agency for such a function is MOT, which at present acts more as an administrative than a policy-making body. It is therefore recommended that a Transport Planning Unit (TPU) be set up in MOT to carry out planning and coordination of the sector and to prepare five-year transport sector plans for inclusion in national development plans. Some of the staff now doing subsectoral planning in other ministries (e.g., the Highway Planning Unit in the Ministry of Public Works) should be transferred to MOT. The transport data unit recommended above would be expected to provide support to the new planning unit.

6.7 The proposed TPU should be headed by a senior transport economist with experience in all transport modes. Staffing of the unit should include two or three transport economists and two or three senior transport planners/engineers with experience in ports, highways, air and railways. Staff with these qualifications are not available in Malaysia and initially would have to be recruited from abroad while Malaysians are sent overseas for training. It is estimated that technical assistance would be required over a five-year period during which time newly trained Malaysians would overlap with the expatriates and be phased into their new jobs. The cost of such a technical assistance and training program is expected to range between US\$5.4 million and US\$8.1 million over a five-year period.

6.8 The proposed MOT Transport Planning Unit would be expected to work closely with relevant agencies in Sabah and Sarawak to ensure consistency in data and analysis. It is therefore recommended that a coordinating committee be established between the federal MOT and the state agencies in Sabah and Sarawak and that periodic staff exchanges be encouraged in order to improve coordination between the transport systems of East and West Malaysia.

Transport Regulation

6.9 As discussed in paras. 3.13 - 3.18, heavy regulation of Malaysia's road transport industry has served to restrain competition in the industry, and in so doing, to contribute to poor service, high freight rates and passenger fares, as well as the encouragement of illegal practices such as the renting of licenses, vehicle overloading and, in some cases, bribery. Regulation of rail and air tariffs, service levels and frequency, and type of equipment have also forced KTM and MAS into inefficient decision making and often entailed unnecessarily high costs which have been borne by transport users. Probably the most wasteful of all the regulations is that limiting entry into the road transport industry and the simultaneous exemption of small trucks (under 2,500 kg) from regulation. As a result, own-account vehicles outnumber for-hire vehicles two to one, and, since own-account vehicles can legally be loaded only about 50% of the time, twice as many vehicles are needed as would be required with for-hire carriers. Further, the lack of regulation of small trucks has led to their proliferation, so that small carriers now constitute

about two thirds of the country's commercial vehicle fleet, implying a very high transportation cost due to multiple handlings and high vehicle operating costs per ton transported. The costs of such low productivity are higher road wear, fuel consumption and vehicle import costs. Estimates based on conservative annual mileages and economic vehicle operating costs suggest that the annual cost of road transport regulation is between M\$2.0 and M\$4.0 billion, not including the wear and tear on roads.

6.10 The most heavily regulated segment of the road transport industry is container haulage by road, for which only three carriers are licensed in West Malaysia. This oligopolistic market has resulted in such high costs for the movement of containers that, once landed in a port, most containers are unstuffed and the goods transferred to conventional general cargo trucks which have lower tariffs. The benefits of containerization have therefore bypassed Malaysia, and the price of Malaysian exports and locally-consumed imported goods has unnecessarily increased. Since the container haulage industry no longer deserves infant industry protection, it is recommended that container transport by road should be deregulated as soon as possible, and the carriers allowed to set their own tariffs.

6.11 While the conventional trucking industry is more competitive, the regulatory framework imposes too many uncertainties for the industry to operate efficiently. It is therefore recommended that Government gradually ease its regulations on entry into the road transport industry and the rates charged, while also stepping up enforcement of axle-load regulations. This could be carried out in phases over a five-year period by increasing license approvals from the current 8% to 20% in the first year, with 20% annual increments thereafter. At the same time, all restrictions on the issuance of for-hire ("A") licenses should be removed and tariffs should be determined by free market forces, although some minimum price guidelines might be established. Licenses should also be issued in perpetuity and carriers should not be restricted as to the number and type of equipment operated other than being legally within the prescribed load limits. All licensed carriers should be allowed to compete for and haul containers. Under such a system, the main criteria for granting licenses should be the carrier's financial soundness and compliance with safety regulations. The phased deregulation would allow Government to monitor the effects of the new policy in its initial years and to make necessary adjustments as needed. The Road Transport Licensing Board, which issues vehicle licenses, should be restructured to include a monitoring capability to assess the effects of the policy changes.

6.12 The current regulatory policy has had as one of its objectives the protection of Bumiputera operators. Evidence indicates, however, that this has merely become a form of transfer payment from one segment of the population to another as many licenses held by Malays are leased out to others, further adding to the cost of transportation. Since the licensing system has not helped the Bumiputera to establish themselves in the industry, it is recommended that the Government undertake a program of assistance which includes loans and management assistance to qualified Malays wishing to enter the road transport industry. In this way, the industry and the consumer will benefit through better services and lower costs.

Economic Evaluation of Transport Investments

6.13 The projects included in Malaysia's transport investment program are not ordinarily subjected to an appraisal of their economic justification, and as a result past investment mistakes have occurred. The introduction of routine economic appraisal of proposed projects would not only indicate the soundness of investments, but would also allow Government to prioritize investments so that logical choices can be made in times of resource constraint. At present, the transport investment proposals most in need of economic appraisal are the planned expansion of airport facilities at Sibu, Tawau and Ipoh, the latter which is likely to lose traffic to the North-South Expressway. It is recommended that the economic justification of the proposed airport investments and any possible alternatives to them be investigated before a decision is made on the type and magnitude of investments to be carried out. For all other sectoral investments aimed at providing additional capacity, economic analysis should be carried out to determine the most cost-effective transport solution.

Cost Recovery

6.14 The considerable discrepancies in cost recovery among modes in Malaysia has resulted in a distortion in modal choice by consumers and a need to subsidize (or cross-subsidize) some operations. The concentration of transport demand in the lower-cost (and subsidized) modes has also led to substantial overinvestment in the financially less viable services in order to meet demand. As shown in Table 1.2, only the road subsector generates more revenue than the combined operation, maintenance and development expenditures allocated to it. The port sector generates a positive balance from its operations but, when development expenditures are included, the result is an overall deficit. KTM and DCA, on the other hand, have incurred major losses, with DCA generating a negative balance from operations which is more than two and one half times greater than that of rail operations. Given that air transport is mainly used by the most affluent segment of the population, it is not in the interest of the general population to continue this subsidization. Since Malaysia has among the lowest aviation user charges in the region, there is scope for improved revenues from the use of air transport infrastructure. There is also some scope for increasing concession revenues and improved marketing of facilities provided at the country's international airports. It is therefore recommended that immediate steps be taken to raise airport and navigational user charges to at least the level of other countries in the region. It is also recommended that MOT undertake a detailed review of cost recovery in the transport sector to determine adequate user charge levels which will allow the modes to compete on an equal basis.

Government's Role in the Sector

6.15 The discussion of a possible government strategy for developing a well integrated transport policy pointed to the need for minimum government involvement in transport operations. Government itself has already shown interest in relinquishing part of its transport involvement, i.e., its ownership of KTM and the North-South Expressway among others.

6.16 Privatization is certainly a recommended course for Government, but should be pursued with some care to ensure that national policy objectives in the sector will continue to be met. For example, an entity should not be privatized if this diverts more traffic to a foreign competitor. Also, because privatization can negatively affect the entities involved, its long-term impact must be taken into consideration. The net financial result of privatization of the Kelang Container Terminal, for example, has been large losses to the Kelang Port Authority. In 1986 alone, the Authority lost an estimated M\$20 million. Thus, the negative effects must be weighed against the expected productivity increases of private sector involvement minus the financial inducements needed to entice the private operator. Such analysis should be used in deciding whether or not to pursue the proposed railway privatization.

6.17 One area where privatization is probably justified is the large group of bus companies operated within the government-owned MARA system (para. 3.10). Many of these companies could be capable of independent survival and could easily be privatized either through stock purchase or outright sale to the private sector. These firms have grown under government protection to the point where they should no longer require government support. It is therefore recommended that terms of reference be developed to determine which firms are candidates for privatization and establish a timetable for divestiture.

Conclusions

6.18 The main thrust of Government transport activities in the next five to seven years should be to improve efficiency of operations and utilization of infrastructure. To do this, many options are available to Government, all of which will require some additional investment, whether for the maintenance of existing facilities or for their modernization. In some cases, privatization may be an option, but the costs of such a course should be clearly assessed before any decision is made. And, in all of its decisions, Government should be guided by a clear and unambiguous policy designed to promote the overall goal of efficiency.

VII. FUTURE ROLE OF THE BANK

Previous Bank-financed Projects

7.1 Since 1971, when the Bank's involvement in Malaysia's transport sector began, the Bank has financed nine transportation projects with loans totaling US\$231.6 million. This included four highway projects (US\$141.7 million), three ports projects (US\$45.8 million), two railway projects (US\$18.1 million), and one urban transport project (US\$26.0 million). Two projects are still under implementation: the Sabah-Sarawak Road Project (Loan 2291-MA in 1983 for US\$86.2 million, less US\$15.0 million cancelled in 1987) and the Port Kelang Project (Loans 2686 and 2687-MA in 1985 for US\$18.8 million). Implementation of the Sabah-Sarawak Road Project is three years behind schedule due to Government's budgetary problems during 1983-86; however, all contracts have now been awarded and are under way. The Port Kelang Project is proceeding on schedule, although a pilot intermodal component has been delayed by about 20 months.

Possible Future Role for the Bank

7.2 Given that the Bank's past involvement in the transport sector has not been continuous and was project-oriented, the overall impact of Bank lending in the sector has been somewhat limited. However, our dialogue with Government on the Bank's future role in the sector has identified the need to refocus Bank attention from a fairly narrow concentration on individual projects toward improving overall sector policies to achieve necessary transport improvements. The benefits to be obtained from this wider approach could well exceed the returns from traditional projects by addressing much broader issues that effect major segments of the transport system. This change in emphasis from project to sector lending would require that the Bank and Government agree on a program of necessary institutional and policy changes that could be demonstrated to have substantial benefits to the country. A continuous and intensive dialogue with government ministries and agencies would also be required to define how specific issues would be tackled.

7.3 The general areas so far identified for possible Bank support are: (a) transport coordination and planning, (b) road maintenance, rehabilitation and upgrading, (c) river transport in Sarawak, (d) port rationalization and efficiency improvements, and (e) railway efficiency improvements.

7.4 Transport Coordination and Planning. As indicated in the report (paras. 6.6-6.7), one of the critical weaknesses of the transport sector is the lack of planning and coordination at the central government level. It has been proposed that MOT take over these critically needed functions, in which case a technical assistance and training program for MOT staff would be needed since the Ministry currently has few economists and engineers to carry out the functions required to guide the decision-makers in their investment choices. At least five to seven staff would need to be sent for professional training abroad while a similar number of expatriate technical assistants would carry out staff functions during their absence. It is expected that this program would be implemented over a five-year period.

7.5 Road Maintenance, Rehabilitation and Upgrading. The road subsector carries over 90% of all traffic flows in Malaysia, and consequently requires a regular program of maintenance, rehabilitation and upgrading. However, budget cuts over the last few years have severely limited JKR's ability to maintain network standards and, as a result, a large backlog of work is accumulating, both in the federal and state networks (para. 3.4). A comprehensive annual program should be established to bring the network back to its original design standard or improve it where justified. Under Loan 2291-MA, the Bank has financed a Road Transport Review for Sarawak and, since that state has the poorest road network in the country, it would be a good starting point for Bank involvement in the roads subsector. In West Malaysia, the Ministry of Public Works has already prepared a Road Rehabilitation and Improvement Program which would be a suitable candidate for time-slice financing by the Bank.

7.6 River Transport in Sarawak. River transport is the keystone of Sarawak's transport system, but its facilities are old, outmoded and their capacity has been far exceeded (para. 4.14). The State Government is undertaking a Coastal and Riverine Transport Review with the assistance of consult-

ants, and the results of that study will form the basis of an improvement program which should be closely coordinated with the road improvements proposed above to ensure complementarity in the system. The likely components of the improvement program would include upgrading of both freight and passenger handling facilities, some river training, provision of navigational facilities, and a boating safety program.

7.7 Port Rationalization and Efficiency Improvements. The ongoing National Ports Study is not expected to be completed before the end of 1987. However, preliminary conclusions indicate that management restructuring, rationalization and improvement of some facilities will be required to meet future demand more efficiently. Port improvement is therefore likely to require financing and, based on the goodwill gained in the Bank's Port Kelang Project (Loans 2686/2687-MA), the Bank could be asked to provide this assistance. This should be pursued.

7.8 Railway Efficiency. If KTM is to survive and play a significant role in the Malaysian transport system, it will have to undertake major efforts to improve its efficiency and market its services. In view of increasing competition from road transport, the railways will have to concentrate on areas where it has an economic advantage. Since it currently is the preferred mode for only a few bulk commodities, it will also have to make substantial efforts to adapt to intermodalism in order to survive. Over the next five years, some US\$150 million will be required to support an efficiency improvement program for this purpose (para. 5.10).

Recommendation

7.9 In order to deal with the various needs described above, it is proposed that the Bank's next lending operation in Malaysia be a sector loan covering road, rail and maritime transport improvements. This would facilitate addressing the institutional issues which pervade all three modes and permit the strengthening of transport planning and coordination at the federal and state levels. Major objectives of such an operation might include:

- (a) improvement of the country's transport planning capacity to provide intermodal coordination and increase system efficiency;
- (b) encouragement of federal-state transport coordination through the development of multimodal regional transport projects;
- (c) integration and coordination of investment programs through a more appropriate institutional framework;
- (d) removal of licensing restrictions on the movement of containers by road and encouragement of competition among operators to reduce transport costs;
- (e) initiation of a five-year program to phase out economic regulation of road transport to allow free entry into the industry and stimulate competition;

- (f) adoption of more realistic railway pricing levels by introducing cost-based tariffs; and
- (g) adjustment of user charges for roads and airports to reflect actual use of (or damage to) the facilities.

Specific action programs to achieve these objectives will have to be defined, based either on the recommendations of this report or, in some cases, on further studies to be carried out by Government with the assistance of consultants. The issues relating to each objective have been covered in this report, which should serve as a basis for the Bank's dialogue with the Government.

MALAYSIA

TRANSPORT POLICY REVIEW

Gross Domestic Product by Industrial Origin /a
(M\$ million, constant 1978 prices)

	1978	1979	1980	1981	1982	1983	1984	1985	1986 est.	1987 est.
Agriculture, livestock forestry & fishing	9,513	10,060	10,189	10,684	11,375	11,302	11,623	11,914	12,235	12,553
Mining & quarrying	3,912	4,586	4,487	4,289	4,617	5,342	6,073	5,985	6,365	6,436
Manufacturing	7,189	8,004	8,742	9,155	9,668	10,429	11,711	11,263	11,488	11,775
Construction	1,572	1,761	2,066	2,367	2,598	2,867	2,988	2,738	2,492	2,243
Electricity, gas & water	530	584	640	689	721	798	890	948	995	1,055
Transport, storage & communication	1,867	2,107	2,542	2,847	2,984	3,138	3,464	3,630	3,757	3,907
Wholesale & retail trade, hotels & restaurants	4,156	4,669	5,383	5,694	6,104	6,583	7,107	6,911	6,614	6,561
Finance, insurance, real estate, business services & ownership dwellings	3,177	3,434	3,687	3,953	4,231	4,570	4,892	5,093	5,042	5,042
Government services	4,106	4,375	4,563	5,649	6,027	6,328	6,817	6,957	7,166	7,194
Other services /b	899	948	1,021	1,065	1,141	1,193	1,249	1,300	1,300	1,300
Less: Imputed bank service charges	585	733	854	877	1,152	1,397	1,595	1,834	1,926	1,986
Plus: Import duties	1,550	1,633	2,046	2,087	2,116	2,429	2,522	2,245	1,908	1,910
GDP at Market Prices	37,886	41,428	44,512	47,602	50,430	53,582	57,741	57,150	57,436	57,990

/a Based on 1978 Input/Output frame.

/b Includes community, social and personal services, private nonprofit services to households and domestic services of households.

Source: Ministry of Finance, Economic Reports, Statistical Appendix, Table 2.2 (1985/86 for 1978; 1986/87 for 1979-87).

MALAYSIA

TRANSPORT POLICY REVIEW

Public Revenue and Expenditure for Transport, 1982-86
(M\$'000)

Mode of transport	Operating results			Government expenditure			Public surplus or deficit (3-6)
	Revenue (1)	Expenditure (2)	Surplus or deficit (3)	Maintenance (4)	Development (5)	Total (6)	
Road transport /a	10,662,200	-	10,662,200	1,536,442	6,857,132	8,393,574	2,268,626
Rail transport /b	766,847	875,655	(108,808)	-	553,228/c	553,228/c	(662,036)
Ports and Marine Services							
Federal ports /d	1,804,810	1,260,965	543,845	-	702,984/d	702,984/d	(441,938)
Sabah Port Authority /e	302,965	204,915	98,050	2,953	6,059	9,012/e	38,030
Sarawak Port Authorities /f	183,886	136,001	47,885	9,735	235,044	244,779	(221,794)
Marine Departments	56,452	96,966	(40,514)	-	54,264/g	54,264	(94,778)
Light Dues Board	28,298	21,494	6,804	-	14,980	14,980	(11,714)
Subtotal	<u>2,376,411</u>	<u>1,720,341</u>	<u>656,070</u>	<u>12,688</u>	<u>1,013,331</u>	<u>1,026,019</u>	<u>(732,194)</u>
Air transport /h	360,385	635,461	(275,076)	-	821,623	821,623	(1,096,699)
Total	<u>14,165,843</u>	<u>3,231,457</u>	<u>10,934,386</u>	<u>1,549,130</u>	<u>9,245,314</u>	<u>10,794,444</u>	<u>(222,303)</u>

/a Operating results of road users, transport-related institutions, etc. are not included.

/b KTM only.

/c 1981-85, operating loss and development expenditures are considered public spending.

/d Kelang, Penang, Johor, Kuantan and Bintulu: expenditure in the form of grants for 1981-85 only. Surplus of M\$543.9 million had been taxed at a 48% rate and the amount obtained has been deducted from the total government figure.

/e Rate of income tax as in /d.

/f Kuching, Rajang and Miri Port Authorities: figures are partially estimates; surplus of M\$47.9 million taxed at a 48% rate.

/g Does not include M\$11.6 million grant for the Marine Department. Sarawak included under /f, column 5.

/h Department of Civil Aviation only.

Source: MOT.

MALAYSIA
TRANSPORT POLICY REVIEW

Road Freight Traffic in Peninsular Malaysia, 1986

Commodity	Peninsular Traffic			Corridor I				Corridor II				Corridor III				Corridor IV			
	Tons ('000)	Ton-km ('000)	Av. distance of transport (km)	Tons ('000)	%	Ton-km ('000)	%	Tons ('000)	%	Ton-km ('000)	%	Tons ('000)	%	Ton-km ('000)	%	Tons ('000)	%	Ton-km ('000)	%
Palm oil	7,414	1,215,568	164	5,777	77.9	788,347	64.9	78	1.1	8,848	0.7	275	3.7	38,385	3.2	42	0.6	10,757	0.9
Petroleum	6,547	882,681	135	5,115	78.1	555,246	62.9	61	0.9	7,841	0.9	409	6.2	65,034	7.4	18	0.3	3,715	0.4
Processed timber	5,064	710,260	140	3,283	64.8	330,608	46.5	115	2.3	13,806	1.9	165	3.3	24,645	3.5	305	6.0	32,548	4.6
Logs	4,726	645,083	136	1,579	33.4	177,127	27.5	106	2.2	6,146	1.0	527	11.2	58,568	9.1	338	7.2	43,499	6.7
Grains	4,098	776,946	190	3,457	84.4	576,388	74.2	3	0.1	360	0.0	145	3.5	27,487	3.5	21	0.5	4,358	0.6
Iron/steel	2,779	367,298	132	2,461	88.6	288,819	78.6	8	0.3	755	0.2	88	3.2	6,641	1.8	6	0.2	3,102	0.8
Chemicals	2,596	391,425	151	2,079	80.1	283,459	72.4	0	0.0	0	0.0	49	1.9	5,930	1.5	6	0.2	587	0.1
Rubber	2,178	301,554	138	1,409	64.7	198,255	65.7	18	0.8	1,490	0.5	30	1.4	4,081	1.4	47	2.2	6,847	2.3
Cement	2,037	210,435	103	1,752	86.0	141,289	67.1	0	0.0	0	0.0	63	3.1	5,160	2.5	0	0.0	0	0.0
Minerals	444	71,966	162	382	86.0	60,087	83.5	0	0.0	0	0.0	7	1.6	436	0.6	7	1.6	652	0.9
Other products	30,767	3,898,677	127	25,153	81.8	2,852,053	73.2	404	1.3	38,878	1.0	994	3.2	110,432	2.8	296	1.0	30,322	0.8
Total	68,650	9,471,893	138	52,447	76.4	6,251,678	66.0	793	1.2	78,124	0.8	2,752	4.0	346,799	3.7	1,086	1.6	136,387	1.4

Source: Bank-MOT Stu

MALAYSIA

TRANSPORT POLICY REVIEW

Malayan Railways: Freight Traffic, 1976-85

	'000 tons	% growth	Million ton-km	% growth	Average distance (km)	% growth
1976	3,306	-	1,008	-	304.9	-
1977	3,787	14.6	1,209	20.0	319.3	4.7
1978	4,142	9.4	1,293	7.0	312.2	-2.2
1979	4,188	1.1	1,357	4.9	323.9	3.8
1980	3,607	-13.9	1,195	-11.9	331.2	2.2
1981	3,374	-6.5	1,123	-6.0	332.9	0.5
1982	3,232	-4.2	1,091	-2.8	337.7	1.5
1983	3,187	-1.4	1,072	-1.8	336.4	-0.4
1984	3,255	2.1	1,077	0.5	331.0	-1.6
1985	2,929	-10.0	1,018	-5.5	347.6	5.0

Source: Malayan Railways.

MALAYSIA
TRANSPORT POLICY REVIEW

Cargo Movements between the Four Major Ports, 1980-86

	Penang - Port Kelang		Port Kelang - Pasir Gudang		Port Kelang - Kuantan		Pasir Gudang - Kuantan		Penang - Pasir-Gudang		Penang- Kuantan		Total	
	Tons	Ton-km ('000)	Tons	Ton-km ('000)	Tons	Ton-km ('000)	Tons	Ton-km ('000)	Tons	Ton-km ('000)	Tons	Ton-km ('000)	Tons	Ton-km ('000)
1980	15,544	6,046.6	648	336.3	-	-	9,923	3,443.3	-	-	-	-	26,115	9,826.2
1981	6,083	2,366.3	-	-	-	-	-	-	27,038	22,036.0	-	-	33,121	24,402.5
1982	6,368	2,477.1	7,057	3,662.6	-	-	15,425	5,352.4	-	-	1,660	1,719.8	30,510	13,211.9
1983	3,149	1,225.0	6,237	3,237.0	3,503	2,553.7	24,465	8,489.3	-	-	7	7.3	37,361	15,512.3
1984	8,595	3,343.5	5,640	2,927.2	1,006	733.4	9,041	3,137.2	8	6.5	-	-	24,290	10,147.8
1985	16,545	6,436.0	2,212	1,148.0	-	-	7,964	2,763.5	202	164.6	9,725	10,075.1	36,648	20,587.2
1986	36,784	14,309.0	10,224	5,306.3	-	-	20,209	7,012.5	48	39.1	-	-	67,265	26,666.9

Source: Statistics from various port authorities.

MALAYSIA
TRANSPORT POLICY REVIEW

Composition of Cargo Originating from
Singapore to Peninsular Malaysian Ports, 1986
(tons)

<u>Port of destination</u>	<u>Petroleum</u>	<u>Fertilizers</u>	<u>Others/a</u>	<u>Total</u>
Port Kelang	1,602,321	21,793	224,120	1,848,234
Penang	848,757	36,605	107,016	992,378
Kuantan	83,860	-	118	83,978
<u>Total</u>	<u>2,534,938</u>	<u>58,398</u>	<u>331,254</u>	<u>2,924,590</u>

/a Only two commodities are significant in terms of volume: rubber, at 18% of the total, and palm oil, at 7%.

Source: Federal Port Authorities.

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TRANSPORT POLICY REVIEW

Summary of Freight Movements Within Corridors and Intercorridors for 1986

Corridors/ intercorridor	'000 tons	% of actual total tonnage	'000 ton-km	% of actual total ton-km	Average distance of transport (km)
<u>Corridor</u>					
I	52,445	76.4	6,251,678	66.0	119
II	793	1.2	78,123	0.8	99
III	2,750	4.0	346,800	3.7	126
IV	1,088	1.6	136,386	1.4	125
<u>Intercorridor</u>					
I-II	1,214	1.8	344,263	3.6	284
II-I	2,255	3.3	520,302	5.5	231
I-III	1,535	2.2	717,035	7.6	467
III-I	1,683	2.5	787,819	8.3	468
I-IV	2,117	3.1	479,090	5.1	226
IV-I	3,441	5.0	685,300	7.2	199
<u>Total</u>	<u>69,321</u>		<u>10,346,796</u>		<u>149</u>
Actual total	68,650		9,471,893		138
% total-actual total/ actual total	0.98		9.24		8.18

Source: MOT/World Bank Study Team.

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TRANSPORT POLICY REVIEW

Road Network by State, Surface Type and Jurisdiction, 1985 /a
(km)

State	Federal jurisdiction				State jurisdiction				Muni- cipal (paved)	Total km of road /b	%	Total km of paved road	
	Paved	Gravel	Earth	Total	Paved	Gravel	Earth	Total				%	%
Johor	1,235	450	70	1,755	2,195	245	35	2,475	180	4,410	10.4	3,610	81.9
Kedah	310	65	5	380	1,915	880	35	2,830	20	3,230	7.6	2,245	69.5
Kelantan	615	105	20	740	755	520	65	1,340	45	2,125	5.0	1,415	66.6
Melaka	120	-	-	120	760	40	-	800	60	980	2.3	940	95.9
Negeri Sembilan	645	375	-	1,020	950	230	-	1,180	240	2,440	5.8	1,835	75.2
Pahang	1,920	820	100	2,840	1,090	420	120	1,630	-	4,470	10.5	3,010	67.3
Perak	745	-	20	765	1,880	110	100	2,090	600	3,455	8.2	3,225	93.3
Perlis	90	-	-	90	345	50	-	395	-	485	1.1	435	89.7
Pulau Pinang	125	-	-	125	865	65	70	1,000	200	1,325	3.1	1,190	89.8
Sabah	-	-	-	-	2,290	4,880	160	7,330	225	7,555	17.8	2,515	33.3
Sarawak	-	-	-	-	1,050	2,980	150	4,180	440	4,620	10.9	1,490	32.3
Selangor	680	-	-	680	2,055	750	35	2,840	780	4,300	10.1	3,515	81.7
Trengganu	575	5	80	660	1,240	40	190	1,470	-	2,130	5.0	1,815	85.2
Federal Territories	-	-	-	-	-	-	-	-	805	805	1.9	805	100.0
Malaysia	7,060	1,820	295	9,175	17,390	11,210	960	29,560	3,595	42,330	100.0	28,050	66.3

/a Figures are rounded up to the nearest kilometer.

/b Encompassing Kuala Lumpur and Labuan.

Source: Highway Planning Unit, Ministry of Works.

MALAYSIA
TRANSPORT POLICY REVIEW

Progress of Construction of North-South Expressway

<u>Section</u>	<u>Completion Year</u>
Bukit Kayu Hitam-Jitra	Completed
Jitra-Alor Setar	February 1988
Alor Setar-Gurun	Completed
Gurun-Butterworth	1992
Butterworth-Changkat Jering	1992
Changkat Jering-Ipoh	1987
Ipoh-Kuala Lumpur	1992
Kuala Lumpur-Seremban	Completed
Seremban-Air Keroh	Completed
Air Keroh-Johor Bahru	1992

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MALAYSIA

TRANSPORT POLICY REVIEW

Growth of Truck Fleet by Permit Type in Peninsular Malaysia, 1982-86

	1982	1983	1984	1985	1986	% average annual growth
<u>Type of Permit and Growth Rate</u>						
Vehicles under 2,500 kg /a	38,846	47,460	61,185	76,111	85,347	
Growth rate (%)	-	22.2	28.9	24.4	12.1	21.9
For-hire trucks (A license)	8,601	9,467	10,939	11,982	14,381	
Growth rate (%)	-	10.1	15.5	9.5	20.0	14.2
Own-account trucks (C license)	18,707	20,008	21,190	20,573	21,072	
Growth rate (%)	-	7.0	5.9	-2.9	2.4	2.1
<u>All Trucks</u>	<u>65,154</u>	<u>76,935</u>	<u>93,314</u>	<u>108,666</u>	<u>120,800</u>	
<u>Growth Rate (%)</u>	<u>-</u>	<u>16.3</u>	<u>21.3</u>	<u>16.5</u>	<u>11.2</u>	<u>16.3</u>
Total payload capacity (tons)	249,531	276,405	311,978	331,568	359,978	
Growth rate of payload capacity (%)	-	10.8	12.9	6.3	8.6	9.7
Average truck age (years)	5.3	4.8	4.5	7.1	6.6	
Average payload capacity (tons)	3.8	3.5	3.3	3.1	3.0	

/a No permit required.

Source: Road Transport Department.

MALAYSIA
TRANSPORT POLICY REVIEW

Comparison of Road Freight Rates in Thailand and Malaysia

Freight movement	Distance (km)	Conventional trucking services /a		Containerized services /b	
		Freight charge (M\$/truckload)/c	M\$ per km	Freight charge (M\$/20' container)/d	M\$ per km
Between Bangkok and:					
Hat Yai	933	504	0.54	1,757	2.52
Chiang Mai	696	323	0.46	2,306	2.47
Khon Kaen	449	252	0.56	1,184	2.64
Nakhon Ratchasima	262	176	0.67	751	2.86
Prachuap Khiri Khan	300	227	0.76	839	2.80
Konchanaburi	128	101	0.79	440	3.44
Between Johor Bahru and:					
Port Kelang	394	400	1.02	942	2.39
Kuala Lumpur	365	400	1.10	870	2.38
Melaka	288	300	1.04	621	2.16
Muar	166	280	1.69	501	3.02

/a Malaysian trucking services are regulated; Thai trucking services are not regulated.

/b Both Malaysian and Thai containerized trucking services are regulated by the Governments.

/c Baht converted to M\$ at B 9.92 per M\$1.00.

/d Malaysian container trucking rates are based on those of Kontena Nasional.

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TRANSPORT POLICY REVIEW

Road User Taxes, 1984

<u>Annual Road User Tax (Vehicle Licenses)</u>	<u>Gasoline</u>	<u>Diesel</u>
	<u>[M\$/cc (mg)]</u>	
<u>Cars</u>		
Private passenger cars - engine capacity		5 times gasoline fee
0 - 1,000 cc	0.13	
1,001 - 1,200 cc	0.15	
1,201 - 1,500 cc	0.20	
1,501 - 2,000 cc	0.35	
2,001 - 2,500 cc	0.80	
2,501 - 3,000 cc	3.60	
Over 3,000 cc	2.00	
Cars owned by companies	the above times 4	the above times 4
Taxi and hire cars	0.06	0.22
Hire and drive vehicles and limousines	0.12	0.44
<u>Motorcycles</u>	<u>(M\$)</u>	<u>(M\$)</u>
Engine capacity:		
0 - 75 cc	50	
76 - 150 cc	55	
151 - 250 cc	60	
Over 250 cc	70	
<u>Buses /a</u>		
Less than 2,000 cc	67.20	-
More than 2,000 cc	100.80	-
Less than 1,500 cc		540
1,500 - 2,500 cc		672
2,501 - 3,500 cc		804
More than 3,500 cc		1,476
<u>Goods Vehicles (as amended in 1981)</u>	<u>Gasoline</u>	<u>Diesel</u>
	<u>Per year</u>	<u>Per year</u>
	<u>Per month</u>	<u>Per month</u>
Max. permissible laden weight (cwts) /b		
1 - 5	38	4
6 - 10	98	9
20	210	18
30	285	24
50	525	44
100	627	53
200	777	65
300	927	78
400	1,077	90
440	1,137	95
Semitrailer, 72 cwt combined	236	20
	+0.80	(440 cwt)
		3,495
per add'l cwt over 72		12 per add'l cwt
Semitrailers for container	90	7.50
<u>Trailers</u>		
1-10 cwt	38	4
50 cwt	270	23
100 cwt	503	42
151 cwt	704	59
Each cwt thereafter	1.50	

Excise Duties on locally assembled vehicles (taxes and hire-cars are given full exemption per Exemption Order 1977)

<u>Value of Vehicle (M\$)</u>	<u>Marginal tax rate (%)</u>
<u>Cars</u>	
0 - 7,000	25
7,001 - 10,000	30
10,001 - 13,000	35
13,001 - 20,000	45
20,001 - 25,000	55
Above 25,000	60
Trucks	15
Buses	5
Motorcycles	20

<u>Import Duties</u>	<u>1984</u>	<u>1983</u>	<u>1982</u>
		(%)	
On CKD	25	15	-
On vehicles CBU value			
0 - \$20,000	100	90	60
Next 5,000	120	110	70
5,000	145	135	80
5,000	170	160	90
5,000	210	200	90
5,000	260	200	100
On motorcycles	55		
On tires	55		

Commercial Transport License

Own	M\$10/month
Public service vehicle certificate	M\$20/month

Driving License

Test fee	M\$20/year
	M\$10

Vehicle Examination Fee

M\$10 for first; M\$5 subsequent

Registration Fee

M\$60; M\$5 for motorcycles

<u>Fuel Prices and Taxes</u>	<u>1984</u>		<u>April 1981</u>		<u>Aug 1980</u>
	<u>Retail price</u>	<u>Tax</u>	<u>Retail price</u>	<u>Tax</u>	<u>Retail price</u>
	(Malaysian cents/liter)				
LPG	74.5	0.72			
Gasoline					
Premium	106.0	35.84	108.0		102.0
Regular	100.0	35.84	102.0	(29)	97.0
Diesel	58.1	0.22	46.2	0.22	39.6

/a Rates were decreased 25% in October 1978 and again in October 1979, for a total decrease of 44% since then.

/b Examples: an intermediate fee is specified for every cwt.

Source: "Summary of Malaysian Tax System 1984;" Road Traffic Ordinance 1982 amendment: Federal Treasury, 1984.

Table 3.6

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TRANSPORT POLICY REVIEW

Road User Revenues, 1982-86
(M\$ million)

	1982	1983	1984	1985	1986
Fees and Licenses					
Driving licenses	67.0	72.1	84.8	110.7	98.2
Motor vehicle licensing fees	460.2	544.7	592.6	614.5	614.0
Driving test fees	7.2	7.3	8.2	8.8	7.7
Road transport registration fees	8.1	8.9	14.7	23.5	15.5
Public service vehicles drivers' and conductors' licenses	3.0	3.5	3.9	4.0	4.0
Miscellaneous fees	15.9	19.3	25.4	37.3	38.5
Subtotal	<u>561.4</u>	<u>655.8</u>	<u>729.1</u>	<u>798.8</u>	<u>777.9</u>
Excise					
Locally refined gasoline	279.3	407.8	437.0	492.6	551.6
Locally refined heavy oil and fuels	25.2	28.0	50.0	44.1	165.4
Motor vehicles	405.8	529.9	562.9	426.3	268.9
Motor vehicle air conditioners	2.0	1.4	0.9	0.1	-
Motor vehicle tires and inner tubes	7.9	8.3	8.1	6.8	6.9
Subtotal	<u>720.2</u>	<u>975.4</u>	<u>1,058.9</u>	<u>969.9</u>	<u>992.7</u>
Import Duties					
On fuels	<u>219.6</u>	<u>283.2</u>	<u>324.5</u>	<u>400.7</u>	<u>467.4</u>
Tolls (Highway Authority)					
	<u>6.3</u>	<u>15.4</u>	<u>21.4</u>	<u>36.7</u>	<u>53.1</u>
Sabah /a					
Driving licenses	4.3	4.2	3.9	-	-
Motor vehicle licensing fees	17.7	38.0	34.2	-	-
Public service drivers' licenses	0.1	0.1	0.1	-	-
Registration of motor vehicles	1.4	2.6	2.4	-	-
Vehicle examination/driving test	0.6	0.6	0.7	-	-
Import duty on fuels	15.8	18.5	10.6	9.5	13.5
Excise duty on fuels	25.9	34.3	44.7	51.9	93.5
Subtotal	<u>65.8</u>	<u>98.3</u>	<u>96.6</u>	<u>61.3</u>	<u>107.0</u>
Sarawak /b					
Driving licenses	3.4	3.5	3.3	-	-
Vehicle licenses	18.1	18.9	20.5	-	-
Fees and charges	0.9	1.0	0.8	-	-
Import duty on fuels	9.5	9.3	9.1	8.9	8.8
Excise duty on fuels	18.5	17.0	15.7	14.4	13.2
Subtotal	<u>50.4</u>	<u>49.7</u>	<u>49.4</u>	<u>23.3</u>	<u>22.0</u>
Total	<u>1,623.7</u>	<u>2,077.8</u>	<u>2,279.9</u>	<u>2,290.7</u>	<u>2,420.1</u>

/a From 1985 on, fees and licenses for Sabah and Sarawak are included under the category "Fees and Licenses."

/b Data not available for 1983-85. Estimates based on average rates of increase/decrease.

Source: MOT.

MALAYSIA
TRANSPORT POLICY REVIEW

JKR and LLM Expenditure on Roads, 1982-86
(M\$'000)

Type of road	1982	1983	1984	1985	1986 /a
Development Expenditures					
Federal roads					
Peninsular Malaysia	371,763	314,683	277,558	207,868	204,730
Sabah	123,851	72,197	56,267	35,749	146,650
Sarawak	55,533	55,661	49,502	105,918	149,670
Labuan	-	-	26,751	22,193	19,380
Toll roads	260,894	75,771	64,272	-	-
FELDA roads /c	70,424	44,217	63,086	56,000	70,000
LLM toll roads	308,029	490,063	571,915	607,708	429,794
Land schemes	36,010	18,498	20,625	33,822	100,056
Rural road grants	245,653	182,824	120,777	84,306	198,900
Village roads	39,027	45,510	81,228	50,000	118,000
Security roads	-	3,313	3,646	17,170	49,670
Subtotal	<u>1,511,184</u>	<u>1,302,737</u>	<u>1,335,627</u>	<u>1,220,734</u>	<u>1,486,850</u>
Operating Expenditures /b					
Federal roads	71,991	67,279	71,685	119,675	154,215/d
Grants to states	96,973	179,557	162,700	175,662	217,053
Emoluments	9,670	12,504	14,193	13,300	7,310
Services and supply	203	418	482	6,034	2,016
Capital goods	282	4	1,100	4,071	4,885
LLM	7,618	5,853	6,428	41,560	81,631
Subtotal	<u>186,737</u>	<u>265,685</u>	<u>256,588</u>	<u>360,392</u>	<u>467,110</u>
Total	<u>1,697,921</u>	<u>1,568,422</u>	<u>1,592,215</u>	<u>1,581,126</u>	<u>1,953,960</u>

/a Allocation.

/b Including maintenance expenditure.

/c Serving rubber-producing areas.

/d The revised allocation as of mid-1987 was about M\$100 million. Since then, the allocation is thought to have been further decreased.

Source: Public Works Department.

MALAYSIATRANSPORT POLICY REVIEWMalayan Railways: Passenger Traffic, 1976-85

	Passengers (number)	Growth (%)	Passenger-km (million)	Growth (%)	Average distance (km)	Growth (%)
1976	6,400,283	-	1,145	-	178.9	-
1977	6,388,910	-0.2	1,273	11.2	199.3	11.4
1978	5,998,199	-6.1	1,269	-0.3	211.6	6.2
1979	6,242,872	4.1	1,372	8.1	219.7	3.8
1980	7,067,163	13.2	1,587	15.7	224.5	2.2
1981	7,355,805	4.1	1,640	3.4	223.0	-0.7
1982	7,116,855	-3.2	1,615	-1.5	227.0	1.8
1983	6,641,636	-6.7	1,499	-7.2	225.7	-0.6
1984	6,633,763	-0.1	1,512	0.9	228.0	1.0
1985	6,356,002	-4.2	1,409	-6.8	221.6	-2.8

Source: Malayan Railways.

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TRANSPORT POLICY REVIEW

Malayan Railways: Passengers, Passenger-Kilometers and Revenue,
by Class of Service (1981-85)

	1981	1982	1983	1984	1985
<u>Number of Passengers ('000)</u>					
First /a	43	39	38	49	73
Second	1,081	1,178	1,178	1,552	1,706
Third	6,232	5,900	5,425	5,033	4,577
<u>Total</u>	<u>7,356</u>	<u>7,117</u>	<u>6,641</u>	<u>6,634</u>	<u>6,356</u>
<u>Passenger-km (million)</u>					
First	15.1	14.4	13.0	17.0	27.5
Second	404.9	433.3	431.6	584.8	611.4
Third	1,220.1	1,167.6	1,054.1	910.5	769.8
<u>Total</u>	<u>1,640.1</u>	<u>1,615.3</u>	<u>1,498.7</u>	<u>1,512.3</u>	<u>1,408.7</u>
<u>Revenue (M\$ million)</u>					
First	1.8	1.7	1.6	2.1	3.8
Second	21.0	22.5	22.4	30.1	34.5
Third	37.3	35.9	32.3	27.8	25.3
<u>Total</u>	<u>60.1</u>	<u>60.1</u>	<u>56.3</u>	<u>60.0</u>	<u>63.6</u>

/a Class of service.

Source: Malayan Railways.

MALAYSIA
TRANSPORT POLICY REVIEW

Malayan Railways: Ratios and Key Statistics, 1981-85

	1981	1982	1983	1984	1985
Working ratio (%)	118.18	113.16	105.15	108.24	115.81
Operating ratio (%)	129.53	125.51	121.36	126.73	135.84
Net income as a % of revenue	-31.42	-29.87	-30.86	-43.57	-58.10
Rate of return (%)	-10.42	-8.10	-5.76	-6.09	-7.32
Return on equity (%)	-82.94	-30.05	-36.42	-79.33	-1,364.73
Fixed asset turnover	0.35	0.32	0.27	0.23	0.20
Current ratio	0.86	2.65	5.87	4.28	2.98
Long-term debt/equity	6.02	3.14	5.65	10.18	146.35
Long-term debt/total capital	0.86	0.76	0.85	0.91	0.99
Passenger (km)	-	5,588,615	5,674,476	6,134,053	6,195,474
Cargo and mail (ton/km)	-	151,278	186,249	203,437	220,516
Revenue/pass-km	-	0.0107	0.0100	0.0098	0.0103
Revenue/ton-km	-	0.1055	0.1024	0.0978	0.0913

Source: Malayan Railways and Bank staff.

MALAYSIA
TRANSPORT POLICY REVIEW

Malayan Railways: Income Statement, 1981-85
(M\$'000)

As of December 31	1981	1982	1983	1984	1985
<u>Operating Revenue</u>					
Passengers	60,100	60,059	56,300	59,984	63,617
Cargo	59,967	57,826	59,229	56,246	50,048
Mail and rents	14,303	15,953	19,074	19,902	20,128
<u>Total Operating Revenue</u>	<u>134,370</u>	<u>133,838</u>	<u>134,603</u>	<u>136,132</u>	<u>133,793</u>
<u>Expenses</u>					
Working capital	158,795	151,448	141,529	147,345	154,939
Depreciation	15,255	16,530	21,824	25,175	26,807
<u>Operating Profit</u>	<u>-39,680</u>	<u>-34,140</u>	<u>-28,750</u>	<u>-36,388</u>	<u>-47,953</u>
Interest expense	11,168	14,182	20,890	31,021	38,720
Other income	8,623	8,344	8,107	8,094	8,938
<u>Taxes</u>					
Malaysian	0	0	0	0	0
Foreign	0	0	0	0	0
<u>Net Income</u>	<u>-42,225</u>	<u>-39,978</u>	<u>-41,533</u>	<u>-59,315</u>	<u>-77,735</u>

Source: Malayan Railways and Bank staff.

MALAYSIATRANSPORT POLICY REVIEWMalayan Railways: Summary Balance Sheet, 1981-85
(M\$'000)

As of December 31	1981	1982	1983	1984	1985
Current assets	145,465	206,187	311,185	309,724	275,310
Fixed assets	380,788	421,326	499,435	597,339	655,391
Investments and accounts receivable	939	939	1,036	1,036	1,036
<u>Total Assets</u>	<u>527,192</u>	<u>628,452</u>	<u>811,656</u>	<u>908,099</u>	<u>931,737</u>
Current liabilities	169,653	77,779	52,990	72,428	92,415
Long-term liabilities	306,627	417,640	644,615	760,901	833,627
Deferred profit	0	0	0	0	0
Capital	50,913	133,033	114,052	74,771	5,696
<u>Total Liabilities and Capital</u>	<u>527,193</u>	<u>628,452</u>	<u>811,657</u>	<u>908,100</u>	<u>931,738</u>

Source: Malayan Railways and Bank staff.

MALAYSIATRANSPORT POLICY REVIEWMalayan Railways: Income Account, 1980-86
(M\$'000)

Element of income	1980	1981	1982	1983	1984	1985	1986
Passenger transport	57,891	60,100	60,059	56,300	59,984	63,617	62,889
Freight transport	62,786	59,967	57,826	59,229	56,246	50,048	50,322
Parcels and mails	6,131	6,302	6,336	7,935	7,941	7,660	7,012
Collection and delivery	1,978	1,643	1,545	1,390	1,116	689	737
Rents	7,883	8,000	9,617	11,138	11,961	12,469	10,776
Interest on investment	1,356	1,859	615	787	1,365	2,417	4,962
Miscellaneous	2,765	5,121	6,184	5,929	5,613	5,832	58,301/a
<u>Total</u>	<u>140,790</u>	<u>142,992</u>	<u>142,182</u>	<u>142,708</u>	<u>144,226</u>	<u>142,732</u>	<u>194,999</u>

/a Reflects sale of land in Singapore.

Source: Malayan Railways.

MALAYSIA
TRANSPORT POLICY REVIEW

Malayan Railways: Expenditure Account, 1980-86
(M\$'000)

Element of expenditure	1980	1981	1982	1983	1984	1985	1986
Maintenance of way and work	22,737	26,839	28,324	33,208	35,128	39,040	34,373
Maintenance of rolling stock	24,663	26,469	28,806	23,345	19,255	55,707	60,959
Locomotive operations	25,871	32,385	35,902	28,267	31,619	-	-
Traffic operations	38,097	42,470	41,647	41,455	43,325	41,644	41,329
Administrative and general expenditure	7,134	8,034	9,599	10,251	11,008	12,949	15,191
Pension and provident fund	12,809	15,177	-	-	-	-	-
Upkeep of rentable property	3,189	2,825	2,805	2,177	2,298	-	-
Signaling and communications	3,378	4,355	4,356	4,749	4,688	5,599	6,629
Miscellaneous	72	240	9	37	23	-	835
Provision for depreciation	14,260	15,255	16,530	21,824	25,176	26,807	28,742
<u>Total Expenditure</u>	<u>152,210</u>	<u>174,049</u>	<u>167,978</u>	<u>165,353</u>	<u>172,520</u>	<u>181,746</u>	<u>188,058</u>
Operating surplus (loss)	(11,420)	(31,057)	(25,796)	(22,645)	(28,294)	(39,014)	6,941

Source: Malayan Railways.

MALAYSIA
TRANSPORT POLICY REVIEW
Airports and Airport Facilities, 1984

	Runway Length (Metres)	Biggest Aircraft Accommodation	Runway facilities	Radio Navigational Aids
INTERNATIONAL AIRPORT				
Lapanganterbang Antarabangsa				
Kuala Lumpur	3475 x45 LCN 100	B 747	Daytime/ Nighttime	2NDB, 2L, 2X ILS-DME VOR DME
Pulau Pinang	3354 x46 LCN 70	A 300	Daytime Nighttime	L, VOR DME, ILS DME
Kota Kinabalu	2987 x46 LCN 30	DC 10	Daytime Nighttime	NDB, L, VOR DME ILS DME
Kuching	2454 x46	DC 10	Daytime Nighttime	2NDB, VOR DME, L ILS/DME
DOMESTIC AIRPORTS				
WEST MALAYSIA				
Lapanganterbang dalam negeri Semenanjung				
Johor Bahru/Sultan Ismail	3354 x46 LCN 100	B 747	Daytime Nighttime	NDB, VOR DME ILS
Alor Setar/Sultan Abdul Hamid	1750 x46 LCN 40	B 737	Daytime Nighttime	NDB
Ipoh	1371 x37 LCN 66	F 27	Daytime	L
Kota Bharu/Sultan Ismail Petra	198 x46 LCN 81	B 737	Daytime Nighttime	NDB, VOR DME
Kuala Terengganu/Sultan Mahmud	2012 x46 LCN 55	B 737	Daytime	L
Kuantan	2004 x46 LCN 50	B 727	Daytime	L, NDB
Malacca	1372 x37 LCN42	F 27	Daytime	L

Note

* 0001 - 0900 Monday - Friday
0001 - 0600 Saturday
Sunday - Closed
PPR (Prior Permission Required for all non Rmaf Acft 24 hours notice)

	Runway Length (metres)	Biggest Aircraft Accommodation	Runway facilities	Radio Navigational Aids
SABAH/SARAWAK/FEDERAL TERRITORY OF LABUAN				
Sandakan	2134/45 LCN 90	A 300	Daytime	NDB, L
Lahad Datu	1371 x30 LCN 20	F 27	Daytime	L
Tawau	1707 x30 LCN 45	B 737	Daytime	NDB
Bintulu	1372 x31 LCN 20	F 27	Daytime	NDB, L
Sibu	1372 x30 LCN 15	F 27	Daytime	NDB, L
Miri	1981 x64 LCN 45	B 737	Daytime/ Nighttime	L
Labuan	1945 x46 LCN 45	B 737	Daytime/ Nighttime	L
STOL - SHORT TAKEOFFS/LANDINGS				
Landasanterbang stol				
SABAH				
Pamol	711 x23	DHC 6	Daytime	-
Semporna	609 x24	DHC 6	Daytime	-
Ranau	548 x21	DHC 6	Daytime	-
Keningau	872 x26	DHC 6	Daytime	-
Long Pasia	610 x23	DHC 6	Daytime	-
Sipitang	732 x23	DHC 6	Daytime	-
Telupid	792 x23	DHC 6	Daytime	-
Kuala Mendamit	411 x32	DHC 6	Daytime	-
Kuala Penyu	549 x23	DHC 6	Daytime	-
SARAWAK				
Mukah	732 x18	DHC 6	Daytime	-
Berio	640 x36	DHC 6	Daytime	-
Limbang	579 x18	DHC 6	Daytime	-
Simanggang	549 x18	DHC 6	Daytime	-
Lawas	518 x18	DHC 6	Daytime	-
Long Akah	412 x18	DHC 6	Daytime	-

	Runway Length (Metres)	Biggest Aircraft Accommodation	Runway facilities	Radio Navigational Aids
SARAWAK				
Sematan	718 x37	BN 2	Daytime	-
Belaga	427 x18	BN 2	Daytime	-
Kapit	427 x18	BN 2	Daytime	-
Bekalalan	549 x23	BN 2	Daytime	Strictly VFR
Long Lellang	762 x24	BN 2	Daytime	-
Long Semado	427 x18	BN 2	Daytime	-
Long Seridan	457 x18	BN 2	Daytime	-
Long Sukang	549 x23	BN 2	Daytime	-
Marudi	915 x24	BN 2	Daytime	-
RURAL AIRSTRIPS				
Padang terbang Luar bandar				
Sitiawan	549 x69	BN 2	Daytime	-
Taiping	1320 x46	CI 30	Daytime	-
Mersing	366 x23	BN 2	Daytime	-
Bidor	366 x23	BN 2	Daytime	-
Kroh	366 x23	BN 2	Daytime	-
Muar	366 x23	BN 2	Daytime	-
Dungun	366 x23	HELOPS	Daytime	-
Segamat	366 x23	BN 2	Daytime	-
Pulau Tioman	792 x30	BN 2	Daytime	-
Grik	366 x23	BN 2	Daytime	-
Batu Pahat	366 x23	BN 2	Daytime	-
Kuala Krai	366 x23	BN 2	Daytime	-

NOTES: Abbreviations:

- LCN - Load Classification number
- ILS - Instrument Landing System
- NDB - Non-Directional Beacon
- VOR - VHF Omnidirectional Radio Range
- DME - Distance Measuring Equipment
- L - Locator
- LLZ - Localiser
- VFR - Visual Flight Rule

Source: Civil Aviation Department
Punca: Jabatan Penerbangan Awam

MALAYSIATRANSPORT POLICY REVIEWInvestment in Aviation Subsector, 1971-85

	Allocation ----- (M\$ million) -----	Actual expenditure -----	Percentage achieved
Revised Second Malaysia Plan (1971-75)	282.43	181.84	64.4
Revised Third Malaysia Plan (1976-81)	490.34	208.26	42.5
Revised Fourth Malaysia Plan (1981-85)	921.74	871.40	94.5
<u>Total</u>	<u>1,694.51</u>	<u>1,261.50</u>	<u>74.5</u>

Source: MOT.

MALAYSIATRANSPORT POLICY REVIEWPassenger Air Traffic, 1979-86
('000)

	Peninsular Malaysia	East Malaysia	Total
1979	3,153	2,487	5,640
1980	3,940	3,257	7,197
1981	4,885	4,126	9,011
1982	5,160	4,138	9,298
1983	5,350	4,113	9,463
1984	6,078	4,337	10,415
1985	6,304	3,951	10,255
1986 est	6,087	3,864	9,951

Source: DCA.

MALAYSIA
TRANSPORT POLICY REVIEW

DCA: Airport Revenues, Peninsular Malaysia, 1982-86
(M\$'000)

	1982	1983	1984	1985	1986
Kuala Lumpur	33,663	34,736	40,262	46,666	49,780
Penang	10,783	10,887	11,443	11,850	11,271
Johor Bharu	708	893	1,029	1,207	1,267
Alor Setar	251	315	370	404	383
Ipoh	281	330	491	559	561
Kota Bharu	640	661	728	770	782
Kuala Trengganu	311	426	469	333	279
Kuantan	187	248	445	574	506
Melaka	64	43	83	116	66
<u>Total</u>	<u>46,888</u>	<u>48,539</u>	<u>55,320</u>	<u>62,479</u>	<u>64,895</u>

Source: DCA.

MALAYSIA
TRANSPORT POLICY REVIEW

DCA: Airport Revenues and Expenditures, 1982-86
(M\$'000)

	<u>Peninsular Malaysia</u>			<u>Sabah-Sarawak</u>			<u>Total deficit</u>
	<u>Revenue</u>	<u>Expen- diture</u>	<u>/a Deficit</u>	<u>Revenue</u>	<u>Expen- diture</u>	<u>/a Deficit</u>	
1982	46,888	244,242	197,354	14,020	107,220	93,200	290,554
1983	48,539	187,728	139,189	14,315	120,067	105,752	244,941
1984	55,320	160,276	104,956	17,185	111,063	93,878	198,834
1985	62,479	159,127	96,648	16,870	102,214	85,344	181,992
1986	64,895	180,220	115,325	19,874	84,927	65,053	180,378

/a Deficit is the difference between total revenue and total cost (expenditures) incurred by DCA in providing the aviation facilities and services.

Source: DCA.

MALAYSIA
TRANSPORT POLICY REVIEW

Malaysian Airline System: Ratios and Key Statistics, 1983-86

	1983	1984	1985	1986
Working ratio (%)	82.24	76.75	76.45	79.96
Operating ratio (%)	90.95	86.61	85.37	89.32
Net income as a % of revenue	0.75	7.77	10.26	8.15
Rate of return (%)	8.73	14.23	16.31	10.91
Return on equity (%)	6.40	40.86	35.42	16.30
Fixed asset turnover	0.96	1.06	1.11	1.02
Current ratio	0.50	0.57	0.86	1.03
Long-term debt/equity	6.16	3.24	2.10	1.16
Long-term debt/total capital	0.86	0.76	0.68	0.54
Passenger-km	5,588,615	5,624,476	6,134,053	6,195,474
Cargo and mail (ton-km)	151,278	186,249	203,437	220,516
Revenue/pass-km	0.1589	0.1670	0.1618	0.1590
Revenue/ton-km	1.8299	1.5062	1.4250	1.3730

Source: MAS and Bank staff.

MALAYSIA
TRANSPORT POLICY REVIEW

Malaysian Airline System: Summary Balance Sheet, 1983-86
(M\$'000)

As of March 31	1983	1984	1985	1986
Current assets	282,649	313,966	498,840	718,578
Fixed assets	1,207,939	1,148,362	1,150,879	1,261,286
Investments and accounts receivable	83,348	89,680	100,900	126,612
<u>Total Assets</u>	<u>1,573,936</u>	<u>1,552,008</u>	<u>1,750,619</u>	<u>2,106,476</u>
Current liabilities	566,726	546,430	578,378	698,901
Long-term liabilities	846,018	751,825	781,397	747,100
Deferred profit	23,904	21,627	19,351	17,074
Capital	137,286	232,126	371,494	643,402
<u>Total Liabilities and Capital</u>	<u>1,573,934</u>	<u>1,552,008</u>	<u>1,750,620</u>	<u>2,106,477</u>

Source: MAS and Bank staff.

MALAYSIA
TRANSPORT POLICY REVIEW

Malaysian Airline System: Income Statement, 1982-86
(M\$'000)

As of March 31	1982	1983	1984	1985	1986
<u>Operating Revenues</u>					
Passengers		888,054	939,556	992,758	984,886
Cargo and other		276,829	280,535	239,899	302,776
<u>Total Operating Revenue</u>	<u>995,345</u>	<u>1,164,883</u>	<u>1,220,091</u>	<u>1,282,657</u>	<u>1,287,662</u>
<u>Expenses</u>					
Working capital		957,977	936,465	980,626	1,029,589
Depreciation		101,481	120,208	114,343	120,502
<u>Operating Profit</u>	<u>-33,643</u>	<u>105,425</u>	<u>163,418</u>	<u>187,688</u>	<u>137,571</u>
Interest expense		117,962	92,730	88,166	78,290
Other income		24,006	26,122	35,231	47,873
<u>Taxes</u>					
Malaysian		0	0	0	0
Foreign	1,534	2,682	1,970	3,168	2,249
<u>Net Income</u>	<u>-35,177</u>	<u>8,787</u>	<u>94,840</u>	<u>131,585</u>	<u>104,905</u>

Source: MAS and Bank staff.

Table 3.23

MALAYSIA
TRANSPORT POLICY REVIEW

Port Throughput and Capacity, 1985
(Tons/year)

Port	1985 throughput	Economical throughput capacity
Port Kelang	9,050,827	13,747,000
Penang	5,753,000	7,789,000
Johor Port	4,083,201	6,236,000
Kuantan	723,428	2,624,000
Sabah ports	1,159,755	1,462,000
Sarawak ports	953,017	1,400,000

Note: Exclusive of timber.

Source: National Ports Study.

MALAYSIA
TRANSPORT POLICY REVIEW

Table 3.23A

Port Traffic in Malaysia in 1985
('000 dwt)

	Peninsular Malaysia	Sarawak	Sabah	Grand total
<u>Exports</u>				
Total	13,785	23,272	11,078	48,135
Of which: Hydrocarbons /a	2,769	11,297	270	14,336
Timber /b	1,697	11,594	9,693	22,984
<u>Imports</u>				
Total	18,900	1,304	2,149	22,353
Of which: Hydrocarbons /a	9,729	289	750	10,768
Timber /b	27	-	-	27
<u>Total /c</u>				
Total	32,685	24,576	13,227	70,488
Of which: Hydrocarbons /a	12,498	11,586	1,020	25,104
Timber /b	1,724	11,594	9,693	23,011

/a Includes crude petroleum, petroleum products, LNG.

/b Includes logs, sawn timber, plywood and veneers, etc.

/c Labuan not included.

Source: PRC: National Ports Plan, Vol. 1, pp. 5-6 - 5-9.

MALAYSIA

TRANSPORT POLICY REVIEW

Revenues and Expenditures of Federal Ports, 1982-86
(M\$'000)

Port	1982		1983		1984		1985		1986	
	Revenue	Exp.								
Kelang Port Authority	173,557	93,226	189,573	96,413	193,342	99,033	181,861	134,140	119,206	107,298
Penang Port Commission	93,136	71,504	97,878	72,372	101,929	75,320	96,116	75,618	84,778	74,395
Johor Port Authority	24,616	21,466	31,185	23,217	33,958	28,020	35,518	36,122	43,888	41,611
Kuantan Port Authority	7,347	6,124	11,380	10,271	7,659	7,545	8,952	8,673	10,055	10,225
Bintulu Port Authority	135	2,757	29,317	32,260	64,422	49,245	80,600	39,600	84,420	44,510
<u>Total</u>	<u>298,791</u>	<u>195,077</u>	<u>359,333</u>	<u>234,533</u>	<u>401,292</u>	<u>259,163</u>	<u>403,047</u>	<u>294,153</u>	<u>342,347</u>	<u>278,039</u>

Source: MOT, Finance Division.

MALAYSIA

TRANSPORT POLICY REVIEW

Development Expenditures for Federal Ports, 1984-86
(M\$'000)

Port	1984				1985				1986			
	Allocation		Actual Expenditure		Allocation		Actual Expenditure		Allocation		Actual Expenditure	
	Grant	Loan	Grant	Loan	Grant	Loan	Grant	Loan	Grant	Loan	Grant	Loan
Port Kelang	-	23,000	-	13,000	-	-	-	-	-	27,000/a	-	22,000/a
Penang	-	10	-	-	-	-	-	-	-	16,680	-	-
Johor	98,754	28,420	80,348	14,000	42,086	29,344	35,219	29,344	32,840	16,520	6,560	10,500
Kuantan	8,700	10,000	8,696	9,000	3,400	6,000	3,258	-	820/b	-	130/b	-
Bintulu	16,538	2,860	15,882	-	500	-	-	-	-	-	-	-
Petroleum Supply	80,100	1,685	79,375	1,684	51,525	-	37,074	-	20,200	-	13,114	-
Kelantan /c	2,000	-	1,222	-	2,750	-	509	-	3,850	-	949	-
Total	206,092	65,975	185,523	37,684	100,261	35,344	76,060	29,344	57,710	60,200	20,753	32,500

/a Pulau Lamut.

/f Ferry Terminal.

/c Feasibility studies for a new port in the Kota Bharu area.

Source: MOT, Finance Division.

Table 3.25

MALAYSIA
TRANSPORT POLICY REVIEW

Marine Department: Revenues and Expenditures, 1982-86
(M\$'000)

	Peninsular Malaysia	Sabah	Sarawak /a	Total
<u>1982</u>				
Revenue	741	2,616	4,280	7,673
Expenditure				
Operating	7,879	5,049	7,157	20,085
Development	3,547	12,651	4,518	20,716
<u>1983</u>				
Revenue	2,956	3,295	4,577	10,828
Expenditure				
Operating	5,788	3,608	7,249	16,645
Development	4,828	991	1,600	7,419
<u>1984</u>				
Revenue	4,311	2,794	4,896	12,001
Expenditure				
Operating	6,206	4,402	7,232	17,840
Development	11,853	120	13,867	25,840
<u>1985</u>				
Revenue	5,137	2,856	5,236	13,229
Expenditure				
Operating	7,345	6,481	7,216	21,042
Development	3,506	8,000	117	11,683
<u>1986</u>				
Revenue	4,167	2,990	5,600	12,757
Expenditure				
Operating	9,059	4,941	7,354	21,354
Development	-	-	175	175

/a Revenue figures for 1982-85 are estimates.

Source: Marine Departments and MOT, Financial Division.

MALAYSIA

TRANSPORT POLICY REVIEW

Malayan Railways: Container Traffic, 1974-86

	Number of containers (TEU)
1974	964
1975	1,715
1976	8,405
1977	19,196
1978	17,733
1979	21,535
1980	20,638
1981	20,022
1982	24,344
1983	37,759
1984	44,981
1985	35,747
1986	31,757

Source: Malayan Railways.

MALAYSIA

TRANSPORT POLICY REVIEW

Road Container Traffic, by Company (1982-86)

	1982	1983	1984	1985	1986
<u>Kontena Nasional</u>					
20'	68,473	75,596	78,964	88,365	94,810
40'	12,811	15,658	18,608	21,462	25,145
Total 20' TEU	94,095	106,912	116,180	131,289	145,100
<u>Shapadu</u>					
20'	n.a.	n.a.	25,081	26,430	28,875
40'	n.a.	n.a.	6,650	8,706	10,721
Total 20' TEU	17,425	26,710	38,381	43,842	50,317
<u>Konsortium</u>					
20'	n.a.	n.a.	n.a.	n.a.	15,562
40'	n.a.	n.a.	n.a.	n.a.	5,522
Total 20' TEU	n.a.	n.a.	16,542	22,558	26,606

Source: MOT.

MALAYSIA
TRANSPORT POLICY REVIEW

Coastal Container Traffic in Peninsular Malaysia,
1980-86 /a

Year	<u>Port Kelang - Singapore</u>		<u>Penang - Singapore</u>		<u>Port Kelong - Penang</u>	
	TEUs	% change	TEUs	% change	TEUs	% change
1980	4,823	-	-	-	-	-
1981	9,735	+101.8	-	-	-	-
1982	23,809	+144.6	-	-	-	-
1983	37,033	+55.5	-	-	-	-
1984	48,184	+30.1	13,010	-	-	-
1985	59,385	+23.2	18,381	+41.3	-	-
1986	75,019	+26.3	16,325	-11.2	136	-

/a These figures exclude containers moved by ocean-going ships in direct port calls as well as those carried abroad conventional vessels.

Source: MOT.

MALAYSIA
TRANSPORT POLICY REVIEW

Sabah State Railways: Revenues and Expenditures, 1982-86
(M\$'000)

Description	1982	1983	1984	1985	1986
Revenues	3,121.7	2,463.1	1,442.5	1,081.9	1,329.9
Expenditures:	7,319.0	7,222.0	6,940.9	7,122.2	7,474.0
Staff salaries	5,805.2	5,556.1	5,289.2	5,410.9	5,780.8
Annual recurrent	1,509.8	1,661.1	1,648.4	1,666.5	1,591.1
Special expenditure	4.0	4.8	3.3	44.8	102.1
Development expenditure	985.7	456.8	764.8	642.3	820.6
<u>Total expenditure</u>	<u>8,304.7</u>	<u>7,678.8</u>	<u>7,705.7</u>	<u>7,764.5</u>	<u>8,294.6</u>
Deficit	5,183.0	5,215.7	6,263.2	6,682.6	6,964.7

Source: Sabah State Railways.

MALAYSIATRANSPORT POLICY REVIEW

Transport Expenditures and Financing in Sabah
and Sarawak (1981-90)
(M\$ million)

<u>Sector</u>	<u>Federal expenditure</u>	<u>State expenditure</u>	<u>Own</u>	<u>Total</u>
<u>Fourth Plan (1981-85)</u>				
<u>Sabah</u>				
Road transport	395.62	468.72	-	864.34
Ports and marine services	2.95	3.11	164.73	170.79
Civil aviation	198.12	-	-	198.12
Sabah Railways	-	4.90	-	4.90
<u>Total</u>	<u>596.69</u>	<u>476.73</u>	<u>164.73</u>	<u>1,238.15</u>
<u>Sarawak</u>				
Road transport	342.70	179.75	-	522.45
Ports and marine services	502.91	62.40	70.61	635.92
Civil aviation	125.07	-	-	125.07
<u>Total</u>	<u>970.68</u>	<u>242.15</u>	<u>70.61</u>	<u>1,238.44</u>
<u>Fifth Plan (1986-90)</u>				
<u>Sabah</u>				
Road transport	295.85	432.83	-	728.68
Ports and marine services	5.60	0.80	100.0	106.40
Civil aviation	45.77	-	-	45.77
Sabah Railways	-	2.97	-	2.97
<u>Total</u>	<u>326.06/a</u>	<u>436.60</u>	<u>100.0</u>	<u>883.82</u>
<u>Sarawak</u>				
Road transport	305.67	209.82	-	515.49
Ports and marine services	1.50	-	74.32	75.82
Civil aviation	85.11	-	-	85.11
<u>Total</u>	<u>392.28</u>	<u>209.82</u>	<u>74.32</u>	<u>676.42</u>

/a Including Labuan.

Source: Federal Budget 1986/87, EPU, Sabah and Sarawak State Governments and Port Authorities.

MALAYSIA

TRANSPORT POLICY REVIEW

Trucking Industry Capacity Utilization and
Forecasts of Fleet Needs in Peninsular Malaysia, 1986-95

<u>Assumptions</u>	<u>1986</u>	<u>1988</u>	<u>1990</u>	<u>1995</u>
<u>Vehicle-Kilometers ('000)</u>				
Medium trucks /a	491,865	546,741	621,836	783,379
Large trucks /b	433,965	449,299	537,286	692,921
<u>Average Actual Payload (tons) /c</u>				
Medium trucks	7.14	7.14	7.14	7.14
Large trucks	14.08	14.08	14.08	14.08
<u>Capacity Utilization Indicator /c</u>				
Medium trucks	0.24	0.24	0.24	0.24
Large trucks	0.62	0.62	0.62	0.62
<u>Average Theoretical Payload (tons) /c</u>				
Medium trucks	6.61	6.61	6.61	6.61
Large trucks	14.07	14.07	14.07	14.07
<u>Total Trucks Required</u>				
Medium trucks	<u>25,372</u>	<u>28,683</u>	<u>32,622</u>	<u>41,097</u>
Large trucks	<u>7,433</u>	<u>7,715</u>	<u>9,226</u>	<u>11,898</u>

/a Two-axle, six-wheel rigid vehicle.

/b Three-axle, ten-wheel articulated vehicle.

/c Actual 1986 values used in calculating projected truck needs.

Source: MOT - World Bank Study Team.

MALAYSIA

TRANSPORT POLICY REVIEW

Forecasts of Bus Fleet Requirement up to 1995

	1986	1988	1990	1995
Pass-km (thousands)	4,143,242	4,550,210	5,078,496	6,392,803
Average seats per bus	40	40	40	40
Capacity utilization rate, 1986 <u>/a</u>	0.593	0.593	0.593	0.593
No. of express buses required	874	960	1,071	1,848

/a If the capacity utilization rate is assumed not to remain constant at the 1986 level, but to reflect past utilization trends, then utilization would fall to 0.411 by 1995, when 1,946 express buses would be needed.

Source: MOT - World Bank Study Team.

Table 5.3

MALAYSIA

TRANSPORT POLICY REVIEW

Government Road Investment Program, 1987-2008

Investment	Completion year	Length (km)	Cost (M\$ million)
<u>Construction</u>			
1. Jitra - Alor Setar	1988	24.0	195.00
2. Gurun - Butterworth	1992	53.3	309.73
3. Butterworth - Changkat Jering	1992	79.5	607.89
4. Changkat Jering - Ipoh	1987	54.0	329.02
5. Ipoh - Kuala Lumpur	1992	186.2	1,009.40
6. Air Keroh - Pagoh	1988	56.2	216.00
7. Pagoh - Johor Bahru	1992	125.0	636.58
8. Eastern section of supporting road system for East-West Expwy.	1988	84.1	51.00
9. Western section of supporting road system for East-West Expwy.	1995	135.0	292.00
10. New Kelang Valley Expwy.	1992	57.9	305.98
11. Karak - Kuantan	1995	n.a.	n.a.
12. Gua Musang - Kuala Lipis	1995	n.a.	n.a.
13. Kuala Berang - Sungai Siput	2008	n.a.	n.a.
<u>Total</u>		<u>855.2</u>	<u>3,952.60</u>
<u>Major Improvements</u>			
14. Seremban - Port Dickson	1990	16.0	88.40
15. Subang - Kelang	1992	13.9	78.32
<u>Total</u>		<u>29.9</u>	<u>166.72</u>

Note: Nos. 1 to 7 and 10 are part of the North-South Expressway.

Source: JKR and LLM.

MA-LAYSIA

TRANSPORT POLICY REVIEW

Recommended Highway and Bridge Capacity Improvements

	Peak hour estimated traffic (one-way) (in 1990)	Peak hour traffic capacity (one-way)	Overload % (in 1990)	Financial cost of development (M\$ million) /a		Economic cost of development (M\$ million) /b	
				Roads	Bridges	Roads	Bridges
<u>1990 Program</u>							
Rawang - Kuala Lumpur	4,346	3,880	12	n.a.	-	n.a.	-
Subang - Shah Alam	8,050	5,000	61	n.a.	-	n.a.	-
Kuala Lumpur - Seminyih	2,002	1,400	43	n.a.	-	n.a.	-
<u>1995 Program</u>							
	(in 1995)		(in 1995)				
Ipoh - Tapah	1,470	1,400	5	82.633	7.500	67.759	6.150
Rawang - Kuala Lumpur	5,083	3,880	31	7.695	0.651	6.310	0.534
Senai - Kulai	1,638	1,400	17	8.046	0.300	6.598	0.246
Subang - Shah Alam	7,320	6,000	22	6.364	1.214	5.219	0.996
Kg. Bata Anam - Kuantan	1,442	1,360	6	8.259	0.108	6.772	0.089
Johor Bharu - Ulu Tiram	1,448	1,320	12	18.001	0.942	14.761	0.772
Kuala Trengganu	1,426	1,320	8	12.067	17.225	9.895	14.125
Kuala Lumpur - Seminyih	2,604	1,400	86	39.914	3.836	32.729	3.146
<u>Total</u>				<u>182.979</u>	<u>31.776</u>	<u>150.042</u>	<u>26.058</u>

/a Includes cost of design, supervision and administration.

/b Economic costs are 82% of financial costs.

Source: Axle Load Study.

Table 5.4

MALAYSIA

TRANSPORT POLICY REVIEW

Sabah: Future Road and Bridge Projects

Projects	Estimated project cost (M\$'000)	Length of project (km)	5th Malaysian plan allocation (M\$'000)	5th Malaysian plan - length of project (km)
West Coast Highway; South Kota Kinabalu-Papar-Beaufort-Sindumin	211,415	163.2	6,800	75.2
West Coast Highway; Spurs and Links	100,000	318.0	4,500	74.0
West Coast Highway; North Kota Kinabalu-Kota Belud-Kudat	164,575	228.9	8,600	53.0
East-West Highway; Tamparuli-Ranau-Sandakan	187,500	295.2	59,000	287.8
East-West Highway; Links and Spurs	39,850	162.0	-	0.0
Southeast Highway; Bukit Garam-Junction-Lahad Datu-Tawau	154,242	274.8	71,790	224.3
Southeast Highway; Spurs	42,400	218.0	11,000	29.0
Central Highway; Kota Kinabalu Keningau-Tenom	81,381	214.5	28,100	85.5
Northeast Highway; Langkon Kanirangan-Sungai East-West Highway	38,500	121.0	10,600	34.0
Southern Highway; Keningau-Matiku-Merutai-Tawau	22,500	21.0	10,500	21.0
Southern Highway; Spurs		119.7		0.0
Agricultural Roads Adjacent East-West Highway	12,037	16.0		0.0
Agricultural Roads Adjacent Southwest Highway	66,732	143.5		0.0
Rural and Kampong Roads			39,650	
Labuan Road & Bridge Projects	184,203		21,160	
<u>Total</u>	<u>1,305,435</u>	<u>2,295.8</u>	<u>271,700</u>	<u>883.8</u>

Source: Sabah-Sarawak Road Transport Review & Economic Planning Unit. Project costs include construction, rehabilitation and resurfacing of roads.

MALAYSIA
TRANSPORT POLICY REVIEW

Sarawak: Future Road and Bridge Projects

<u>Project</u>	<u>Project cost (M\$'000)</u>	<u>Length of project (km)</u>	<u>5th Malaysian plan allocation (M\$'000)</u>
First Trunk Roads	770,550	920.0	120,500
Pan Borneo Highway	163,605	129.0	46,000
Other Trunk Roads	1,449,645	786.8	21,100
Hydro Project Access Roads	299,530	218.0	10,000
Other Major Road Improvements	163,970	235.9	13,200
Development Roads	309,042	1,124.0	31,480
Rural and Kampung Roads	-	-	15,860
<u>Total</u>	<u>3,156,342</u>	<u>3,414.0</u>	<u>258,140</u>

Source: Sabah-Sarawak Road Transport Review & Economic Planning Unit.
Project costs include construction, rehabilitation and resurfacing of roads.

MALAYSIA
TRANSPORT POLICY REVIEW

Malayan Railways: Wagon Turnaround Time, 1982-86
(days)

Description	1982	%	1983	%	1984	%	1985	%	1986	%
Time spent in terminals	4.16	49.5	3.62	45.1	4.36	48.6	4.47	44.9	4.14	41.1
Movement of loaded wagon	0.69	8.2	0.68	8.5	0.75	8.2	0.77	7.7	0.78	7.8
Detention of wagons loaded in intermediate yards	1.64	19.5	1.72	21.5	1.81	20.2	2.25	22.6	2.42	24.2
Movement of empty wagon	0.56	6.7	0.57	7.1	0.60	6.7	0.63	6.3	0.65	6.5
Detention of empty wagon in intermediate yards	1.35	16.1	1.43	17.8	1.46	16.3	1.83	18.4	2.02	20.2
Total turnaround time	<u>8.40</u>	<u>100.0</u>	<u>8.02</u>	<u>100.0</u>	<u>8.98</u>	<u>100.0</u>	<u>9.95</u>	<u>100.0</u>	<u>10.01</u>	<u>100.0</u>

Source: MOT - World Bank Study Team.

MALAYSIA
TRANSPORT POLICY REVIEW

Load Factors of Major Aircraft Types
(%)

Aircraft Type	1982/83	1983/84	1984/85	1985/86	1986/87
B-737	70.7	71.6	75.3	74.0	72.5
F-27					
Peninsular Malaysia	60.5	70.2	74.6	70.7	68.3
Sabah and Sarawak	72.5	74.3	78.1	77.9	75.9
Twin Otter	56.8	60.8	60.4	66.6	71.5

Source: MAS.

MALAYSIA

TRANSPORT POLICY REVIEW

MAS Fleet Development, 1986/87 - 1991/92

<u>Aircraft type</u>	<u>1986/87</u>	<u>1987/88</u>	<u>1988/89</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
B-747-200c	2	2	2	2	2	2
B-747-300c	1	1	1	1	1	1
B-747-400c	-	-	-	1	1	2
DC-10	3	3	3	3	3	3
A-300B	4	4	4	4	4	4
B-737	11	12	13	14	14	15
F-27	11	11/10	10	9	9	9
Twin Otter	4	4	4	4	4	4
Total	<u>36</u>	<u>37/36</u>	<u>37</u>	<u>37</u>	<u>37</u>	<u>38</u>

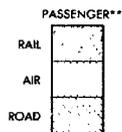
Source: MAS.

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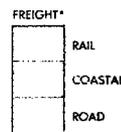
MALAYSIA NATIONAL TRANSPORT POLICY REVIEW PENINSULAR MALAYSIA



Traffic Corridors

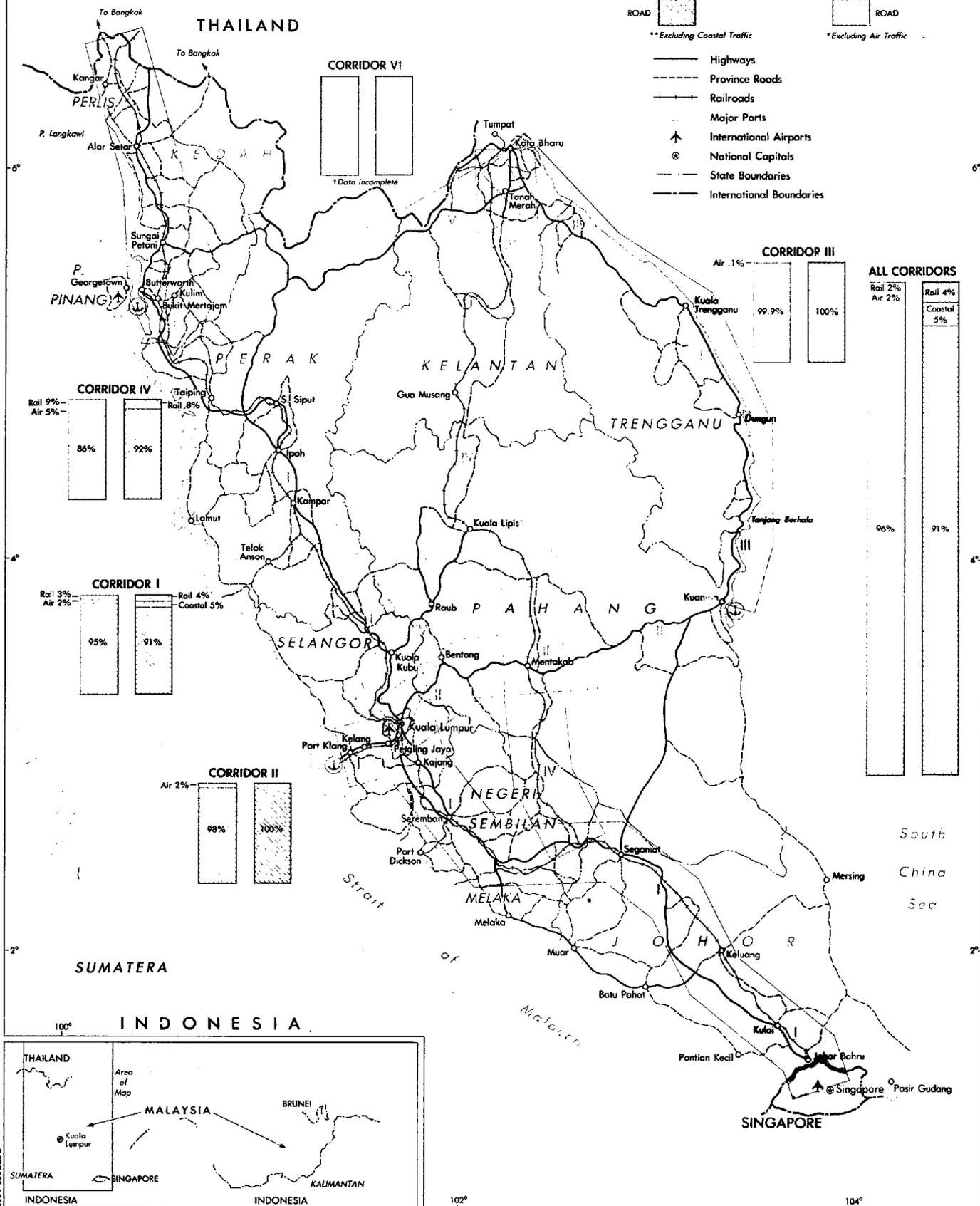


** Excluding Coastal Traffic

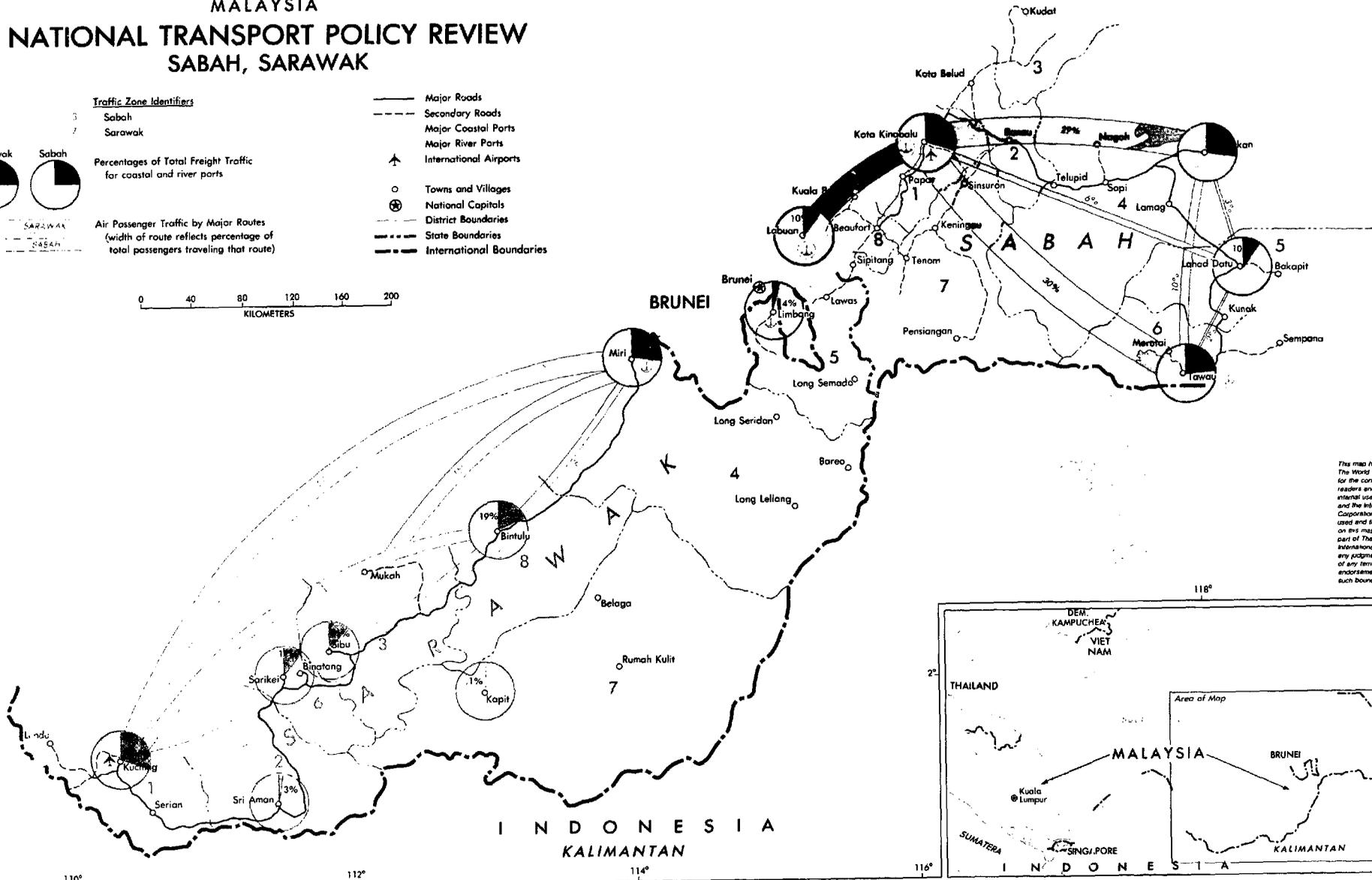
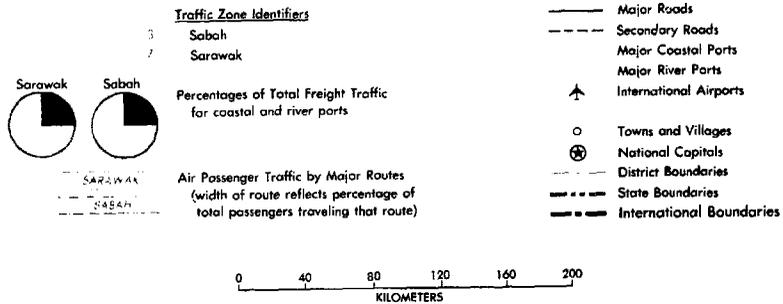


* Excluding Air Traffic

- Highways
- - - Province Roads
- +— Railroads
- Major Ports
- ↑ International Airports
- ⊙ National Capitals
- State Boundaries
- International Boundaries



MALAYSIA NATIONAL TRANSPORT POLICY REVIEW SABAH, SARAWAK



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