

Table 10.5 : Implementation Programme for Future Highway Development to 2010

(in RM million)

| Region | Phase I (1996-2000) | Phase II (2001-2005) | Phase III (2006-2010) |
|---------------------|------------------------|-------------------------|--------------------------|
| Peninsular Malaysia | 8,236.6 | 11,336.6 | 16,530.6 |
| Sabah | 2,118.0 | 2,488.0 | 3,486.3 |
| Sarawak | 2,448.0 | 2,647.3 | 3,714.7 |
| Total | 12,802.6 | 16,471.9 | 23,731.6 |

10.4 Policies and Strategies for Highway Network Development Plan

10.4.1 Policies

Proposed Highway Network Development Plan has been discussed in the previous section. In this section, development policies and proposal will be identified through a series of analysis and examinations.

The development plan is examined based on Planning Goals and Objectives which are described in Chapter 6. Goal 1, a main theme in this study aims to develop a national highway network that contributes to the attainment of the national economy and regional development plan of Vision 2020 and NDP of the OPP2. When the national economy achieve both the 7.0% GDP growth and the objectives of the regional development plan, the role of transport sector will be more significant to handle the huge future traffic demands. At present, the road transport handles more than 95% of the total passenger and freight transport in Malaysia. These are very high shares as compared to those of the developed countries which average about 80-85% share. In future, road transport will continue to play a most important role in the transport sector. However it is necessary to encourage the use of other modes for both passenger and freight. Therefore two major policies will be proposed as follows:

- P1:** *The proposed inter-urban highway network shall be the major transport system to handle future traffic demand in Malaysia.*
- P2:** *Other transport modes, especially rail transport shall be modernized.*

The improvement of rail transport will be expected to reduce diseconomy arising from the concentration in road transport.

These overall policies will be the main overriding policies for the next 20 years, P1 for whole study area and P2 for Peninsular Malaysia. They shall be further supplemented by the following strategies.

10.4.2 Highway Network Configuration

The proposed highway network configuration are discussed in the previous section. The policies on the network configuration are identified as follows :-

S1: A functional hierarchy of highway shall be developed and maintained.

The proposed functional highway network classification shall consists of the following highway systems:

- (1) Principal Highway
- (2) Minor Highway
- (3) Primary Road
- (4) Secondary Road
- (5) Minor Road

The network configuration for Peninsular Malaysia contains three distinct north-south corridors and six east-west corridors. The policies on this network are:

S2: Expressway network shall be extended to East Coast of Peninsular Malaysia

S3: The highway network in West Coast shall be further strengthened forming a ladder pattern configuration.

S4: More linkages between East and West Coast shall be provided.

S5: Urban bypasses shall be provided especially on the Principal and Minor Highway System.

For Sabah and Sarawak the following strategies are identified :-

S6: Linkage between Sabah and Sarawak shall be provided.

S7: Road access to the coastal towns and interior shall be developed.

10.4.3 Road Traffic Safety

The number of road accident fatalities in Malaysia has increased from 2,816 people in 1989 to 3,675 people in 1991. This fatality rate is very much higher when compared to statistics in developed countries.

Motorcyclist and pillion riders topped the list of road users who are killed or seriously injured followed by pedestrians, drivers of private and commercial vehicles and their passengers.

In view of the alarming increase in fatality rate among motorcyclist and pedestrians, more stringent effective measures must be introduced. Policy P1 and strategy S5 will help to reduce road accidents. However to further minimize road accidents more road safety facilities and appropriate road safety education programs should be introduced.

S8 : Specific lanes for motorcycles for heavily trafficked roads.

S9 : More pedestrian subways or bridges shall be constructed.

S10: Appropriate driver education system shall be introduced in order to instill safer driving habits and to promote road safety awareness and etiquette,

S11: Develop a five year road safety programme and provide sufficient funds preferably a revolving fund to implement the above programme.

10.4.4 Environmental Issues

The construction of highway can bring about a myriad of favourable as well as unfavourable impacts to the living environment. These impacts include economic, social, regional development impacts as well as impacts on the natural environment.

While a highway can bring about an increase in accessibility and employment opportunity (favourable), impacts on the natural environment often involve the destruction of natural habitats, vegetation and wild life which may then cause secondary impacts such as soil erosion, flooding, and land slides (unfavourable).

Although Malaysia still possess some 195,300 sq.km of forest areas or about 59% of the total land area in the country, every effort must be made to conserve these assets. Tropical forest in Malaysia is particularly valuable in terms of diversity of species while timber and other plant resources have ironically encouraged human exploitation. Tropical forest is particularly vulnerable to indiscriminate land clearing for development.

Environmental impacts occur in two stages of a highway development. Firstly, short term environmental impacts are created during the construction of the highway. In this stage, the preparation of the highway alignment involves cutting away trees, ground cover, levelling, etc. The use of machinery during construction further bring about disturbance to the environment, especially to wild life. Secondly, long term environmental impacts are generated from the use of the highway. Traffic, vibration, noise and related human activities will bring about adverse impacts to the natural environment. In case of a highway that passes through existing settlement areas, it can bring about noise pollution, disruption of community livelihood and endanger safety.

To mitigate and minimize the short and long term impacts of highway development on the natural and living environments, it is recommended that:

- S12: In conducting feasibility and engineering studies of the highway, alignment and structure of the road shall be carefully examined by means of Environment Impact Assessment (EIA) studies to minimize effects on the natural environment.*
- S13: During construction of the highway, suitable construction methods be chosen to minimize the adverse effects on the environment.*
- S14: Upon completion of a highway, prompt action shall be taken to protect the exposed ground by tree planting, turfing of slopes and other slope protection measures.*
- S15: Sufficient right-of-way shall be provided to reduce noise and air pollution by erection of noise screens such as tree planting, setback or bunking.*
- S16: The grade separated accesses shall be provided to neighbouring communities whenever possible to safeguard safety of roadside residents.*
- S17: The appropriate land use planning for land adjacent to highways shall be carried out carefully so as not to affect the intended function of the highways.*
- S18: Regulations with respect to smoke emission and noise level control shall be effectively enforced.*

10.4.5 Inland Transport Facilities

Since the Malaysian Government has decided to implement modernization of the Malayan railway through double tracking between Rawang-Seremban and KL-Port Klang and introduce other related facilities, the following policies are recommended to supplement P2.

- S19: The modernization program of KTM shall be further extended to the entire west coast line in Peninsular Malaysia,*
- S20: More inland ports and terminal facilities shall be constructed at strategic locations to encourage multi-modalism especially between road and rail transport and between maritime and rail transport.*

10.4.6 Modernization of Freight Transport System

The Study has forecasted the increase of freight traffic demand in future from 640 million tonne in 1991 to 2,400 million tonne by 2010. To meet this huge demand in future and to promote better freight transport, it is necessary to enhance the development of highway network as well as to modernize the present freight

transport system. The traffic survey conducted in this Study indicated a large proportion of lorry trips were unladen. It is therefore necessary to improve freight transport to achieve a higher loading efficiency.

S21: Efficient freight transport shall be established through containerization, segregation of inter-city line haulers from intra city distributors including introduction of multi-modalism.

S22: Modernization of freight transport industry through agglomeration of individual small transporters shall be introduced.

S23: Freight terminals such as truck terminals, container terminals and inland ports shall be established at strategic locations,

S24: Study on modernization of freight transport shall be undertaken.

10.4.7 Toll Road System and Privatization

Toll road system in Malaysia can be divided into two types, toll expressway and toll highway.

The Malaysian Highway Authority (MHA) was formed by the Incorporation Act 231, 1980-with the aim of implementation and operation of the North-South Toll Expressway.

MHA had taken over the following highway sections along the North-South Expressway and other highways that are completed earlier:-

- i) Bukit Kayu Hitam - Jitra
- ii) Senai - Johor Bahru Causeway
- iii) Kuala Lumpur - Karak highway
- iv) Penang Bridge

Subsequently in 1988, a concession agreement was signed between the Malaysian Government and the Concession Company to complete the construction of the balance of the expressway by April 1994.

The Concession Company will be fully responsible for the financing, construction, maintenance and operation of the balance of the expressway programme. Existing sections of the expressway are to be handed over to the concession company for their maintenance and operation.

In return, the Concession Company retains absolute right to the collection and retention of all toll charges for their own benefit from vehicles using the expressway for a period of 30 years. MHA's role in this concession is to oversee (on behalf of the Government) the due performance of the responsibilities and obligation under the Concession.

The objectives of the privatization of road projects are:

1. To speed up construction of expressways and highways,
2. To relieve financial and administrative burden of the government,

Observations of the existing privatized projects show that the performances of these projects are generally good at present. However these companies might face financial difficulties in future such as those experienced by the highway concession companies in France and Italy. The Government should consider incorporating together highways which have less traffic demand with heavily trafficked roads in order to speed up road development in the country. Therefore :

S25: The present privatization scheme shall be reviewed either through full privatization, joint-venture with private enterprises or encourage cross-subsidy from a more profitable project to another.

10.4.8 Further Studies and Review

The HNBP Study has recommended the development of a future highway network in achieving national and regional development in Malaysia. The Study has accordingly identified some of the proposed highways as priority projects on the basis of their role in network formation and traffic demand. To ensure continuity and on-schedule implementation,

S26: Feasibility/Engineering Study on highway development projects shall be undertaken.

The proposed projects for S26 are follows:

- (1) Kuala Lumpur Outer Ring Road/South Klang Valley Expressway
- (2) Sabah and Sarawak Linkage
- (3) Kuala Lumpur - Kuantan Expressway
- (4) Port Dickson - Seremban Highway

The proposed highway network development plan has been analyzed based on 1991 traffic demand and future socio-economic indicators from EPU. The existing population data, one of the basic data for traffic demand forecasting, was also estimated. Eventhough population census has been completed in 1991, the processing of the data has not been finished. Moreover, unforeseeable economic changes might happen. Therefore:

S27: The review of the HNBP study shall be conducted every five years to update the road development program or from time to time when necessary.

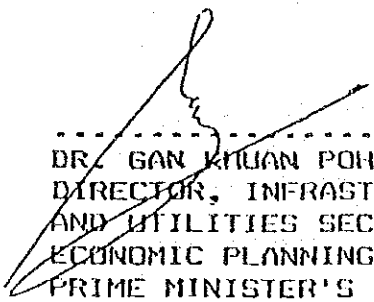
APPENDIX

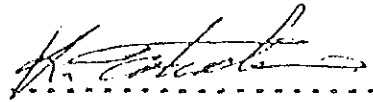
A. SCOPE OF WORK

SCOPE OF WORK
FOR
THE STUDY ON THE HIGHWAY NETWORK
DEVELOPMENT PLAN
IN
MALAYSIA

AGREED UPON BETWEEN
THE ECONOMIC PLANNING UNIT,
PRIME MINISTER'S DEPARTMENT
ON BEHALF OF
THE GOVERNMENT OF MALAYSIA
AND
THE JAPAN INTERNATIONAL COOPERATION AGENCY

KUALA LUMPUR, 19th. MARCH, 1990


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DR. GAN KUAN POH,
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AND UTILITIES SECTION,
ECONOMIC PLANNING UNIT,
PRIME MINISTER'S DEPARTMENT
on behalf of
THE GOVERNMENT OF MALAYSIA


.....
MR. KUNIHICO TAKADA
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PRELIMINARY STUDY TEAM
on behalf of
THE JAPAN INTERNATIONAL
COOPERATION AGENCY

I. INTRODUCTION

In response to the request of the Government of Malaysia, the Government of Japan has decided to conduct the Study on the Highway Network Development Plan in Malaysia (hereinafter referred to as "the Study").

In accordance with the relevant laws and regulations in force in Japan, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programmes of the Government of Japan, will undertake the Study in close cooperation with the authorities of Malaysia.

The present document sets forth the scope of work with regard to the Study.

2. OBJECTIVES OF THE STUDY

The objectives of the Study are:

- (1) To formulate a development plan of the national highway network targeted to the year 2010.
- (2) To prioritise new and improved linkages in the planned network with respect to technical and economic viewpoints and to formulate a road development programme taking into consideration the possibility of tolling.

3. STUDY AREA

The Study covers the whole of Malaysia.

4. SCOPE OF THE STUDY

In order to achieve the objectives mentioned above, the Study shall cover the following items:

4.1 Collection and Review of Available Information

To collect and review available data, reports, and other information relevant to the Study.

4.2 Inventory and Physical Condition Survey

(1) To conduct an inventory survey on transportation network facilities, especially on the network of federal roads, to supplement existing inventory information.

(2) To outline physical conditions critical to construction or improvement of highway network based on existing data and materials.

4.3 Traffic Survey and Analysis of Present Travel Characteristics

(1) To analyze available data on all modes of passenger and freight transport on the principal routes.

- (2) To carry out OD survey, traffic count survey, and other surveys as required to supplement existing traffic and transportation data.
- (3) To establish present vehicle OD matrix.
- (4) To analyze present travel characteristics.

4.4 Analysis of Performance of Existing Highway Network

- (1) Data collection and analyses of travel speed and accidents.
- (2) Assessment of adequacy of existing highway network in terms of traffic capacity, geometric standard, and safety.

4.5 Analysis and Forecast of Socio-Economic Framework

- (1) to analyze national and regional socio-economic characteristics and development prospects.
- (2) To identify major economic and regional development policies.
- (3) to forecast future socio-economic frameworks for the period up to the year 2010.

4.6 Formulation of Highway Development Strategy and Alternative Concepts of Highway Development

- (1) To define the roles of road transportation especially in connection with freight transportation, regional and tourism development, conforming to the institutional framework as prescribed by the Government of Malaysia.
- (2) To formulate development strategy for national highway network such as hierarchy concept.
- (3) To formulate alternative concepts of highway network development.

4.7 Traffic Demand Forecast and Formulation of National Highway Network Development Plan

- (1) Forecast of future vehicle OD matrices in every 5 years coinciding with Malaysia Plans up to the year 2010.
- (2) Establishment of highway network model and traffic assignments.
- (3) Preliminary estimates of construction costs.
- (4) Formulation of a national highway network development plan targeted to the year 2010 including hierarchical levels of links, development type such as new road or upgrading, and traffic safety consideration.

4.8. Formulation of Road Development Programme

- (1) To prioritize new and improved linkages in the planned network with respect to technical and economic viewpoints taking into account traffic forecasts in every 5 years.
- (2) To explore possibilities of toll roads for priority expressway links.
- (3) To formulate a road development programme.

4.9. Conclusions and Recommendations

5. STUDY SCHEDULE

The Study will be carried out in accordance with the attached tentative schedule.

6. REPORTS

JICA shall prepare the following reports in English and submit them to the Government of Malaysia.

- (1) Inception Report (25 copies)

This report will be submitted at the commencement of the Study and will describe the overall approach and implementation programme of the Study.

(2) Progress Report (1) (25 copies)

This report will be submitted within four (4) months after the commencement of the Study and will contain a statement of all work performed during the reporting period.

(3) Progress Report (2) (25 copies)

This report will be submitted within eight (8) months after the commencement of the Study and will contain the preliminary results of the analyses and surveys such as traffic survey, inventory survey, and analysis of performance of existing highway network.

(4) Interim Report (1) (40 copies)

This report will be submitted within twelve (12) months after the commencement of the Study and will contain highway development strategy and alternative network concepts.

(5) Interim Report (2) (40 copies)

This report will be submitted within sixteen (16) months after the commencement of the Study and will contain the proposed national highway network development plan and preliminary results of prioritization.

(6) Draft Final Report (40 copies)

This report will be submitted within twenty (20) months after the commencement of the Study and will contain all the results of the Study. The Government of Malaysia will provide the written comments on the Draft Final Report in English within four (4) weeks after receipt of the report.

(7) Final Report (60 copies)

This report will be submitted within two (2) months after the receipt of the written comments on the Draft Final Report by the Government of Malaysia.

The Study team shall ensure that all data, information, maps, drawings, materials, and findings connected with the study are kept confidential and not disposed of or revealed to any third party except with the prior written consent of the Government of Malaysia. Such maps and aerial photographs are to be returned to the Government of Malaysia immediately upon completion of the Study. All reports when finalized and submitted to the Government of Malaysia shall remain the property of the Government of Malaysia.

7. UNDERTAKINGS OF THE GOVERNMENT OF MALAYSIA

To facilitate smooth conduct of the Study, the Government of Malaysia shall take the following necessary measures:

- (1) To inform the members of the Study Team of any existing risk in the Study area and to take any measures deemed necessary to secure the safety of the Study Team.
- (2) To secure the necessary entry permits for the Study Team to conduct field survey in Malaysia and exempt them from consular fees.
- (3) To exempt the members of the Study Team from taxes and duties as normally accorded under the provision of the Malaysian General Circular No. 1 of 1979, on equipment, machinery and other materials brought into and out of Malaysia for the conduct of the Study.
- (4) To exempt the members of the Study Team from Malaysian income tax on their official emoluments in respect of their period of assignment in Malaysia in connection with the conduct of the Study, but the Government of Malaysia shall retain the right to take such emoluments into account for the purpose of assessing the amount to be applied to income from other sources.

- (5) To provide the necessary facilities to the Study Team for remittance as well as utilization of funds introduced into Malaysia from Japan in connection with the conduct of the Study.
- (6) To secure permission for entry into private properties or restricted areas for the conduct of the Study.
- (7) To provide the Study Team with medical services when needed, but the expenses will be chargeable to the members of the Study Team.
- (8) To make arrangements for the Study Team to take back to Japan the data, maps, drawings and materials connected with the Study subject to the approval of the Government of Malaysia, in order to prepare the reports.
- (9) To provide the Study Team with available data, maps, aerial photos and information necessary for the execution of the Study.
- (10) To appoint counterpart personnel to the Study Team during the Study period.
- (11) To provide the Study Team with suitable office spaces with clerical service and necessary office equipment.

- (12) To provide the Study Team with adequate means of local transport for official travel only.
- (13) To indemnify any members of the Study Team in respect of damages arising from any legal action against him in relation to any act performed or omissions made in undertaking the Study except when the two Governments agree that such a member is guilty of gross negligence or wilful misconduct.
- (14) To nominate the Economic Planning Unit of the Prime Minister's Department as the coordinating agency for the Study.

B. UNDERTAKINGS OF JICA

In order to conduct the Study, JICA shall take the following measures:

- (1) To dispatch, at its own expense, the Study Team to Malaysia.
- (2) To pursue technology transfer to the Malaysian counterpart personnel in the course of the Study.

9. CONSULTATION

JICA and the Government of Malaysia shall consult each other in respect of any matter that is not agreed upon in this document and which may arise from or in connection with the Study.

TENTATIVE SCHEDULE

| MONTH | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
|---------------------|------|---|---------|---|---|---|---|---------|---|----|----|---------|----|----|----|---------|----|----|----|------|----|----|-----|--|
| WORK IN MALAYSIA | | | | | | | | | | | | | | | | | | | | | | | | |
| WORK IN JAPAN | | | | | | | | | | | | | | | | | | | | | | | | |
| REPORT PRESENTATION | △ | | △ | | | | | △ | | | | △ | | | | △ | | | | △ | | | △ | |
| | IC/R | | PR/R(1) | | | | | PR/R(2) | | | | IT/R(1) | | | | IT/R(2) | | | | DF/R | | | F/R | |

IC/R: Inception Report.

PR/R: Progress Report

IT/R: Interim Report

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JICA