社会開発調査部報告書

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

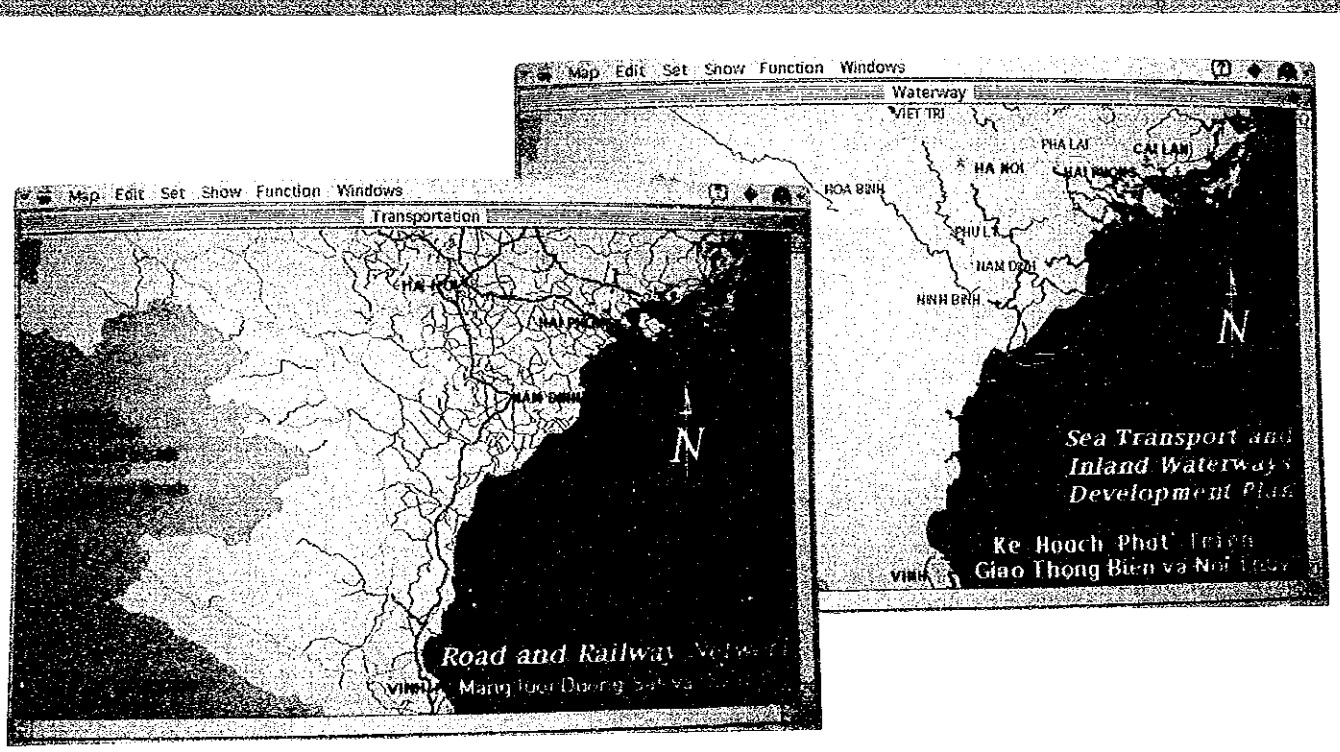
MINISTRY OF TRANSPORT AND COMMUNICATIONS
THE SOCIALIST REPUBLIC OF VIET NAM

NO. 53

THE MASTER PLAN STUDY ON THE TRANSPORT DEVELOPMENT IN THE NORTHERN PART IN THE SOCIALIST REPUBLIC OF VIET NAM

FINAL REPORT

VOLUME 1: SUMMARY



JUNE 1994

PACIFIC CONSULTANTS INTERNATIONAL

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The following foreign exchange rate is applied in the study:

US$1.00 = 10,880 Dong (as of October 1993)

PREFACE

In response to a request from the Government of the Socialist Republic of Viet Nam, the Government of Japan decided to conduct a master plan study on the Transport Development in the Northern Part in the Socialist Republic of Viet Nam and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Viet Nam a study team headed by MR. MINORU SHIBUYA, Executive Vice President of Pacific Consultants International, twice between June 1993 and March 1994.

The team held discussions with the officials concerned of the Government of Viet Nam, and conducted field surveys at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

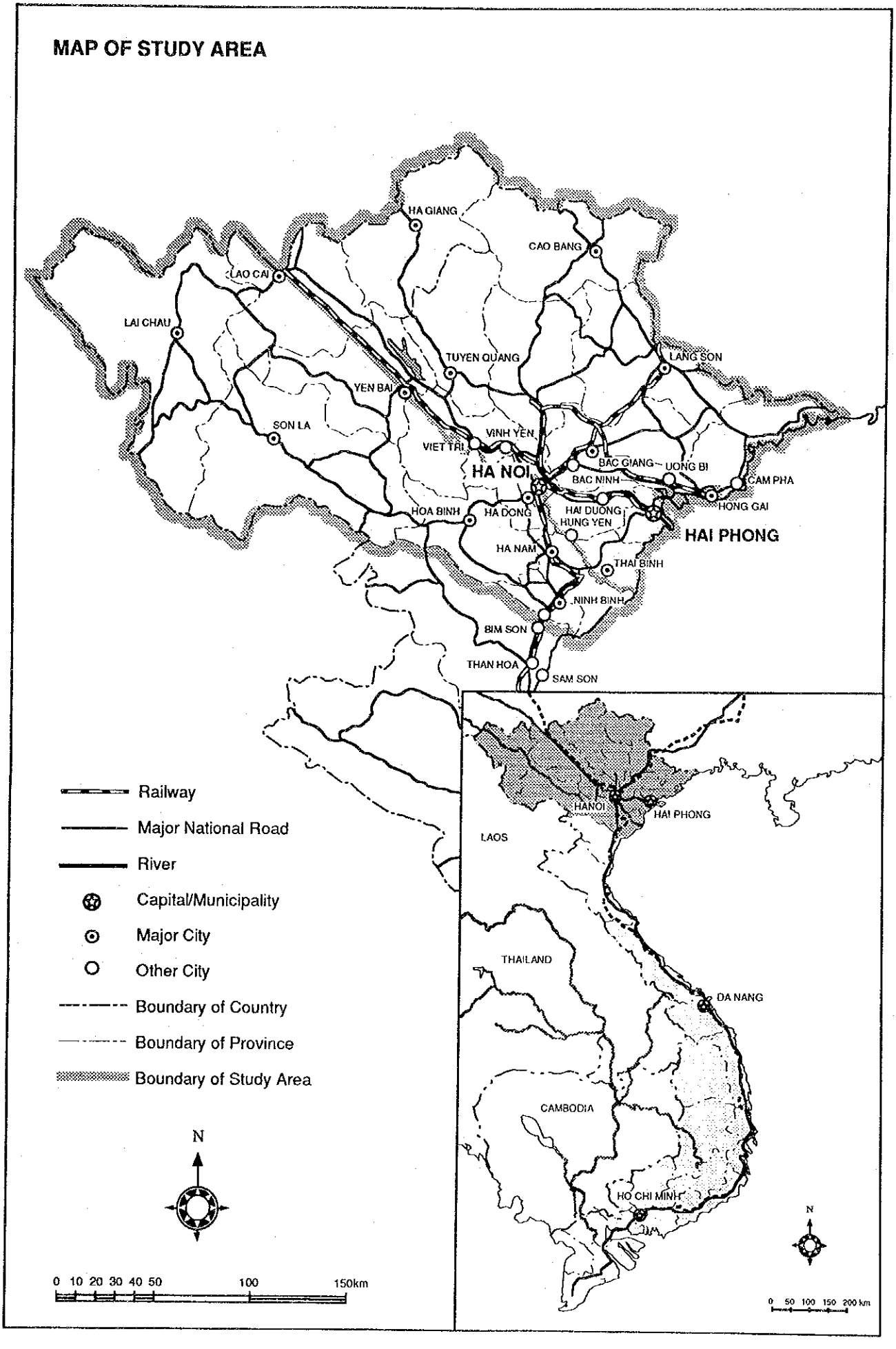
I hope that this report will contribute to the promotion of the projects and programs and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Socialist Republic of Viet Nam for their close cooperation extended to the team.

June 1994

Kensuke Yanagiya

Kensuke Yanagiya
President
Japan International Cooperation Agency


MAP OF STUDY AREA
HA GIANG
CAO BANG
LAO CAI
LAI CHAU
TUYEN QUANG
LANG SON
YEN BAI
SON LA
VINH YEN
VIET TRI
HA NOI
BAC GIANG
UONG BI
BAC NINH
CAM PHA
HOA BINH
HA DONG
HAI DUONG
HUNG YEN
HONG GAI
HAI PHONG
HA NAM
THAI BINH
NINH BINH
BIM SON
THAN HOA
SAM SON
Railway
Major National Road
River
Capital/Municipality
Major City
Other City
Boundary of Country
Boundary of Province
Boundary of Study Area
N
0 10 20 30 40 50 100 150km
HANOI
HAI PHONG
LAOS
THAILAND
DA NANG
CAMBODIA
HO CHI MINH
N
0 50 100 150 200 km

OUTLINE OF THE STUDY

1. OBJECTIVE AND BACKGROUND

The Government of the Socialist Republic of Viet Nam has embarked on a profound remodeling of the country under the "Doi Moi" policy.

A new vision for its future socio-economic development targeted at the year 2000 and the direction for further economic development were confirmed at the National Conference of the Communist Party held in 1991.

An efficient transport system is a vital element to achieve the development objectives;

- To support economic development
- To minimize regional economic gaps and disparities
- To promote the market economy

The objective of the study is set to formulate a comprehensive transport master plan for the Northern Part of Viet Nam with 2010 as the target year.

2. TRANSPORT ISSUES

Issues on the transport system development in the Northern Part of Viet Nam are;

- Development of transportation system to support regional socio-economic activities
- Transition to market economy
- Integration of the different modes of transport
- Removal of transport infrastructure constraints
- Environmental consideration and traffic safety
- Expansion of financial sources for infrastructure development

3. DEVELOPMENT OBJECTIVES

Road

- Adoption and enforcement of international road quality and engineering standards
- Enhancement of the already available capacity mainly through "low-cost" and "software" measures such as enhancement of road maintenance system
- Increase in the pavement ratio from currently 20 % to some 40 % to 50 % by the target year 2010
- Expansion of the road width in identified road sector
- Construction of new additional, including high-order roads, as suggested in the development program

Railway

- Improvement of function, management and organization of VNR
- Improvement of manpower through skill and training program
- Upgrade of existing rolling stock through improved maintenance
- Improvement of related facilities

Port and Sea Transport

- Development of the Hai Phong Port
- Development of a new deep sea port as high efficiency transport base
- Development of private and specialized ports
- Design and establishment plan for shipping companies
- Administrative set-up for VINAMARINE

Inland Waterway

- Specialization of river ports in handling bulk cargo (coal and construction materials)
- Modernization of river port facilities and inland waterway fleets
- Development of the construction material's related industries in the vicinity of river ports
- Rehabilitation of the dredging and navigation aids systems

4. IMPLEMENTATION SCHEDULE AND FINANCIAL SOURCES

The total investment costs for development of transport system in the Northern Part of Viet Nam is estimated to amount to 5,198 million US dollars. The projects were prioritized by mode of transport and divided into three phases.

Sector	1994 - 2000	2001 - 2005	2006 - 2010	Total
Road	1,098	1,174	1,331	3,603
Railway	214	236	412	862
Port	314	185	136	635
Inland Waterway	56	21	21	98
Total	1,682	1,616	1,900	5,198

The Government of Viet Nam would be able to increase investment budget for transport sector by the following measures;

- Tax increase brought about by the expected high economic growth
- Tax reform by introduction of "Beneficiary-Pay-Principle"
- Priority allocation of budget to transport sector

Comparison of the possible budget allocation to the Northern Part of Viet Nam to the investment requirements by development phase is analyzed in the table below. Shortage of investment funds need to be financed by foreign aids and investment of private sectors.

(unit; million US$)

Transportation Sector Budget	Up to 2000	2001 - 2005	2006 - 2010	Total
State Budget for Whole Country (Trend based on 1994)	620	720	1,160	2,,500
State Budget for Whole Country (with Gov. Efforts)	1,430	3,370	7,750	12,550
State Budget for North VN:(A)	529	1,247	2,868	4,664
Invest Requirements for North VN:(B)	1,687	1,615	1,890	5,192
Balance: (B) - (A)	1,153	369	-968	554

Note: Possible budget allocation to the Northern Part was estimated by assuming 37 % (the rate of population in the Northern part to the Nation) of the State budget is allocated to the area.

5. SHORT-TERM PROJECTS

26 projects, which are to be implemented by the year 2000, were selected from the viewpoint of significance and urgency among the projects in the master plan.

Road Projects (Total 10 projects)

- Improvement of National Road No. 1, 2, 18, 70 and 379.
- Urgent Bridge Improvement & Reconstruction of National Roads and Rural Roads etc.

Railway Projects (Total 9 projects)

- Ha Noi - Hai Phong Line Passenger Transport Improvement
- Gia Lam Workshop and Rolling Stock Depots Improvement
- Long Bien Bridge Replacement and Repair of Other Bridges
- International Transport by Railways etc.

Port Projects (Total 2 projects)

- Hai Phong Port Urgent Rehabilitation
- Cai Lan Port Development

Inland Waterway Projects (Total 5 projects)

- Ninh Binh Port Rehabilitation and Extension
- Ha Noi and Viet Tri Port Improvement
- The Main Waterway Dredging and Rearrangement etc.

THE MASTER PLAN STUDY ON THE TRANSPORT DEVELOPMENT
IN THE NORTHERN PART
IN THE SOCIALIST REPUBLIC OF VIETNAM
FINAL REPORT - VOLUME 1

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List of Abbreviations

A. Authorities and Agencies

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
CIS	Commonwealth of Independent States
COMECOM	Council for Mutual Economic Aid
DOTC	Department of Transport and Communications
FAO	Food and Agriculture Organization
G.D.R.	German Democratic Republic
IBRD	International Bank for Reconstruction and Development (World Bank)
IWB	Inland Waterway Bureau
JARTS	Japan Railway Technical Service
JICA	Japan International Cooperation Agency
JNR	Japanese National Railway
JR	Japan Railway
LAO PDR	Lao People's Democratic Republic
MOTC	Ministry of Transport and Communications
P.R. China	People's Republic of China
R.M.D.	Road Management Divisions
RRMU	Regional Road Management Unit
SCCI	State Committee for Co-operation and Investment
SPC	State Planning Committee
TEDI	Transport Engineering Design Inc.
TESI	Transport Economic Scientific Institute
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNIDO	United Nation, Industrial Development Organization
U.S.A.	United States of America
USSR	Union of Soviet Socialist Republics
VINAMARINE, V.M.	Viet Nam National Maritime Bureau
VINASHIP	Viet Nam Shipping Company
VISERITRANS	Viet Nam Sea - River Transport Enterprise
VITRANSCHART	Viet Nam Sea Transport and Chartering Company
VNR	Viet Nam Railway
VOSCO	Viet Nam Ocean Shipping Company
VRAB	Viet Nam Road Administration Bureau

B. Other Abbreviations

AADT	Average Annual Daily Traffic Volume
AASHTO	American Association of State Highway and Transportation Officials
AC	Asphalt Concrete
As	Asphalt
BOT	Built, Operation and Transfer
CBR	California Bearing Ratio
CIF	Cost Insurance and Freight
DC	Diesel Rail Cars
DID	Densely Inhabited District
DWT	Dead Weight Tonnages (Tons)
EIA	Environmental Impact Assessment
EPZ	Export Processing Zone
FDC	Freight Distribution Center
FIRR	Financial Internal Rate of Return
F/P	Foreign Portion
GDP	Gross Domestic Products
GPP	Gross Provincial Products
GRP	Gross Regional Products
GRT	Gross Registered Tonnage
HCM	Highway Capacity Manual
HCM City	Ho Chi Minh City
HP	Horse Power
IEE	Initial Environmental Examination
L/P	Local Portion
LRT	Light Rail Transit
MG	Meter Gauge
MIS	Management Information System
MxG	Mixed Gauge
NFEA	Northern Focal Economic Area
N.P.	National Park
NTSR	National Transportation Sector Review
ODA	Official Development Assistance
O/D, O-D Survey	Origin-Destination Survey
OJT	On-The-Job- Training
PC	Prestressed Concrete
PCU	Passenger Car Unit
PD	Project Description
PSI	Present Serviceability Index
QC	Quality Control
R.O.W.	Right of Way
RUCM	Road User Cost Model

SD	Site Description
SFEA	Southern Focal Economic Area
StG	Standard Gauge
TEU	Twenty Feet Container Equivalent Units
TQC	Total Quality Control
TRANPLAN	Transportation Planning Modeling Software
TWV	Two-Wheeled Vehicles
V/C Ratio	Volume Capacity Ratio

Chapter 1 Introduction

CHAPTER 1 INTRODUCTION

1.1 PROJECT BACKGROUND AND JUSTIFICATION

The Government of the Socialist Republic of Vietnam has embarked on a profound remodeling of the country by providing a new vision for its future socioeconomic development with the proclamation of the "Doi Moi" or renovation policy in 1986. The pace of this reform program has been accelerated since 1989, resulting in fundamental changes induced by the gradually widening liberalization and transformation of the domestic economy into a more open, market driven system, and the increasing integration of Vietnam's economy into regional and global markets.

Furthermore, the historic development of the country has resulted, among other things, in distinct interregional disparities in terms of per capita income; the North - South gap; and incompletely exploited economic potential which could be realized on a short- to medium-term basis.

The modernization of Vietnam's socioeconomic system along market oriented lines will necessarily lead to a more pronounced differentiation and separation of the economic functions of production, consumption and distribution. The promotion and development of an efficient market oriented transportation system therefore becomes, as a matter of principle, a vital element not only for integrating the national economy, but also for linking the country with its primary regional and global markets.

The goal of integrating the national economy requires that particular attention is paid and efforts are undertaken to develop the Northern part of Vietnam, which is relatively under developed compared with the Southern part. However the transport infrastructure to support economic development is insufficient in the area, so that it is urgently required to improve the transportation network in the Northern part of Vietnam. In this context, the Government of the Socialist Republic of Vietnam has decided in 1993 to request the Government of Japan to assist in the preparation of a comprehensive transport sector master plan study for the Northern Part of the Vietnam.

1.2 THE STUDY AREA

The study area, which is depicted in Figure 1.2.1, covers twenty provinces including Hoa Binh, Ninh Binh and all the provinces located further north. This area can be divided into two distinct sub-regions when described in terms of geographical and socioeconomic characteristics. These are:

- The North Mountain and Midland Region; and
- The Red River Delta.

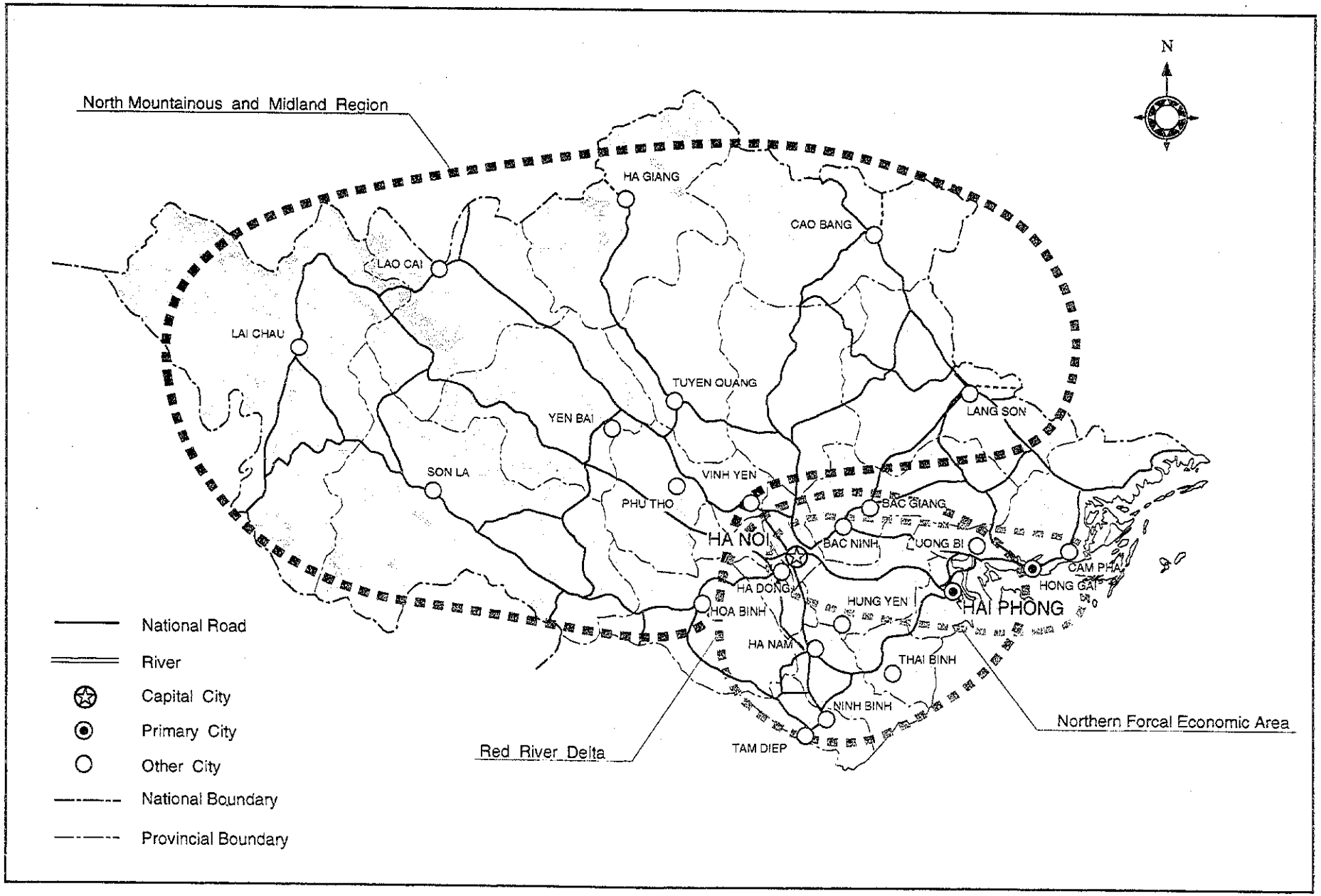


Figure.1.2.1 Study Area

The major characteristics of the North Mountain and Midland Region are a low population density coupled with a relatively low per capita income level, while the Red River Delta has relatively high levels of both population density and per capita income. A third important feature of the study area is the existence of urban and industrial agglomeration centers in the triangle bounded by Ha Noi, Hai Phong and Quang Ninh.

This triangle, which geographically forms part of the Red River Delta, has been designated for development purposes as "The Northern Focal Economic Area" in view of its high potential for industrial development, its outstanding urbanization rate and existing level of agricultural diversification.

1.3 STUDY OBJECTIVES

The Study has been carried out over the period June 1993 to March 1994. It had the following three major objectives:

- To formulate a comprehensive transport master plan for the Northern Part of Vietnam with 2010 as the target year, in order to establish an optimum overall transport system among the four major surface transport modes of road, railway, sea and inland waterway;
- To identify short-term development projects for each transport mode, and prepare project profiles for the identified projects; and
- To pursue transfer of technology to Vietnamese counterpart personnel in the course of the Study.

1.4 IMPLEMENTATION OF THE STUDY

The study is divided into two phases as shown in Figure 1.4.1.

(1) The First Phase (June 1993 - November 1993)

Analysis of the present situation and formulation of the transport development strategy, and preparation of the Master Plan

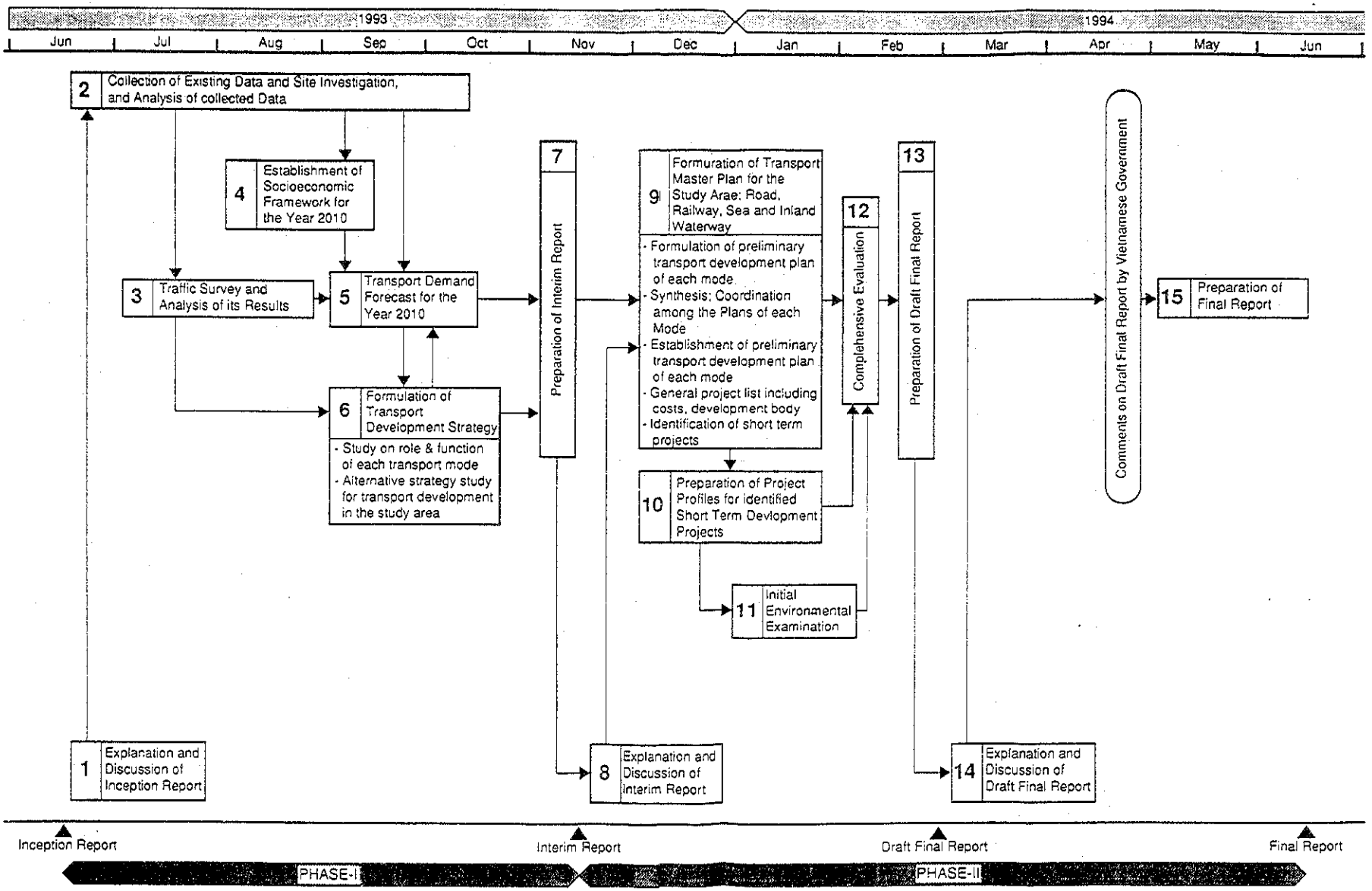
Submission of the Interim Report

(2) The Second Phase (November 1993 - June 1994)

Formulation of the master plan and selection of short-term development projects

Submission of the Draft Final Report (March 1994)
Submission of the Final Report (June 1994)

Figure 1.4.1 General Work Flow Chart



1.5 STRUCTURE OF THE FINAL REPORT

The present document constitutes the Final Report, which is divided into four volumes, namely:

- VOLUME 1 : SUMMARY
- VOLUME 2 : TRANSPORT DEVELOPMENT PLAN
- VOLUME 3 : PROJECT PROFILES AND INITIAL ENVIRONMENTAL EXAMINATION
- VOLUME 4 : ANALYSIS OF PRESENT CONDITIONS AND FUTURE FRAMEWORK.

Emphasis in structure and contents in this Volume 1 is placed on a proposed action program for the development of the transport sector in the Northern Part of Vietnam. Analytical and descriptive features are only elaborated to the extent that they are essential to understand this program.

Volume 1 summarizes the proposed overall strategic approach by explaining the transport sector's basic development direction, the development objectives and the fundamental principles of funding and budget allocation. Individual projects and programs covering the four surface transport modes of road, railway, port and sea, and inland waterway transport, are then identified and described in summary fashion. The air and pipeline transport modes are not covered, since they were beyond the terms-of-reference for the Study. The investment requirements are presented in form of an overview type of summary, identifying the order of magnitude of the total investment requirements, including a proposed rough phasing. Finally, the subjects of financing and funding are addressed as well as issues pertaining to the proposed implementing agency for the action program, and criteria for improving the organization's management efficiency.

Volume 2 of this Final Report concentrates in detail on description of the transport system development plan. It highlights the major issues for the four transport modes and presents the development plans for each mode, including proposed projects, cost estimations and funding options; scheduling of implementation and necessary institutional arrangements. This volume also explains in detail the future role and function of each transport mode, and lays out the suggested modal mix and its underlying assumptions and rationale.

Volume 3 contains a listing and detailed description of each individual project proposed for short-term action as well as initial environmental examination for the short-term projects.

Volume 4 of the Final Report presents the major pillars of the analytical framework, on which the conclusions and recommendations in Volumes 1, 2 and 3 are based. It contains a description and discussion of the Study area's

currently prevailing overall socioeconomic framework, and outlines that framework's key quantitative and qualitative parameters as they are projected to unfold and develop up to the target year 2010. The present situation of the transport sector is described and the major constraints and problems for future development are highlighted. The transport demand forecast is presented in a summary fashion. Key parameters of the methodology, including the simulation model, are explained and a synopsis of findings and conclusions is presented. The complete report containing the step by step analytical approach, and details of the simulation of the future transport sector demand forecast, has been issued as a separate technical document. The readership which needs or wishes to go into full depth on the topic of transport demand modeling and forecasting, may wish to consult this document on any details. Finally, environmental consideration and traffic safety is discussed in this volume.

1.6 PARTICIPANTS OF THE STUDY

Participants of the study are (1) Vietnamese members of the Committee; (2) Japanese Advisory Committee Members; (3) JICA Study Team; and (4) Vietnamese Counterparts to the JICA Study Team.

(1) Vietnamese Members of the Committee

Chairman:

Mr. Le Ngoc Hoan	MOTC

Members:

Mr. Minh	Office of Ministers
Mr. Tai	Office of Ministers
Mr. Nhat	State Planning Committee
Mr. Nguyen Vuong Ta	State Planning Committee
Mr. Vu Than	Ministry of Sceince Technology and Environment
Mr. Long	MOTC
Mr. Tuat	MOTC
Mr. Ngo	MOTC
Mr. Hai	MOTC
Mr. Nguyen Trong Bach	MOTC
Mr. Tuyen	MOTC
Mr. Nguyen Van Tien	MOTC
Mr. Dao Xuan Lam	Institute for Transport Design
Mr. Nguyen Dinh Dang	TESI
Mr. Trinh Thi Nhung	TESI
Mr. Vu Hai	Institute for Science and Technology
Mr. Phan Vi Thuy	MOTC
Mr. Nguyn Duy Sor	Department for Science and Technology
Mr. le Tien	MOTC
Mr. Duong Hoang Ngan	Department for Transport and Legislation
Mr. Do Doan Hai	MOTC

Mr. Le Lieu	Center for Information
Mr. Vu Pham Chanh	Ministry Office

MOTC: Ministry of Transpot and Committee

(2) Japanese Advisory Committee Members

Chairman:

Prof. Hideo Nakamura	Tokyo University

Members:

Mr. Hisao Ohuchi	Ministry of Transport
Mr. Izumi Kawaguchi	Ministry of Transport
Mr. Kazuhiro Sawada	Ministry of Construction
Mr. Hiroshi Tsujino	Japan International Cooperation Agency

(3) JICA Study Team

Team Leader:

Minoru Shibuya	Team Leader/Transport Planner

Members:

Tadashi Kume	Deputy Team Leader/Regional Planner
Masamitsu Toriyama	Transport Economist
John E. Thompson	Transport Analyst (Demand Forecast)
P. Delaporte	Transport Analyst (Traffic Survey and Analysis)
Akihisa Kojima	Institutional Management Specialist
Haruo Sakashita	Highway Planner
Takeshi Nakayama	Bridge Engineer
Nobutaka Sato	Bridge Engineer
Takao Inami	Highway Engineer
Akira Tamura	Railway Planner
Masanao Koyama	Railway Engineer
Mineo Tokuda	Port Planner
Masayuki Nakamura	Inland Waterway Specialist
Mintsuhiko Hasegawa	Port Engineer
Osamu Isoda	Environmental Analyst
Kazuto Honda	Administrative Coordinator

(4) Counterparts to the JICA Study Team

Mr. Hoang The Hai
Mrs. Doan Thi Phin
Mr. Nguyen Manh Ung
Mr. Nguyen Thang
Mr. Bui Xuan Duong
Mr. Phan Minh Tan

Chapter 2 Transport Issues

CHAPTER 2 TRANSPORT ISSUES

2.1 REGIONAL DEVELOPMENT AND TRANSPORT

The development of the transport sector infrastructure should be undertaken from a regional point of view, taking full account of the following major parameters:

- Spatial and topographic characteristics and constraints of the planning area
- Demographic features and development trends, including both intraregional and rural-to-urban migration
- Existing land use patterns and constraints
- Existing distribution patterns in agriculture, industry and services, including potential and likely development trends; and
- Existing and planned urban and industrial agglomeration centers, (industrial estates and/or export processing zones).

The Study area (115,406 km^2) is equivalent to 34.9 % of Vietnam's total land area, and has a population recorded at a level of some 24.8 million people in 1991, or 37.2 % of Vietnam's total population.

Demographic characteristics differ considerably within the Study area itself and in relation to the rest of the country. The Study area's average annual population growth rate over the period 1979 to 1989, at 2.39 % was some 0.38 % higher than the national average. The population is heavily concentrated in the Red River Delta, which has a population density of 1,065 persons per square km, as against 215 in the Study area and 202 on average nationally.

The proportions of urban population in both the Red River Delta (17 %) and the North Mountain and Midland Region (14 %) are below the corresponding national average level of 20 %. However, the urbanization level in the Study area is increasing at an average annual growth rate of 3.18 %, almost double the rate of increase in urbanization for the nation as a whole (1.77 %).

Some 58 % of the population in the Study area is over 15 years of age, and 78 % of the total workforce (13.8 million persons) is recorded as being employed as of the year 1989. These indicators are in line with national averages.

The Study area's total regional GDP in 1993 accounted for about 25 % of the country's total GDP (16,700 million US dollars). In comparison, the Southern Region's share in national GDP was 58 % and the Central Region's 17 %. The national average per capita GDP in 1993 was US $240 and that of the Study area US $162, equivalent to 67 % of the national average.

Two major policy objectives of the Government are the integration of the national economy (to overcome the North - South gap) and to reduce both intra-regional income disparities, and similar inter-regional gaps nationally. It is estimated by the Government that the country's GDP will grow at an average annual rate of 8.8 % over the period 1993 to 2010. It is anticipated that this growth path will follow two phases. During phase 1 (1993 to 2000) the annual GDP growth rate is assumed to average 7 %, increasing during phase 2 (2000 to 2010) to an average of 10 % per annum.

The trend of the average annual growth rates expected to occur in the Study area are approximated to be above the national trend average. The particulars for the three phases of the Study's planning horizon, and the study area's two major zones, are summarized in Table 2.1.1.

Table 2.1.1 Estimated Average Annual Growth Rates for the Gross Regional Product in the Study Area

(UNIT : PERCENT)

PERIOD	RED RIVER DELTA	NORTH MOUNTAIN REGION	STUDY AREA
1993 - 2000	8.5	7.1	8.0
2001 - 2005	13.0	10.9	12.3
2006 - 2010	13.3	11.0	12.6
1993 - 2010 Average	11.2	9.4	10.6

SOURCE : STUDY TEAM ESTIMATIONS
NOTE : BASED ON CONSTANT 1993 US $

The dynamics inherent in this accelerated growth performance will result in a very strong pull effect on road transport capacities and capabilities for both passengers and freight, with the pull effect being particularly strong in the envisaged Northern Focal Economic Area. A review of national traffic survey data (National Transport Sector Review, UNDP, 1992) allows for the establishment of modal elasticities, that is, for a given change in GDP what change in domestic modal activity (production and consumption) is catalyzed. These calculations indicate that for an average GDP growth rate of 8 %:

- Road passenger transport will grow by a factor of 1.15 to 1.5 times that of GDP growth
- Road cargo transport will grow by 0.9 to 1.25 times the GDP growth
- Rail cargo transport will grow by 0.5 to 0.85 times the GDP growth
- Rail passenger transport will grow by 0.25 times the GDP growth
- Sea cargo transport will grow by 1.0 times the GDP growth, and
- Inland waterway transport will grow by 0.6 to 0.9 times the GDP growth.

This relationship of elasticities of growth by transport modes relative to overall economic growth, establishes the overall quantitative performance to be met by the basic strategic options, and necessities for the development of the transport sector. The programmes and projects proposed in the master plan are aimed at meeting these targets.

Parallel to the expected accelerated growth performance of the economy in the Study area, a substantive shift is also expected in the distribution of the Gross Regional Product (GRP) over sectors. The share of the primary sector, which accounted for 43 % of GRP in 1993 , is estimated to decrease to 18 % by the target year 2010. The share of the secondary sector is forecasted to increase from 19 % in 1993 to some 32 % in 2010. The share of the tertiary sector is likewise approximated to increase from 38 % in 1993 to about 50 % by the target year 2010.

The above estimated growth rates imply that the relative level of per capita income in the Study area will increase from 67 % of the national level in 1993 to 72 % in the year 2000 and 90 % of the national average by the target year 2010.

2.2 MARKET ECONOMY

Vietnam's economy is in the midst of an important transitional phase, away from a centrally planned, state dominated and controlled economic system, towards a more market and demand driven economy. This over-riding trend, which implies a massive restructuring of the economy and its institutional infrastructure, is the essential element in the country's new vision for the future development.

Historic evidence suggests strongly that market-dominated open economies perform better than state dominated ones, are more flexible and responsive to changes in the international economy, and form a stronger basis for increasing the overall welfare of society. It is imperative that this course be continued, with the state playing the overall role of creating a favorable "enabling environment", including its rules and regulations; and private sector forces undertaking most of the economic activities. A particular challenge is to provide the private sector with appropriate incentives and regulations so that, while pursuing their own interests with little encumbrance to their efficiency, they will at the same time be contributing to publicly-identified development goals.

In general, the above would entail, but not necessarily be limited, to the following :

- Continuing gradual privatization of appropriate economic activities, following a clear policy for the respective roles the public and private sectors should play in the future

- Restructuring of the institutional set-up in previously state-managed productive enterprises, including the re-employment of redundant labor and the restructuring of public tariffs

- Implementing of a tax reform with a view to increasing Government revenues and securing funds for public activities and investments

- Lifting of many, although not all, price controls and price interference by the state. Prices should reflect real economic costs (market prices for the most part, but modified in certain cases to take account of indirect cost)

- Restricting of state activities to those areas, which are needed from the society's point of view, but which are either too risky and/or costly for private investors, or simply not profitable enough for them.

Development targets in transport should reflect the need to control and/or accommodate, as appropriate, the future traffic growth stimulated by tendencies toward rapid motorization and urbanization. The establishment of spatial and transport plans for the urban agglomerations of Ha Noi and Hai Phong, where urbanization has been most progressed, are viewed as priority concerns in this context.

There is need for a transport sector-specific policy along the lines identified above. Such a policy should be geared towards defining the overall role and function of the future transport system :

- To support the economic development

- To minimize regional economic gaps and disparities, and

- To promote the market economy.

Given the future role and function of the transport system, a practical approach has been taken to projecting the future image of the transport infrastructure, by employing an extrapolation of historical patterns and combining this extrapolation with identified future potentials. The integration of these two approaches defines the development direction for the transport sector, i.e. the status of the desirable future transport system and the outlay required to achieve it. This approach is summarized in a simplified and graphical manner in Figure 2.2.1 .

This figure identifies the concept's basic rationale by answering the question why the proposed future transport system is needed and therefore desirable. It furthermore shows the four major factors influencing the final shape of that system.

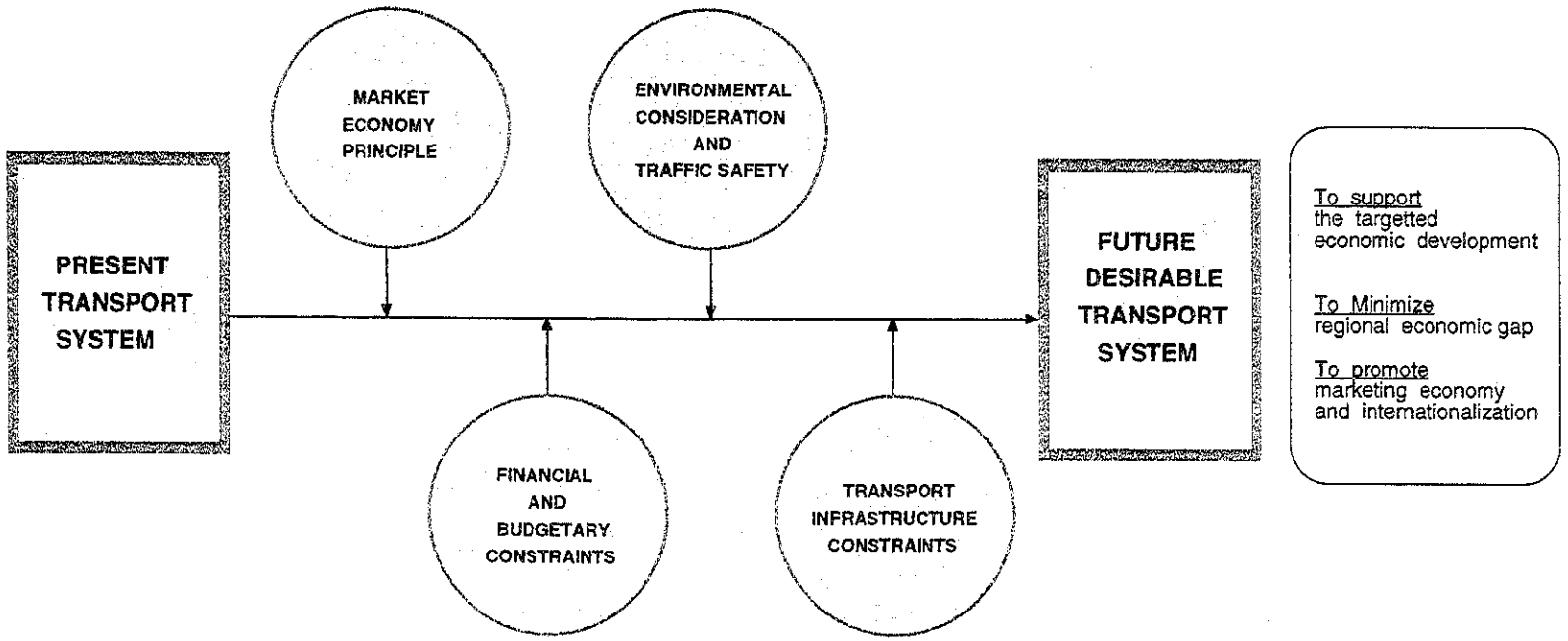


Figure 2.1.1 Development Direction of Transport Sector

2.3 INTEGRATION OF THE TRANSPORT

How the development of the transport sector will evolve in each and every detail in the Study area, is subject to manifold tendencies and uncertainties in transport demand and characteristics of transport modes. However, under the market oriented economy, users of the transport system are presented with choices, and decision for a particular transport mode will be guided eventually by the mode's characteristics, and by what is perceived as being the most flexible, convenient and economic choice to meet the personal needs of the user.

The integration of the different transport modes will partly take shape in line with market driven forces. However, the desirable functional distribution among the modes and their interfacing, are summarized in Table 2.3.1 as they should be supported by an appropriate "policy-objectives-instruments" mix.

The functional distribution identified in this table partly reflects a specialization pattern which has evolved historically in the Study area in line with basic characteristics of each mode. Typically, at that stage of development, road transport is perceived as being the most cost-efficient in terms of direct user outlays, although this apparent advantage may be negated by indirect costs. Road transport also has the image of being a fast and flexible, almost "door-to-door" mode for passenger and general freight transport. Again, avoidance of congestion is critically necessary if this image is to be realized.

Rail transport encompasses potential advantages for long distance, inter-city and bulk cargo transport. Port and sea transport characteristics favor the handling of bulky, heavy, and a large quantity of cargo, while the inland water transport mode is a vital mode for transporting coal as an energy supply and construction materials such as sand and gravel, given the basic socioeconomic and topographical features of the Study area.

As highlighted earlier, the development of the transport sector will have to keep pace with the strong expansion of overall economic activity anticipated for the Study area. This means that the transport system will have to be adequate not only to accommodate numbers of vehicles rapidly increasing (refer to the current low base); also overall higher average speed requirements will have to be provided for. The development of a high speed transport network by combining well-thought-out components of reliable transport facilities and services, is therefore a matter of primary concern.

The opening of the economy to regional and global markets requires that the transport sector develop in tune with prevailing international standards, of which containerization is one predominant feature. The increasing numbers of container cargo will result in an increasing number of heavy-loaded vehicles on the road transport network. The authorities will have to take this trend into account by introducing and enforcing higher geometric design standards for road construction and improvement.

The promotion and expansion of a reliable transport industry is likewise necessary. It is important to modernize the transport industries and define and support an institutional set-up which can efficiently meet the needs of transport services in a market oriented economy.

Table 2.3.1 Potential Future Role and Function of Each Transport Mode

Transport Mode	Potential Future Role & Function	Selected Key Issues
Road Transport	1) Majority of Local and Intra-Regional Passenger Transport 2) Majority of Inter-Urban Passenger and an appreciable share of Freight Transport within the Growth Area of Ha Noi and Hai Phong, possibly including Cai Lan 3) Interface with the Mountain Region for Passenger and Selected Freight Transport 4) Majority of Freight Transport Connecting Regional And Local Distribution Centers	1) Implement in line with "International Standards" and Increasing Number of Heavy Loaded Vehicles (Truck Size) 2) Introduce Suitable "Regulatory Framework" according to International Standard: Set up Appropriate Enforcement Agencies 3) Adopt and Implement Consistent Transport Policy (Roles of Private Sectors: Roles of Public Agencies) 4) Adopt and Enforce Appropriate Environmental Standards 5) Define Strategy and Operational Programme for Public Agencies Concerned
Railway Transport	1) Inter-City between Ha Noi and Hai Phong, Local Passengers and Goods in Remote Areas, where Rail is the Predominant Mode 2) Bulk Cargo and Inland Supply to Places where other Modes Are Absent Note: It is anticipated that much of the small-volume freight transport will be transferred to the road 3) International Connection and Interfacing (Possibly with the P.R. China)	1) Adopt and Implement Consistent Transport Policy (Roles of Private Sectors: Roles of Public Agencies) 2) Upgrade Facilities & Service on High Demand Lines 3) Make Optimal Use of Existing Facilities
Port & Sea Transport	1) International Freight Transport with Concentration on Bulk Cargo and Containers 2) International Freight Distribution Base and Domestic Freight Distribution Centers	1) Net Investment For Capacity Build up Needed: New Deep Sea Port 2) Decide on Future Roles of Public and Private Sectors (Port Management Authority) 3) Establish Overall Sea and Coastal Fleet Strategy
Inland Waterway Transport	1) Vital Energy Supply Route (Coal) 2) Bulk Freight Transport (Construction Material), Supplementary to Rail Transport 3) Localized and Intra-Regional Small Size Freight (Partly Replaced by Road Transport)	1) Upgrade Specialized Ports which Function as Interfaces with other Modes 2) Maintain and Upgrade Existing Facilities 3) Decide on Roles (Public/Private) of Inland Waterways Fleet and Existing Organizations

Source: Mission team compilation

2.4 DEVELOPMENT PRINCIPLES AND MAJOR OBJECTIVES

In order to accomplish the future desirable transport system expansion, existing obstacles and constraints should be removed in the road transport system and network as well as in the port and sea transport systems. Taking due account of overall financial and budgetary capacities and limitations, priorities in both overall measures and in project promotion and selection should, in general, be defined along the following lines:

- First priority should be assigned to redefining the institutional arrangements to accord to a greater extent, thereby removing existing institutional constraints in appropriate cases
- Second priority should be given to the removal of constraints in the physical infrastructure, such as bridges currently used by road and rail transport modes. New bridges should be constructed in some places where currently ferry service is provided, and/or where heavy traffic is anticipated in the near future
- Third priority should be attached to all measures geared to upgrading and improving the existing network
- Fourth priority should be given to any new developments.

The following principles have been taken into consideration in the formulation of the master plan's programmes and projects:

- The development path of the road transport mode should be governed by the objectives to improve the road quality of the overall existing network and, to upgrade and/or enlarge the physical infrastructure in the proposed projects and programmes.
- The development path of the railway transport mode should be governed by the utmost utilization of existing facilities, the streamlining of the system's outlay and operations, and the concentration of efforts and measures on rehabilitation and upgrading.
- The development path of the port and sea transport mode should be guided by the utilization of Hai Phong Port up to its maximum capacity, the investment of considerable resources into port capacity build up (new deep sea port), the specialization of ports and their modernization, the international trend of containerization; and far from least, by considerations of protecting the natural environment and traditional coastal communities of the North Tongkin Gulf and Ha Long Bay, with their very great values for international tourism, for recreation of the Vietnamese people, and as a unique national aesthetic heritage reflected in many art-works.

The time frame of the master plan should be divided into three phases as follows:

- Master Plan Phase 1 : up to 2000
- Master Plan Phase 2 : 2001 to 2005
- Master Plan Phase 3 : 2006 to 2010.

2.5 ENVIRONMENT AND TRAFFIC SAFETY

The protection of the environment is necessarily an integral part of development if it is to be sustainable over a long time period. Traffic safety is already today a matter of major concern, which would grow in magnitude with the tendency toward rapid motorization, if this were not controlled, and increase of speed. Policies must therefore be defined and implemented, which address the following issues :

- Definition of environmental and safety standards for domestic and imported vehicles
- Establishment of a modern regulatory framework, including an appropriate institutional set-up, to control vehicle safety and ensure compliance
- Definition, introduction and enforcement of a traffic management system with particular emphasis on urban agglomeration centers
- Establishment of an appropriate traffic signal and sign infrastructure
- Establishment of a transport education system for motorized-vehicle drivers, pedestrians and bicyclists
- Establishment, introduction and enforcement of environmental standards, emphasizing a pollution control regulatory framework (including institutional set-up) to monitor and to enforce limitation of air, water, and soil pollution, and far from least, noise levels which are presently escalating un-necessarily by excessive vehicle horn use.
- Introduction of vehicle inspection stations to control air pollution as well as to secure traffic safety by periodic checking of motor vehicles.

2.6 FINANCIAL AND BUDGETARY PROCEDURE

The needed development of the transport sector will require considerable financial resources to cover both investments and recurrent expenditures.

It is imperative that the financial capacity of the public sector be expanded to meet such requirements. Three general tools in this context would be:

- Introduction of an appropriate taxation system
- Introduction of cost recovery components in the definition of public tariffs, and
- Prudent allocation of foreign aid resources and possibly private sector resources (for example in the form of BOT [Build - Operate - Transfer]) schemes.

Allocations made from the regular state budget should, in general, follow the priorities identified in Section 2.4.

Chapter 3 System Development Strategy and Development Plan for Each Transport Mode

CHAPTER 3 SYSTEM DEVELOPMENT STRATEGY AND DEVELOPMENT PLAN FOR EACH TRANSPORT MODE

3.1 GENERAL

3.1.1 System Development Plan

Figure 3.1.1 shows the final stage of development of the transport sector system in the target year 2010, as envisaged under the masterplan. This "end-status" assumes that all proposed programmes and projects are implemented over the whole planning period, even if some rephasing may occur in one or the other case due to budgetary or other reasons.

3.1.2 Estimated Invesment Requirements

Total requirement amounts to 5,197 million US dollars by the year 2010. Each five year period requires almost same amounts of investment. Majority is occupied by the road projects, followed by railway projects, port projects and inland waterway projects.

Table 3.1.1 Estimated Total Investment Requirements

(Unit; million US$)

Sector	up to 2000	2001 - 2005	2006 - 2010	Grand Total
Road Sector	1,098	1,174	1,331	3,603
Railway Sector	214	236	412	862
Port Sector	314	185	136	635
Inland Waterway Sector	56	21	21	98
Total	1,682	1,616	1,900	5,198

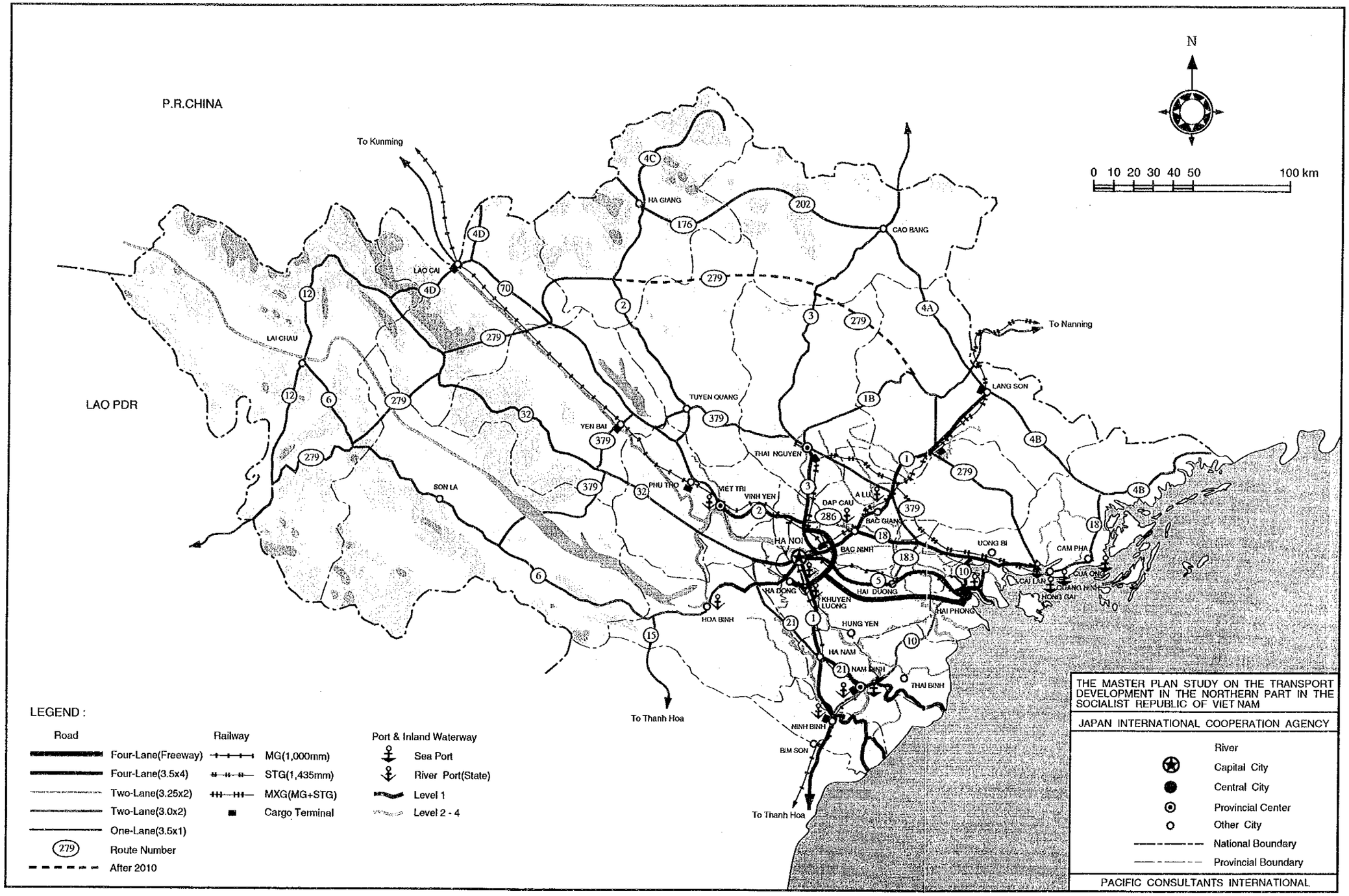


Figure 3.1.1 TRANSPORT SYSTEM IN THE NORTHERN PART OF VIETNAM YEAR 2010

3.2 ROAD DEVELOPMENT PLAN

The conclusions of the transport demand modeling and forecasting show that vehicle trips are expected to more than double from about to 20,000 trips in 1993 to 50,000 trips in 2000, and to increase sharply to about 200,000 trips in 2010. Trips by car are expected to grow more rapidly than those by bus and truck. Cargo will increasingly flow by truck. This trend is reflected in a far higher annual average growth rate of car vehicle trips and truck cargo shipments than the GDP and per Capita GDP growth rates.

Throughout this discussion, however, it is important to bear in mind that motorization does not necessarily have to be passively accepted in all its aspects, undesirable as well as desirable. From all its years of isolation and hardship, Vietnam at this moment has one unique opportunity which must not be missed: the chance to avoid many mistakes other countries have made in their development during the last half-century, for instance, environmental pollution caused by traffic.

The 1991 vehicle ownership in Vietnam was 3.1 vehicles per 1,000 persons. Cross-country comparison and other analytical indicators suggest that the national fleet, which numbered some 205,100 vehicles in 1991, will grow to some 1.43 million vehicles by the target year 2010. For the Study area the following findings and conclusions are essential for the formulation of the road development plan :

- The total vehicle fleet is estimated to grow to 163,000 vehicles by the year 2000, and 645,000 vehicles by the year 2010
- Cars, which account for 31 % of the Study area's present fleet, are forecast to total 44 % and 53 % by the years 2000 and 2010, respectively
- The Study area, while containing about one third of national vehicle registration in 1991, is likely to contain about 45 % of the national registration in the year 2010
- The motorization rate of the Study area, which stood at 2.8 vehicles per 1,000 persons in 1991, is estimated to grow to 5.4 and 18.2 vehicles per 1,000 persons in the years 2000 and 2010, respectively. In the target year 2010 the rate of 18.2 vehicles per 1,000 persons will exceed the composite national rate of 15 vehicles per 1,000 persons.

The demand forecast for the years 2000 and 2010 confirms that the current road network will be far from sufficient to cope with the forecasted traffic demand, if that were not controlled, particularly in the Red River Delta.

Overall development objectives for the road transport mode in the Study area are identified as follows :

- Adoption and enforcement of international road quality and engineering standards
- Enhancement of the already available capacity mainly through "low-cost" and "software" measures such as improving a road maintenance system; and restraining traffic within appropriate limits by the same means
- Increase in the pavement ratio from 20 % currently, to some 40 % to 50 % by the target year 2010
- Expansion of the road width in identified road sectors
- Construction of additional new roads, including high-order roads, as suggested in the development programme.

The needed development status of the road network in the target year 2010 is depicted in the following Figure 3.2.1.

A fundamental assumption underlying the master plan is that the following measures are implemented in the short-term. They belong to the "software" and overall enabling environment:

- Road inspection and routine maintenance should be carried out under national and provincial Government responsibility
- Periodic maintenance, rehabilitation, improvement and new construction works should be carried out on a contract basis by public construction companies under MOTC (national level) or DOTC (provincial level) and/or by private contractors
- A road maintenance and operations system must be established, including operations manuals for routine and periodic maintenance and rehabilitation
- Public construction companies need to be fully privatized in many cases
- The national and provincial Regional Road Management Unit (RRMU) need to be provided with sufficient maintenance equipment
- Equipment centers should be established to lease maintenance and construction equipment
- A quality control system must be established
- The roles for private and public bus operations need to be clearly defined and policies are needed to promote public bus traffic
- Usage of mass transit modes (bus, rail) and non-motorized personal transport means (bicycle, cyclo) rather than individual motor vehicles, needs to be encouraged and maintained to the fullest extent possible in

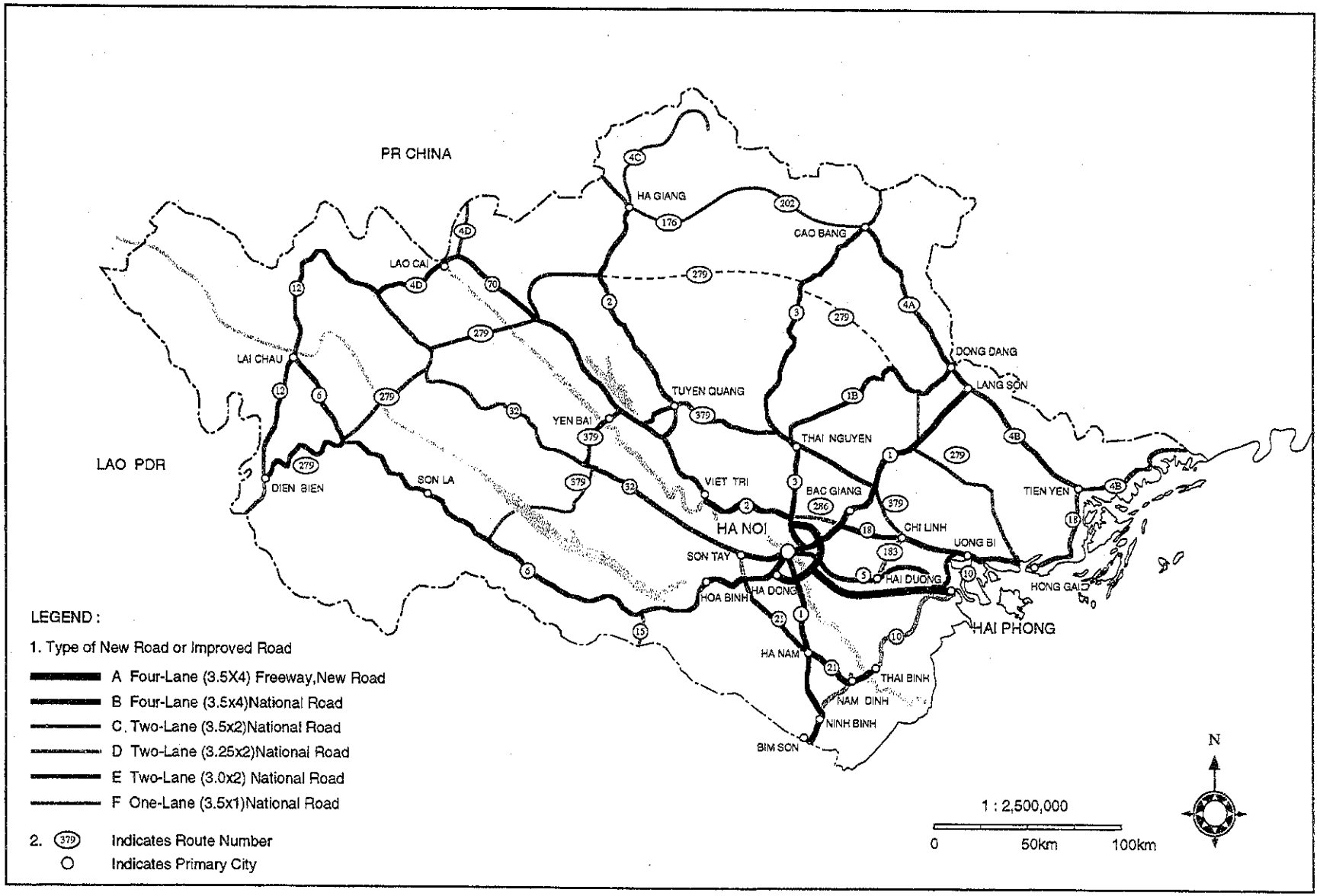


Figure 3.2.1 Masterplan in the Northern Part of Vietnam (by 2010)

urban areas especially, by a combination of appropriate incentives and firm regulations

- A policy for the trucking industry needs to be defined and special attention should be paid to :

  (1) Establishment of a market monitoring system comprising demand and supply indicators, as well as managerial and financial conditions of trucking enterprises

  (2) Development of truck terminals equipped with container depots, warehouses, sorting and packaging facilities, and some kinds of processing facilities. Such terminals need to be developed in the vicinity of urban centers, but in such a way as to avoid congestion and disruption of the urban environment.

  (3) Development of a container transport system for all transport modes.

On the "hardware side", the master plan is divided into three distinct phases, namely phase 1 : up to 2000; phases : 2001 to 2005, and phase 3 : 2006 to 2010. Such phasing is not only useful for practical purposes, but also needed in view of the fact that total investment requirements are identified in the masterplan, but total funds (domestic and foreign) available are not yet known.

The component of the master plan for development of the road transport network comprises a total of 26 projects, the distribution of which over the three phases is as follows :

- Phase 1 (up to 2000) : 12 projects
- Phase 2 (2001 to 2005) : 8 projects, and
- Phase 3 (2006 to 2010) : 13 projects.

Projects suggested for implementation during phase 1 receive the highest priority. The improved road network in 2000 is illustrated in Figure 3.2.2. The individual projects proposed in Phase 1 are in the following order of priority :

- RD-1 Improvement of National Road No. 1 (Construction of four-lane section from Bac Giang to Ha Nam via Ha Noi. Improvement and rehabilitaiton of bridges not less than 25 m)

- RD-3 Improvement of National Road No. 2 (Construction of four-lane section from Phu Lo to Viet Tri. Improvement and rehabilitation of bridges not less than 25 m)

- RD-6 Improvement of National Road No. 5 (Construction of four-lane section from Ha Noi to Hai Phong. Improvement and rehabilitation of bridges not less than 25 m)

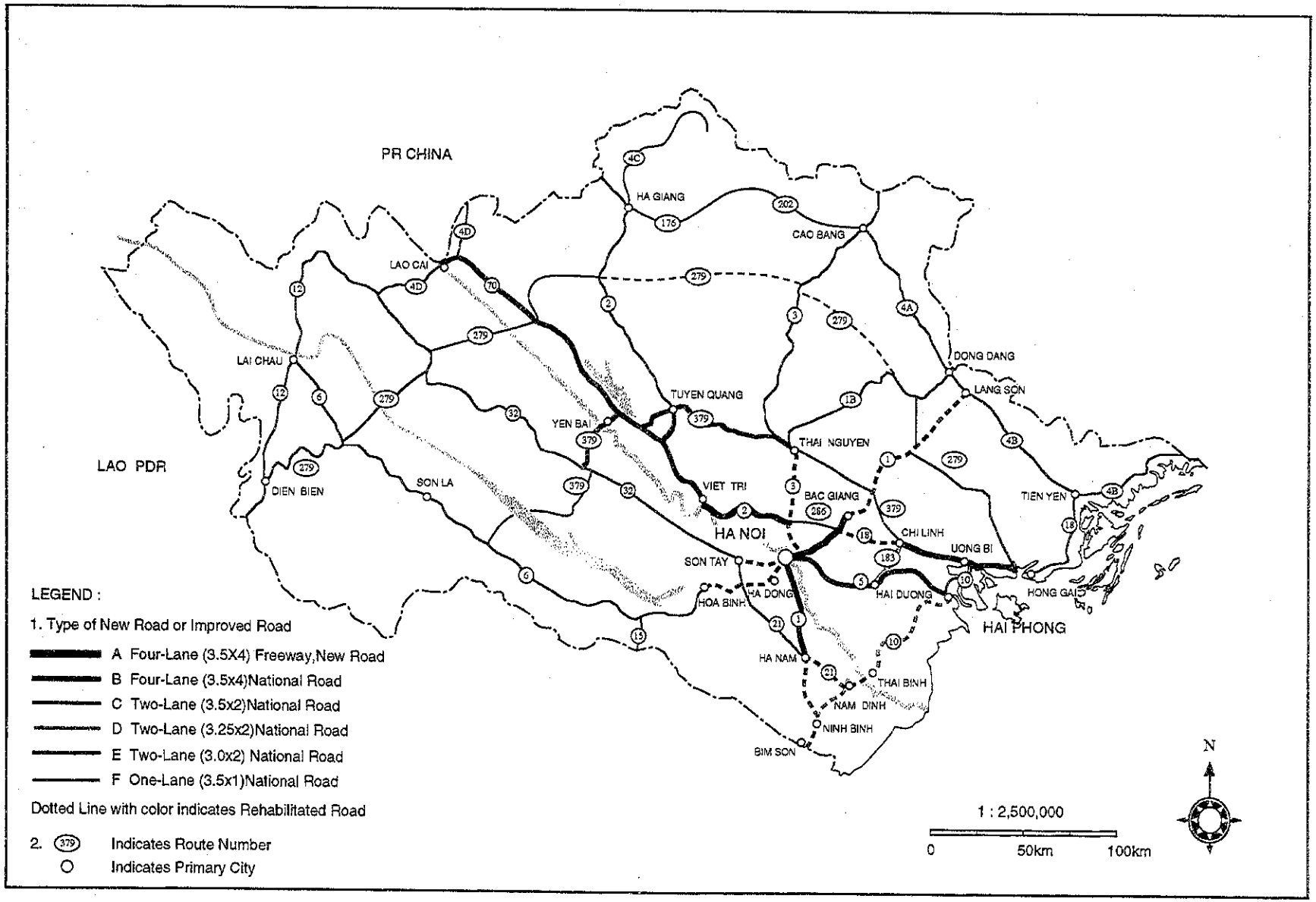


Figure 3.2.2 Improvement Plan for Roadway Networkin the Northern Part of Vietnam (by 2000)

- RD-9 Improvement of National Road No. 18 (Construction of four-lane section from Chi Linh to Hong Gai. Improvement and rehabilitation of bridges not less than 25 m)

- RD-12 Improvement of National Road No. 70 (Pavement of unpaved section from Dau Lo to Lao Cai. Improvement and rehabilitation of bridges not less than 25 m)

- RD-16 Improvement of National Road No. 379 (Pavement of unpaved section from Ba Khe to Thai Nguyen. Improvement and rehabilitation of bridges not less than 25 m)

- RD-17 Urgent Bridge Improvement and Reconstruction of National Roads

- RD-18 Urgent Bridge Improvement and Construction of Rural Roads

- RD-19 Rehabilitation of National Roads in the Red River Delta Area

- RD-21 Improvement and Rehabilitation of Rural Roads in the Northern Part of Vietnam

- RD-22 Training Center and Procurement of Road Maintenance Equipment

During phases 2 and 3 of implementing the master plan, efforts and investments should be concentrated on;

- Extension of a four-lane section into Vinh Phu Province;

- Expansion and upgrading of most roads in the Red River Delta to high-order two-lane status;

- Widescale improvement of roads in the North Mountain and Midland Region;

- Provision of freeways in the heavily traveled Ha Noi - Hai Phong corridor and possibly also the Ha Noi - Ha Nam and/Ha Noi - Bac Giang corridors, as well as around Ha Noi's Eastern Flank (Outer Ring Road);

- Partial Ha Noi Outer Ring Road (eastern crescent linking routes 3 and 6) and Ha Noi - Hai Phong freeway.

Projects which will remain tentative by the year 2010, but are to be committed in later years include the Ha Noi - Ha Nam and/or Ha Noi - Bac Giang freeways.

A summary of all projects proposed in the master plan is given in Table 3.2.1. The total investment requirements are estimated to be in the order of magnitude of US$3,602.6 million over the whole period. Total investment requirements during each of the three phases are estimated to be :

- US $1,097.9 million during phase 1;
- US $1,173.5 million during phase 2, and
- US $1,331.2 million during phase 3.

This distribution of investment requirements is done under the assumption that no rephasing of projects takes place.

Another, separate issue relates to the necessary development of the urban road network itself, in particular in Ha Noi and vicinity. The following measures are recommended in order to accommodate and/or control, as appropriate, the tendency toward increasing traffic volume:

- Channelization of at-grade intersections and installation of traffic signals
- Installation of traffic safety facilities (lane mark; guard rail)
- Establishment of a public transport system (bus and Light Rail Transit)
- Incentives and safety-protective measures for users of non-motorized personal transport (bicycles and cyclos)
- Provision of systematic traffic safety education, for drivers, bicyclists and pedestrians
- Enforcement of traffic regulations, including restrictions on horn use.

A detailed development plan for the larger urban transport systems of Ha Noi and Hai Phong is clearly beyond the terms-of-reference of the present study. However, some of the key parameters will be mentioned here for the sake of completeness.

The national road routes 1, 2, 3, 5, 6 and 32 exist presently as radial roads from the center of Ha Noi. Only one road with a diameter of 5 km functions as a ring road, as depicted in Figure 3.2.3. The ring road has a few sections of 2 lanes, which should be widened up to 4 lanes at least. In addition to this ring road, one or two additional ring roads may be needed in line with the future expansion of the urban area. This possible development is also shown in Figure 3.2.3.

Table 3.2.1 Summary of Road Development Project List

Unit: million US$, 1US$ = 10,800 Dg, F/P: Foreign portion, L/P: Local portion

Code	No.	Project Name	Total Length (km)	by 2000			2001 - 2005			2006 - 2010			Grand Total			% of F/P
				F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	
RD	1	Improvement of N.R. No. 1	266	86.8	87.4	174.2	128.0	131.2	259.2				214.8	218.6	433.4	50
RD	2	Improvement of N.R. No. 1B	145							19.1	12.7	31.8	19.1	12.7	31.8	60
RD	3	Improvement of N.R. No. 2	318	52.4	51.2	103.6				45.1	30.1	75.2	97.5	81.3	178.8	55
RD	4	Improvement of N.R. No. 3	317				50.7	54.3	105.0	47.8	31.9	79.7	98.5	86.2	184.7	53
RD	5	Improvement of N.R. No. 4	173							60.0	40.0	100.0	60.0	40.0	100.0	60
RD	6	Improvement of N.R. No. 5	99	121.2	107.1	228.3							121.2	107.1	228.3	53
RD	7	Improvement of N.R. No. 6	419							95.3	82.4	177.7	95.3	82.4	177.7	54
RD	8	Improvement of N.R. No. 10	146				51.1	61.8	112.9				51.1	61.8	112.9	45
RD	9	Improvement of N.R. No. 18	206	67.9	71.3	139.2				43.6	40.0	83.6	111.5	111.3	222.8	50
RD	10	Improvement of N.R. No. 21	30				6.4	4.2	10.6				6.4	4.2	10.6	61
RD	11	Improvement of N.R. No. 32	42				38.2	38.3	76.5				38.2	38.3	76.5	50
RD	12	Improvement of N.R. No. 70	193	48.2	32.1	80.3							48.2	32.1	80.3	60
RD	13	Improvement of N.R. No. 183	20	3.7	2.5	6.2							3.7	2.5	6.2	60
RD	14	Improvement of N.R. No. 279	105							17.6	11.7	29.3	17.6	11.7	29.3	60

Note: RD-1 Road widening of the sections Lang Son - Ha Noi and Ha Noi - Vinh is financed by IBRD. Detailed design has been done and the construction work will bed by the end of 1997.

Table 3.2.1 Summary of Road Development Project List (Continued)

Unit: million US$, 1US$ = 10,800 Dg, F/P: Foreign portion, L/P: Local portion

Code	No.	Project Name	Total Length (km)	by 2000			2001 - 2005			2006 - 2010			Grand Total			% of F/P
				F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	
RD	15	Improvement of N.R. No. 286	25							8.2	5.5	13.7	8.2	5.5	13.7	60
RD	16	Improvement of N.R. No. 379	275	40.4	26.9	67.3				18.4	12.3	30.7	58.8	39.2	98.0	60
RD	17	Urgent Bridge Improvement & Reconstruction of National Roads		17.5	9.0	26.5							17.5	9.0	26.5	66
RD	18	Urgent Bridge Improvement & Construction of Rural Roads		30.8	15.8	46.6							30.8	15.8	46.6	66
RD	19	Rehabilitation of National Roads in the Red River Delta Area		22.6	11.7	34.3							22.6	11.7	34.3	66
RD	20	Rehabilitation of National Roads in the Mountainous Area				0.0	54.7	28.2	82.9				54.7	28.2	82.9	66
RD	21	Improvement & Rehabilitation of Rural Roads in the Northern Part of Vietnam		79.4	52.9	132.3	79.4	52.9	132.3	79.4	52.9	132.3	238.2	158.7	396.9	60
RD	22	Training Center & Procurement of Road Maintenance Equipment		47.3	11.8	59.1							47.3	11.8	59.1	80
RD	23	Construction of Freeway, Ha Noi to Hai Phong								132.5	169.9	302.4	132.5	169.9	302.4	44
RD	24	Construction of Ha Noi Outer Ring Road								133.3	121.5	254.8	133.3	121.5	254.8	52
RD	25	Construction of Long Spanned Bridges					260.1	134.0	394.1				260.1	134.0	394.1	66
RD	26	Construction of Truck Terminal								12.0	8.0	20.0	12.0	8.0	20.0	60
		Total		618.2	479.7	1,097.9	668.6	504.9	1,173.5	712.3	618.9	1,331.2	1,999.1	1,603.5	3,602.6	55
				F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	%

A similar possible development path is identified for Hai Phong in Figure 3.2.4. At present, the national road routes 5 and 10 function as arterial roads in the urban area of Hai Phong. Route 5, which connects Hai Phong with Ha Noi, could create a ring road by itself within the urban area of Hai Phong. This ring road should be connected with the proposed Ha Noi - Hai Phong freeway.

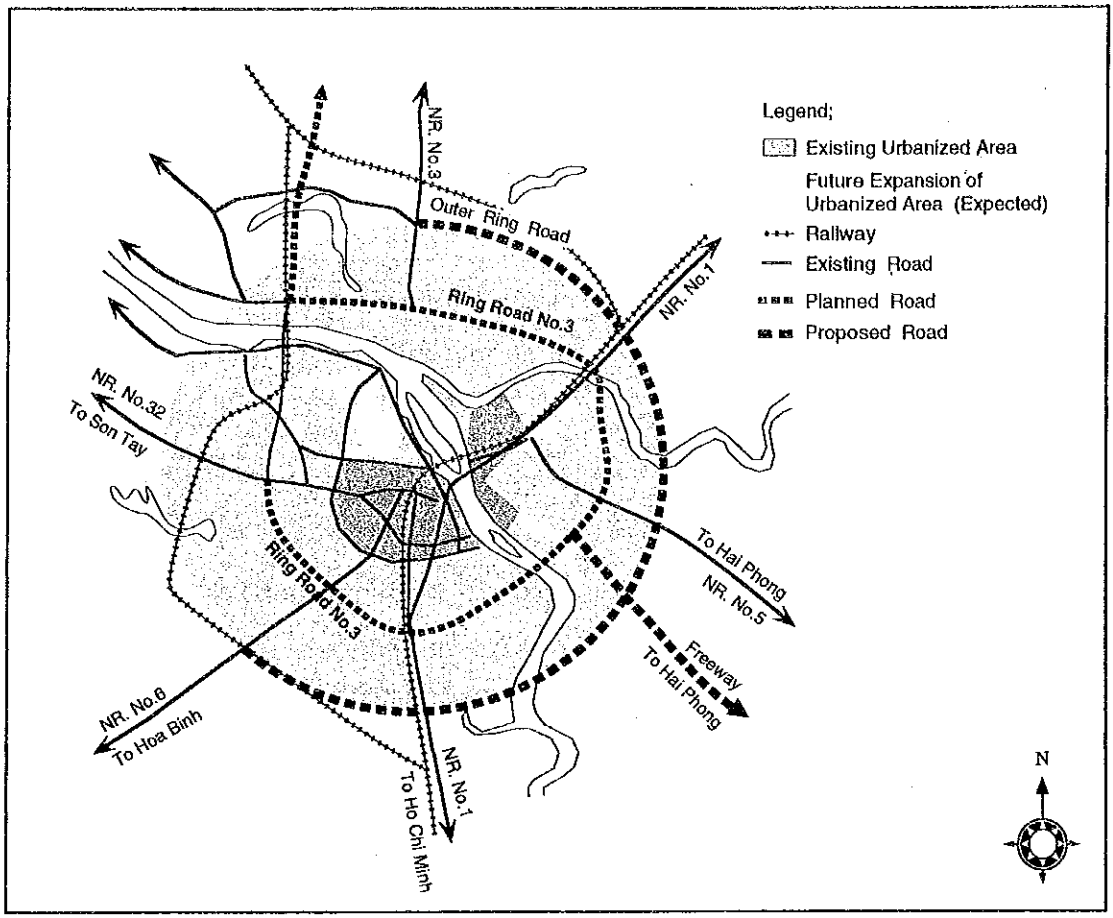


Figure 3.2.3 Planned Road Network System in Ha Noi

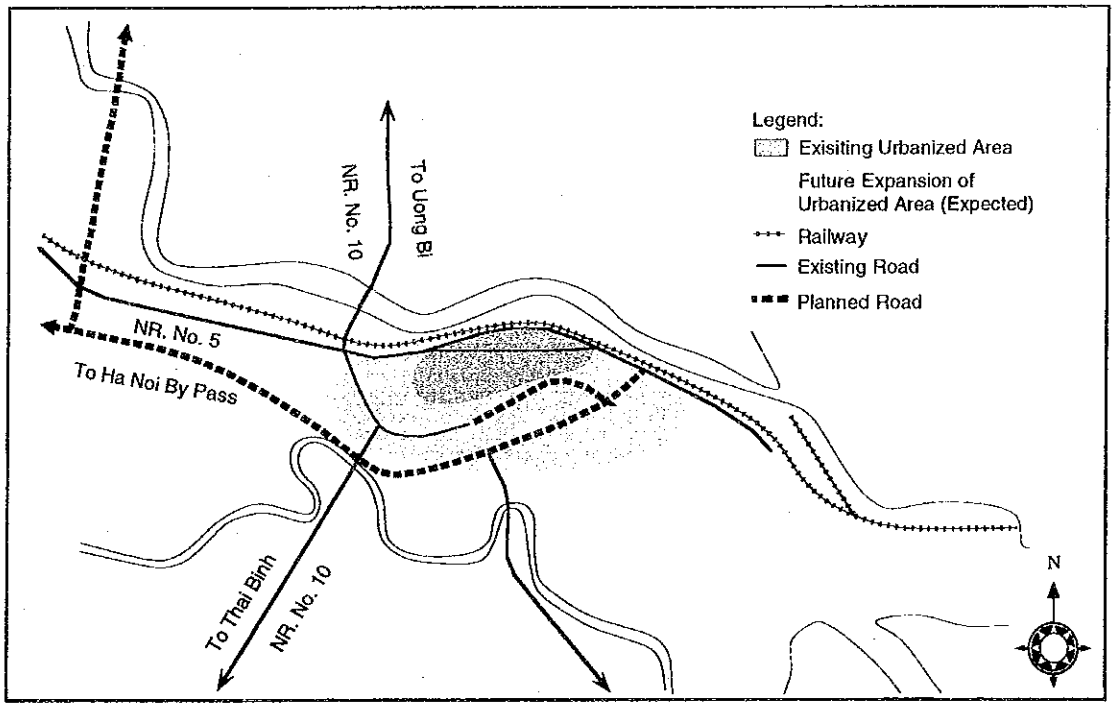


Figure 3.2.4 Planned Road Network System in Hai Phong

3.3 RAILWAY DEVELOPMENT PLAN

The railway passenger travel demand was projected to increase from 6.4 million trips in 1991 to 8.2 million trips in 2000 and 13.5 million trips in 2010. Thus the average annual growth rates of railway passenger transportation are 2.8 present for the period 1991 - 2000, and 5.1 percent from 2000 to 2010. On the other hand, the railway freight transport demand was forecast to grow from 2 million ton in 1991 to 3.9 million ton in 2000, and 9.5 million ton in 2010. The growth rate for freight transport accounts for 7.5 percent for 1991 - 2000 and 9.4 percent for 2000 - 2010.

In general the railway development component in the master plan has the following development objectives :

- Improving function, management and organization of VNR
- Improving manpower through skill development and training programs
- Upgrading existing rolling stock through improved maintenance
- Improvement of related facilities.

The existing railway network is depicted in Figure 3.3.1. Individual projects under the master plan are :

- RW-1 Ha Noi - Hai Phong Line Passenger Transport Improvement

  The objective is to provide for a modern rail passenger transport system between Ha Noi and Hai Phong. This project includes increasing operation speed and frequency, improving railway cars and feeder services. The project should be implemented during phase 1 of the masterplan, i.e. before the year 2000. Total investment costs are estimated to be in the order of magnitude of US$18.6 million foreign currency cost component and 25 billion Dong. Cost estimations have been undertaken on a 1993 price basis. The proposed project has an expansion stage, i.e. the procurement of 10 additional railcars to be realized between the years 2000 and 2005. Costs for this investment are currently estimated at US $ 10 million.

- RW-2 Establishment of a New Railway Education and Training Center

  The project aims at providing training and retraining in the fields of management (2,000 people/year); college education (200 students/year); vocational training (200 engineers and technicians, 800 workers/year). The project should be implemented during phase 1 of the proposed Masterplan. The foreign currency cost component is estimated at US$7.5 million and the local currency cost component at 18 billion Dong.

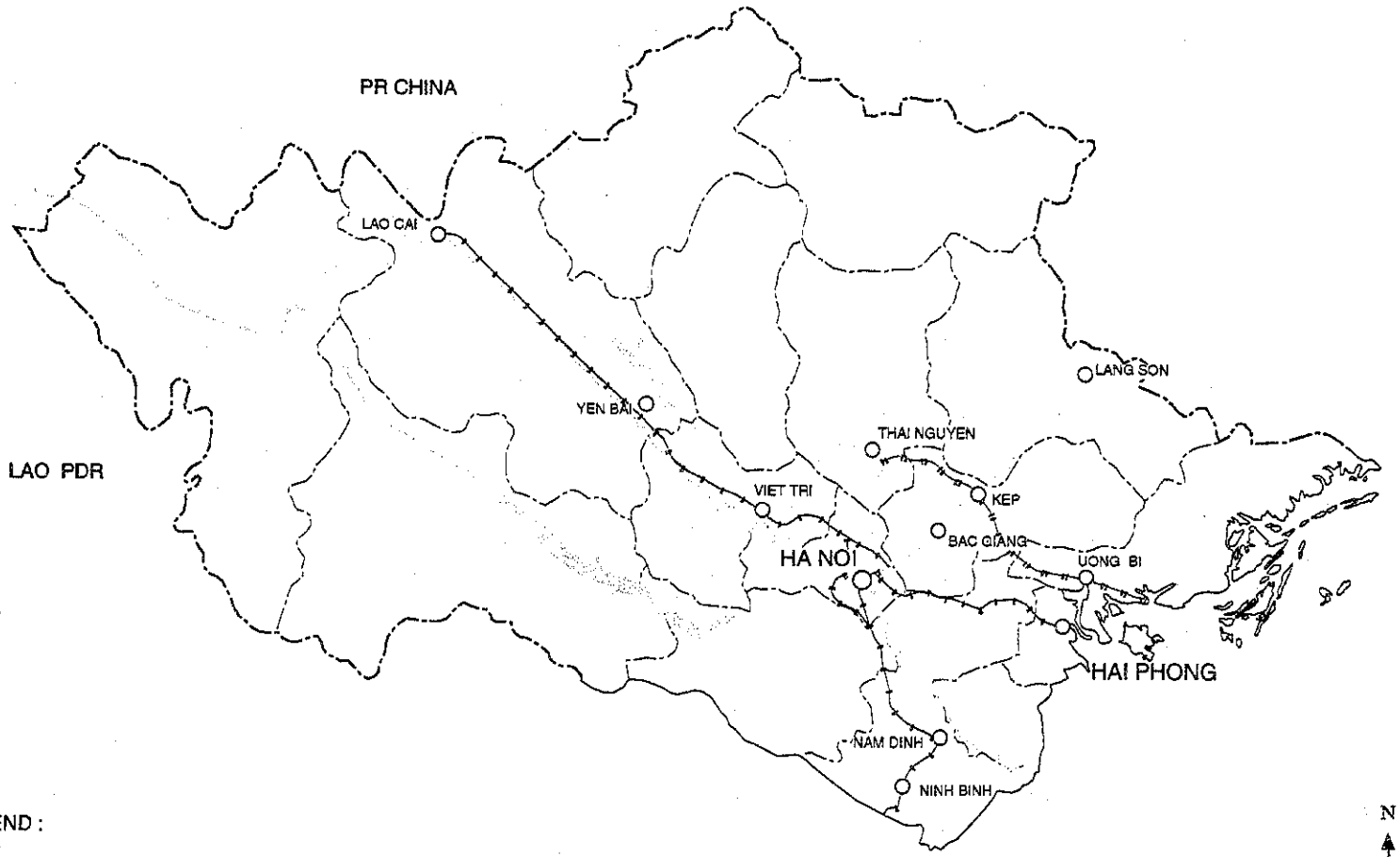


Figure 3.3.1 Railway Network

- RW-3 Gia Lam Workshop and Rolling Stock Depots Improvement

  The project's objective is to upgrade the capacity and technology level in the Study area for overhauling and rehabilitating existing rolling stock. The project should be implemented during phase 1 of the Masterplan. Total investment costs are estimated to be around US$32 million foreign currency component and about 30 billion Dong local currency component.

- RW-4 Long Bien Bridge Replacement and Repair of Other Bridges

  The project aims at improving the railway infrastructure through the rehabilitation and repair of the bridge network. This project must be implemented over the whole Masterplan period, i.e. from 1995 to the year 2010. Three stages are envisaged, stage 1 up to the year 2000, stage 2 between the years 2001 and 2005 and stage 3 between 2006 and 2010. The total foreign cost component is estimated to be in the order of magnitude of US$97.3 million, distributed as follows : US$8.3 million during stage 1; US$59.0 million during stage 2 and US$30.0 million during stage 3. The total local cost component is estimated to be about 366.0 billion Dong; with some 8.0 billion Dong to be invested during stage 1; about 258 billion Dong during stage 2 and the remainder of 100 billion Dong during stage 3.

- RW-5 International Transport by Railways (Lao Cai Corridor and Dong Dang Corridor)

  This project aims at the reopening of international transport between Vietnam and the Kunming and Nanning regions in the PR China. This project includes the improvement on the Ha Noi - Lang Son line and the Hai Phong - Lao Cai Line. If the scale of industrial development in Cai Lan becomes larger than the expected and realized earlier, the improvement of the Cai Lan - Lao Cai line should be taken into consideration as well. The project should be implemented in phase 1 of the Masterplan, i.e. before the year 2000. Total investment costs are estimated to be in the order of magnitude of US$59.4 million foreign currency component and 82 billion Dong local cost component.

- RW-6 Establishment of Management Information System and Telephone Improvement

  The project aims at establishing an appropriate management information system (hardware and software components). The project should be implemented during phase 1 of the Masterplan. The foreign currency cost component is estimated at US$8.8 million and the local cost component at 2 billion Dong.

- RW-7 Renovation of Rolling Stock

  The project's objective is the renovation of D4H locomotives, passenger cars, and freight cars, including necessary design work. This project should be fully implemented between the years 1995 and 2005. The total foreign currency cost component is estimated at US$47.5 million, out of which US$22.5 million would have to be invested during phase 1 of the Masterplan and the balance between the years 2001 and 2005. The local currency cost component is estimated to total 71 billion Dong, out of which some 35 billion Dong would have to be invested during phase 1 of the Masterplan.

- RW-8 Ha Noi Urban Transport by Railways

  The project aims at catering for the anticipated urban mass transport needs in Ha Noi and vicinity. This project should be implemented in three stages. Stage 1 should be done during phase 1 of the Masterplan, stage 2 between the years 2001 and 2005, and stage 3 between 2006 and 2010. The total foreign cost component is estimated at US$50.6 million distributed over the stages as follows : US$8.6 million during stage 1; US$36.0 million during stage 2 and US$31.6 million during stage 3. The corresponding local cost component is estimated to total some 249.6 billion Dong, equivalent to 28.4 billion Dong in stage 1; 168.4 billion Dong during stage 2 and 52.8 billion Dong during stage 3.

- RW-9 Strengthening of Freight Transport

  The project's objective is to upgrade the freight transport system through the establishment of appropriate loading/unloading facilities at main stations and the establishment of specialized cement, coal and oil terminals at selected stations. It is proposed to implement the project in two stages, stage 1 before the year 2000 and stage 2 between the years 2001 and 2005. The total foreign cost component is estimated at US$22.0 million, out of which US$16.0 million would have to be invested before the year 2000. The corresponding total local cost component is estimated to be around 121 billion Dong, out of which some 81.0 billion Dong would have to be invested before the year 2000.

During Phases 2 and 3 of implementing the master plan, the following projects should be carried out.

- RW-10 Cai Lan Port Cargo Transport by Rail and Ha Noi Land Port Construction

  This project has three major elements : (i) improvement of the railway system between the Cai Lan terminus and Ha Noi; (ii) tourist transport by rail from Ha Noi to Ha Long resort, and (iii) the establishment of a terminus and an inland depot in Ha Noi. It is proposed to implement this project during phase 2 of the Masterplan, i.e. after the year 2000. The

project should be implemented in two stages. The total foreign cost component is estimated at US$95.2 million, out of which US $ 15.6 million would have to be invested during stage 1 (2001 - 2005) and the remainder of US$79.6 million during stage 2, between the years 2006 to 2010. The total local currency cost component is estimated to total at 321 billion Dong. The local currency cost component is divided into 159 billion Dong during stage 1 and 162 billion Dong during stage 2.

Priority of this project can be lifted upward according to a scale of Cai Lan Port - related industrial development plan and its progress.

- RW-11 Modernization of Signaling

  The project has a rationalization function and aims at reducing manpower through modernization of the signaling system. It is suggested to implement this project in the second phase of the Masterplan, also in two stages.

  Total foreign currency component is estimated at some US$38.0 million, out of which US$8.0 million should be invested over the period 2001 to 2005, and the balance of US$30.0 million during stage 2, over the years 2006 to 2010. The total local currency cost component is approximated at a total of 60.0 billion Dong. The local cost component will have to be invested as follows : 20 billion Dong during stage 1 of the project and the remainder of 40.0 billion Dong during stage 2.

- RW-12 Replacement of Diesel Locomotives

  Since the useful life span of almost all locomotives will expire after 2006, there is a need for replacement investments. This project aims at replacing the locomotive stock during the period 2006 to 2010. The total foreign currency cost component is presently approximated at US$174 million with a corresponding local cost component of some 268 billion Dong.

The Master plan contains three project proposals, the implementation of which is suggested after the year 2010, i.e. after the time horizon of the current Masterplan itself. These projects refer to (i) the electrification of the line between Nam Dinh and Hai Phong (via Ha Noi), (ii) the establishment of a 160 km/h speed passenger train between Ha Noi and Ha Long, and (iii) a track elevation project in Ha Noi city itself. Total foreign currency costs for all three projects are approximated at US$508.0 million, with a corresponding local cost component of some 3,230.00 billion Dong.

A summary of the railway system projects, including the estimated investment requirements, is provided in Table 3.3.1

Table 3.3.1 Summary of Railway Development Project List

Unit: million US$, 1US$ = 10,800 Dg, F/P: Foreign portion, L/P: Local portion

Code	No.	Project Item	by 2000			2001 - 2005			2006 - 2010			Grand Total			% of F/P
			F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	
RW	1	Ha Noi - Hai Phong Line Passenger Transport Improvement	18.6	2.8	21.4	10.0	0.0	10.0				28.6	2.8	31.4	91
RW	2	Establishment of a New Railway Education & Training Center	7.8	2.0	9.8							7.8	2.0	9.8	80
RW	3	Gia Lam Workshop and Rolling Stock Depots Improvement	32.0	3.3	35.3							32.0	3.3	35.3	91
RW	4	Long Bien Bridge Replacement and Repair of other Bridges	8.3	0.8	9.1	59.0	25.8	84.8	30.0	10.0	40.0	97.3	36.6	133.9	73
RW	5	International Transport by Railways	55.4	8.8	64.2	5.0	0.0	5.0				60.4	8.8	69.2	87
RW	6	Establishment of Management Information System and Telephone Improvement	8.8	0.8	9.6							8.8	0.8	9.6	92
RW	7	Renovation of Rolling Stock	22.5	4.0	26.5	24.0	3.9	27.9				46.5	7.9	54.4	85
RW	8	Ha Noi Urban Transport by Railways	9.4	3.6	13.0	37.2	18.3	55.5	31.6	5.8	37.4	78.2	27.7	105.9	74
RW	9	Strengthen of Freight Transport	16.0	8.9	24.9	6.0	4.0	10.0				22.0	12.9	34.9	63
RW	10	Cai Lan Port Cargo Transport by Rail and Ha Noi Land Port Construction				15.6	17.4	33.0	82.0	17.8	99.8	97.6	35.2	132.8	73
RW	11	Modernization of Signaling				8.0	2.0	10.0	30.0	4.0	34.0	38.0	6.0	44.0	86
RW	12	Replacement of Diesel Locomotives							174.0	26.8	200.8	174.0	26.8	200.8	87
		Total	178.8	35.0	213.8	164.8	71.4	236.2	347.6	64.4	412.0	691.2	170.8	862.0	80
			F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	%

Note: RW-1 The feasibility study on Ha Noi - Hai Phong Line is being undertaken by a British firm, and will be completed by September 1994.

3.4 PORT AND SEA TRANSPORT DEVELOPMENT PLAN

The development of the port and sea transport mode is important in strategic priority for the development of the transport sector in the Study area. The major reason for this is that the demand for general cargo throughput will surpass the capacity of the existing ports in the near future, necessitating the establishment of additional deep sea port in the area.

The demand forecast has established that the general cargo throughput will grow at an average annual rate of some 7.2 % over the period 1990 to 2000, and at 7.4 % over the period 2000 to 2010. General cargo throughput (excluding oil and coal) will grow from some 2.98 million tons in 1993, to about 5.9 million tons in the year 2000 and 15.2 million tons in 2010. Over the period under consideration, containerized cargo will increase sharply from 405 thousand tons in 1993, to about 5.1 million tons in the target year 2010.

A fundamental concept for port development in the Northern part of Vietnam was established as follows;

(1) Development of a large scale sea port, which is designed to function efficiency and integrated with other ports, is essential for a socio-economic development in the Northern part of Vietnam.

(2) Hai Phong Port has played a role of hub port in the Northern Vietnam and accumulated a wide range of port facilities with skilled port workers and supporting industries.

This is the reason why this port should maintain its function and be utilized to its full capacity, and why a rehabilitation and/or replacement of the deteriorated facilities and the outworn equipment are urgently needed.

(3) However, excessive freight demand handled at Hai Phong Port are expected in the future since this port has a physical constraint in expanding its handling capacity. Thus new port construction is necessary to absorb the excessive demand at Hai Phong Port.

(4) In searching the site of a new deep sea port in the Northern part of Vietnam, Cai Lan was selected as the best alternative, under the situation no completely ideal site was found.

In expanding Cai Lan Port, it is necessary to commence the civil works at the possible early stage to absorb the excessive demand at Hai Phong Port prior to an expected time of its saturation, and the stage construction plan should be prepared.

(5) It should be paid attention that the Ha Long Bay and its surrounding area is an area inherited with the most beautiful scenery and precious natural environment, and one of the most attractive spot for the tourism. If the

development of this area deteriorates its natural environment, its damage will not be compensated by any pecuniary return.

Thus, it is necessary to prepare an port development plan with a sufficient attention to an environmental preservation, and the Government should take an appropriate action not to regret the loss of precious natural heritage in the future.

(6) Hai Phong Port and Cai Lan Port should be functioned to supplement each other under the integrated management and operation framework as well as provision of sufficient transport and communication facilities between the two ports.

Based on the fundamental concept mentioned above, the following development objectives have been identified and adopted for the port and sea transport development:

- Development of Hai Phong Port into an international general commercial port handling all kinds of cargo
- Development of a new deep sea port to support the economic and industrial development cooperating with the existing Hai Phong Port
- Development of private and specialized ports in the area, in particular for handling oil and coal
- Design and establishment of an appropriate institutional set-up and port management system
- Formulation of a development plan for shipping companies, including crucial privatization issues
- Definition of an appropriate future role, function and administrative set-up for VINAMARINE
- Undertaking of an in-depth environmental impact study on the possible future siting of the new deep sea port
- Undertaking a tourism development plan for the Ha Long Bay area. Attainment of this development objective is closely linked to the preceding port development, and both should be harmonized with each other.

In addition to the physical expansion and rehabilitation of port facilities, improvements of port management and operations are urgently required. Such measures refer to the following areas:

- Introduction of mass cargo handling methods at Hai Phong Port
- Introduction of a computer-based management network at the container terminal

- Definition of a sea transport development plan, including a future role for VINAMARINE (separation of port management and shipping management; privatization of the fleet)

- Transfer of operations and management of the container terminal to the private sector.

Figure 3.4.1 gives an overview of the existing port locations, and candidate sites for a new deep sea port, if it could not be sited closer to Hai Phong or other existing ports.

As in the case of all other modes, projects are distributed over the three principal phases for master plan implementation. The major features and objectives of the two top priority projects are summarized below, including the overall required outlays for them:

- Hai Phong Port rehabilitation project. This project aims at addressing the urgent need to improve the ports capacity up to five million ton by 2000 and efficiency in cargo handling. The project contains the following major elements:

  1) dredging of the entrance channel
  2) yard improvement and expansion
  3) berth improvement
  4) rehabilitation and expansion of warehouses; construction of CFS
  5) renovation and procurement of equipment

  Total investment costs are estimated at some US$145 million; out of which US$108 million is the foreign cost component (equal to some 74 % of total investment cost) and the balance of US$37 million represents the local cost component. It is suggested that the project's implementation be completed by 1998.

- New deep sea port development project. Cai Lan is one of the potential sites for the new deep sea port in the Study area. The new deep sea port is necessary not only because of the increasing cargo throughput in the area, but also because of the sedimentation problem in the entrance channel of Hai Phong Port, where larger size ships cannot easily enter unless the entrance channel is deepened further. The project aimes at building up the needed port capacity up to one million ton in 2000, which can not be handled in Hai Phong Port. This volume is a subject of change according to a progress of industrial development plan in the hinterland. Implementation of this project should be completed by the year 2000. The major elements in this project comprise:

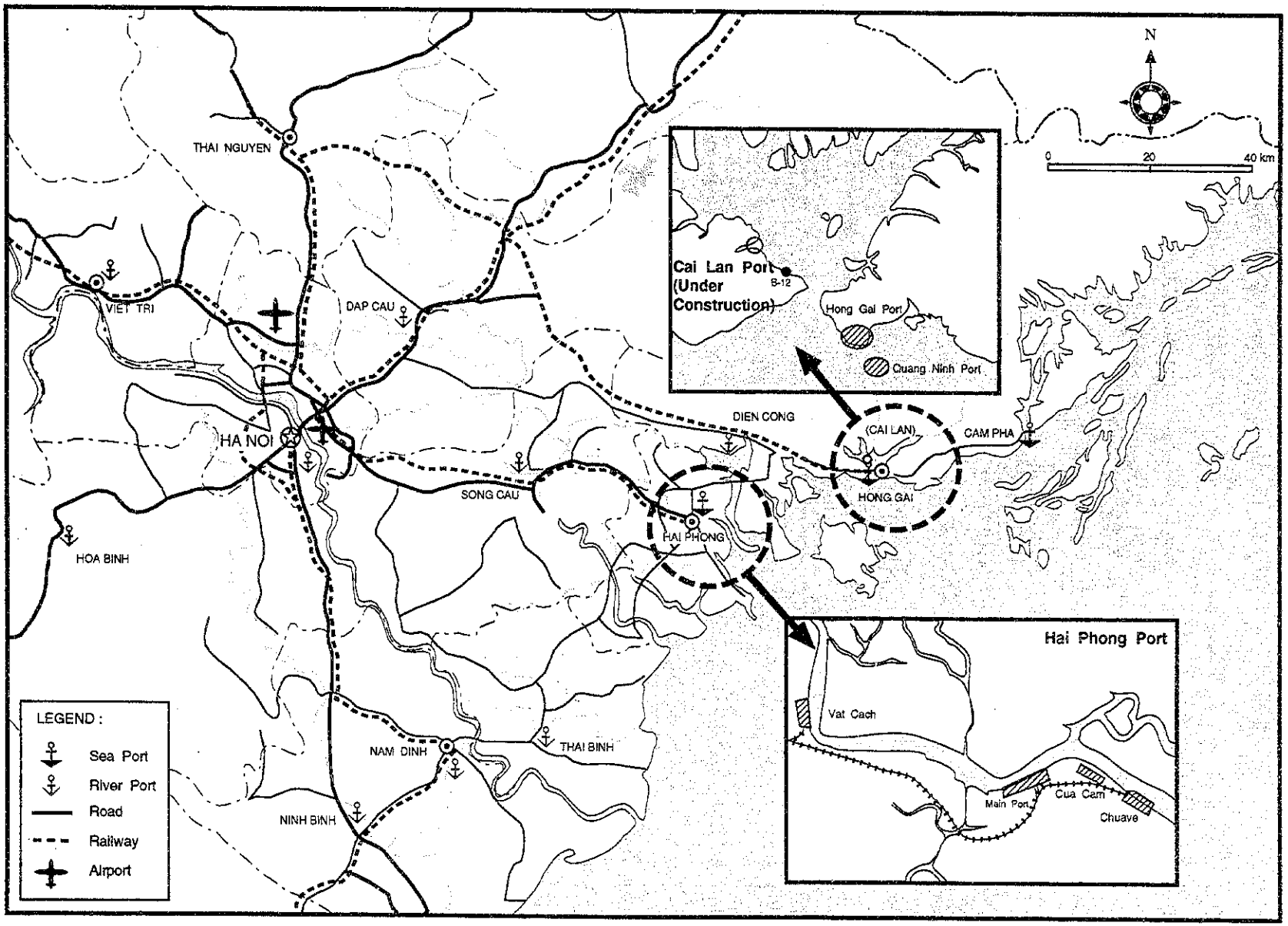


Figure 3.4.1 Port Location Map

31) construction of new berths
2) yard construction
3) building construction
4) dredging, and
5) the construction of a road and railway connection.

Total investment costs are currently estimated to be in the order of magnitude of US$449 million. Out of this amount 67 % is for the foreign currency and 33 % for the local cost component.

Follow-up phases to each of the high-priority projects above are also envisaged. These are:

- Planning project for further development of Hai Phong Port. Feasibility study for this project should be performed and the project's implementation should be finalized by 2005. Taking into account the dramatic increase in containerized cargo traffic, this project aims at strengthening the terminal capacity up to 8.2 million ton, including 4.5 million ton container cargoes, through the construction of a new container berth in Cuave.

- New port capacity development plan: 2000 - 2005 and 2006 to 2010. This project is necessary to supplement Cai Lan Port. This project aims at expanding the port capacity up to 6.3 million ton, including 0.6 million ton container cargoes. The project's rationale is basically the same.

In addition to the above, other projects have also been proposed; A study for developing yet another new deep sea port in well coordination with tourist activities should be initiated towards the end of this century. The other projects refer to upgrading of the navigational aid system, and the relocation and reconstruction of the B-12 oil terminal.

A summary of the investment requirements for all projects is provided in the following Table 3.4.1.

Table 3.4.1 Summary of Port and Sea Transport Development Project List

Unit: million US$, 1US$ = 10,800 Dg, F/P: Foreign portion, L/P: Local portion

Code	No.	Project Item	by 2000			2001 - 2005			2006 - 2010			Grand Total			% of F/P
			F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	
PS	1	Hai Phong Port Urgent Rehabilitation	108	37	145							108	37	145	74
PS	2	Hai Phong Port Development				23	12	35				23	12	35	66
PS	3	Cai Lan Port Development including - Installation of Buoys and Construction of Light-House - Removing and Reconstruction of B-12 Oil Terminal	114	52	166	95	52	147	92	44	136	301	148	449	67
PS	4	Study for developing New Deep Entrance Channel in Hai Phong Port	2	1	3	2	1	3				4	2	6	67
		Total	224	90	314	120	65	185	92	44	136	436	199	635	69
			F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	%

Note: PS-1 Hai Phong Port Urgent Rehabilitation was completed and the loan for implementation was committed by OECF.
PS-3 The feasibility study is being undertaken by JICA.

3.5 INLAND WATERWAY DEVELOPMENT PLAN

Demand for inland water transport will increase from 0.6 million tons in 1991 to 1.35 million tons in the year 2000, and between 22 and 28 million tons in the target year 2010. However, the future potential for this transport mode is limited to the transport of bulk cargo, such as coal and construction materials.

The development objectives for this mode are suggested as follows:

- To specialize river ports in handling bulk cargo (coal and construction materials)
- To modernize river port facilities and inland waterway fleets
- To develop the construction-materials related industries in the vicinity of river ports
- To rehabilitate the dredging and navigation aids systems.

Figure 3.5.1 shows the future development status of the inland waterway transportation system in the study area. The study suggests the implementation of 5 projects over the whole planning period. Out of this total, 5 projects are considered to be of highest priority for implementation. Their particulars are as follows:

- Rehabilitating urgently the existing facilities and equipment of the Ninh Binh port up to the year 2000 and also constructing a new port at Ninh Phu. The total investment costs are estimated at US$34.6 million , split into 65 % for the foreign currency and the remainder of 35 % for the local currency component.
- Dredging and re-aligning the rivers; (1) Quang Ninh - Hai Phong - Pha Lai (140 km), (2) Hai Phong - Nam Dinh - Ninh Binh (220 km), (3) Ninh Binh - mouth of Day River (60 km). Total project cost is estimated at US$10.6 million, out of which some US$5.5 million, equivalent to 52 % of the total is covering the foreign currency component.

The proposed projects are summarized in Table 3.5.1

Table 3.5.1 Summary of Inland Waterway Development Project List

Unit: million US$, 1US$ = 10,800 Dg, F/P: Foreign portion, L/P: Local portion

Code	No.	Project Item	by 2000			2001 - 2005			2006 - 2010			Grand Total			% of F/P
			F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	
IW	1	Ninh Binh Port Rehabilitation and Extension	11.3	6.3	17.6	5.5	3	8.5	5.5	3	8.5	22.3	12.3	34.6	
IW	2	Ha Noi and Viet Tri Port Improvement	23	7	30	7	3	10	7	3	10	37	13	50	
IW	3	The Main Waterway Dredging and Rearrangement	3.9	3.7	7.6	0.8	0.7	1.5	0.8	0.7	1.5	5.5	5.1	10.6	
IW	4	Groyne Test Construction and Hydrologic Survey	0.04	0.14	0.18	0.11	0.35	0.46	0.11	0.35	0.46	0.26	0.84	1.1	
IW	5	Navigation Aids System Rearrangement	0.18	0.59	0.77							0.18	0.59	0.77	
		Total	38.42	17.73	56.15	13.41	7.05	20.46	13.41	7.05	20.46	65.24	31.83	97.07	
			F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	F/P	L/P	Total	%

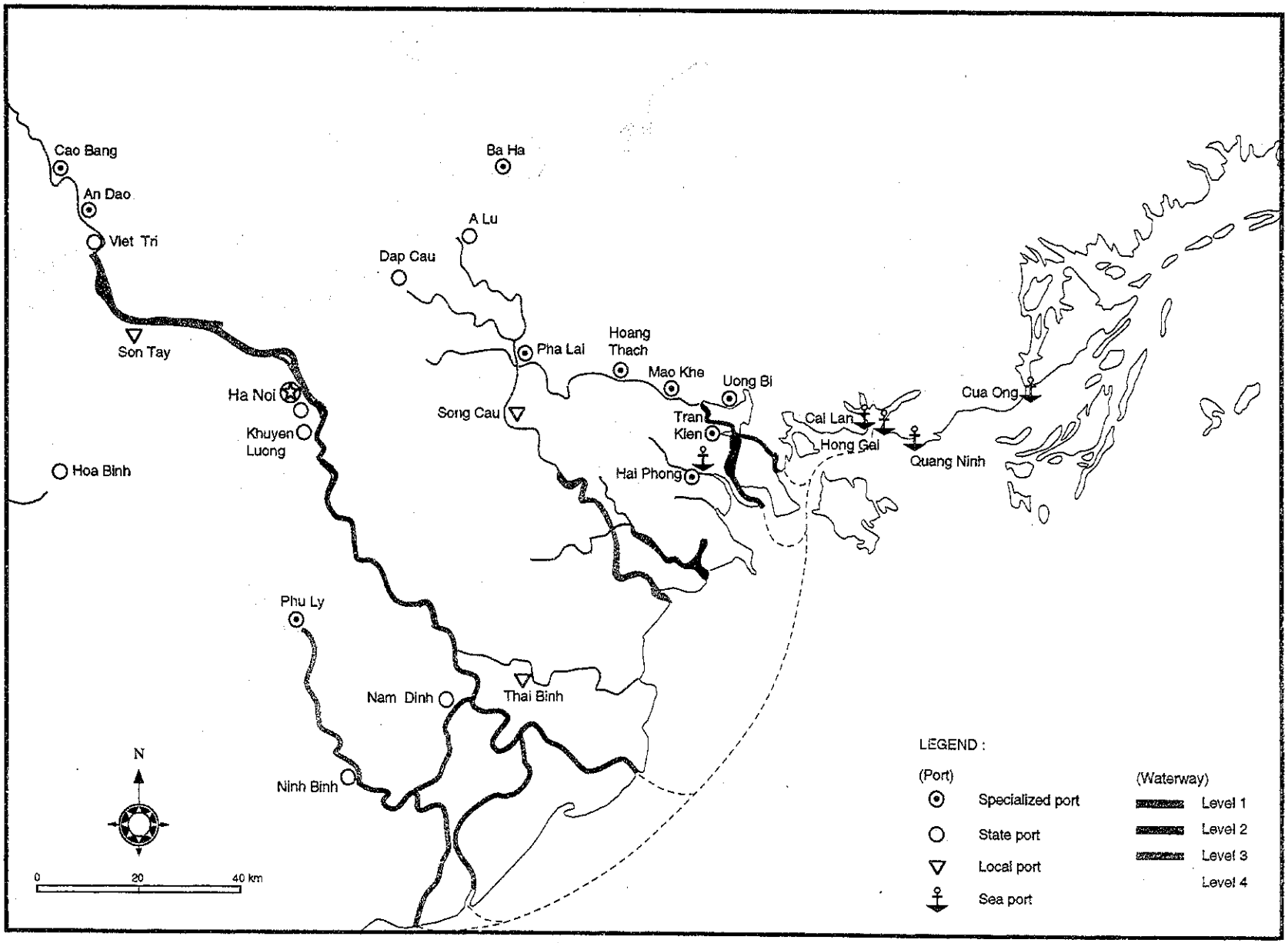


Figure 3.5.1 Location of Inland Waterways in Future (Red River Delta)

Chapter 4 Financial Sources and Efficient Management

CHAPTER 4 FINANCIAL SOURCES AND EFFICIENT MANAGEMENT

4.1 FINANCIAL SOURCES

The previous chapters have established that considerable investment is required to realize the needed development of the transport sector in the Study area. Currently estimated investment for all high priority projects, that is those to be implemented before the year 2000, totals about:

- US$1,063 million; covering the foreign currency component; and
- Dong 10,973 billion, equivalent to some US$624 million at the average exchange rate of 1 US$ = Dong 10,800; covering the local currency component.

The trend of actual share of the transport sector in the state budget is shown in Table 4.1.1 together with its diminishing share of GDP. Both recorded peaks in 1989, and since then the transport shares have declined to 1% of the state budget and 0.4% of GDP in 1993.

Table 4.1.1 State Expenditure to Transport Sector, 1989 - 1993

(unit : billion Dong, current price)

	1989	1990	1991	1992	1993
1. State Budget Expenditure					
a. Total	5,045	7,062	9,946	17,105	36,590
2. Construction Expenditure of State Budget					
a. Total	1,920	2,704	4,504	6,103[1)]	9,540
(= 2a/1a)	38%	38%	45%	36%	26%
b. Transport Sector	252	442	753	660	449
(= 2b/1a)	5%	6%	8%	4%	1%
3. a. GDP	17,414	27,514	51,136	71,091	125,526
4. a. Budget Expenditure/GDP (=1a/3a)	29.0%	25.7%	19.5%	24.1%	29.1%
b. Construction Expend./GDP (=2a/3a)	11.0%	9.8%	8.8%	8.6%	7.6%
c. Expenditure to Transport Sector/GDP(=2b/3a)	1.4%	1.6%	1.5%	0.9%	0.4%

Sources : (1989 - 1992) of 1a ; Key Indicators of Developing Asia and Pacific Countries, 1993, Asian Development Bank
(1993) of 1a, 2a and 2b ; Vietnam Economic Research Institute
Note : 1) estimated by interpolation

The past record of financing, from public sources, the maintenance of the existing transport infrastructure, new projects, and operational expenditures has left something to be desired. Worrying signals are not only the dramatically increased dependency of the state budget on foreign sources, but also the overall declining shares of state budget allocations for the transport sector infrastructure. This trend will clearly have to be reversed.

The Government is therefore strongly encouraged to consider positively and implement measures not only to increase its overall revenues, but also to allocate from the budget, the funds needed to implement the projects proposed under this study.

The Vietnamese government is expected to increase its investment budget for the transport sector along with the Government policy efforts aimed at increasing its budget revenue. Table 4.1.2 shows an amount expected to be raised by the government' efforts and Figure 4.1.1 illustrates this situation.

Table 4.1.2 Expected State Budget Scale of Vietnam

(Unit; million US$)

Transportation Sector Budget	Up to 2000	2001 - 2005	2006 - 2010	Total
1. State Budget for Whole Country (Trend based on 1994)	620	720	1,160	2,500
2. State Budget for Whole Country (with Gov. Efforts)	1,430	3,370	7,750	12,550
3. State Budget for North Part of Vietnam (37 % of Total)	529	1,247	2,868	4,644
Proposed Project Cost for North VN	1,682	1,616	1,900	5,198

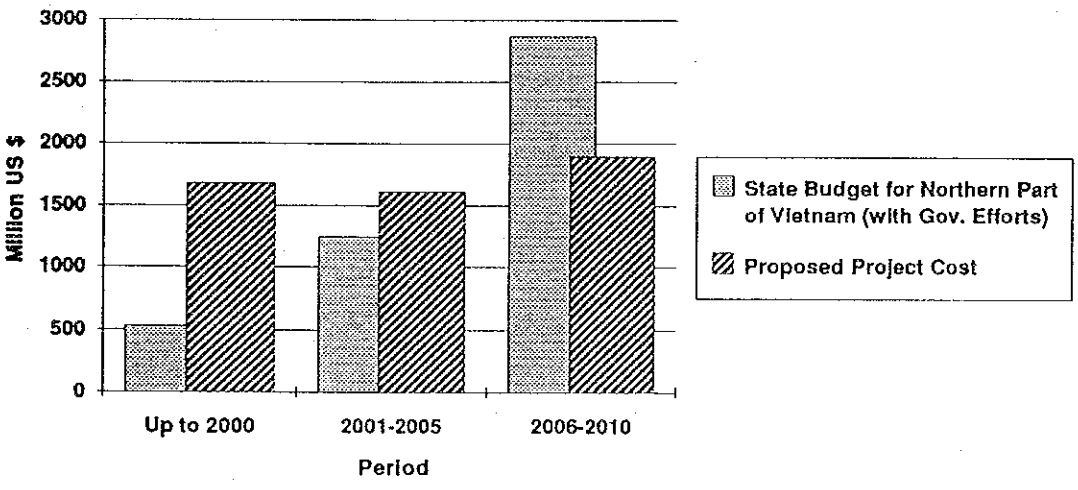


Figure 4.1.1 Expected State Budget to Transport Sector

Assumptions:

- GDP growth as a scenario; 7% for the period 1994-2001, and 10% between 2001 and 2010
- Priority in budget allocation is attached to the transport sector;
  - 3% of GDP for the transport sector in 2010
  - 15% of the increment in the construction budget to the transport sector
- Any budgetary gap is to be financed in part by foreign aid
- Application of BOT (Build-Operation-Transfer) scheme should be introduced for high-return promising projects in order to lessen the financial burden of the government of infrastructure improvement.

In preparing a loan program from the international money market and/or donor countries, it is necessary to keep a debt service ratio at less than 30 %, which sets a general international standard for maximum level of loan provision. In the case of Vietnam, it is reckoned that the debt service ratio is less than 26 %, and keeps at permissible level among donor countries (budget = trend type in Table 4.1.2: loan conditions are set as same as those of the World Bank; interest rate = 1 %, repayment period = 30 years). Fundamental reform of the tax system is indispensable to meet the huge amount of investment required in the future. This task is basically a subject of fiscal policy.

However, the most urgent measures to be considered are :

- Introduction of a usage-specific tax for road rehabilitation and new construction (user-pays principle)
- Rational structuring of taxes and levies related to transport infrastructure (gasoline tax, vehicle tax and so on)
- Wider application of the toll system
- Transfer (where appropriate) of certain specific transport services from a public function to private sector management through the use of BOT schemes
- Establishment of a reasonable public tariff structure (cost recovery component).

Especially two measures are strongly recommended: first is introduction of a usage-specific tax that is levied in the form of a gasoline tax, and second is wider application of toll systems. The main rationale of these measures is a principle that road users should pay for non-pecuniary benefit they can receive by using the roads in which new investment has been made; and the principle of cost recovery that aims at paying back investment costs by means of toll revenue.

TESI estimated how much the new gasoline tax for road maintenance and construction can contribute to the road investment. These magnitudes illustrate the large impact of this tax and toll system. However, the levels of charges should be decided by research in depth about economic benefits the users can receive. TESI should play a role in investigating this matter.

4.2 IMPLEMENTATION AGENCY

Drastic reform of the government organization has been in progress since 1991. It is still under way as of November 1993 and another drastic reform is on schedule for 1994. This aims at separating administration from implementation, and everything seems to be going on the right track in general.

There are also many specialized tasks that the present system of "Official Development Assistance" requires recipient-country officers to be conversant with, if they are to insure that Vietnamese national objectives are properly served by outside aid. These include project identification, internal appraisal and approval procedures; implementation, and monitoring and evaluation. In these respects Vietnam is not yet fully prepared to cope with the likely future increase in such projects. Figure 4.2.1 depicts the principal stages, functions and responsibilities of Vietnam's internal process of project identification, approval and implementation.

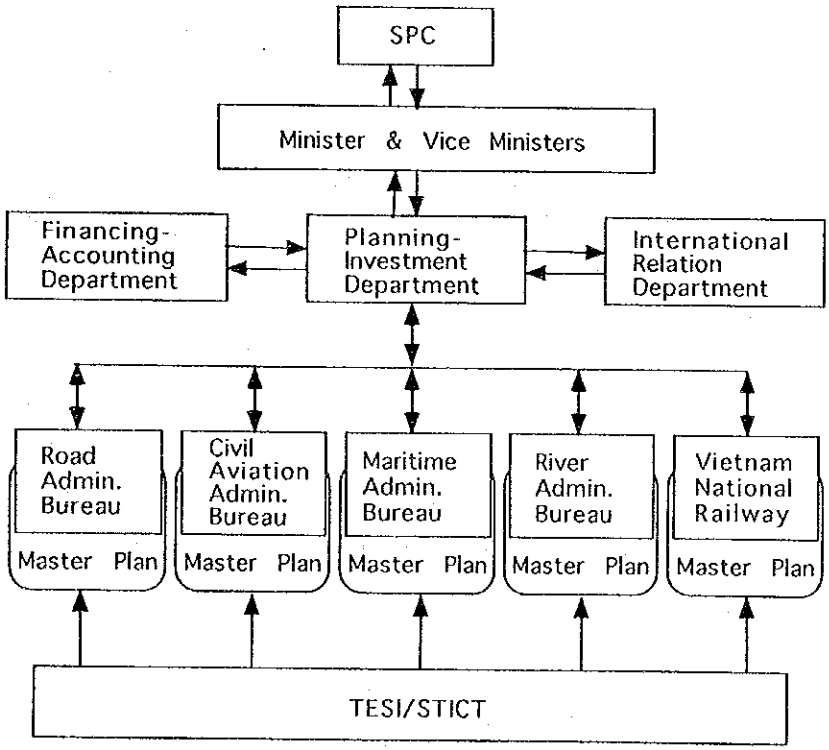


Figure 4.2.1 Procedure for Project Formulation in MOTC

As has been pointed out above, securing of sufficient financing constitutes a prerequisite for successful project implementation. A second crucial factor is the country's absorptive capacity in terms of the project screening and management functions mentioned above.

In this context the following minimum measures are recommended to be effected in the MOTC and its related agencies:

- The capability of the research institute and planning departments should be strengthened in terms of number of manpower and to guarantee the non-biased, long-term systematic research that provides basic data for policy formulation and for price setting of various transportation charges. In particular:

- TESI should be a part of the government and be engaged in fundamental research in the transport economy. The results of such research would always be priced very low by the private sector, but it is extremely valuable in formulating a rational national transport policy. Privatization of this organization is the miss-application of a market-efficiency principle which is not always valid.

- Separation of administrative functions from the implementation agencies should be further promoted, especially this is desirable for the VINAMARINE.

4.3 MANAGEMENT EFFICIENCY

The topic of management efficiency is of outstanding importance in the context of successfully implementing development projects, which will not only increase in terms of numbers, but also in complexity. It is therefore necessary to expand the SPC's capacity in project handling, in general as well as specifically for the transport sector, by introducing the following measures:

- Increasing the number of personnel in line with the increased work loads implied by each of these remaining measures:

- Establishing clear guidelines on investment priority and ranking, employing international project appraisal criteria

- Aligning externally-proposed projects with the development direction set by national authorities

- Strengthening in the numbers of advisory manpower available to the SPC and the Ministries and other agencies to conduct efficient planning as well as liaison and communication with foreign donor countries and multilateral donor agencies

- Making of relevant officers of the SPC, Ministries and other agencies, familiarize with the procedures and criteria employed by the most important donors in project selection, appraisal and implementation.

- Strengthening the SPCs planning sections through improved access to relevant information; thereby enabling them to perform in a professional manner

- Strengthening the overall coordination among the SPC and other agencies, in order to eliminate duplication and formulate overall project supporting measures. In this context it is recommended to establish a new sub-committee to undertake this task

- Empowering the sub-committee, among other things, to coordinate transportation policy and to align transport policy with the overall national development targets.

4.4 CONSTRUCTION

Another aspect of implementation is the physical and managerial capacity of Vietnamese enterprises and agencies in construction phases of implementing the projects. This is widely admitted to be very poor because of shortages in funds and technology to carry out construction and maintenance. In addition, actual operational capacity of equipment is reportedly low. This is attributable to the old age of the equipment and the fact that the producers had already stopped manufacturing spare parts for them a long time ago. As a result, only 48% of maintenance machines are operational.

The following measures are suggested:

- Construction of the project should be divided into short and small segments to make the participation of small companies easy.

- A type of joint venture among Vietnamese companies and foreign companies is recommended to allow Vietnamese partners to get acquainted with new technology and to strengthen their financing capability.

- Provision of low interest loans, and equipment-procurement advisory services, to the Vietnamese construction contractors on the project is suggested in order to make it easy for them to acquire appropriate new equipment.

4.5 DATA AVAILABILITY

Furthermore, a provision of various statistical data is indispensable for policy formulation, especially at the stage of planning. However data available both to the MOTC and SPC is inadequate both in data content and in compilation technology. Therefore the following is recommended:

- Continuous and quick compilation and publication of all appropriate data concerning budget of the state and departments, macro-economic statistics, actual price of construction material in the market, and project information.

- Data necessary for project planning should be available at cost, especially for Vietnamese government agencies and certified public donor delegations.

  Instances of staff of the public sector selling data to which they can have access because of their positions in the government, may lead to biased formulation of the national plan in various fields.

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