

The Study on Urban Transport Master Plan and Feasibility Study in Ho Chi Minh Metropolitan Area (HOUTRANS)

FINAL REPORT

Vol.1 Summary

June 2004

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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTRY OF TRANSPORT, SOCIALIST REPUBLIC OF VIETNAM (MOT)
HO CHI MINH CITY PEOPLE'S COMMITTEE (HCMC-PC)

THE STUDY ON
URBAN TRANSPORT MASTER PLAN
AND FEASIBILITY STUDY
IN HO CHI MINH METROPOLITAN AREA
(HOUTRANS)

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PREFACE

In response to the request from the Government of the Socialist Republic of Vietnam, the Government of Japan decided to conduct the Study on Urban Transport Master Plan and Feasibility Study in Ho Chi Minh Metropolitan Area and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a team to Vietnam between August 2002 and June 2004, which was headed by Mr. IWATA Shizuo of ALMEC Corporation.

The team conducted the study in collaboration with the Vietnamese counterpart team including field surveys, traffic demand forecast, formulation of a master plan and feasibility studies on the selected priority projects, and then held a series of discussions with the officials concerned of the Government of Vietnam. Upon returning to Japan, the team duly finalized the study and delivered this report.

I hope that this report will contribute to the development of urban transport in Ho Chi Minh Metropolitan Area and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Vietnam for their close cooperation extended to the team.

June 2004

MATSUOKA Kazuhisa
Vice President
Japan International Cooperation Agency

June 2004

MATSUOKA Kazuhisa

Vice President

Japan International Cooperation Agency

Tokyo

LETTER OF TRANSMITTAL

Dear Sir,

We are pleased to formally submit herewith the final report of the Study on Urban Transport Master Plan and Feasibility Study in Ho Chi Minh Metropolitan Area in the Socialist Republic of Vietnam.

This report compiles the result of the study which was undertaken both in Vietnam and Japan from August 2002 to June 2004 by the Team, organized by ALMEC Corporation.

We owe a lot to many people for the accomplishment of this report. First, we would like to express our sincere appreciation and deep gratitude to all those who extended their extensive assistance and cooperation to the Team, in particular the Ministry of Transport as well as the Ho Chi Minh City People's Committee both in Vietnam.

We also acknowledge the officials of your agency, the JICA Advisory Committee and the Embassy of Japan in Vietnam for their support and valuable advice in the course of the Study.

We wish the report would contribute to the promotion and sustainable development of urban transport in Ho Chi Minh Metropolitan Area.

Very truly yours,

IWATA Shizuo

Team Leader

The Team for the Study on Urban Transport Master Plan and Feasibility Study in Ho Chi Minh Metropolitan Area

VOLUME 1: SUMMARY

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ACRONYM

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
AC	Asphalt Concrete
ADB	Asian Development Bank
APD	Architecture and Planning Department
ASEAN	Association of Southeast Asian Nations
ATC	Area Traffic Control
BOT	Build-Operate-Transfer
BR-VT	Ba Ria-Vung Tau
CAO	Chief Architect Office
CBD	Central Business District
CP	Counterpart
CPRGS	Comprehensive Poverty Reduction and Growth Strategy
DBST	Double Surface Treatment
DCI	Department of Culture and Information
DFID	Department for International Development
DLH	Department of Land and Housing
DOC	Department of Construction
DONRE	Department of Natural Resource and Environment
DOSTE	Department of Science and Technology
DOT	Department of Transport
DPI	Department of Planning and Investment
EIA	Environment Impact Assessment
E&M	Electronics and Mechanics
EIRR	Economic Internal Rate of Return
EPZ	Export Processing Zone
FIRR	Financial Internal Rate of Return
F/S	Feasibility Study
GDP	Gross Domestic Product
GIS	Geographical Information System
GOJ	Government of Japan
GOV	Government of Vietnam
GPS	Global Positioning System
GRDP	Gross Regional Domestic Product
HCM	Ho Chi Minh
HCMC	Ho Chi Minh City
HDI	Human Development Index
HEPZA	HCMC Export Processing and Industrial Zones Authority
HIS	Household Interview Survey
HOUTRANS	The Study on the Urban Transport Master Plan and Feasibility Study in HCM Metropolitan Area
HPI	Human Poverty Index
ICD	Inland Clearance/Container Depot
IRR	Internal Rate of Return
IT	Information Technology

ITS	Intelligent Transportation Systems
IWT	Inland Waterway Transport
IZ	Industrial Zone
JICA	Japan International Corporation Agency
JBIC	Japan Bank of International Cooperation
J/V	Joint-venture
HCMC-PC	Ho Chi Minh City People's Committee
IER	Institute of Economic Research
LED	Light Emitting Diode
LS	Learning Session
MOC	Ministry of Construction
MOCPT	Management and Operation Center of Public Passenger Transport
MOF	Ministry of Finance
MOT	Ministry of Transport
MPI	Ministry of Planning and Investment
M/C	Motorcycle
M/P	Master Plan
MRDR	Mekong River Delta Region
NESR	Northeastern South Region
NGO	Non Governmental Organization
NH	National Highway
NMV	Non-motorized vehicle
NPO	Non Profit Organization
NTSP	National Traffic Safety Program
OD	Origin-Destination
ODA	Official Development Assistance
O&M	Operation and Management
PC	People's Committee
PCU	Passenger Car Unit
PBSC	Public Benefit Service Companies
PLC	Public Lighting Company
PMU	Project Management Unit
PMU-IUT	Project Management Unit of Investment in Urban Transport
PPC	Provincial People's Committee
PPP	Public Private Partnership
PR	Provincial Road
PTP	Policy Test Project
RAO	Road Area Occupancy
RFID	Radio Frequency Identification
RND	Road Network Density
ROW	Right of Way
RR	Ring Road
SC	Steering Committee
SFEZ	Southern Focal Economic Zone
SOE	State-owned Enterprise
STRADA	System for Traffic Demand Analysis

S/W	Scope of Work
SWM	Solid Waste Management
TDSI	Transport Development Strategy Institute
TDM	Traffic Demand Management
TMU	Transport Management Unit
TSSV	Transport Science Society of Vietnam
TUPWS	Transportation and Urban Public Works Services
TWG	Technical Working Group
UMRT	Urban Mass Rapid Transit
UNESCO	United Nation Educational, Scientific and Cultural Organization
UNDP	United Nations Development Program
UPI	Urban Planning Institute
VC	Volume-Capacity
VCR	Volume-Capacity Ratio
VITRANSS	The Study on the National Transport Development Strategy in the Socialist Republic of Vietnam
VMS	Variable Message Signboard
VND	Vietnam Dong
VOC	Vehicle Operating Cost
VUTIP	Vietnam Urban Transport Improvement Project
VR	Vietnam Railway

Executive Summary

Scope of the Study

Objectives: The JICA-assisted “The Study on Urban Transport Master Plan and Feasibility Study in Ho Chi Minh Metropolitan Area” was conducted with the following main objectives:

- Formulation of a comprehensive Master Plan up to 2010 and 2020 for the urban transport system in the HCM metropolitan area, and a Short-term Action Plan up to 2005;
- Conduct of feasibility studies on selected priority projects; and,
- Conduct of technology transfer on database development, modeling, and plan formulation to the Vietnamese counterpart staff during the course of the study.

Study Area: The study covered the entire HCMC and the surrounding districts of Dong Nai, Binh Duong and Long An provinces from a regional development viewpoint. The study area has a population of 7.5 million, of which 5.3 million reside in HCMC.

Study Process: The study commenced in August 2002 and was completed in June 2004.¹ The study was conducted under a multilevel Steering Committee headed by the Vice Minister of Transport and the Vice Chairman of the HCMC People’s Committee and with the extensive involvement of the Vietnamese counterpart agencies through Technical Working Group meetings, a series of seminars, technical workshops, learning sessions, Task Force meetings on the Policy Test Project, training course on transport demand forecast and planning, and joint work with the direct counterparts coordinated by the TDSI-South and the TUPWS. As a result, these activities strengthened the Vietnamese side’s ownership of the study. In addition, the development of a set of updated database contributed to the successful completion of the study.

Urban and Transport Issues

Study Area in South Vietnam: The study area serves as a socio-economic hub not only for the southern region but for the entire country as well. The significance of the study area’s role in the region requires an effective integration of its urban transport system with the regional transport system. It will increasingly become important to strengthen the transport network in the study area for the city to become more competitive in the international market.

Socio-economy and Urban Development: The population of the study area is estimated to reach 13.5 million by 2020 (10.0 million for HCMC). Per capita GDP will increase from US\$ 1,400 to US\$ 4,000-5,000 (current Bangkok level) during the same period, and rapid, large-scale and long-term changes are foreseen in the society. Although Vietnam is said to have been successful in poverty alleviation, the income gap is reported to be expanding. If urbanization continues without an effective city planning, the quality of living environment and city services may deteriorate, and another gap may emerge in the quality of life of the citizens.

Motorization and Transport Demand: The total transport demand in the study area was estimated to be about 19.1 million trips a day (excluding 3.9 million walk trips); 13.4 million trips was accounted for HCMC only (also excluding 2.5 million walk trips). The study area is characterized by a high trip rate and extremely high ownership rate of motorcycles. In HCMC, 78% trips are by motorcycle while car usage is still low at 1.2 %. The share of private transport including that of bicycle (14%) thus becomes 93% which is unique in Asia countries in general.

¹ The Draft Final Report was submitted in March 2004.

Main Transport Components

Overall Situation: The transport system in the study area should be described not only in terms of infrastructural resources, such as ports, airports, railways and roads, but also in terms of function. Also, in light of the role of HCMC in the region, the linkage of the urban transport system with the regional transport system must be considered. The study area absolutely lacks transport infrastructure, and also has various problems such as deficient network, insufficient intermodal linkage, inadequate maintenance, and poor structural standards. An approach based on the development of transport infrastructure requires huge investments and a long period, in addition to land acquisition which has become increasingly more difficult.

To tackle the transport problem efficiently, a comprehensive approach is necessary where a number of measures are to be conducted at the same time, i.e. efficient use of existing infrastructure, demand management, effective network, intermodal integration, improved arrangement for development implementation, securing of stable fund source, etc. At present, road transport plays a dominant role in the study area, while the role of water transport and railway is insignificant.

Road Development: The study area has a road network with a total length of 1,250km. However, its quantity and quality are both insufficient. Road area occupancy is low, about 3% in the suburban areas in contrast to 10-20% in the central area.² The length of roads that have six lanes or more is only 73km. The roads in the central area and its vicinity, and major arterial roads including the national roads are paved and relatively well maintained. However, the roads in rural areas and local roads are in poor condition. Although road development is essential to construct a good urban area, land acquisition has become difficult³ and the fund source is limited⁴. Improvement of policy and strategy formulation is therefore needed.

Traffic Management: In addition to insufficient infrastructure development, which has brought about a number of problems relating to road itself, there are a variety of system shortcomings in terms of both hardware and software. The quality and quantity of enforcement, i.e. the human resources, are insufficient. Intersections, traffic signals, traffic signs/markings, pedestrian crossings, etc. need improvement. Traffic and parking controls are practiced to some extent, but are insufficient to rectify traffic and to ensure traffic safety. Information and education campaigns among the citizenry on traffic information and safety education are limited. Considering the rapid motorization and the change in vehicle composition (increase in cars), the improvement of traffic management and its operating capacity is an urgent issue.

Road-based Public Transport: Expansion and strengthening of public transport services in the study area is one of the determinants of the future urban transport system. The establishment of a bus system is the core issue that must be addressed as well as the development of a suitable set of policies. The public transport system in the study area is dominated by road-based services including ordinary buses (40-60 seats), lambro (11-12 seats), taxis, cycles (man-driven 3-wheel vehicles), and motorcycle taxis. The share of bus and lambro in the total transport demand is only 2% at present. The existing railway that is operated for inter-city travel northward from Saigon Station is not used for urban travel. Water transport is used locally only along rivers.

² Average road density is 3.95 km/ km². However, it is low at 0.48km/km² in five newly developed areas and at 0.29km/km² in the peripheral area. The gap between the central area and the suburbs is large.

³ In the ongoing East-West Highway Project, land acquisition cost is reported to be 40% of the total cost.

⁴ In 2000, the total transport expenditure was VND 900 billion, of which VND 360 billion was for maintenance. The expenditure for new development was about VND 540 billion.

Performance of Existing Urban Transport System⁵

Accessibility and Mobility: Based on the Household Interview Survey (HIS) conducted in 2002 in HCMC, 94% of households owned motorcycles (60% with two motorcycles or more) and 50% owned bicycles. Households with a monthly income of US\$ 500 or more owned three motorcycles on average. The situation was the same in the adjacent provinces (90% owned motorcycles and 40% owned two motorcycles or more). Thus, on an individual basis, more than 60% of people owned his/her transport means (motorcycle/bicycle). And even non-owners could use the vehicles of other household members or could be picked up and sent off by others. As a result, mobility for the population was considered high.

Citizen's Perception: The HIS showed that the citizen's perception on transport policy was different for various issues. The most important issues were considered to be "traffic safety", "roads and facilities", and "traffic enforcement" with over 40% rating. Relatively important issues were "travel conditions", "traffic control measures", "public transport service", and "air pollution from vehicles"; and less important issues were "walking condition", "parking at destination", and "parking at home". People's satisfaction with the different issues, however, did not correspond with the relative importance of the issues.

Traffic Safety: The number of traffic accidents is increasing. In 2001, HCMC accounted for 1,220 fatalities and 1,900 serious injuries with 2,500 accidents. Ninety-two percent (92%) of the causes were misconduct of motor vehicle drivers such as speeding, drunk driving, and reckless driving. Motorcycles accounted for 78% of the causes and 66% of victims of traffic accidents. Pedestrians shared 15% in the causes, but 17% in the victims. Bicycle's share in the causes was only 1.6%, but 11% in the victims. The major problems in relation to traffic safety included: (1) reckless behavior of drivers and pedestrians, (2) weak enforcement, (3) insufficient walking environment, (4) deficient reporting system and database of traffic accidents, and (5) lack of traffic safety education.

Environment: The major problem of air pollution arises in HCMC from exhaust gas of road traffic and various factories scattered in residential areas. More specifically, particulate matter (PM) and carbon monoxide (CO) from vehicles, PM from cement factories, sulfur dioxide (SO₂) from thermal power plants, and PM from other factories are the pollutants.

Traffic Congestion: In mega cities of developing countries, reduction in traffic congestion often becomes one of the most challenging policy issues, as economic loss due to congestion reportedly reaches 2-3% of GDP. Moreover, traffic congestion affects the poor more seriously, posing a social problem in addition to the economic losses. Congestion is considered to have negative impacts on people's health due to aggravation of air pollution. In HCMC, traffic congestion is still limited geographically and in terms of duration. Average travel time is short with a relatively high travel speed. More road users were satisfied or feeling "so-so" about this situation.

Policy Test Project

Policy Test Project (PTP): This project aimed to test a set of integrated measures designed to improve bus services and bus operating environment (refer to Table1), as well as to learn lessons for the formulation of the HOUTRANS bus transport development strategy. The PTP was carried out as a joint effort by the Study Team and the HCMC government agencies between August 2003 and October 2003.

⁵ Mainly based on the results of the Residents' Perception Survey in the HOUTRANS' HIS.

Test Corridor: Tran Hung Dao Street with a length of 5km was selected as the project corridor. It connects two major bus terminals of Ben Thanh in the urban center and Cho Lon in the suburban center. Existing Bus Route No.1 operating on this corridor was improved as the test bus route.

Table 1 Measures Implemented in the Policy Test Project

	Stage 1 (Aug.1 – Sep.14)	Stage 2 (Sep.15 – Oct.31)
Bus Operation	<ul style="list-style-type: none"> - Increase of frequency - Expansion of operating hours - Fixed departure time 	<ul style="list-style-type: none"> - Continuation of measures in Stage 1 - Introduction of air-con buses - Bus exclusive/priority lanes - Park and bus ride at terminal - Circular bus service in city center
Traffic Management & Enforcement	<ul style="list-style-type: none"> - Traffic management at major intersections - Prohibition of onstreet parking - Enforcement of traffic rules & driving behaviors 	<ul style="list-style-type: none"> - Continuation of measures in Stage 1 - Prohibition of 4-wheeled vehicles from narrow road section
Traffic Safety & PR of the Project	<ul style="list-style-type: none"> - On-site traffic safety campaign - PR on site and through TV and newspapers 	

Source: Study Team

Assessment: The implementation of the PTP provided a comprehensive examination of the project impact on bus operation, user experience, and corridor traffic condition. Major findings are highlighted as follows:

- The project as a whole was accepted and appreciated by the public including bus operators, passengers, road users, and roadside residents;
- The bus priority lane functioned and showed applicability for bus transport development;
- Bus service enhancements appealed to the people. As a result, the number of bus passengers increased by about 80% during the implementation of the PTP;
- Measures, such as improvement in marketing and enforcement, were effective and functioned well in promoting public transport and road safety.
- Park & Bus Ride facility provided convenience to people using bus transport but it was limited;
- Various minor intersection traffic measures functioned with moderate impact;
- Prohibition of on-street parking effectively supported the bus priority scheme.

Urban Transport Master Plan

Role and Structure of the Master Plan: The Transport Master Plan up to 2020 for the HCM metropolitan area not only depicts what the city should be by year 2020, but also lays down the path towards that future with the transport sector as the main driver. A set of coherent strategies was formulated to make the journey from the present to the future in a logical and sustainable manner. The Transport Master Plan comprises a long-term structural plan, a five-year short-term action plan, and a 10-year medium-term investment plan.

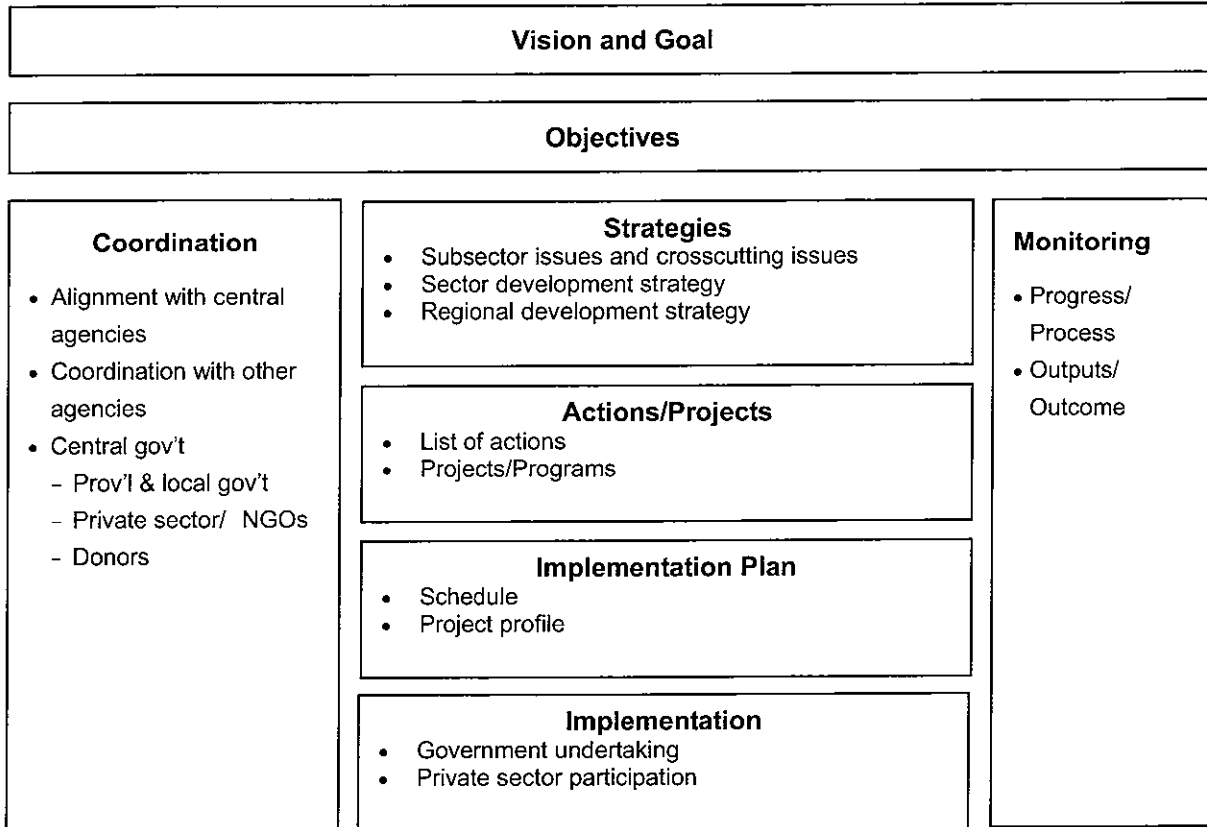
For this, a mechanism to integrate vision and actions and measures to monitor its process and to coordinate between related agencies were worked out (refer to Figure 1). In order to connect the vision with specific actions, seven basic objectives and 35 strategies were identified. Then, 105 particular actions and projects based on the strategies were proposed (refer to Table 2).

Vision and Goal: A bleak future can be expected for the study area, unless some strategic interventions are made along the way. Free-wheeling use of motorcycles and road space may still be tolerable for a small city, but not tenable in a conurbation of more than 10 million people with heightened expectations, active social lives, and diversified activities. An aging urban population

will also demand a different quality of transport services. The future HCMC should be livable as well as globally competitive and attractive for industries, leading Vietnam's international trade, and the transport sector must be designed to make that possible. The overall vision of urban transport is:

"Ensure mobility and accessibility to urban services that are vital for the people and the society by providing a transport system characterized by safety, amenity, and equity and sustained by an efficient public transport system"

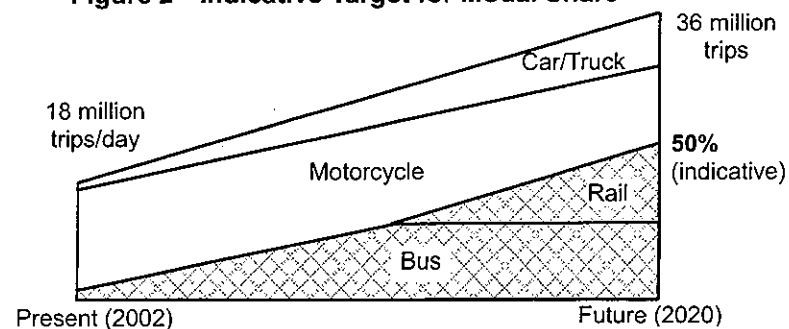
Figure 1 Structure and Components of the Transport Master Plan



Source: Study Team

Indicative Target for Modal Share: A combination of supply-type and demand-type strategies is required to alter, radically, the modal shares of transport along the lines of the conceptual diagram illustrated in Figure 2. It should be noted that the modal shift is indicative. If the 50% share for public transport is not attainable, the resulting plan would overestimate the requirement for bus-rail capacity, but underestimate vehicular volume on roads, thereby affecting the feasibility of many road projects.

Figure 2 Indicative Target for Modal Share



Source: Study Team

Table 2 Proposed Objectives, Strategies and Actions

Objective	Strategy	Action
A. Promotion of social understanding on present and future urban transport problems and issues at	A1 Conduct of consecutive transport campaigns	A11: Identification of stakeholders on key transport policies (traffic safety, bus promotion)
		A12: Establishment of implementation system in coordination with NGOs, civic groups and communities
		A13: Campaign on key policies and its monitoring
	A2 Expansion of transport education	A21: Traffic safety education at primary/secondary schools
		A22: Traffic safety campaign at community level
		A23: Expansion of traffic education to drivers
	A3 Strengthening of transport studies	A31: Strengthening of Transport Science Society of Vietnam (TSSV) and its activities
		A32: Strengthening of transport study in colleges and research institutes
		A33: Holding of domestic and international symposia and seminars on transport issues
	A4 Implementation of Policy Test Project	A41: Extension of policy test project (bus corridor development)
		A42: Conduct of Policy Test Project on TDM (D53)
		A43: Model program on integrated urban & transport development (B43)
	A5 Information disclosure	A51: Establishment of transport information system
		A52: Establishment and operation of website
		A53: Publicity through mass media
B. Management of sustainable urban growth and development	B1 Policy coordination within metropolitan area	B11: Establishment of Metropolitan Transport Conference (tentative)
		B12: Integration of planning between regional and urban transport
		B13: Integration of spatial planning between HCMC and adjoining provinces
	B2 Integration of city M/P and transport M/P	B21: Establishment of urban planning system
		B22: Integration of city M/P and transport M/P
		B23: Institutionalization of integrated M/P
	B3 Development of systematic road network	B31: Establishment of hierarchical road system
		B32: Strategic development of arterial road system (RRs, expressways, primary and secondary roads)
		B33: Establishment of effective development method for road projects
	B4 Promotion of integrated urban & transport development	B41: Establishment of development method
		B42: Integrated urban development with mass transit development
		B43: Conduct of pilot projects (A43)
	B5 Guidance for ideal urban development	B51: Improvement of development permission system
		B52: Introduction of traffic impact assessment
		B53: Establishment of method to improve residential environment in high-density built-up area
C. Promotion and development of attractive public transport	C1 Development of mass transit system	C11: Formulation of long-term mass transit development plan
		C12: Establishment of modal policy
		C13: Establishment of development method of mass transit system
	C2 Development Bus transport system	C21: Establishment of bus operating business system
		C22: Development of bus corridors
		C23: Strengthening of bus operation and management capacity
	C3 Exploitation of para-transit and NMVs	C31: Establishment of management system
		C32: Improvement of supporting infrastructure/facilities
		C33: Supporting system for small-scale operators/drivers
	C4 Exploitation of water transport system	C41: Actual condition survey and database development
		C42: Improvement of water transport infrastructures and river environment
		C43: Promotion of water transport for local and tourism transport
	C5 Promotion of public transport use and expansion of services	C51: Formulation of subsidiary policy for public transport users
		C52: Expansion of bus services for students and workers
		C53: Introduction of new services
D. Effective Management of Traffic and Demand	D1 Establishment of comprehensive management system for motorized vehicles	D11: Improvement of vehicle registry system and introduction of information technology (IT)
		D12: Review of registration fee and user charges
		D13: Adjustment of production quantity
	D2 Strengthening of traffic regulation & management	D21: Improvement of traffic regulation and management
		D22: Strengthening of capacity of traffic enforcers (training system)
		D23: Strengthening of coordination with communities & NGOs
	D3 Effective response to freight transport	D31: Actual condition survey and database preparation
		D32: Formulation of measures for port-related transport
		D33: Formulation of measures on overloaded trucks
	D4 Establishment of parking policy	D41: Conduct of actual condition survey and database preparation
		D42: Establishment of provision mechanism for parking space
		D43: Establishment of policy on parking fee
	D5 Introduction of TDM	D51: Specification of TDM measures
		D52: Establishment of organizational setup for implementation of TDM
		D53: Conduct of Policy Test Project on TDM (A42)

(Continuation of Table 2)

Objective	Strategy	Action
E. Comprehensive development of transport space and environment	E1 Management of transport corridors	E11:Preparation of planning manual
		E12:Regulation of roadside use and development
		E13:Establishment of corridor management system
	E2Improvement of transport environment for pedestrian and bicycle users	E21:Actual condition survey and database preparation
		E22:Formulation of Green Network Plan
		E23:Specification for facility and design standards
	E3Redistribution of transport space & improvement of traffic environment in city center	E31:Transport system planning for the city center
		E32:Establishment of transport management system for the city center
		E33:Pilot project on transport management in the city center
	E4Alleviation of air pollution	E41:Establishment of environmental guidelines
		E42:Formulation of measures to reduce air pollution sources
		E43:Improvement of fuel quality
	E5 Establishment of district transport development strategy	E51:Establishment of District Transport Plan
		E52:Development and management system for intradistrict transport infrastructures
		E53:Establishment of provision system for intradistrict transport services
F. Enhancement of traffic safety	F1 Establishment of traffic safety audit system	F11:Preparation of guidelines
		F12:Human resource development for audit system operation
		F13:Establishment of Traffic Safety Audit System
	F2 Improvement of traffic accident black spots	F21:Establishment of traffic accident database
		F22:Identification of black spots and improvement guideline preparation
		F23:Improvement and monitoring of black spots
	F3 Improvement of licensing & vehicle inspection system	F31:Conduct of actual condition survey
		F32:Improvement of licensing system
		F33:Improvement of vehicle inspection system
	F4 Strengthening of traffic enforcement system	F41:Improvement of enforcement skills
		F42:Strengthening of penalty and fine systems
		F43:Strengthening of coordination with NGOs and NPOs
	F5 Strengthening of first aid system	F51:Conduct of actual condition survey
		F52:Strengthening of emergency contact and communication system
		F53:Strengthening of transport and receiving system for emergency patients by emergency care service
G. Strengthening of transport sector administration and management capacity	G1 Reform of transport-related organizations	G11:Implementation of institutional reform
		G12:Conduct of personnel training program
		G13:Introduction of IT
	G2 Promotion of private sector participation	G21:Improvement of competitive conditions
		G22:Expansion of project area for private sector
		G23:Establishment of support system for private sector
	G3 Improvement of Infrastructure development & management system	G31:Establishment of public-private partnership (PPP) scheme
		G32:Expansion of maintenance system
		G33:Fostering of local consulting firms and construction industry
	G4 Strengthening of planning capacity	G41:Conduct of transport surveys and update of Karte
		G42:Fostering of transport planners
		G43:Review of planning and design standards
	G5 Securing of development fund	G51:Dissemination of user's pay principle
		G52:Expansion of public funding capacity
		G53:Effective use of ODA

Source: Study Team

Master Plan Transport Network and Projects

Master Plan Network: Based on the analysis of a series of alternative scenarios including modal share as well as network configuration, a future transport network was formulated. In this network, the following were assumed to be guaranteed through adequate policy intervention: (a) public transport would share 50% of the total demand; (b) buses would be operated efficiently with a high load factor; (c) car use would be limited to more or less 20% of total traffic demand; (d) basic traffic management and maintenance would be practiced adequately; and (e) there would be no serious traffic bottleneck in the network.

The Master Plan network will be composed of roads, including at-grade primary and secondary roads, and elevated urban expressways, as well as mass transit systems including urban rail and

busway. The Master Plan network will have 703km of new roads covering 238km of primary roads, 419km of secondary roads, 46km of urban expressways, and 138km of mass transit lines (refer to Table 3 and Figure 3).

Network Performance: The likely traffic conditions and transport situation when the Master Plan network would be completed was simulated using the model. While total demand would increase from 3.1 million PCU-trips to 7.3 million or 2.4 times between 2002 and 2020, PCU-km and PCU-hours would increase 2.8 times and 2.5 times, respectively. This means people would have to travel longer and spend more time traveling. Overall traffic congestion level would increase from 0.7 to 0.9, but average travel speed would be expected to increase due to network improvement and development of high-standard roads such as urban expressways and ring roads. With this improved network, the distance people could reach from the city center would also lengthen.

Composition of Master Plan Projects: The Master Plan projects were worked out based on the network study and the identified actions to form main packages of projects and programs for implementation. The Master Plan projects cover infrastructure, transport and traffic operation and management, institutional development, integrated urban development, and so on. The selected projects are mainly of the infrastructure type because the required financial resource is large. The Master Plan includes both ongoing/committed projects and new ones.

Committed Infrastructure Projects: Committed infrastructure projects, including ongoing projects in the study area, are mainly roads. They were deemed as essentially unalterable under the Master Plan.

New Projects Proposed in the HOUTRANS: Major projects/programs proposed in the study are broadly categorized into four groups: roads, traffic management, public transport development, and transport environment program. A total of 16 projects were prepared.

Total Estimated Costs: The estimated total costs of the Maser Plan projects/programs would be about US\$ 14 billion.

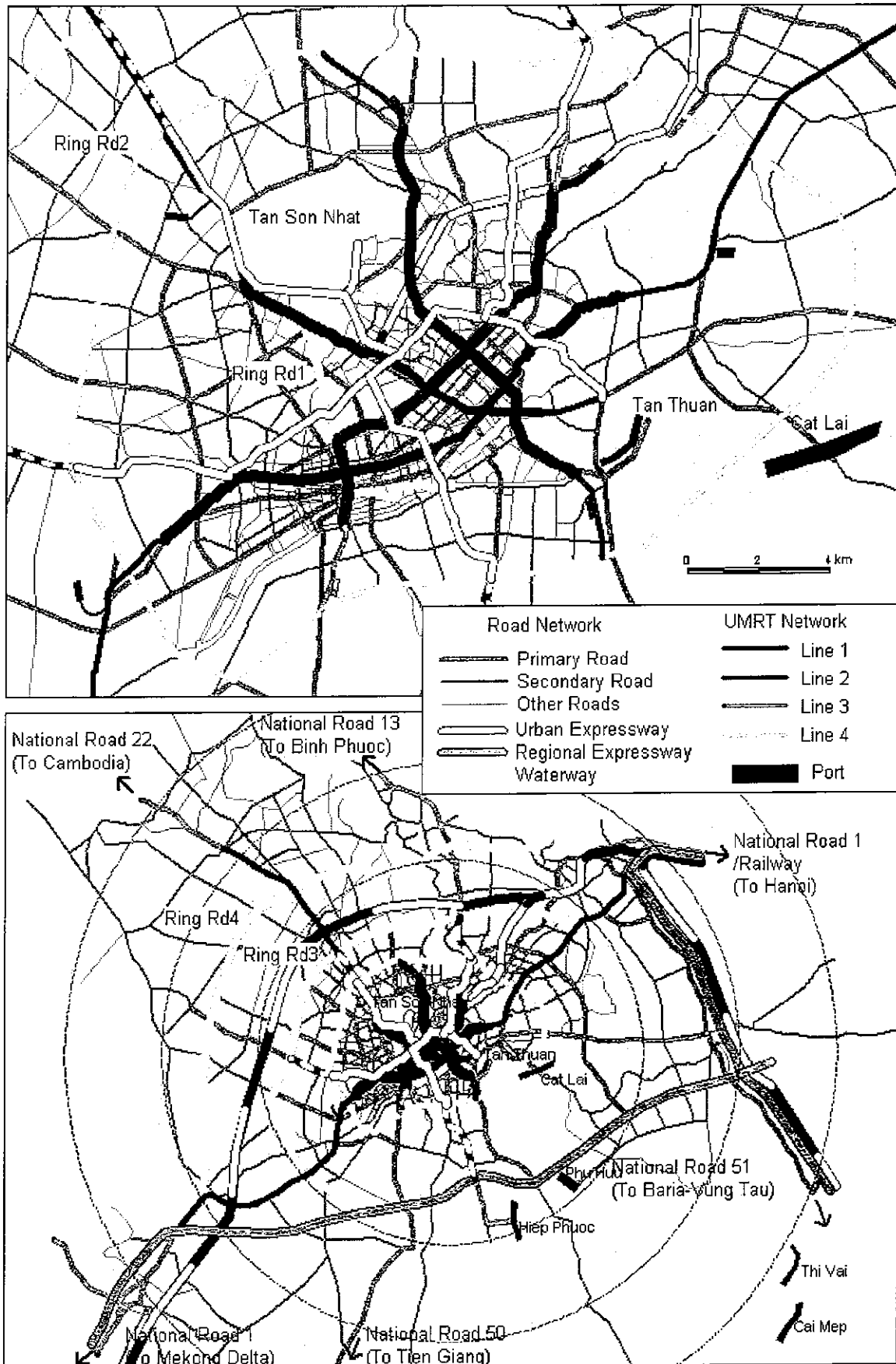
Table 3 Roads and UMRT Development by 2020

Area	Infrastructure		2002 (km)	M/P Project		2020 (km)	Increase	
				Widen- ing ¹⁾	New		km	Ratio 2020/2002
HCMC	Road	Primary	206	113	128	476	271	2.3
		Secondary	309	213	251	647	338	2.1
		Urban EXP.	-	-	46	46	46	-
	UMRT		-	-	106	106	106	-
Adjoining Provinces	Road	Primary	185	27	110	295	110	1.6
		Secondary	297	172	168	569	272	1.9
	UMRT		-	-	32	32	32	-
Study Area Total	Road	Primary	391	140	238	771	380	2.0
		Secondary	606	385	419	1,216	610	2.0
		Urban EXP.	-	-	46	46	46	-
	UMRT		-	-	138	138	138	-

Source: Study Team

¹⁾ Includes roads reclassified and upgraded from a lower to a higher category due to widening.

Figure 3 Proposed Master Plan Network



Source: Study Team

Table 4 Ongoing and Proposed Major Projects in the Master Plan

Project / Program		Description (Action) ¹⁾	Estimated Cost (US\$ mil.)
Road	(1) Primary	38 roads with 382km (B3, D3)	3,361
	(2) Secondary	A total of 757km (B3)	2,656
	(3) Urban Expressway	7 sections with 26km (B3)	1,861
	(4) Flyover	53 locations (B3)	1,401
Traffic Management	(5) Capacity Building	Training, equipment, etc. (A1, D2)	10
	(6) CBD Traffic Management	Traffic signals, parking, pedestrian path, transit mall etc. (A1, A42, D2, D4, D5, E2, E3)	100
	(7) Bus Corridor Management	Channelization, pavement, bus facilities, road space reorganization, etc. (A41, C22, D3, E1)	50
Public Transport	(8) Urban Rail	4 routes with 82km (C1)	2,850
	(9) Busway	3 routes with 57km (C1)	173
	(10) Bus Modernization	Bus fleet, management system (A1, C2, C3, C5)	222
	(11) Transit Terminal	UMRT, inter-city bus etc. (A43, B4, C1, C2)	200
Transport Environment	(12) Urban Water Transport	Terminal, vessels (C4)	10
	(13) Local Traffic Improvement	Traffic management, facilities, pavement, feeder transport etc. (E5, G5)	300
	(14) Green Network	Pedestrian path, street lighting, trees, street furniture etc. (E2, E3)	20
	(15) Air Quality Improvement	Monitoring facilities vehicle inspection etc. (E4)	20
	(16) Traffic safety	Campaign, drivers education (A1, A2, A41, F1, F2, F3 F4, F5)	20
Total			13,254

Source: Study Team

Table 5 Summary of Investment Cost of Master Plan Projects

Category	Cost		
	VND bil.	US\$ mil.	%
A. Ongoing and Committed Projects	12,570	811	5.8
B. New Projects	1) Roads	143,825	66.0
	2) Traffic Management	2,480	1.1
	3) Public Transport	53,553	24.5
	4) Transport Environment	5,580	2.6
Total	218,008	14,065	100.0

Source: Study Team

Table 6 Possible Funding Sources

Item		US\$ billion
Estimated Fund Requirement 2004-2020	1) HOUTRANS Master Plan	14.0
	2) Other work (30% of 1)	4.2
	Total	18.2
Possible Fund Source 2004-2020	1) Existing Funding Mechanism ¹⁾	1.9-4.7
	2) Private Sector Participation	
	• Urban expressway (40%)	0.7
	• UMRTs (40%)	1.2
	• Secondary roads (20%)	0.5
	3) Economic Measures on TDM	
	• Increase in vehicle registration fee	
	US\$ 300 for motorcycles	1.0
	US\$ 3,000 for cars	7.9
	• Increase in parking fee ²⁾	
VND 3,500 for motorcycle	3.9	
VND 6,000 for cars	1.9	
• Area licensing ³⁾		
VND 7,500/entry for motorcycles	0.3	
VND 15,000/entry for cars	0.8	
• Increase in fuel price (1.5 times) ⁴⁾	2.1	
Total	21.3-24.1	

Source: Study Team

1) 1.25% of HCMC's GDP (2004-2020).

2) ½ of motorcycles and cars.

3) Includes 11 districts in the city center (districts 1,3,5,10,11& part of 6).

4) From US\$ 0.37/liter to US\$ 0.56/liter.

Figure 4 Location of Primary Road Projects



Source: Study Team

Figure 5 Location of Secondary Road Projects



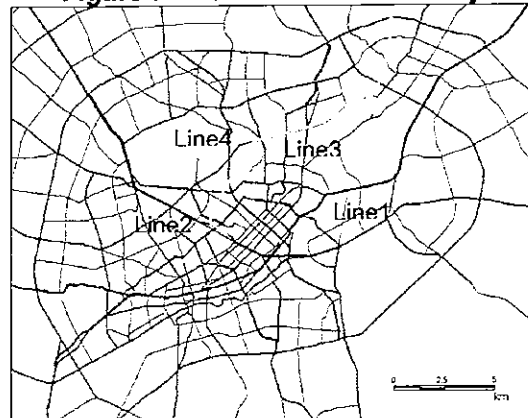
Source: Study Team

Figure 6 Location of Urban Expressway Projects



Source: Study Team

Figure 7 Location of UMRT Projects



Source: Study Team

Feasibility Study on Ring Road No.2

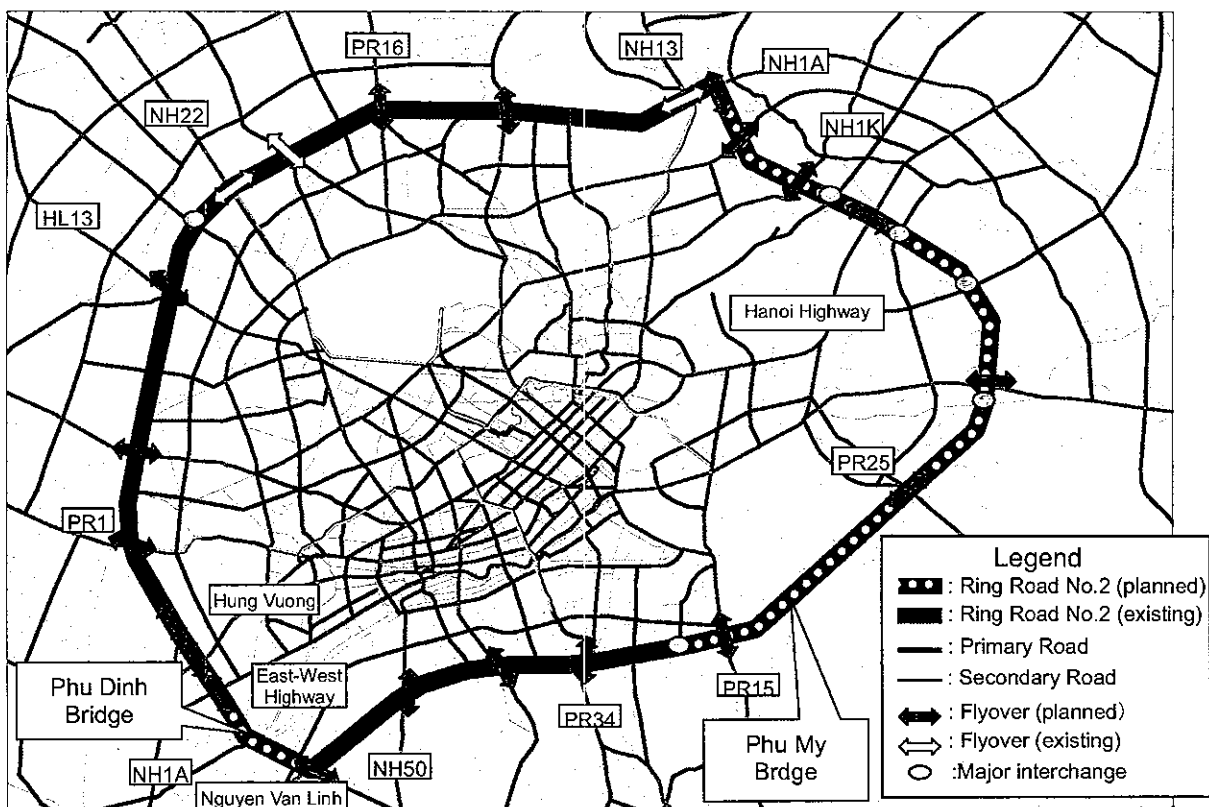
Ring Road No.2 (RR2) is a priority project of the city authority. It will form the first high-standard ring road by completing missing links in order to connect the existing National Highway No.1 and the road network in southern HCMC. RR2 when completed is expected to function as the backbone in the future expanded urban area. This road is extremely important both from the transport and urban development viewpoints.

From the transport viewpoint, it will prevent industrial traffic to/from factories and ports from using the roads in the city center. From the urban development viewpoint, it will provide ample opportunities for new developments along the road, especially new urban centers in the areas where the ring road intersects with major radial corridors. The ring road will give a great opportunity to encourage the development of a polycentric urban structure. The project is composed of the following components:

- (a) New construction of eastern section (23.5km including Phu My Bridge)
- (b) Widening of southwestern section (5.0km including Phu Dinh Bridge)
- (c) Construction of flyovers (a total of 11 locations)

Traffic demand in 2020 was estimated to be 70-100 thousand PCUs/day in the east section. The entire RR2's basic cross-section was designed to have six lanes and service roads. While the total project cost to complete RR2 amounted to US\$ 1,272 million, the priority sections (missing links in the east and southwest sections) alone would require US\$ 882 million. The project is economically viable, generating an EIRR of 29%. The adoption of an appropriate public-private partnership (PPP) scheme was proposed, wherein the private sector will invest a part of the project.

Figure 8 Ring Road No.2 Project



Source: Study Team

Feasibility Study on UMRT Line1 (East)

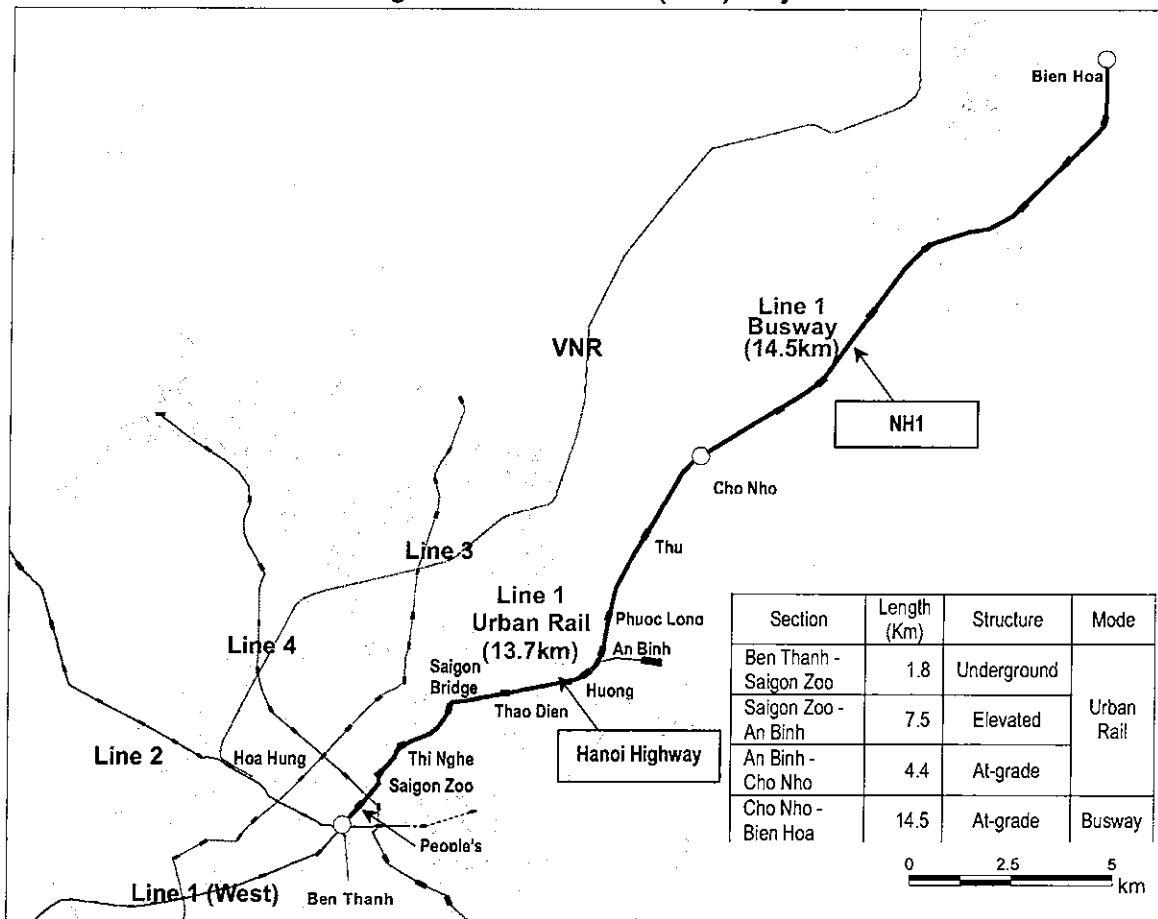
While the ring road will create a new corridor, the Urban Mass Rapid Transit (UMRT) Line 1 is meant to expand passenger capacity along an existing and well-established corridor that links HCMC and Bien Hoa City, the capital of Dong Nai province where industrial activities are concentrated. The corridor is expected to function as a vital link between two major urban centers and other economic and population subcenters in-between.

UMRT Line 1 will provide a high-quality and high-capacity public transport system serving as the backbone of a public transit network. The project is composed of the following:

- (a) Urban rail segment between Ben Thanh and Cho Nho (13.7km) which will initially be developed as a busway before being upgraded into a railway.
- (b) Busway segment between Cho Nho and Bien Hoa (14.5km), operating harmoniously with the rail component.

The ridership of urban rail and busway in 2020 was estimated at 526,000 and 240,000 passengers a day, respectively. Based on the estimated demand, natural conditions, roadside conditions and social environment, preliminary engineering design of facilities of urban rail, busway, depot, terminals, etc. and operation plan were conducted. The total project cost was estimated at US\$ 710 million (operation and maintenance cost was US\$ 7.4 million a year). The project is economically viable, generating an EIRR of 20%. The adoption of an appropriate PPP scheme to minimize the risk of the private sector was proposed.

Figure 9 UMRT Line1 (East) Project



Source: Study Team

1 INTRODUCTION

1) Study Objective and Study Area

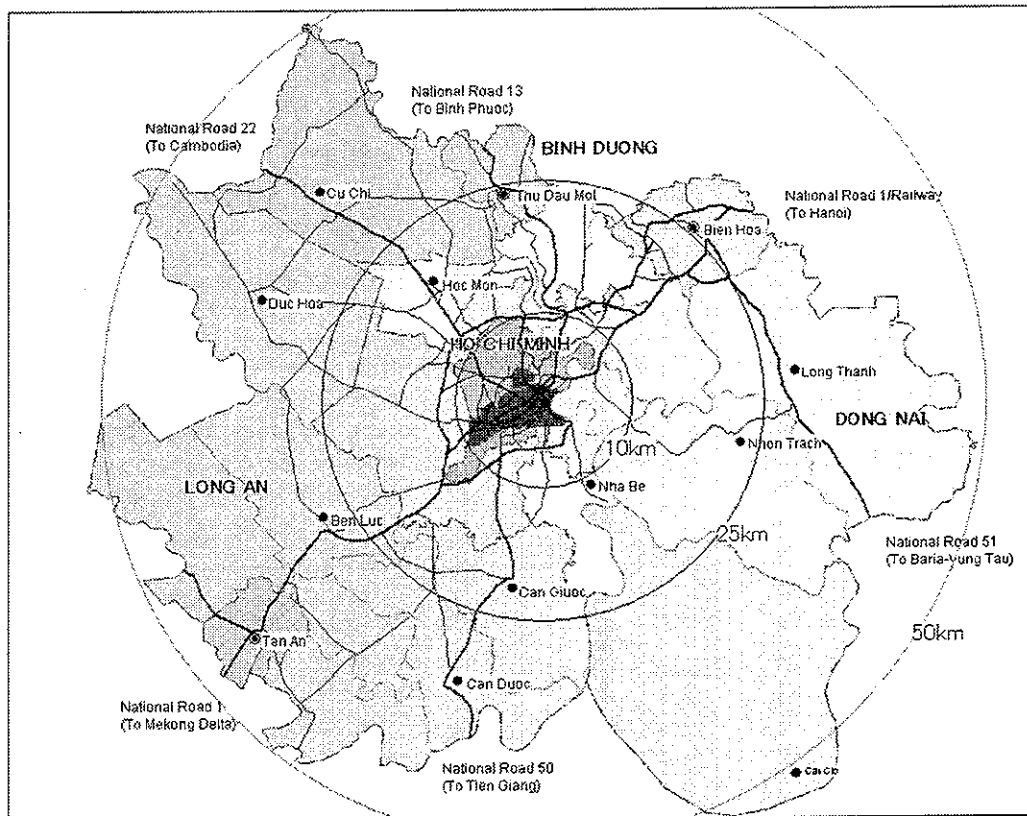
Objective: The overall goal of the study, entitled “The Study on the Urban Transport Master Plan and Feasibility Study in Ho Chi Minh (HCM) Metropolitan Area” (HOUTRANS), was to formulate a long-term strategy to ensure mobility and accessibility for the people and to propose concrete measures and actions that will provide the targeted level of urban transport services. The objective is broken down into three operative objectives, to wit:

- (1) To formulate a comprehensive master plan up to 2010 and 2020 for the urban transport system in the HCM metropolitan area;
- (2) To formulate a Short-term Action Plan up to 2005 based on the Master Plan and to conduct a feasibility study on selected priority project(s); and,
- (3) To conduct technology transfer on database, modeling and plan formulation to the Vietnamese counterpart staff during the course of the study.

Study Area: The study area is composed of: (a) HCM City (HCMC), (b) districts of adjacent provinces which form or will form part of the metropolitan area, and (c) other areas related to (a) and (b) from a regional development viewpoint.

In particular, the study area covered the entire HCMC and three districts of Dong Nai province, two districts of Binh Duong province and eight districts of Long An province. Based on the 1999 census, the study area had a population of 7 million, of which 5 million resided in HCMC (see Figure 1.1).

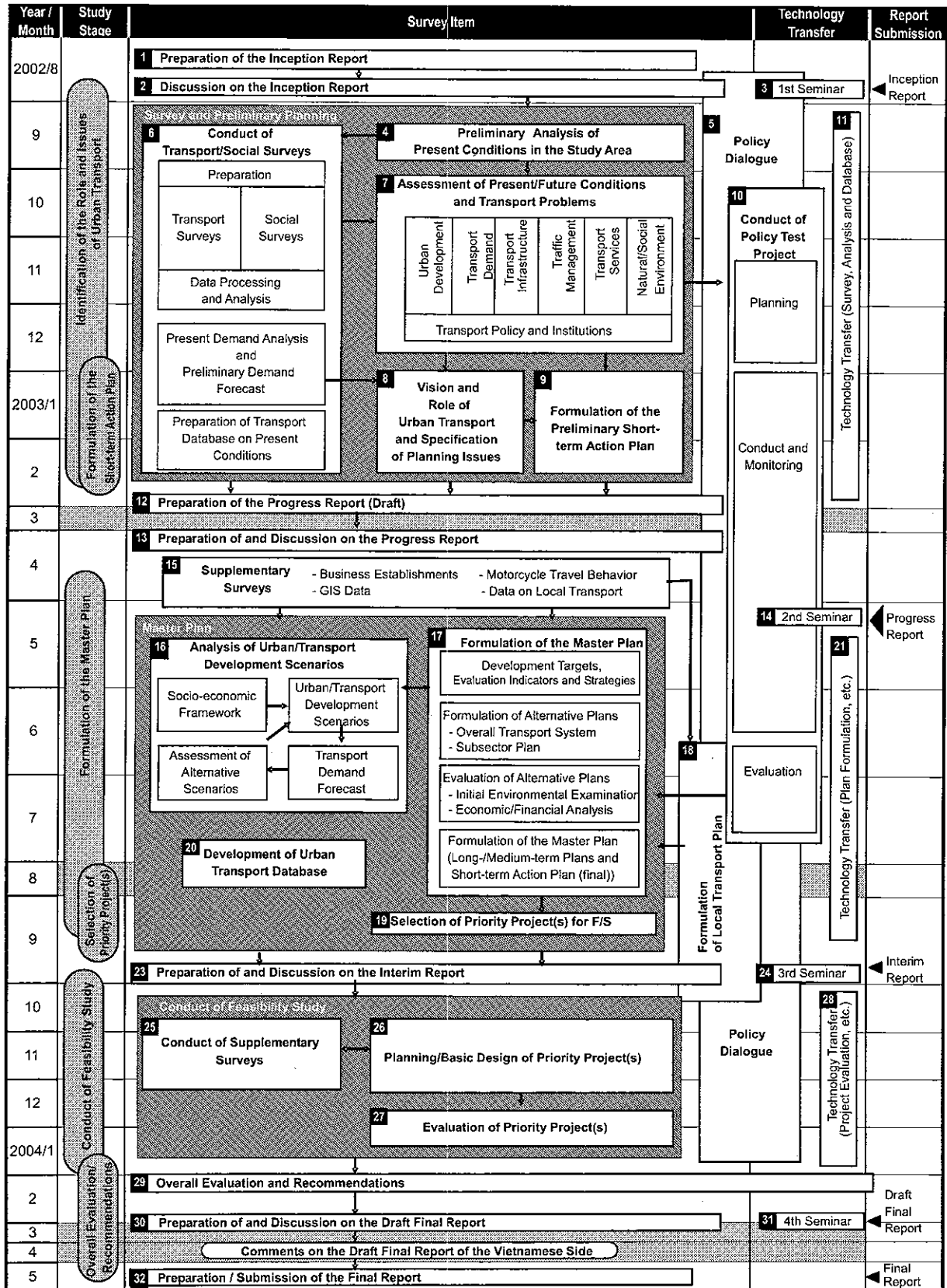
Figure 1.1 Study Area Boundary



Source: Study Team

Study Schedule and Framework: The study commenced in August 2002 and ended in May 2004. The scope of the study included the entire transport and traffic system of the study area with the exception of internal distribution of goods, solid waste, etc. The overall framework of the Study is shown in Figure 1.2.

Figure 1.2 Overall Study Framework

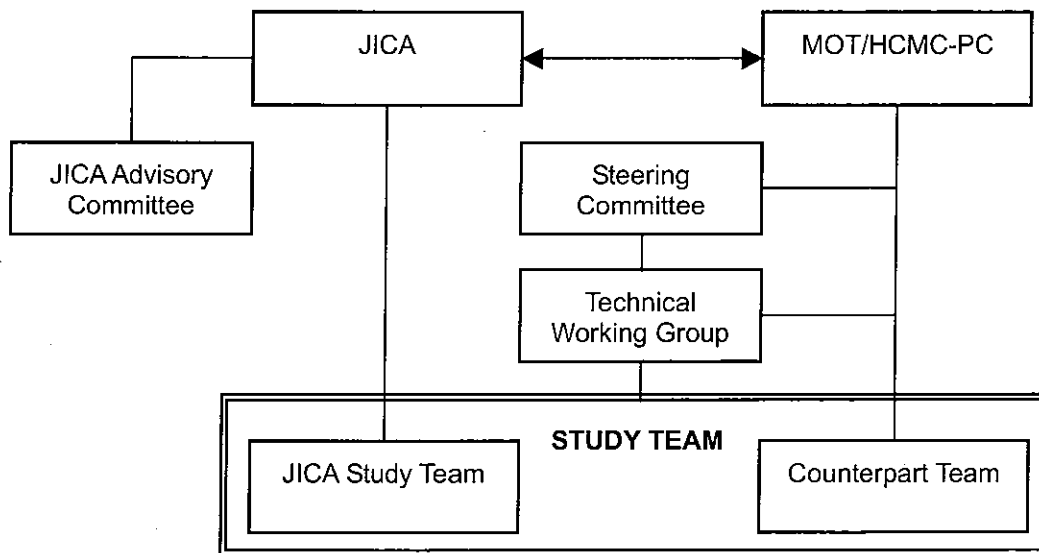


2) Study Organization and Implementation

Study Implementing Organization: The study organization was composed of the JICA Advisory Committee and the JICA Study Team on Japan's side and the Steering Committee (SC), Technical Working Group (TWG), and the Counterpart (CP) Team on Vietnam's side (refer to Figure 1.3 and **Appendix 1**).

Coordination and involvement of the Vietnamese side were significant during the course of the study. There have been regular discussions with the SC, TWG and CP, while various related agencies have been directly involved in the study. As of the end of January, a total of four, nine and 55 SC, TWG and CP meetings, respectively, were conducted.

Figure 1.3 Study Organization



Source: Study Team

Seminars / Workshops: Workshops and seminars were organized frequently on specific planning issues in order to discuss them in detail with all related persons (refer to **Appendix 1**). Resulting discussions and suggestions were incorporated in the study.

Intensive Training in Demand Forecasting: An intensive training in demand forecasting was conducted for Counterpart Team members and TDSI staff on 14-16 January 2004 and 13-20 February 2004.

Website and Newsletter: In addition to the above activities, the Study Team developed a website (<http://www.houtrans.org>) and published three issues of the newsletter "HOUTRANS" in English and Vietnamese.

2 CURRENT TRANSPORT SITUATION, PROBLEMS AND ISSUES

2.1 Generation of Transportation

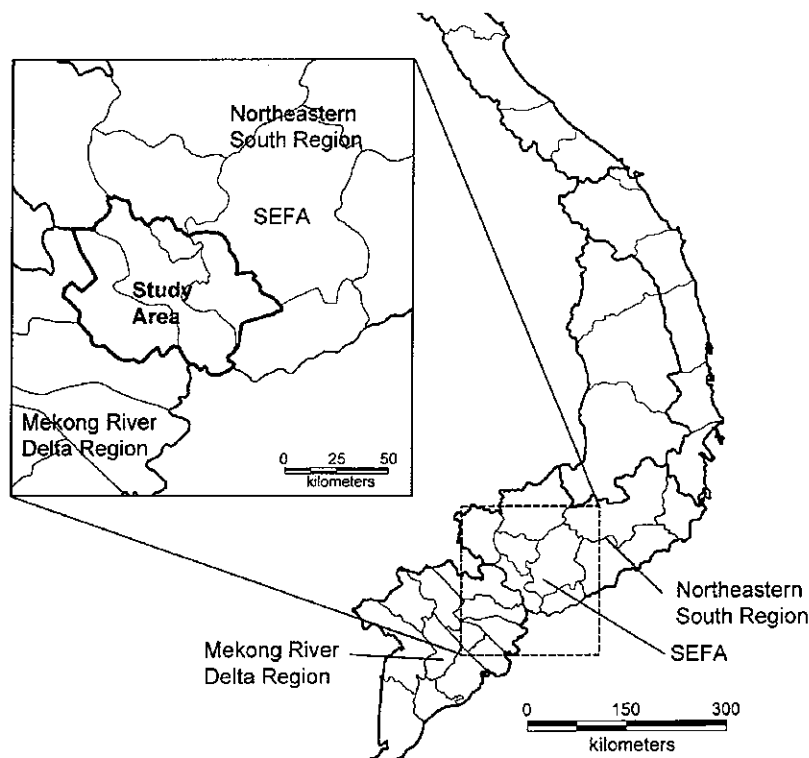
1) Study Area in the Southern Region

The study area serves as a socio-economic hub not only for the southern region but for the entire country as well. The significance of the study area's role in the region requires an effective integration of its urban transport system with the regional transport system. It will increasingly become important to strengthen the transport network in the study area for the city to become more competitive in the international market.

Development Core of Vietnam and the Southern Focal Economic Zone (SFEZ): The SFEZ functions as the growth engine of the Vietnamese economy. The study area forms the core of the SFEZ, and leads the development and growth of the region including the less developed Mekong River delta region and the central highlands by strengthening these areas' linkage with the region.

Integration of Inter-city and Urban Transport Systems: It is not only necessary to tackle the transport problems of the area itself but also to address transport development on the regional level to promote the growth of the whole region. More specifically, the integration of the urban transport network with the inter-city network as proposed in "The Study on the National Transport Development Strategy in the Socialist Republic of Vietnam" (VITRANSS) and the improved accessibility to the international transport hubs (ports, airport, industrial estates, inland container/clearance depots or ICDs, etc.) are necessary.

Figure 2.1 Location of Study Area in the Region



Source: Study Team

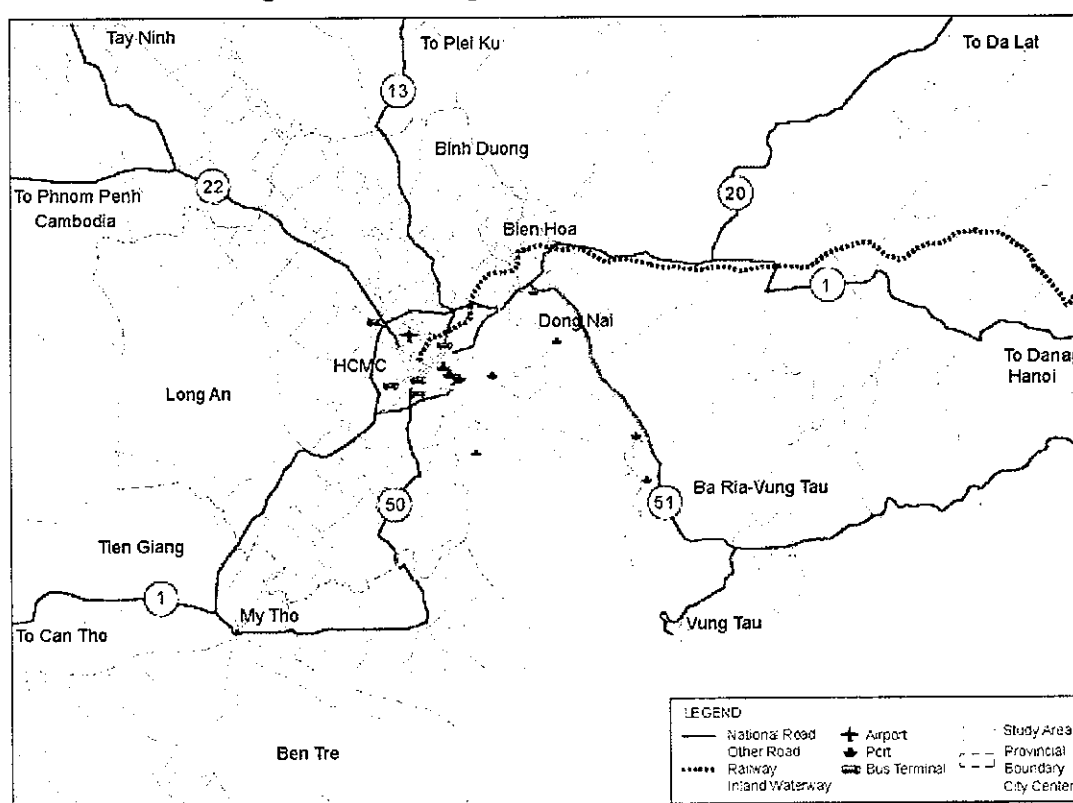
Table 2.1 Socio-economic Indicators by Area

Area		Population			Economy ⁵⁾		Industry Structure (%)			Social Aspect ⁶⁾	
		1995 (000)	2001 (000)	Growth Rate (%/year)	GDP ⁵⁾ (VND Bil.)	Per Capita GDP (VND 000)	Primary	Secondary	Tertiary	HDI	HPI
Study Area	HCMC	4,640	5,285	2.2	52,342	9,904	1.9	46.0	52.1	0.798	10.6
	Adjoining Areas ¹⁾	1,949	2,193	2.0	9,282	4,233	26.2	43.3	30.5	-	-
	Total	6,589	7,478	2.1	61,624	8,241	5.6	45.6	48.8	-	-
SEFZ ²⁾		7,833	9,052	2.4	85,862	9,485	4.9	56.7	38.4	-	-
Northeastern South Region ³⁾		10,695	12,362	2.4	95,112	7,694	8.7	53.1	38.2	0.751	14.8
Mekong River Delta Region ⁴⁾		15,532	16,519	1.0	55,365	3,352	40.7	22.2	39.1	0.669	25.5
Vietnam Total		71,996	78,686	1.5	273,582	3,477	23.1	35.9	39.1	0.696	20.1
Share of Study Area	SEFZ	84	83	-	72	-	-	-	-	-	-
	NESR+MRDR	25	26	-	41	-	-	-	-	-	-
	Vietnam	9	10	-	23	-	-	-	-	-	-

Source: Worked out by the Study Team based on various data.

- 1) including 3 districts of Binh Duong, 3 districts of Dong Nai and 8 districts of Long An.
- 2) including the 4 provinces of HCMC, Binh Duong, Dong Nai and Ba Ria - Vung Tau (BR-VT)
- 3) including the 8 provinces of HCMC, Binh Duong, Dong Nai, Ninh Thuan, Binh Phuoc, Tay Ninh, Binh Thuan, BR-VT
- 4) including the 12 provinces of Long An, Dong Thap, An Giang, Tien Giang, Vinh Long, Ben Tre, Kien Giang, Can Tho, Tra Vinh, Soc Trang, Bac Lieu and Ca Mau
- 5) at constant 1994 prices
- 6) HDI (Human Development Index) is an indicator of quality of human life, combining average life, level of education and income level. HPI (Human Poverty Index) is an indicator to show poverty, illiteracy, unemployment and average life.

Figure 2.2 Existing Transport Network in the Region



Source: Study Team

2) Socio-economic and Urban Development Characteristics

The population of the study area is 7.5 million at present (5.3 million for HCMC alone), and is estimated to reach 13.5 million by 2020 (10.0 million for HCMC). Per capita GDP will increase from US\$ 1,400 to US\$ 4,000-5,000 (current Bangkok level) during the same period, and rapid, large-scale and long-term changes are foreseen in the future. Vietnam is said to have been relatively successful in poverty alleviation. However, the income gap between the rich and the poor is reported to be expanding. If urbanization continues without effective city planning, the quality of the living environment and city services may deteriorate, and another gap may emerge in the quality of life of the citizens. Transportation can contribute to improve this situation in two (2) aspects. One is by providing well-planned roads and mass transit systems to improve urbanization and city structure, and the other is by supporting socio-economic activities of the citizens through the efficient provision of better transport services. These impacts are noticeable in both short and long terms.

Rapid Increase in and Aging of Population: The study area includes 9.5% of the national population. The annual population increase of 2.1% is higher than the national figure of 1.5% and is expecting to accelerate further because of migration. Aging of the city population is progressing.

Economic Growth and Income GDP: Per capita gross domestic product (GDP) of HCMC is about three (3) times the national average. Its growth is remarkable and leads the national economy, while the income gap between provinces and cities is feared to have become more serious.

Relatively Few Urban Poor: The percentage of the poor is relatively low at 3-5% in HCMC.¹ The 2002 HOUTRANS person-trip survey revealed that the ownership rate for motorcycles was 91%. Although the poverty ratio is decreasing every year, actions to further reduce poverty will be further needed considering the expected large population inflow in the future.

Table 2.2 Population Growth in the Study Area

Year	Population (000)					Population Growth (%/year)				
	HCMC	Adjoining Area			Study Area Total	HCMC	Adjoining Area			Study Area Total
		Binh Duong	Dong Nai	Long An			Binh Duong	Dong Nai	Long An	
1989	3,924	-	-	-	-	-	-	-	-	-
1995	4,640	316	697	936	6,589	2.8	-	-	-	-
1996	4,749	325	715	946	6,735	2.3	2.8	2.6	1.1	2.2
1997	4,853	335	731	957	6,876	2.2	3.1	2.2	1.2	2.1
1998	4,958	346	748	969	7,021	2.2	3.3	2.3	1.3	2.1
1999	5,064	357	765	983	7,169	2.1	3.2	2.3	1.4	2.1
2000	5,175	363	788	996	7,322	2.2	1.7	3.0	1.3	2.1
2001	5,285	381	803	1,009	7,478	2.1	5.0	1.9	1.3	2.1

Source: Statistical Yearbooks of HCMC, Binh Duong, Dong Nai, and Long An

¹ Save the Children (UK), "A Participatory Poverty Assessment – HCMC", 1999.

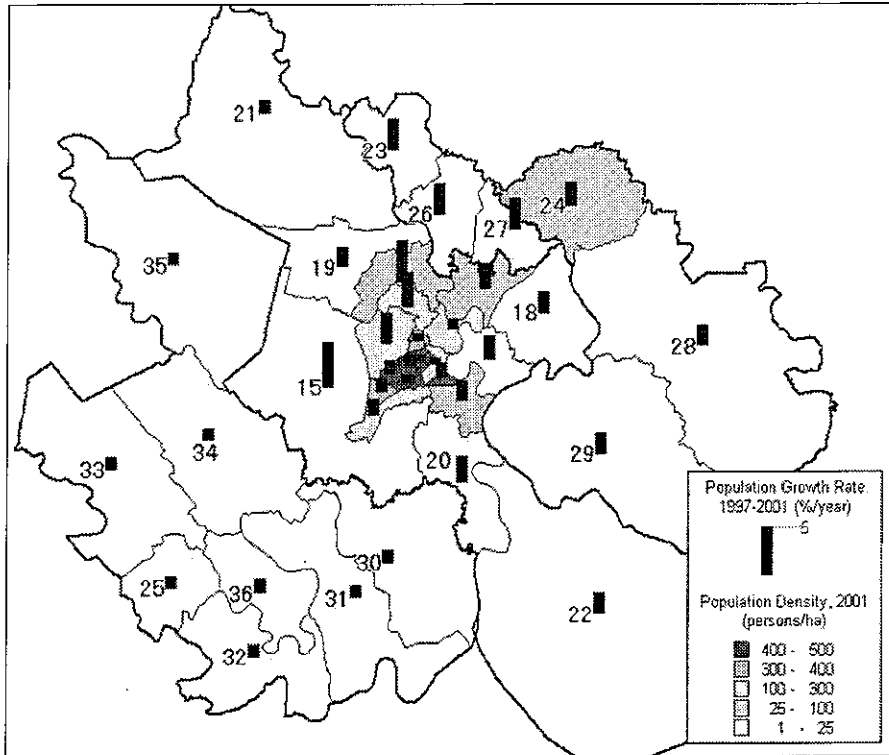
Formation of Metropolitan Area: The study area is yet to form a coherent metropolitan area given the weak linkage between HCMC and its surrounding municipalities. The proportion of primary industries in the economy is low at 1.9% in HCMC, but is still high at 26.2% in the adjacent provinces. However, a contiguous metropolitan area will soon emerge because of the rapid growth of HCMC including its progressing urbanization and the relocation of manufacturing industries and ports to adjacent provinces. Transport infrastructure will determine the spinal structure of the metropolitan area.

Changing Urban Structure: Distribution of population and industries is changing due to the increase in population and the change in socio-economic conditions.

- (a) Seven (7) Districts in Central HCMC: Population density exceeds 400 persons per hectare in districts 1, 3, 4, and 5, and population has started to decrease at around 1% per annum. And in the suburban areas, such as Cu Chi, Hoc Mon, Nha Be, and Can Gio, population growth has been low.
- (b) North and Northwest of HCMC: Rapid population growth at about 4-5% per annum is seen in the districts of Tan Binh, Go Vap, Binh Chanh, and 12. This is due to good accessibility to the central business district (CBD), low land prices, and favorable land conditions.
- (c) South and East of HCMC: In districts 2, 7, and 9 along National Highway No.1, residential development for the middle-income class is being undertaken by developers including SOEs. However, the pace of development is rather slow.
- (d) Northeast of HCMC: In Thu Duc and District 9, population is stably increasing due to the ongoing development of industrial estates, a university, specialized schools, and housing estates. In Thuan An and Di An of Binh Duong province, industrial estates are also being developed.
- (e) Adjacent Provinces: Population is rapidly increasing in the surrounding areas of HCMC, particularly in the north and northeast directions. The southern three (3) districts of Binh Duong province show an increase rate of 5% per annum, and the two (2) districts of Bien Hoa and Dong Nai province, 2.4% per annum. Meanwhile, population increase is modest in Long An province.
- (f) Insufficient Mechanism of Urban Growth Control: The current urbanization and subsequent change in urban structure are pushed by the market. The present master plan of HCMC² will not be effective in the absence of institutional arrangements to realize the plan. The rapidly expanding demand-supply gap of land and the complex implications of land rights contribute to the problems. In order to ensure the effectiveness of transport policies in a mid-term and long-term perspective, the establishment of realistic institutional/legal arrangements for city planning and urban development is an urgent issue.

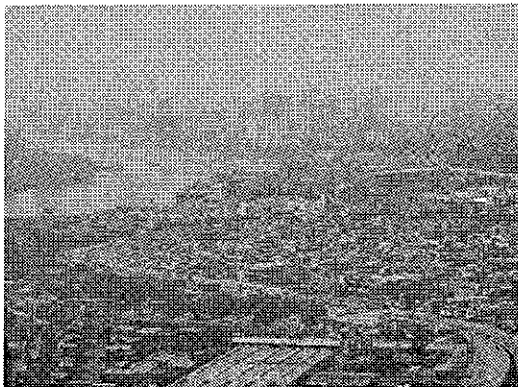
² The current master plan was formulated four (4) years ago. It is already inconsistent with the current urbanization; in the northwest of HCMC the population already exceeds the 2005 planned population, while in the east and south of HCMC the population is less than half of the plan.

Figure 2.3 Population Growth and Density of the Study Area by District

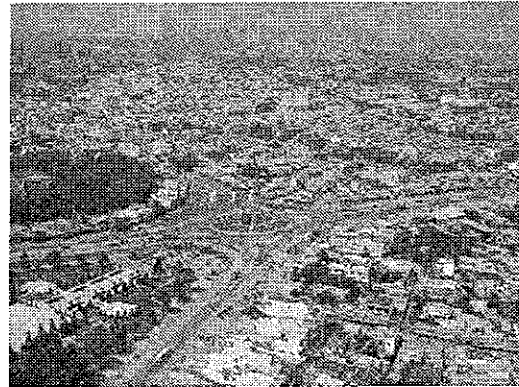


Source: Statistical Yearbooks of HCMC, Binh Duong, Dong Nai, and Long An

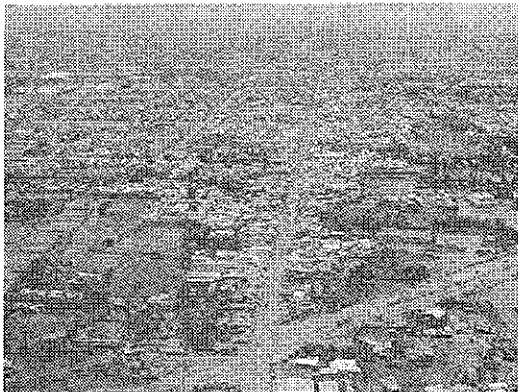
Photo 2.1 Aerial Views of Urban Areas



Urban Center



Bien Hoa



Saigon South



Rural Area

Source: Taken by the Study Team

3) Motorization and Transport Demand

Transport Demand: The total transport demand in the study area was estimated to be about 19.1 million trips a day (excluding 3.9 million walk trips); 13.4 million trips was accounted for HCMC only (also excluding 2.5 million walk trips). The study area is characterized by a high trip rate and extremely high ownership rate of motorcycles. In HCMC, 78% trips were by motorcycle while car usage was still low at 1.2 %. The share of private transport including that of bicycle (14%) thus reached 93% which was unique in Asia and in developing economies in general. In the adjacent provinces, the situation was similar but with less motorcycle trips (67%) and more bicycle trips (26%). The share of public transport seemed about the same in HCMC and its adjacent areas (some 93%). Experiences in other Asian cities indicate that motorcycle users will shift to private cars as incomes increase and when alternative public transport is not provided.

Extremely High Ownership and Use of Motorcycles: The number of motorcycles registered in HCMC doubled to more than 2 million during the period 1996-2002. The HOUTRANS person-trip survey showed that more than 90% of HCMC households owned motorcycles and that 53% owned two (2) or more motorcycles. These figures were also high in adjacent provinces at 88% and 41%, respectively. Seventy-five percent (75%) of the total transport demand was thus shared by motorcycle (78% in HCMC and 67% in provinces).

Steadily Increasing Cars: The number of cars was small at 66 thousand in 2002. However, the increase rate was nearly 10% in the last few years. As income levels go up, the demand for car will show an accelerated growth. Automobile manufacturing industry is one of the major targets of Vietnam, and foreign investments have been active in this industry.

Walk Trips and Bicycle Use: The bicycle was rapidly replaced by the motorcycle in HCMC as a favored mode, with its share of trip-making drastically dropping from 32% in 1996 to 14% in 2002. Although bicycle use was still relatively high in the provinces at 26%, its share would further decrease unless proper countermeasures are taken to improve safety conditions. Walking showed a similar tendency to bicycle; however, it should remain as one of the important means of transport at the local level.

Table 2.3 Total Travel Demand in the Study Area¹⁾

	HCMC			Adjoining Areas	Study Area
	1996	2002	Growth Rate (%/yr)	2002	2002
Population (000)	4,839 ¹⁾	5,410	1.9	2,244	7,653
No. of Trips/day (000)	8,229	13,383	8.4	5,678	19,060
Trip Rate (No. of trips/day/person)	1.70	2.47	6.5	2.53	2.49

Source: 1996 HCM Transport Survey (MVA) and 2002 HOUTRANS HIS

1) Excluding walk trips.

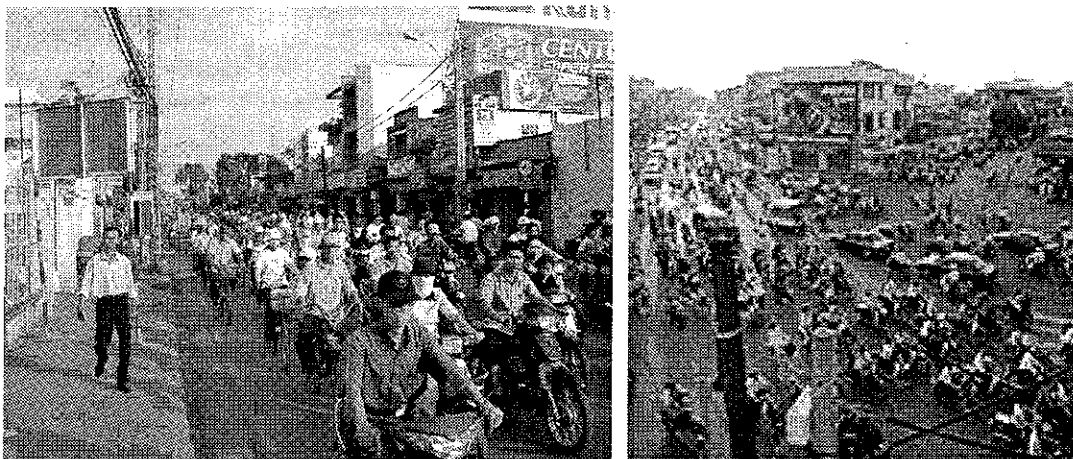
High Trip Rate: The trip rate of the study area was very high at 2.5 (excluding walk trips), which was higher than that of major Asian cities³ and was comparable to advanced countries. This may be attributed to the high ownership rate of motorcycles. Among high-income households, the trip rate reached 3.0-3.5, and this trend is expected to continue.

High Peak Ratio: The peak traffic was seen at 6-7 AM (13%) and 7-8 AM (10%). At these hours of the morning, about ¼ of the daily traffic was concentrated. The evening peak ranged from 3 PM to 7 PM, showing a wide and moderate peak. The 6-7 PM peak was due to the heavy concentration of “to school” trips (48%) and “to work” trips (34%). In the evening peak, “private” trips shared a large percentage, next to “to home” trips.

Relatively Short Travel Time: Average travel time in the study area was 18 minutes; 63% within 15 minutes and 9% over 30 minutes. This relatively short travel time was realized due to a compact urbanized area, the door-to-door motorcycle service, and the yet-to-be-serious road traffic congestion.⁴

Concentration of Traffic in CBD: A compact urbanized area brings about a concentration of traffic in the CBD. The central eight (8) districts⁵ generated/attracted 28% of the total traffic in the study area and 40% of HCMC. The population density in this area was 430 persons per hectare at night and 510 persons per hectare in the daytime, showing high activity density and narrow space despite the convenience in accessibility.

Photo 2.2 Typical Scenes of Traffic Situation in HCMC



Source: Taken by the Study Team

³ It is 1.8 in Manila and 1.1 in Jakarta.

⁴ In Manila, for instance, the average travel time is 47 minutes excluding walk trips.

⁵ A 43km² area comprising districts 1, 3, 4, 5, 6, 10, 11, and Phu Nhuan.

2.2 Main Transport Components

The transport system in the study area should be described not only in terms of infrastructural resources, such as ports, airports, railways, and roads, but also in functional terms, i.e. how such resources are used. Also, in light of the role of HCMC in the region, the linkage of the urban transport system with the regional transport system must be considered. The study area absolutely lacks transport infrastructure, and also has various problems such as network deficiency, insufficient intermodal linkage, lack of maintenance, and poor structural standard. An approach based only on development of transport infrastructure requires huge investment and a long period, in addition to land acquisition which has become more and more difficult. To tackle transport problems efficiently, a comprehensive systems approach is necessary where a number of measures are conducted at the same time, i.e. efficient use of existing infrastructure, demand management, effective network construction, intermodal integration, improved arrangement for development implementation, securing stable fund source, etc. In the study area, road transport plays a dominant role at present while the role of water transport and railway is insignificant.

1) Road Development

Overall Situation: The study area has a road network with a total length of 1,250km. However, its quantity and quality are both insufficient. Road area occupancy is low, about 3% in the suburban areas in contrast to 10-20% in the central area (Figure 2.4).⁶ The length of roads that have six lanes or more is only 73km (Figure 2.5). The roads in the central area and its vicinity, and major arterial roads including the national roads are paved and relatively well maintained. However, the roads in rural areas and local roads are in poor condition. Although road development is essential in constructing a good urban area, land acquisition has become difficult⁷ and fund sources are limited.⁸ Improvement of policy and strategy formulation is needed.

Fundamental Problems of Road Network: In addition to the lack of quantity and uneven distribution, the road system of the study area lacks hierarchy and its network is fragile. The problems can be pointed out also from the viewpoint of pedestrians. Continuity is not seen in the network of major roads (28m or wider), and traffic is not efficiently distributed on this network. In addition, most roads do not have sidewalks, and the width of lanes and shoulders is narrow. This is one of the reasons why the number of lanes can hardly be secured without additional land acquisition.

Urban Roads: Although major streets are well developed, most of the urban roads are narrow with different cross-sections and standards. There is a discrepancy between the determined role and the actual function of a road. The lack of road hierarchy affects the determination of the role and function of each road.

Roads in Population-increasing Areas: Road development does not keep pace with rapid urbanization, e.g. in the area between National Highway (NH) No.1 and the city

⁶ Average road density is 3.95km/km². However, it is low at 0.48km/km² in five newly developed areas and at 0.29km/km² in the peripheral area. The gap between the central and the suburban areas is large.

⁷ In the ongoing East- West Highway Project, land acquisition cost is reported to be 40% of the total cost.

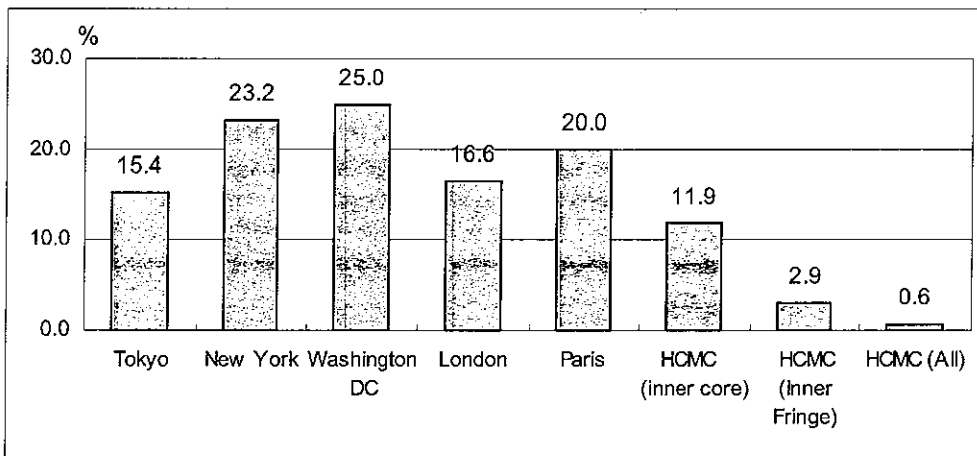
⁸ In 2000, the total transport expenditure was VND 900 billion, of which VND 360 billion was for maintenance. The expenditure for new development was about VND 540 billion.

center. The road network is deficient, pavement is seldom sufficient and surface condition is poor.

Regional Network: As a whole, the circumferential road is insufficient only in its connection with NH1. Bridges to the east and south of HCMC and airport/port access are also lacking.

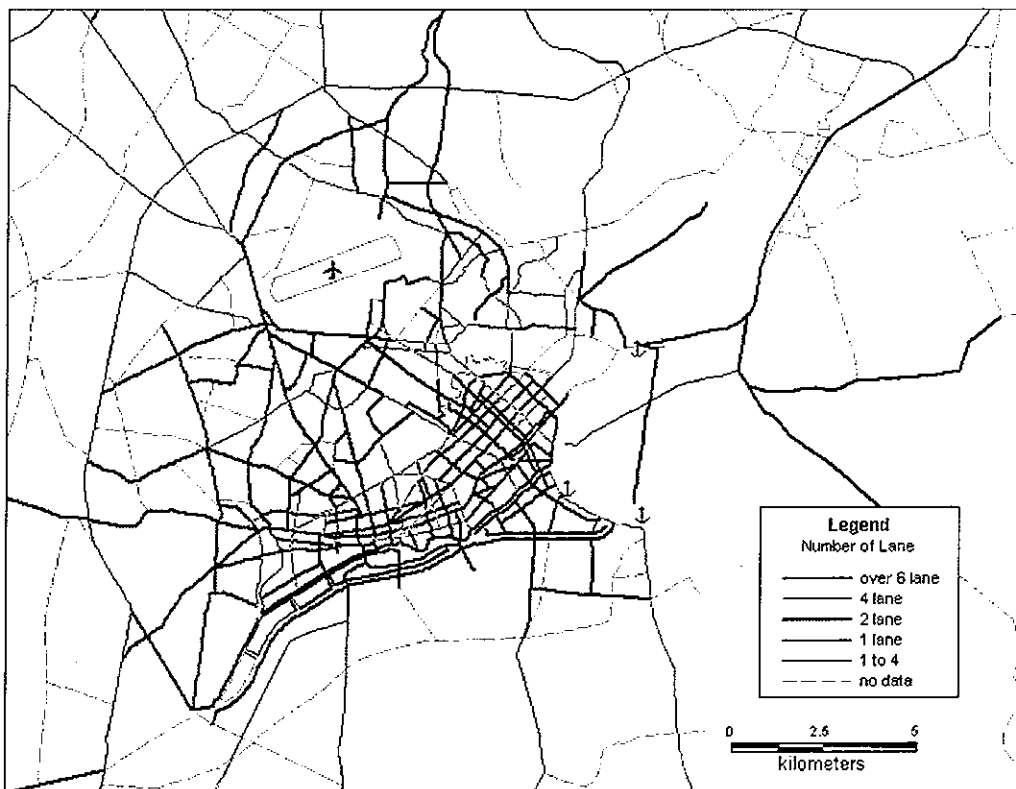
Main Issues: In conclusion, the most critical issues in relation to road development are: (1) reconstruction of roads' functional classification and hierarchy; (2) strengthening of legal/institutional arrangement for road development; and (3) securing of fund sources.

Figure 2.4 Comparison of Road Area Occupancy



Note: Culled from various sources.

Figure 2.5 Number of Lanes in Urban Areas¹⁾



Source: TUPWS

1) Excluding national roads.

2) Traffic Management

In addition to insufficient infrastructure development, which has brought about a number of problems relating to road itself, there are a variety of system shortcomings in terms of both hardware and software. The quality and quantity of enforcement, i.e. the human resources, are insufficient. Intersections, traffic signals, traffic signs/markings, pedestrian crossings, etc. need improvement. Traffic and parking control is practiced to some extent, but is insufficient to rectify traffic and to ensure traffic safety. The information and education campaign activities among the citizenry on traffic information and safety education are limited. Considering the rapid motorization and the change in vehicle composition (increase in cars), the improvement of traffic management and its operating capacity is an urgent issue. The following further describes some of the problems:

Lack of Traffic Signals: Traffic signals are currently in operation at 341 intersections (out of about 1,300). Most of them are old and of different types, having been provided by more than seven different manufacturers. Two types of area traffic control (ATC) also exist.⁹ Periodic adjustment of control parameters is not conducted, and the control performance of signalized intersections is not satisfactory.

Traffic and Traffic Flow Control: In the central area, including districts 1 and 3, one-way restriction is widely practiced, taking advantage of the grid pattern of roads. This structure is rather old and whether it is the most efficient for future requirements (e.g. need for public transport priority) is not clear. In the congested areas in the vicinity, one-way control has been implemented or otherwise proposed. The dangerous left turn of motorcycles has been recognized, but no left turn control has been introduced in some intersections. Many traffic control actions are individual and spot-wise with no systematic approach.

The current traffic rule allocates the outer lanes to motorcycles/bicycles and the inner lanes to four-wheeled vehicles. This rule functions well on road stretches. However, at intersections, the crossing movement of right-turning cars and left-turning motorcycles has become a serious problem. As car traffic increases in the future, this problem will worsen.

For three-wheeled vehicles and trucks, running or entry in the study area is controlled. For motorcycles/ bicycles, however, no control is implemented although its necessity is being realized.

Photo 2.3 Unorganized Traffic Flow at Intersections



Source: taken by the Study Team

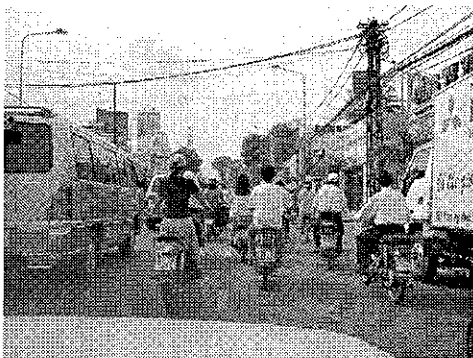
⁹ French ATC signals were installed at 48 intersections by French aid, and different ATC signals are being installed at 121 intersections under the World Bank-funded "Viet Nam Urban Transport Improvement Project".

Traffic Accidents: The importance of securing traffic safety has been recognized more and more seriously by the citizens and the government due to the fact that the number of traffic accidents is soaring as traffic increases. Although various efforts have been made such as strengthening of enforcement by the police and education campaign for traffic safety, the driving manner remains poor. Helmet use by motorcycle users is required only on national roads, and it is quite common for 3-4 passengers to ride a motorcycle without wearing helmets. Measures to enhance traffic safety are required. However, unless the citizens follow traffic and traffic safety rules, the effect will be very limited whatever measure is taken.

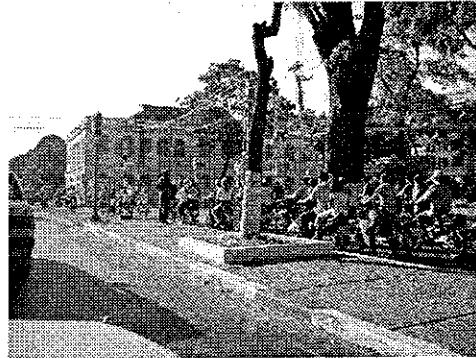
Importance of Integrated Approach: Various measures are needed for the entire study area, by corridor¹⁰ and by spot. For each level, an integrated approach should be taken from the viewpoint of rectifying traffic, alleviating congestion, addressing motorcycle-related issues, prioritizing buses, improving driving behavior, etc.

- Facility (intersection, traffic signal, traffic sign/markings, chatter bar, etc)
- Management (traffic control, signal phasing, parking control, traffic flow management, bus operation support, etc.)
- Miscellaneous (enforcement, driving manner, traffic safety perception, etc.)

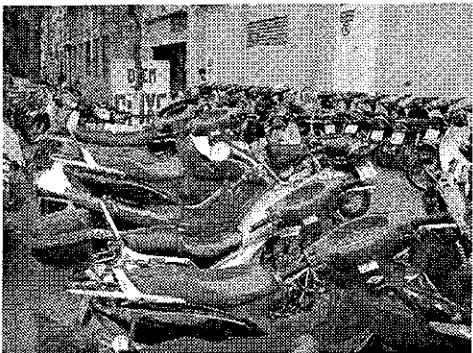
Photo 2.4 Motorcycle Traffic and Accidents



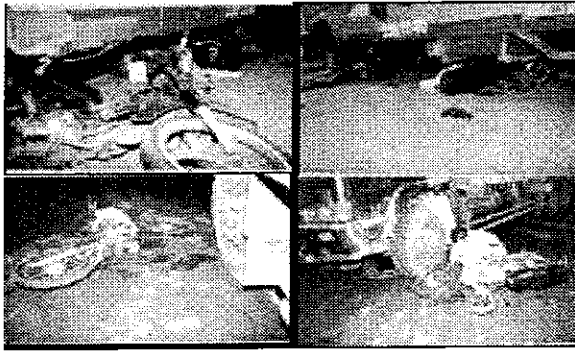
Mixed Traffic



Separation of 2- and 4-wheeled Vehicles



Parking on Sidewalk



Traffic Accidents

Source: Taken by the Study Team

¹⁰ Policy test was conducted along Tran Hung Dao Street in this study.

3) Road-based Public Transport

Expansion and strengthening of public transport services in the study area is one of the determinants of the future urban transport system. How to establish a bus system is the core issue to address this subject as well as to develop a suitable set of policies. The public transport system in the study area is dominated by road-based services including ordinary buses (40-60 seats), lambro (11-12 seats), taxis, *cyclo* (man-driven three-wheeled vehicle), and motorcycle taxis or *xe om*. The share of bus and lambro in the total transport demand is only 2% at present. The existing railway that is operated for inter-city travel northward from Saigon Station is not used for urban travel. Water transport is used locally only along rivers.

Bus: As a priority measure of the city government, new bus units were purchased and some policy initiatives are being introduced such as rerouting and bus priority measures on road. However, there are still problems to be solved, as follows:

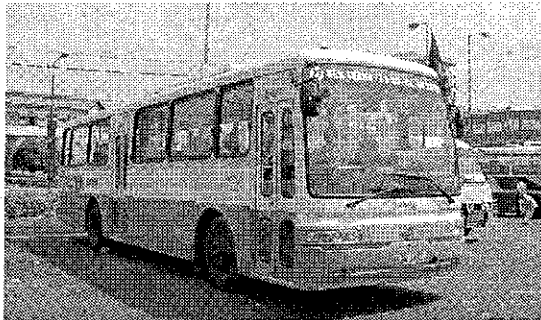
- (a) Operation and Management of Bus Services: The institutional mechanism related to the operation and management of bus services is largely controlled by the city. This is logical since the policy of a major shift to public transport must necessarily be driven by the public sector. However, it also hinders the independent operation of bus services by prohibiting bus operators to respond timely and efficiently to market needs.
- (b) Bus Network and Bus Units: Up to the beginning of January 2002, the bus transport network in HCMC had 76 routes with a total length of 1,409km. Of these routes, 28 were served by mini buses, medium buses and large buses. A larger number of the routes, 48 of the 76, were served by lambros (small three- and four-wheeled vehicles).
- (c) Bus Operators: There are only two fleet operators with experience of systematic bus operations; the SOE Saigon Bus and the joint venture Saigon Star. All other operators are by nature one-vehicle operators although they are organized in cooperatives. This is the major structural problem of the bus system in HCMC and the main obstacle for the development of a full-scale bus mass transit system.
- (d) Current Situation of Bus Operations and Services: The "Model Bus" scheme was experimented in HCMC as one of the measures to promote public transport. The basic concept of the Model Bus is to lower the fare level of existing bus routes at a flat fare of VND1,000 (about US\$ 0.07) in order to encourage patronage. Then, the bus fare was increased to VND 2,000 in December 2003 when the city started to introduce new buses.

Subsidy is given by the city to the operators based on the difference between the latter's operating cost and revenue. At present, 48 routes are operated by the Model Bus while the remaining 25 routes adopt the conventional distance-proportional fare system.

- (e) Introduction of New Bus Units: In Vietnam, vehicles more than 20 years old have been banned since 2003. In response to this regulation, HCMC submitted a plan to the central government in 2002 to replace 1,300 bus units. However, due to procedural delays, the plan materialized only in January 2003 wherein the purchase of 300 new bus units was actualized. HCMC intends to promote bus patronage to take advantage of these new units, although a specific action plan is yet to be clarified.

Public Transport Service Other than Bus: This includes taxi, cyclo and xe om. In 2002, the number of taxis accounted for about 3,600 of which 40% was accounted for by private companies, 28% by state-owned enterprises (SOEs), 20% by cooperatives, and 12% by joint ventures. Cyclos have been banned in the CBD and on major roads. However, an estimated 30,000 of them are still operating in HCMC, although their number is decreasing. Xe oms are out of the city's control, and the actual situation is not well defined. However, its service coverage is wide, functioning as a supplementary mode of public transport for buses. Policy direction for motorcycle taxis is yet to be clarified.

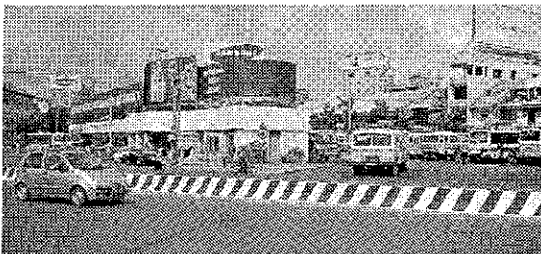
Photo 2.5 Public Transport Modes in HCMC



New Bus



Lambro



Ben Thanh Bus Terminal

Source: Taken by the Study Team



Xe Om

4) Water Transport

HCMC has a water transport network composed of large and small rivers. Its role is noticeable in linking HCM with the Mekong Delta. It also plays an important role in cargo transport between the ports and their respective hinterlands and in tourism for specific routes. The share is limited in the entire urban transport system. However, its function is important as a secondary means of local transport, and its role is being reviewed as roads get more congested.

5) Cargo Transport

There are a number of ports in the study area which play a pivotal role in the SFEZ by dealing with international cargo flows. However, the major ports, located in the central area, are affecting urban traffic. Eleven (11) ports located along the Saigon River generate about 15,000 trucks a day (including 6,600 container trucks) which is equivalent to more than 40,000 PCUs. Although the share is small at only 2% of the total urban traffic demand (about 2 million PCUs), its concentration in certain routes has been problematic. As most of the destination of port traffic is located in the hinterland, such as Mekong Delta and Dong Nai province, relocation of these ports is being pushed by city authorities.

6) Inter-city Transport

The inter-city transport system around HCMC is essential for both HCMC and the SFEZ. The direction is shown in the VITRANSS¹¹, and the integration of inter-city and urban transport systems should be further pursued.

- (a) Airport: The number of passengers at Tan Son Nhat International Airport, which was 5.5 million in 2002 (60% international), is increasing rapidly. A new terminal building is under construction using financing from the Japan Bank for International Cooperation. However, the accessibility of this airport is worsening year after year. Construction of a new international airport is proposed in Long Thanh (35km east of HCMC in Dong Nai province) as a long-term plan. Implementation of this project will strongly influence urban and regional development in a similar manner as the ports' relocation.
- (b) Vietnam Railway: A 29km railway exists between Saigon and Bien Hoa. This is the southern end of the national north-south line of 1,727km connecting HCMC with Hanoi. It has a single track, is at grade and non-electrified. Six long-distance trains are operated daily in this section. However, there is no stop en route and no commuter service exists. The right of way (ROW) is 11m or more. However, there are residential houses along its track in the central area. The MOT has a plan of double tracking and elevating this section. Thus, the possibility to introduce suburban services should be taken into account in order to have an integrated urban transport system.
- (c) Port: A deep-water port development project is ongoing in Thi Vai/ Cai Mep through a JICA assisted feasibility study in consistency with the national policies. In parallel to this project, the port group located in central HCMC is going to be relocated to Hiep Phuoc/Cat Lai. This restructuring of the port system has significant impacts on the location of industries and cargo/business traffic flows. Urban and regional development should take these impacts into account in the mid term and the long term, e.g. transport network construction in accordance with the port system restructuring and the use of land space after relocation.
- (d) Road: SFEZ borders with Cambodia, and its role is unique in the entire ASEAN transport network. There are two flagship projects: the ASEAN Railway¹² and the ASEAN Highway. In relation to the latter, a project is ongoing using ADB's finance to improve NH13 and cross-border procedures.
- (e) Inter-city Bus Services: Five inter-city bus terminals exist in HCMC at present.¹³ Inter-city buses operate to /from various provinces. Ben Thanh and Cho Lon terminals are located in the central area of HCM. Facilities are insufficient in every terminal from the viewpoint of both operators and passengers. Improvement and restructuring of these terminals are needed in conjunction with urban public transport facilities.

¹¹ A JICA-assisted study that works as the master plan for national transport system.

¹² Planned railway between Singapore and Kunming. One of the major candidate routes is Singapore – Malaysia – Thailand – Cambodia – Vietnam – China.

¹³ TUPWS operates Ben Thanh and Cho Lon terminals. Others are operated by SOEs.

2.3 Performance of Urban Transport Systems

1) Approach

In preparing the urban transport plan, it is an important point of view to use a set of clear indicators to express the performance of the present situation and plans/policies. This is to enhance the transparency of the plans/policies for attaining efficient allocation of limited resources and for promoting consensus. In the study, performance indicators for the transport system and services were presented, in addition to the objective indicators based on data and the subjective indicators obtained mainly from transport users.

2) Mobility and Accessibility¹⁴

As of 2002, 94% of households in HCMC owned motorcycles (60% with two motorcycles or more) and 50% owned bicycles. On average households with a monthly income of US\$ 500 or more owned three motorcycles. The situation was the same in the adjacent provinces (90% owned motorcycles and 40% owned two motorcycles or more). Thus, on an individual basis, more than 60% people owned his/her transport means (motorcycle/bicycle). And even non-owners could use the vehicles of other household members or could be picked up and sent off by others (Table 2.4). As a result, mobility for the population was considered high.

The average trip length and travel time in HCMC was 6.8km and 22 minutes, respectively, indicating an average travel speed of 18.5 km/h.¹⁵ Compact city, high mobility of motorcycles, and still ample capacity of roads enabled this high accessibility.¹⁶ With regard to travel time, the satisfactory range differed by mode: up to 15 minutes for walking, 20 minutes for riding bicycles, 30 minutes for using cars and motorcycles, and 50 minutes for buses.

Table 2.4 Access to Alternative Transport Modes, 2002

Category		HCMC (%)	Adjoining Areas (%)	Study Area (%)
1. Persons owning vehicles		62.5	61.0	62.1
2. Persons not owning vehicles		37.5	39.0	37.9
Alternative Modes	Family vehicle	(22.3)	(22.9)	(22.5)
	Sent off/Picked up by others	(41.9)	(33.7)	(39.5)
	Public Transport	(3.9)	(1.7)	(3.2)
	Others	(31.9)	(41.7)	(34.7)

Source: HOUTRANS HIS

¹⁴ Mobility is an indicator showing the extent of availability of transport means to access the needed services. Accessibility is an indicator showing the condition (time, cost, safety, comfort, etc.) to reach the needed services.

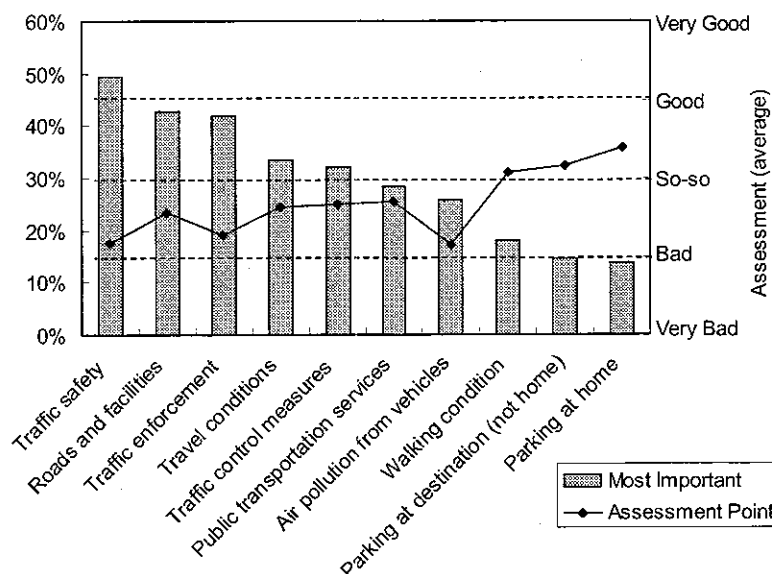
¹⁵ Excluding intrazonal trips.

¹⁶ In Manila, average trip length is 11 km, average travel time 47 minutes, and average travel speed 14km/h (MMUTIS).

3) Citizen's Perception

The citizen's perception on transport policy is different for various issues (Figure 2.6). The most important issues were: "traffic safety", "roads and facilities" and "traffic enforcement" with over 40% ratings. Relatively important issues were: "travel conditions", "traffic control measures", "public transport service", and "air pollution from vehicles"; and less important issues were: "walking condition", "parking at destination", and "parking at home". People's satisfaction with the different issues, however, did not correspond with the relative importance of the issues. For example, "traffic safety" was considered to be the most important issue but was rated as "bad". On the other hand, "parking at home" was not a very important issue but one of the few ones which were considered to be fairly well fulfilled (above "so-so"). Public transport services were not much of a concern of the people which is logical because of the very limited bus share in transport demand and supply.

Figure 2.6 People's Concerns on and Assessment of Urban Transport Services



Source: HOUTRANS HIS

4) Traffic Safety

According to the MOT's "National Traffic Safety Program (NTSP) for the Period 2001-2005", about 145,760 traffic accidents were reported all around the country from 1990 to 1999. These accidents killed 48,436 and wounded 155,649 (excluding victims of maritime and air traffic accidents). It was also reported that total economic loss caused by traffic accidents is estimated at about US\$ 200 million per year. In 2000, around 23,300 traffic accidents occurred, killing 7,924 and injuring 25,693.

The number of traffic accidents is increasing. Fatalities from road traffic accidents have exceeded 13,000 in Vietnam. In 2001, HCMC accounted for 1,220 fatalities and 1,900 serious injuries with 2,500 accidents. Ninety-two percent (92%) of the causes were misconduct by motor vehicle drivers such as speeding, drunk driving, and reckless driving. Motorcycle accounted for 78% of the causes and 66% of victims of traffic accidents. Pedestrians shared 15% in the causes, but 17% in the victims. Bicycle's share in the causes was only 1.6%, but 11% in the victims. The major problems in relation to traffic safety included: (1) reckless behavior of drivers and pedestrians, (2) weak enforcement,

(3) insufficient walking environment, (4) deficient reporting system and database of traffic accidents, and (5) lack of traffic safety education.

5) Environment

The major problem of air pollution arises in HCMC from exhaust gas of road traffic and various factories scattered in residential areas. More specifically, particulate matter (PM) and carbon monoxide (CO) from vehicles, PM from cement factories, sulfur dioxide (SO₂) from thermal power plants, and PM from other factories are the pollutants.

Since 1996 the Department of Science and Technology (DOSTE) has conducted environmental monitoring. Air pollution has been identified as one of the most serious problems that hurt the people's health, although air pollution still remains below the threshold as a whole in HCMC excluding the area along major roads. The situation will worsen rapidly in the future as traffic congestion becomes chronic.

At present, the "Air Quality Improvement Project Phase 1" is ongoing led by the United Nations Development Program (UNDP), and its Phase 2 will be carried out by the Asian Development Bank (ADB). The reduction of air pollution largely depends on the implementation of the projects proposed in this Master Plan.

6) Traffic Congestion

In mega cities in developing countries, reduction in traffic congestion often becomes one of the most challenging policy issues, as economic loss due to congestion reportedly reaches 2-3 % of GDP. Moreover, traffic congestion affects the poor more seriously, posing a social problem in addition to the economic loss. Congestion is considered to have negative impacts on people's health due to the deterioration of air quality. In HCMC, traffic congestion is still limited geographically and in terms of duration. The average travel time is short with a relatively high travel speed. More road users were satisfied or feeling "so-so" about this situation (Table 2.5 and Table 2.6).

Figure 2.7 shows traffic volumes and congestion in different parts of the central road network. Although motorcycles accounted for a major part of traffic, its impact on congestion was not much different from that of other transport modes because of different PCU values – motorcycle shared only 60% of the traffic, while four-wheeled vehicles and bicycle shared 20% each.

Table 2.5 Average Travel Time and Evaluation by Mode

Mode	Modal Share (%)	Ave. Travel Time (min)	Evaluation Score ¹⁾
Walking	17.1	10.0	3.43
Bicycle	14.4	13.6	3.26
M/C (Driving)	51.8	18.1	3.26
M/C (Passenger)	10.0	16.5	3.32
Xe Om	0.7	19.2	3.17
Car	1.2	36.9	3.30
Bus	1.4	32.8	3.24
Others ²⁾	3.4	33.1	3.24
Total	100.0	16.9	3.30

Source: HOUTRANS HIS

¹⁾ The scores were calculated by averaging the points, as follows; 1-Very Bad; 2-Bad, 3-So-so; 4-Good; and 5-Very Good

²⁾ Others include semi-public modes except xe om.

Table 2.6 Average Travel Time and Users' Assessment

Type of Trip	Trips/day		Ave. Trip Length (km)	Ave. Travel Time (min)	Ave. Travel Speed (kph)	Assessment (%)		
	000	%				Good & V. Good	So-so	Bad & V. Bad
A. Interdistrict Trips								
To work trips	1,602	7.0	8.8	27.8	19.0	25.4	67.8	6.9
To School trips	532	2.3	7.3	23.9	18.5	27.3	67.1	5.6
Other trips	5,157	22.5	8.5	26.5	19.3	26.4	67.0	6.6
B. Intradistrict Trips								
To work trips	2,267	9.9	3.2	12.9	14.8	33.0	63.2	3.8
To School trips	1,470	6.4	2.5	12.1	12.6	34.7	62.1	3.1
Other trips	11,878	51.9	2.7	11.9	13.7	36.0	61.0	3.0

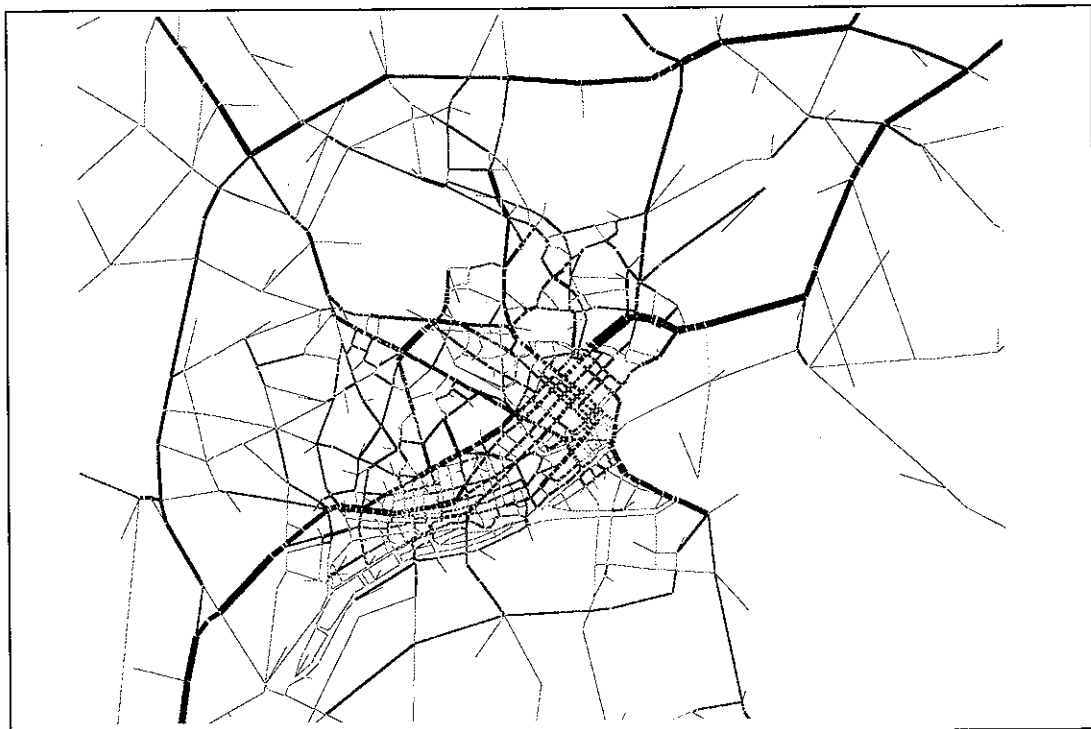
Source: HOUTRANS HIS

Photo 2.6 Traffic during Morning Peak Hours



Source: Taken by the Study Team

Figure 2.7 Estimated Traffic Volume and Volume Capacity Ratio in the Study Area¹⁾



Source: Study Team

¹⁾ Estimated based on traffic assignment of present demand.

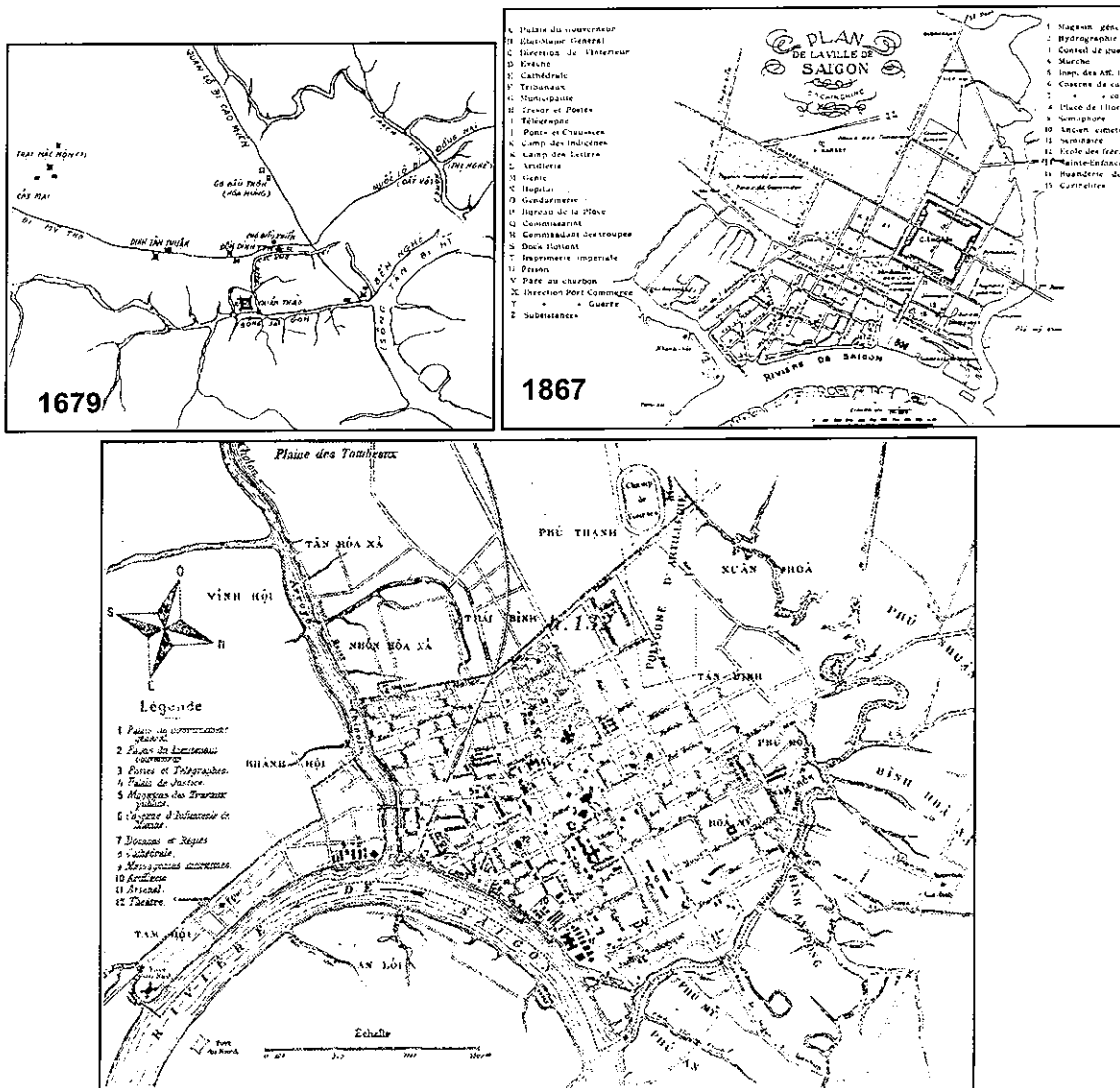
3 TRANSPORT POLICY FOR METROPOLITAN HCM

1) Historical Context

In many ways, the HCMC of today is a child of history. Like many great cities of the world, it started as a settlement on the banks of a river (circa 1650s) because the main transport mode of that century was water-based. In the 18th century it grew into an important trading post (with Cho Lon as the center). The French colonization left its imprints on the city – in its civic buildings, and in its grand boulevards and rotundas a la Paris.

Motorization occurred slowly in the last 50 years, partly due to the dislocations caused by the Indochina wars, and in their wake, a short period of economic isolation. City residents resorted to bicycles, and made the best out of old bus assets. The re-integration of Vietnam into the world economy and the Doi Moi reforms in the early 1990s led to major changes in the transport sector. The city's bus company was broken up then turned over to private operators. However, the sudden removal of support, without concomitant changes in regulatory policy, led to the stagnation of the public transport system. Because of that and the liberalized environment, commuters shifted to the use of motorcycles.

Figure 3.1 Development of Ho Chi Minh City



Source: Tu Lieu & Hình Anh, Saigon Gia Dinh Xua, 1996

2) Prospects for the Metropolis

Growth in terms of population, size of the built-up areas, complexity of economic activities, and household income levels has been most rapid in HCMC. The population in the study area will more than double to 13.5 million (of which 10 million will be in HCMC). A large part of this growth will be accounted for by in-migration. Per capita GDP is expected to reach US\$ 5,000, or about 3 times that of current levels. Some of the resulting dramatic changes that will ensue are: (a) expanded urban boundaries; (b) longer trip lengths,¹; (c) displacement of low-income households from the central areas.

Like the experience of other cities in developed and developing countries, such a scale of urban growth will entail painful adjustments on the organs of the State as well as on the residents of the city. Undisciplined and unbridled use of motorcycles and private cars could become costly in terms of congestion, safety, and environment.

3) Government Objectives

HCMC and its adjoining areas would remain as Vietnam's main link to the global economy. The country's global competitiveness will therefore rely on the efficiency of the transport system in the greater metropolitan Saigon. The overall goal of urban transport is:

"Ensure mobility and accessibility on needed urban services for its people and society, through safety, amenity and equity - towards the development of a public-transport-based city with a 50% share in the total urban transport demand."

Seven specific objectives in the master plan were identified to meet the preceding goal:

- Promotion of social understanding about urban transport problems and issues
- Effective management of urban growth and development
- Promotion and development of attractive public transport
- Effective management of traffic and travel demand
- Comprehensive development of transport space and environment
- Enhancement of traffic safety
- Strengthening of urban transport administrative and management capacities so as to better utilize available resources in a most effective way.

4) Sector Constraints

The biggest constraint is funding hence, the need to turn to the private sector. Even if it has unlimited resources, the city cannot continuously expand the provision of roads without destroying the fabric of the city. Besides, as shown by other cities, adding more roads only leads to a vicious cycle of more cars and more congestion.

Another growing concern is the increasing difficulty in land acquisition and resettlement in developing infrastructures. While the study area absolutely needs basic roads, the cost of right-of-way (ROW) acquisition poses a big hindrance as it often reaches 20 to 40% of construction costs. An alternative approach must be found, one that will give project-affected persons (PAPs) a proper and fair treatment at the same time efficiently and effectively develop the planned infrastructures.

Getting more commuters on public transport is a must. It is starting from a low base of

¹ Excluding intra-zonal trips.

public transport users. Unlike many developing cities which struggled against the eroding high share of public transport, HCMC must do battle in the opposite direction – enticing commuters to take the bus (and not their motorcycles). Old habits are difficult to break, and residents of HCMC have gotten used to individualized modes of transport. Without government involvement, change is unlikely.

A third constraint is weak institutional capability to cope with urban and transport challenges under a shifting policy environment. One way to overcome the lack of funds is to improve government's ability to harmonize land use with transport development. This, however, entails expertise and processes that are also scarce in the public sector.

5) Ongoing Initiatives

HCMC is a city in a hurry. It has begun to entertain proposals for a metro rail system, even before it could fully modernize its aging bus fleet and its management systems. It is also pushing for the early relocation of major ports along the Saigon River, and the international airport. These major projects have strategic and long-term implications – not only to the master plan, but also to the city's future. If done too early, the competitiveness of its industries could suffer and other projects with higher returns elbowed out of their rightful priorities. The more prudent course is to make haste slowly.

6) New Policy Directions

HCMC has to embark on a new direction, if it is to succeed in addressing the complex urban challenges of the future. There are three main policy themes: greater reliance on the private sector, a transport-mediated urban growth, and metropolitan form of collaboration.

The first theme is but an outgrowth of the national policy towards a market-based economy. Private sector participation can become more pervasive in the supply of transport services, perhaps not as much in the provision of transport infrastructure. Both require reforms in the public sector – in the method of procuring infrastructure projects, in price regulation, and in the operation of SOEs. A level playing field has to be created - between private and public entities, between foreign and local companies.

On the second theme, urban planning has to move away from the rigid concept of static master plans and adopt a flexible framework wherein private and public stakeholders can make their own optimal choices and decisions. Instead of focusing on spatial arrangement of different land uses, urban controls could seek to evolve a desired transport network by preserving roads' ROWs (specifically, alignment and width) - especially in urbanizing areas outside the city center.

Inter-city collaboration will become necessary as the urban areas spread outside the political boundary of HCMC and spill over to its adjoining areas. A metropolitan-type of institution needs to be forged by HCMC, Binh Duong, Dong Nai, and Long An authorities.

