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Japan International Cooperation Agency (JICA)**

**METRO MANILA  
URBAN TRANSPORTATION  
INTEGRATION STUDY**

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**FINAL REPORT**

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**mmutis**

**ALMEC Corporation  
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# MMUTIS FINAL REPORT MAIN TEXT

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## Glossary

<b>ADB</b>	Asian Development Bank
<b>ALS</b>	Area Licensing System
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>BOT</b>	Build-Operate-Transfer
<b>CAD</b>	Computer-aided Design
<b>CALA</b>	Cavite-Laguna Urban Development and Environment Project
<b>CBD</b>	Central Business District
<b>CIF</b>	Capital Investment Folio
<b>CO</b>	Carbon Monoxide
<b>DOTC</b>	Department of Transportation and Communications
<b>DPWH</b>	Department of Public Works and Highways
<b>ECA</b>	Environmentally Critical Areas
<b>ECC</b>	Environmental Compliance Certificate
<b>ECP</b>	Environmentally Critical Project
<b>EDSA</b>	Epifanio de los Santos
<b>EIRR</b>	Economic Internal Rate of Return
<b>EIS</b>	Environmental Impact System
<b>EMK</b>	Equivalent Maintenance Kilometer
<b>ERP</b>	Electronic Road Pricing
<b>FIRR</b>	Financial Internal Rate of Return
<b>GCR</b>	Greater Capital Region
<b>GMR</b>	Greater Manila Region
<b>GNP</b>	Gross National Product
<b>GRDP</b>	Gross Regional Domestic Product
<b>HIS</b>	Household Interview Survey
<b>HOV</b>	High-occupancy Vehicle
<b>ICTSI</b>	International Container Terminal Service Inc.
<b>JICA</b>	Japan International Cooperation Agency
<b>JUMSUT</b>	Metro Manila Transportation Planning Study
<b>LGU</b>	Local Government Unit
<b>LIL</b>	Learning Innovation Loan
<b>LRT</b>	Light Rail Transit
<b>LTFRB</b>	Land Transportation Franchising and Regulatory Board
<b>LTO</b>	Land Transportation Office
<b>MCX</b>	Manila-CALABARZON Express
<b>MMDA</b>	Metro Manila Development Authority
<b>MMETROPLAN</b>	Metro Manila Transport, Land Use and Development Planning Project
<b>MMUESS</b>	Metro Manila Urban Expressway System Study
<b>MMUSTRAP</b>	Metro Manila Urban Transportation Strategy Planning Project
<b>MMURTRIP</b>	Metro Manila Urban Transport Improvement Project
<b>MMUTDP</b>	Metro Manila Urban Transport Development Plan
<b>MMUTIP</b>	Metro Manila Urban Transportation Improvement Project
<b>MMUTIS</b>	Metro Manila Urban Transportation Integration Study
<b>MRT</b>	Mass Rail Transit
<b>MRTC</b>	Metro Rail Transit Corporation, Ltd.
<b>MTDP</b>	Medium-term Transport Development Plan
<b>NAIA</b>	Ninoy Aquino International Airport
<b>NCR</b>	National Capital Region

<b>NEDA</b>	National Economic Development Authority
<b>NLE</b>	North Luzon Expressway
<b>NOx</b>	Nitrogen Oxide
<b>NPV</b>	Net Present Value
<b>NSO</b>	National Statistics Office
<b>NTP</b>	Notice to Proceed
<b>OD</b>	Origin-Destination
<b>ODA</b>	Official Development Assistance
<b>OECS</b>	Overseas Economic Cooperation Fund
<b>PAP</b>	Productive Age Population
<b>PFI</b>	Public-financed Investment
<b>PNCC</b>	Philippine National Construction Company
<b>PNP</b>	Philippine National Police
<b>PNR</b>	Philippine National Railways
<b>PM</b>	Particulate Matter
<b>PSP</b>	Private Sector Participation
<b>PTSS</b>	Philippine Transport Strategy Study
<b>ROW</b>	Right of Way
<b>SLE</b>	South Luzon Expressway
<b>SOx</b>	Sulfur Oxide
<b>STRADA</b>	System for Traffic Demand Analysis
<b>TDM</b>	Traffic Demand Management
<b>TEAM 4</b>	Metro Manila Traffic Engineering and Management Project Phase IV
<b>TICD</b>	Transport Infrastructure and Capacity Development
<b>TRAIN</b>	Transportation and Information Network
<b>TRB</b>	Toll Regulatory Board
<b>TSP</b>	Total Suspended Particulate
<b>UP-NCTS</b>	University of the Philippines National Center for Transportation Studies
<b>UTSMMA</b>	Urban Transport Study in the Manila Metropolitan Area
<b>UVVRP</b>	Unified Vehicular Volume Reduction Program
<b>VCR</b>	Volume/Capacity Ratio
<b>VOC</b>	Vehicle-operating Cost
<b>WB</b>	World Bank
<b>WHO</b>	World Health Organization

## SUMMARY, CONCLUSION & RECOMMENDATIONS

### *Purpose of the MMUTIS*

The JICA-assisted Metro Manila Urban Transportation Integration Study (MMUTIS) was conducted with the following main objectives:

- To establish an updated transportation database system which is intended to contribute to transportation planning, research and education in the Philippines;
- To formulate a Master Plan for an integrated urban transportation system of Metro Manila for the target year 2015; and
- To formulate a Medium-term Transportation Development Plan (1999-2004) based on the Master Plan.

### *Worsening Transport Situation and Potential Threat to Sustainability*

The MMUTIS Study Area, which comprises Metro Manila, Rizal and parts of Bulacan, Cavite and Laguna, has been suffering from worsening traffic congestion and environmental degradation in the city centers and on most of the radial corridors. In 1980, traffic situation was already serious. Between 1980 and 1995, while new infrastructures have been limited and traffic management capabilities remain insufficient, Metro Manila's population increased from 5.9 million to 9.5 million or a 60% increase (3.2% a year). It is likely to reach 13 million by 2015. **Urban growth is now more significant in the adjoining areas of Metro Manila.** Thus, transport demand will also increase tremendously. The gradual shift from public transport to private transport due to the increase in income and car ownership, as well as the increase in average trip length resulting from the expansion of urban areas, would further amplify the traffic load on roads (refer to Table S.1). This urbanization trend is the most fundamental threat the society must overcome. Under the enormous pressure of population increase and urban development, the critical issues for planning and development involve, not only how to improve transport conditions, but also how the transport sector should contribute to more sustainable urban development.

Table S.1  
Growth of Socio-economy and Transport Demand in the Study Area

Item		1996	2015	2015/1996	
Population : 000		<b>14,368</b>	<b>25,720</b>	<b>1.79</b>	
( ) Metro Manila		(9,454)	(13,157)	(1.39)	
Employment at Workplace: 000		<b>5,149</b>	<b>9,443</b>	<b>1.83</b>	
( ) Metro Manila		(3,709)	(5,815)	(1.57)	
Students in School: 000		<b>4,589</b>	<b>8,394</b>	<b>1.83</b>	
( ) Metro Manila		(2,996)	(4,167)	(1.40)	
Per Capita GRDP: ₱, medium growth		59,580	103,490	1.74	
Average Household Income: ₱ /month		12,356	20,730	1.87	
Car Ownership: no. 000		<b>730</b>	<b>2,340</b>	<b>3.21</b>	
% of households		18.5%	28.2%	1.52	
Person Trips: million/day	Motorized	Public	18.5 ( 78%)	28.9 ( 66%)	1.57
		Private	5.2 ( 22%)	14.8 ( 34%)	2.82
		Total	<b>23.7 (100%)</b>	<b>43.7 (100%)</b>	<b>1.84</b>
	Walk	Total	6.5 ( 22%)	10.8 ( 20%)	1.66

Source: MMUTIS

### ***Constraints and Opportunities***

Major constraints influencing transport strategy include institutional effectiveness, the ability to acquire land, environmental clearance to construct infrastructure, funding, and actual implementation status of so-called “committed” projects. Funding capability is particularly critical. The estimated public funds are **₱ 200-400 billion for the Master Plan period (up to 2015) and ₱50-100 billion during the MTDP period (1999-2004), based on traditional revenue sources available for the transport sector in the Study Area under low (4% p.a.) and high (7% p.a.) economic growth assumptions, respectively.** Private sector funding (from BOT and similar schemes) is considered to be additional to public funds.

Although many constraints exist, there are opportunities to improve the situation in the Study Area. These are: (1) the riding preference of the people for public transport, which is mostly operated by the private sector, is still strong compared to other Asian cities; (2) a drastic car use restriction measure, such as the Unified Vehicular Volume Reduction Program (UVVRP) or color coding scheme, is socially accepted; (3) the basic road network in the central area (within EDSA) is relatively well configured; (4) large urban development opportunities exist in emerging suburban areas; (5) basic city planning institution exists (although not functioning effectively); and (6) there are mechanisms for dialogue among concerned agencies and stakeholders. Considerations on these positive elements indicate the following:

- Effective management of and minor investment in the existing infrastructure have great potential to improve the transport situation.
- Public transport market is large and diverse, and investment opportunities are amply available requiring improved regulatory framework to respond to varying demands.
- Infrastructure investments in emerging areas could be cross-subsidized by urban development if they are properly integrated and guided by the government through proper regulatory measures.
- People’s acceptance of further demand management measures is considered high, taking into account the support for UVVRP by both the public transport and private car users.
- The potential of new revenue sources from increased tax on vehicle sales, registration and fuel exists.

### ***Master Plan Formulation***

The ongoing/planned impact projects are so much concentrated in the existing, already-congested areas and little actions are taken in emerging areas in advance to or to catch up with the rapid suburbanization, such that the transport network would not be able to meet the future demand pattern effectively. In formulating a pragmatic transport Master Plan, focus has been placed on the following issues:

- how to support the north-south urban growth and expansion;
- how to develop a hierarchy of transport network and facilities;

- how to gradually develop a rail-based public transport system; and
- how to ensure accessibility to the CBDs, NAIA and Manila Port, which are of national concerns as well.

The Master Plan network has been formulated by initially developing the “Do-maximum” network which can meet the future demand in terms of infrastructure capacity at an improved level of traffic situation than the present (see Figure S.1). This ideal network requires roughly ₱ 1,200 billion (US\$ 30 billion), ₱ 800 billion (US\$ 20 billion) of which are to be borne by the government. **Although the entire “Do-maximum” network could unrealistically be implemented, this provides national agencies and local government units (LGUs) with a basis for city planning direction beyond 2015.** On the basis of the assessment of the “Do-maximum” network by corridor and area, the Master Plan network has been formulated more or less within the constraint of the budget envelope (refer to Figure S.2 and Table S.2).

The summary of the Master Plan projects and investments is shown in Table S.3. In formulating the investment program with particular regard to new investments for the Master Plan network, it is to be noted that the investment required for the basic program, such as the low-cost management, including traffic management, maintenance/rehabilitation and existing network improvements, is the indispensable part of the program. The portion of the investment costs in which the public sector budgets are allocated beyond 1999 is also included in the program.

Table S.3  
Master Plan Investment Summary

		Total Cost (₱ billion)	Cost to Govt. <sup>1/</sup> (₱ billion)	Remarks
CORE	1. Basic Program Management/Low-cost Measures	30	30	₱ 10 billion x 3 terms
	2. Ongoing/ Committed Projects	181	153	Refer to MTDP investment Program (Table 9.1)
	3. MMUTIS Projects 1) Primary Roads 2) Secondary Roads 3) Expressways 4) MRT/LRT/Busways	153 75 53 175	153 75 11 84	Skyway, R10/C3 Line 1 Extension (Imus), 2 (Masinag), 3 Extension, 4, N. Rail/ MCX
	Subtotal	<b>667</b>	<b>468</b>	
CORE PLUS	1) Primary Roads	24	24	
	2) Expressways	84	17	
	3) MRT/LRT/Busways	47	26	
	Subtotal	<b>155</b>	<b>67</b>	
<b>TOTAL</b>		<b>822</b>	<b>535</b>	

1/ Cost to government: 100% for primary/secondary roads; 20% for expressways, infrastructure cost for MRT/LRT/busway.

Figure S.1  
Future Transport Network (Do Maximum)

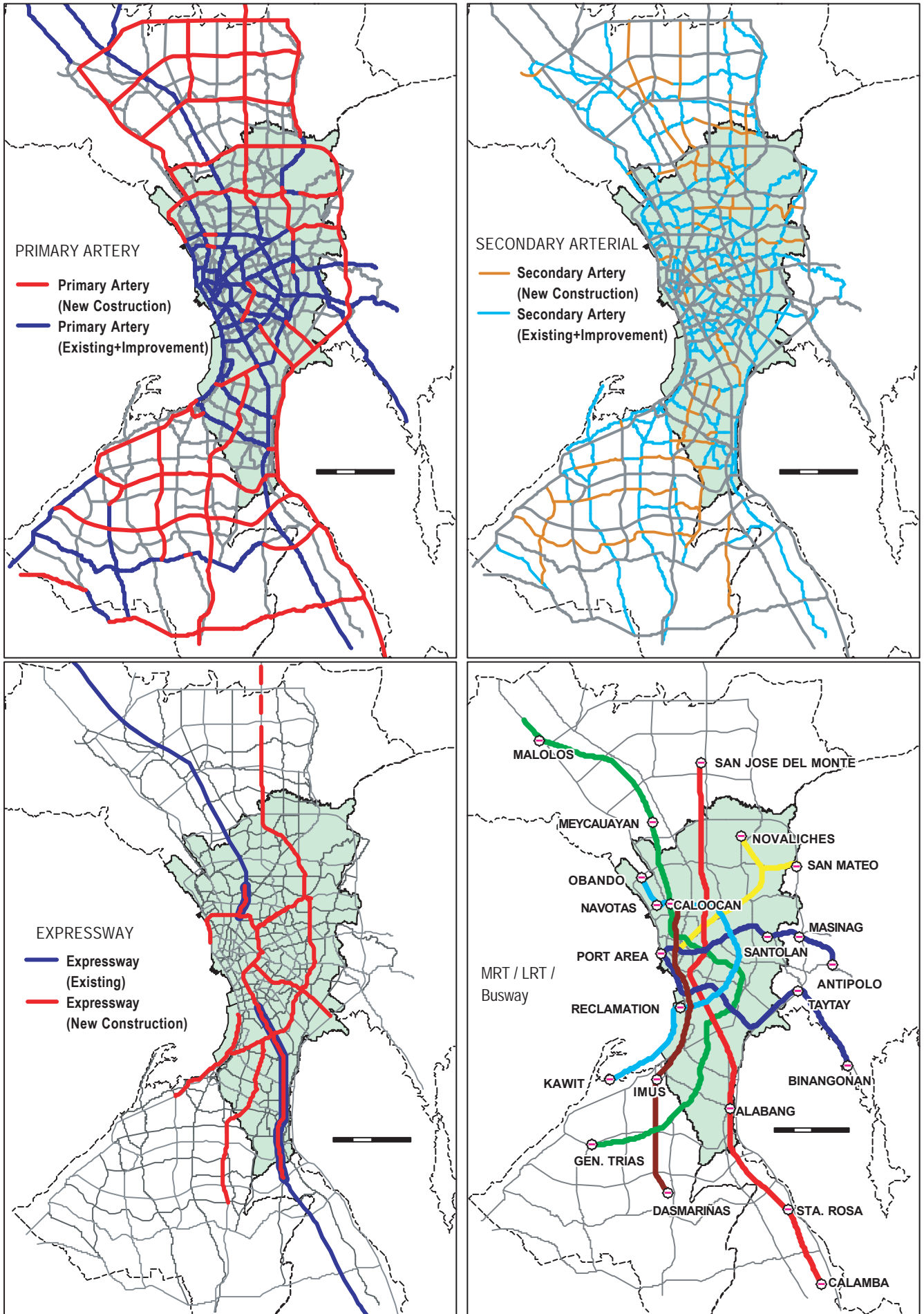
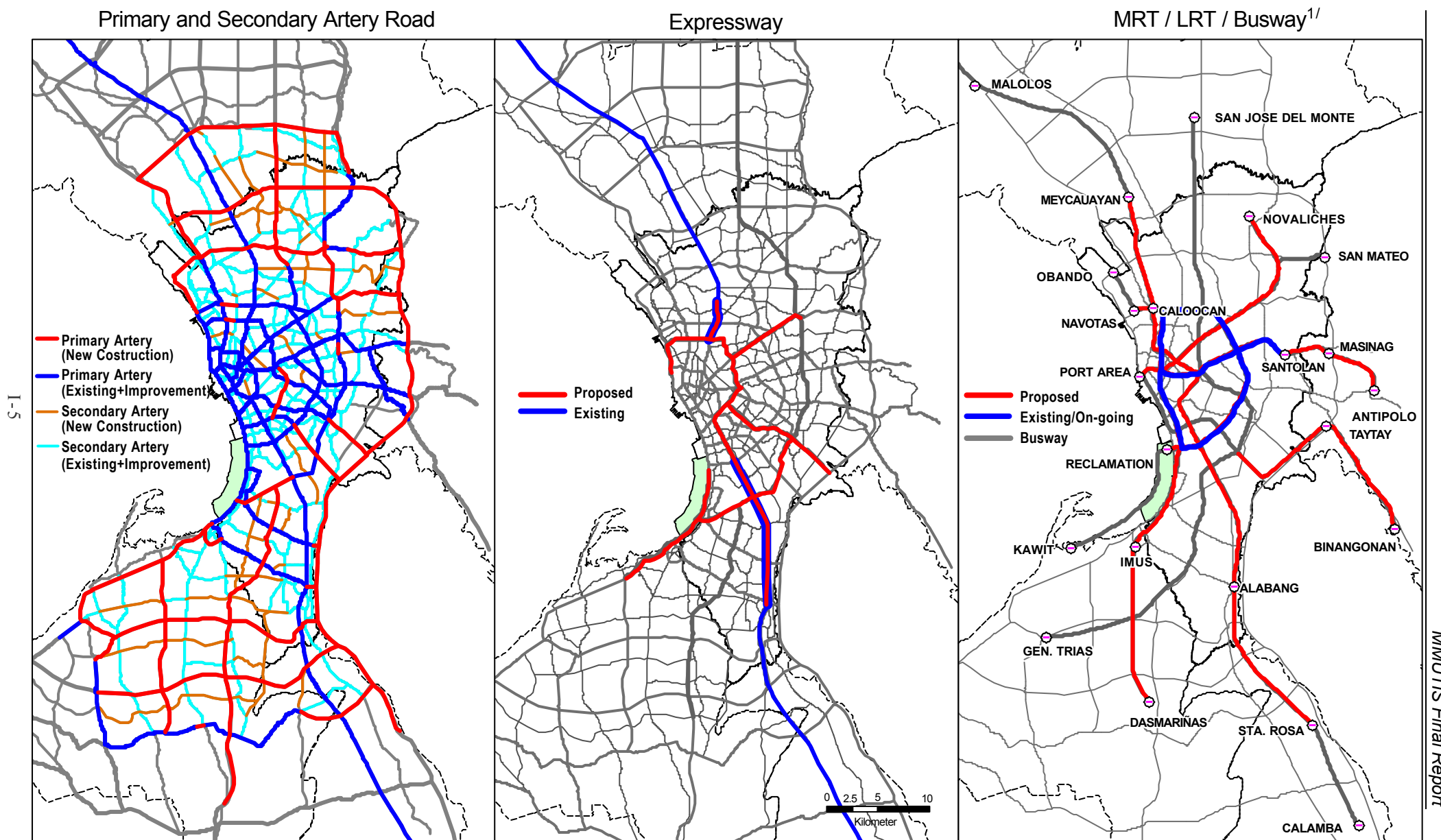




Figure S.2  
Master Plan Network



1/ Busway includes major bus priority measures

S-1

Table S.2  
Summary of MMUTIS Master Plan

**(Roads)**

		Length (km)			Estimated Cost (₱ billion)
		Metro Manila	Outer Areas	Total	
Expressways	Existing	34	49	83	2
	Ongoing/Committed	9	-	9	20
	MMUTIS Proposal	103	12	115	136
	Subtotal	146	61	207	158
Primary Arteries	Existing	211	-	211	-
	Ongoing/committed	8	-	8	8
	MMUTIS Proposal	112	241	353	170
	Subtotal	331	241	572	178
Secondary Arteries	Existing	307	21	328	-
	MMUTIS Proposal (existing)	2	81	83	10
	MMUTIS Proposal (new)	108	85	193	65
	Subtotal	417	187	604	71
TOTAL		894	489	1,383	407

**(MRT/LRT/Busway)**

Lines	Section	Code	Profile		Type <sup>1/</sup>	Estimated Capital Cost (\$ mil)		
			Length :km	System		Infra <sup>2/</sup>	E & M <sup>2/</sup>	Total
Line 1	Existing (Monumento-Baclaran)	R1O	14.5	EL-LRT	U	-	-	-
	S. Extension (Imus)	R1Sa	15.0	EL-MRT	S	450	450	900
	S. Extension (Dasmariñas)	R1Sb	15.0	AG-MRT	S	150	300	450
	Subtotal		44.5			600	750	1,350
Line 2	E. Extension (Antipolo)	R2Ea	7.7	AG/EL Busway	S	77	-	77
	E. Extension (Masinaq)	R2E	4.0	EL-MRT	S	137	91	228
	Existing (Recto-Santolan) <sup>3/</sup>	R2O	14.0	EL-MRT	U/S	(488)	(368)	(856)
	W. Extension (N. Harbor)	R2W	4.0	EL-MRT	U	137	91	228
	SE. Extension (Taytay)	R2Eb	19.8	AG/EL-MRT	U/S	168	150	318
	SE. Extension (Binangonan)	R2Ec	12.0	AG/EL	S	120	-	120
	Subtotal		53.7			639	332	971
Line 3	NW Extension (Navotas)	R3N	10.0	EL-MRT	U	258	216	474
	Existing (Q. C.-Pasay Rtd.) <sup>3/</sup>	R3O	16.8	EL/AG-LRT	U	(235)	(420)	(655)
	S. Extension (Reclamation)	R3S	2.0	EL-MRT	U	48	45	93
	Subtotal		28.8			306	261	567
Line 4	Main (Recto-Batasan)	R4Oa	15.1	EL-MRT	U	453	453	906
	Phase 2 (Novaliches)	R4Ob	7.7	EL-MRT	U	231	193	424
	Branch Line (San Mateo)	R4Oc	4.0	AG/EL Busway	S	40	-	40
	Subtotal		26.8			724	646	1,370
PNR-N.Rail/ MCX	Meycauayan (Caloocan)	R5N	18.0	AG-MRT	IC,S	349	409	758
	Caloocan-Sta. Mesa	R5M	8.0	EL-MRT	IC,U	240	240	480
	Sta. Mesa-EDSA	R6Sa	8.6	EL-MRT	IC,U	258	258	516
	EDSA-Alabang	R6Sb	22.1	AG-MRT	IC,U	177	442	619
	Alabang-Sta. Rosa	R6Sc	14.8	AG-MRT	IC,S	119	296	415
	Subtotal		71.5			1,14	1,645	2,788
TOTAL			196.5			3,412 (P136B)	3,634 (P145B)	7,046 (P281B)

1/ IC = inter-city, S = suburban, U = intracity type of operation/service

2/ Infrastructure includes guideway, stations/terminals, depot, etc. while E&M includes rolling stock, power supply, catenary train control, signaling, depot equipment, track works, and other maintenance facilities, etc.

3/ ongoing projects.

### ***Medium-term Transport Development Plan***

The Medium-term Transport Development Plan (MTDP) has been formulated, basically forming the essential components of the Master Plan, with the following primary directions considered in plan formulation:

- **Integration**: While a number of mega projects both in transport and urban sectors are already underway, they lack coordination; and basic transport facilities and services are insufficiently provided in many locations. The MTDP would focus on the integration among the new and existing facilities and services to maximize the benefits of the huge investments being made.
- **New Strategies**: The rapid growth of population and urban areas has exerted constant pressure on transport sector development. Increasing car ownership and the shift to private transport are the most serious threats. Conventional infrastructure development alone, even if funds were available, would not be able to provide effective solutions. The MTDP should focus on introducing possible new strategies to pave the way for the coming decades, such as further demand management, public transport-oriented urban development, integrated development, improved public-private partnership, etc.
- **Reality**: Public funding capability for the MTDP period is severely constrained due to limited funding sources and commitments to a number of mega projects. Private sector financing has become scarce due to the tight financial situation after the Asian crisis. Institutional capacity needs to be strengthened to improve planning and implementation coordination.

### ***Broad Priorities***

Investment priorities in the MTDP have been broadly set forth as follows:

- Management and low-cost measures such as traffic management, minor road widening and rehabilitation, public transport priorities, terminals, intersection improvements, etc.
- At-grade road improvements/construction, particularly primary arterial roads (missing links in the central area and those to promote north-south urban expansion) and secondary roads to strengthen road network connections. The role of at-grade roads in the Study Area is extremely important for effective urban expansion and to provide space to accommodate elevated expressways and the MRT.
- The MRT and urban expressways which are to become more and more important to sustain mobility in large urban areas. These projects require effective participation of the private sector to become implementable.

Candidate projects selected for the MTDP are composed of committed projects and the MMUTIS strategy program (refer to Table S.4, Figures S.3 and S.4). The total cost to government is ₱ 236.0 billion, of which ₱ 99.0 billion is already allocated for committed projects and ₱ 137.0 billion for MMUTIS-proposed projects. After the costs are allocated over the MTDP period (1999-2004), **the actual costs to government during the MTDP period are ₱ 68.6 billion and ₱ 53.6 billion for committed/carried-over projects and MMUTIS proposals, respectively** (refer to Table S.5).

Table S.4  
Candidate Projects for MTDP (1999-2004)

Category		Project/Project Project	Est. Cost (₱ bil)	Govt. Investment		Agency Responsibility	
				Total (₱ bil)	MTDP (₱ bil)	Primary	Support
1. Committed 1.1 BOT 1.2 IFI Loans (committed) (almost committed) 1.3 Government-funded	1)	LRT 3	26.2	Rental	18.0	DOTC	DPWH
	2)	Skyway (Stage I)	20.0	4.0	2.0	DPWH	LGU
	3)	C-5 South Section	5.6	1.1	0.5	DPWH	LGU
	4)	LRT 1 Capacity Expansion, OECF (revenue surplus)	6.3	6.3	-10.8	DOTC	-
	5)	LRT 2, OECF	39.5	27.4	21.0	DOTC	DPWH
	6)	Interchanges (3 nos.), OECF	1.5	1.5	1.5	DPWH	-
	7)	TEAM 4, AusAid	1.6	1.6	0.9	MMDA	DPWH
	8)	ADB Air Quality	18.6	18.6	18.6		
	9)	WB-ILI	5.0	5.0	5.0	MMDA	LGU
	10)	WB – MMURTRIP (Priority 1 & 2)	7.9	7.9	7.9	MMDA	DPWH
	11)	OECF Interchanges (4 nos.)	1.2	1.2	1.2	DPWH	-
	12)	PNR Commuter Improve.: North Rail I	30.3	14.0	(8.4)	DOTC	-
	13)	Line 3 Extension (Mon./Caloocan)	12.6	7.6	(3.8)	DOTC	DPWH
	14)	Primary & Secondary Roads/Flyovers	2.8	2.8	2.8	DPWH	LGU
Subtotal			<b>179.1</b>	<b>99.0</b>	<b>68.6</b>		
2. MMUTIS Strategy 2.1 Program Management/ Low-cost Mgt. 2.2 Roads: Primary and Secondary Arteries Expressway (BOT) 2.3 Airport Access 2.4 Public Transport MRT (BT-BOO)	1)	MMURTRIP 2	5.0	5.0	5.0	MMDA	DPWH-LGU
	2)	TEAM 5	2.0	2.0	2.0	MMDA	DPWH-LGU
	3)	Provincial TEAM (South, North, East)	2.0	2.0	1.2	LGU	DPWH
	1)	Northern Package <sup>1/</sup>	10.6	10.6	7.1	DPWH	LGU
	2)	Southern Package <sup>2/</sup>	13.7	13.7	10.6	DPWH	LGU
	3)	Central Package <sup>3/</sup>	10.8	10.8	8.3	DPWH	LGU
	4)	Eastern Package <sup>4/</sup>	3.6	3.6	3.4	DPWH	LGU
	5)	Road Environmental Facilities	2.0	2.0	2.0	DPWH	LGU
	6)	N-S Link (Skyway Stage 2 & 3)	40.4	8.1	4.8	DPWH	-
	7)	Port Access (R-10/C-3)	12.7	2.5	1.5	DPWH	PPA
	8)	C-5 North Section	14.1	2.8	2.0	DPWH	LGU
	1)	Skyway I.C. Improvement, etc.	2.1	0.7	0.7	DPWH	
	1)	MRT Integration (Line 1/Line 3)	3.2	2.3	2.3	DOTC	DPWH-LGU
	2)	MRT Mode Interchange Facilities	2.3	2.3	1.1	MMDA	DOTC-LGU
3)	Line 2 Extension (Masinag)	9.1	5.5	1.6	DOTC	DPWH-LGU	
4)	Line 4 (Recto-Batasan)Phase I	36.2	18.1	(10.6)	DOTC	DPWH-LGU	
5)	Line 6 (Baclaran-Imus) Phase I	36.0	18.0	(9.0)	DOTC	DPWH-LGU	
6)	PNR Commuter Improve MCX	64.6	27.0	(27.0)	DOTC	DPWH-LGU	
Subtotal			<b>270.4</b>	<b>137.0</b>	<b>53.6</b>		
Total			<b>449.5</b>	<b>236.0</b>	<b>122.2</b>		

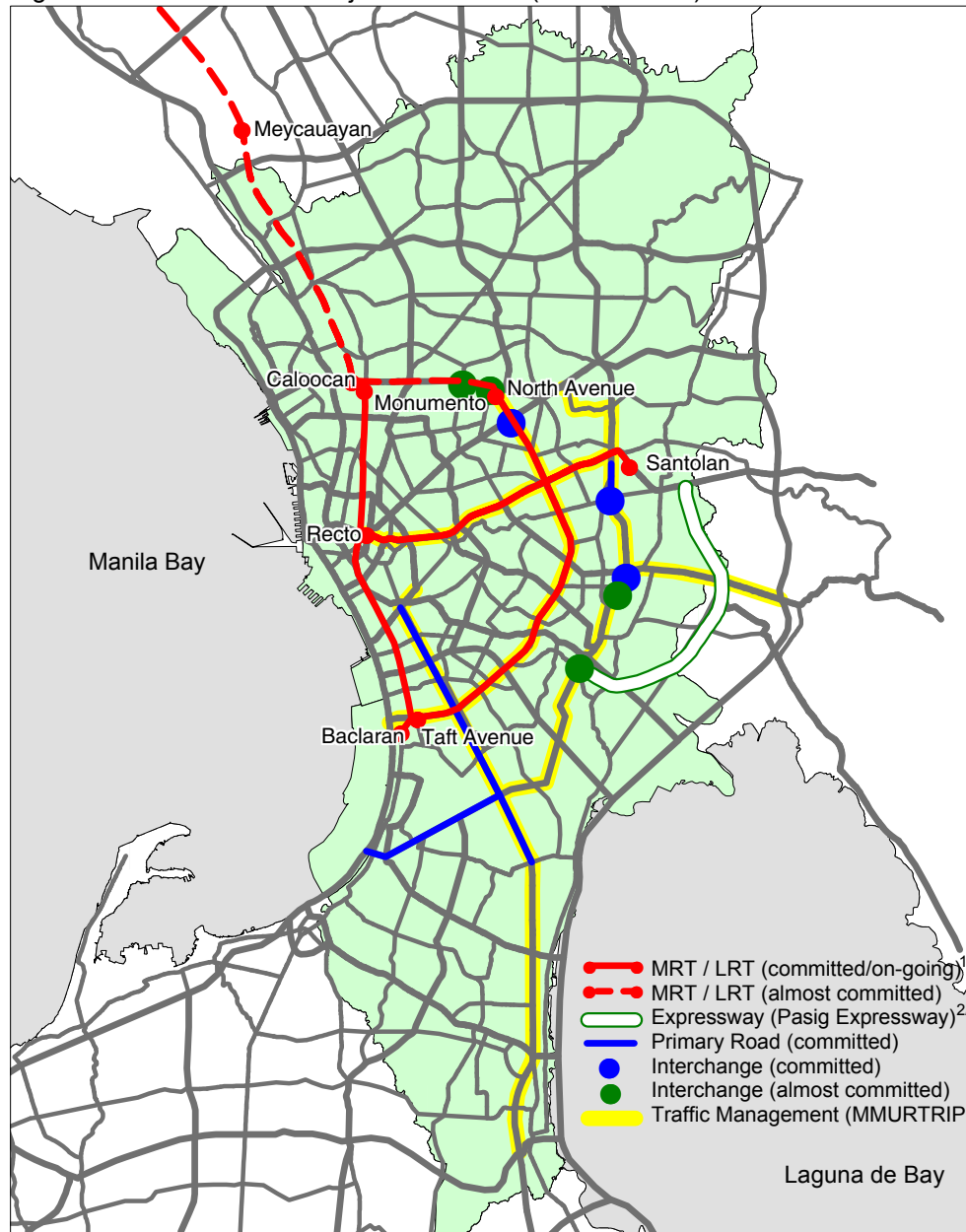
1/ Northern Package includes the following: PN3 – North Central Road (Quirino Hwy-SM16); SM13 – Don M. Marcos Ave. Ext. to N. Central Rd.; and SM14 – Quirino Hwy Novaliches Bypass.

2/ Central Package includes the following: SM1 – Aurora Ave. Ext. to R10; SM2 – A.M.Maceda & Ext. to Aurora Blvd.; SM3 – F. Martinez Ext. to Ortigas Ave.; SM4 – SLE Ext. (Pres. Quirino – J.P. Laurel); SM5 – Gilmore Ave. Ext. to Roosevelt; SM6 – Victoneta Ave. Ext. to Congressional Ave.; SM17 – Kalayaan Ave. Ext. to 20<sup>th</sup> Ave.; GS1-5 – Primary/Primary Grade Separation Projects.

3/ Southern Package includes the following: PS1 – Talaba-Kawit Road; PS3 – Kawit-Bucandala Road; PE1 – Bucandala-Muntinlupa Road; SM21 – Pasay Road Ext. (Lawton-Gen. Santos); GS6 – Primary/Primary Grade Separation Projects.

4/ Eastern Package includes the following: SM18 – New Marikina Road; SM20 – col. B. Serrano Ave. Ext. to Marcos Hwy; GS7,8 – Primary/Primary Grade Separation Projects.

Figure S.3 Committed Projects for MTDP ( 1999 - 2004 )



1/ LRT Line 1 (Monumento-Baclaran) is an existing line.  
2/ not fully committed yet.

Figure S.4 MMUTIS Proposed Projects for MTDP (1999-2004)

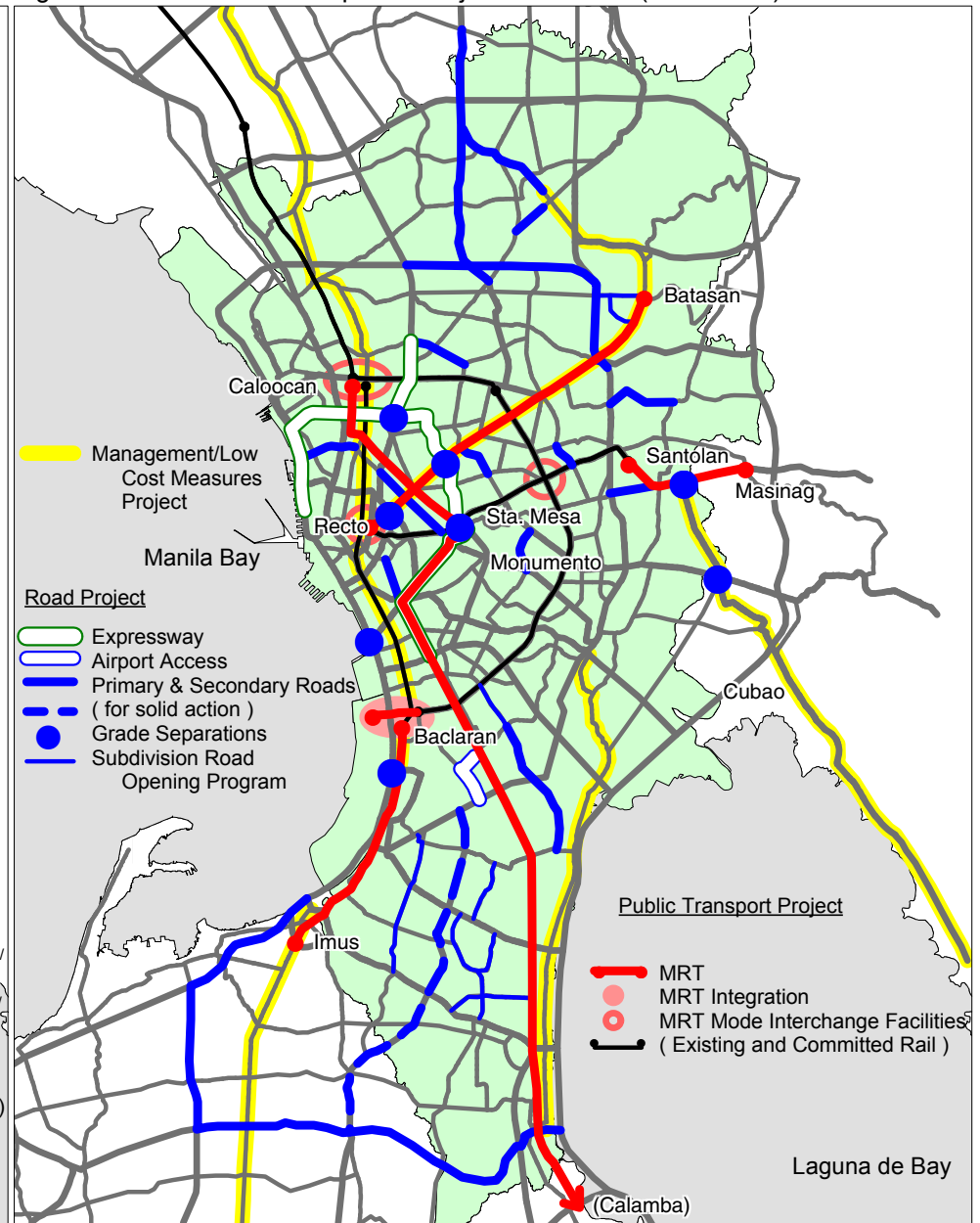


Table S.5  
MTDP Cost Allocation Plan

	Project/Project Package	Cost to Govt.		Cost Allocation for the Mid-term Plan Period					
		Total (P bil)	MTDP (P bil)	1999	2000	2001	2002	2003	2004
<b>1. Committed</b>									
1.1 BOT	1) LRT 3	Rental	18.0		2.0	4.0	4.0	4.0	4.0
	2) Skyway (Stage I)	4.0	2.0	1.0	1.0				
	3) C-5 South Section	1.1	0.5	0.2	0.3				
1.2 IFI Loans (committed)	4) LRT 1 Capacity Expansion, OECF (revenue surplus)	6.3	-10.8	-1.2	-1.2	-1.2	-1.2	-3.0	-3.0
	5) LRT 2, OECF	27.4	21.0	6.0	6.0	5.0	4.0		
	6) Interchange (3 nos.), OECF	1.5	1.5	0.1	0.6	0.6	0.2		
	7) TEAM 4, AusAid	1.6	0.9	0.4	0.5				
(almost committed)	8) ADB Air Quality Improvement	18.6	18.6	3.7	3.8	3.7	3.7	3.7	
	9) World Bank LIL	5.0	5.0	2.0	2.0	1.0			
	10) World Bank MMURTRIP (Priority 1 & 2)	7.9	7.9	0.1	1.5	2.3	2.3	1.7	
	11) OECF Interchanges (4 nos.)	1.2	1.2			0.4	0.4	0.4	
	12) PNR Commuter Improvement: North Rail I	14.0	(8.4)			(1.4)	(1.4)	(2.8)	(2.8)
	13) MRT Line 3 Extension (Monumento/Caloocan)	7.6	(3.8)				(0.8)	(1.5)	(1.5)
1.3 Government-funded	14) Primary & Secondary Roads/Flyovers	2.8	2.8	0.7	0.7	0.7	0.7		
<b>Subtotal</b>		<b>99.0</b>	<b>68.6</b>	13.0	17.2	16.5	14.1	6.8	1.0
<b>2. MMUTIS Strategy</b>									
2.1 Management/ Low-cost Measures	1) MMURTRIP 2	5.0	5.0				1.0	2.0	2.0
	2) TEAM 5	2.0	2.0				0.4	0.8	0.8
	3) Provincial TEAM (South, North, East)	2.0	1.2				0.4	0.4	0.4
2.2 Roads: Primary and Secondary Arteries	1) Northern Package	10.6	7.1			1.0	1.8	1.8	2.5
	2) Southern Package	13.7	10.6	0.1	1.2	3.2	3.8	2.3	
	3) Central Package	10.8	8.3	0.7	1.7	2.4	1.4	2.1	
	4) Eastern Package	3.6	3.4	0.2	0.7	1.4	0.9	0.2	
	5) Road Environmental Facilities	2.0	2.0	0.4	0.4	0.4	0.4	0.4	
Expressway (BOT)	6) Expressway, N-S Link (Skyway Stage 2 & 3)	8.1	4.8			0.8	0.8	1.6	1.6
	7) Expressway, Port Access (R-10/C-3)	2.5	1.5			0.2	0.3	0.5	0.5
	8) C-5 North Section	2.8	2.0	0.3	0.3	0.3	0.5	0.6	
2.3 Airport Access	1) Skyway I.C., Nichols Improvement, etc.	0.7	0.7	0.1	0.1	0.2	0.2	0.1	
2.4 Public Transport	1) MRT Integration	2.3	2.3	0.3	1.0	1.0			
	2) MRT Modal Interchange Facilities	2.3	1.1	0.2	0.2	0.2	0.2	0.3	
	3) MRT Line 2 Extension (Masinag)	5.5	1.6				0.5	1.1	
	4) MRT Line 4 (Recto-Batasan) Phase I	18.1	(10.6)				(2.2)	(4.2)	(4.2)
	5) MRT Line 6 (Baclaran-Imus) Phase I	18.0	(9.0)				(2.0)	(3.5)	(3.5)
	6) PNR Commuter Improvement: MCX	27.0	(27.0)				(9.0)	(9.0)	(9.0)
<b>Subtotal</b>		<b>137.0</b>	<b>53.6</b>	0.0	2.3	7.6	13.8	15.0	14.9
<b>Total</b>		<b>236.0</b>	<b>122.2</b>	13.0	19.5	24.1	27.9	21.8	15.9

### ***Supporting Policies***

- 1) Adopting New Transport Policy Directions: A new paradigm in urban transport planning and management has emerged, **emphasizing sustainability and private-public partnership**. The environment is being given greater attention, not as an afterthought, but as an intrinsic element of economic growth and poverty reduction. While the planning horizon is necessarily long, the requirements of the short- to medium-term period cannot be sacrificed. In the case of the greater Metro Manila area, failure to adopt and follow a long-term plan has severely restricted its present options. True, there is already a perceptible shift from dependence on public sector management and funding to greater reliance on private sector skills and resources. However, the requisite adjustment in government institutions, regulations and processes has been lethargic as to limit the volume of privately financed transport infrastructure. With less government investment in transport projects, there is greater need to focus on capacity building, institutional restructuring, user charges, and policy reform to create competitive markets.
  
- 2) Strengthening Metropolitan Governance: This is the critical success factor for transport development and management in the Study Area. The Metropolitan Manila Development Authority (MMDA) should be strengthened to function as the center of management to cover the following:
  - Incorporation (determination) of alignment and locations of major transport facilities in the statutory city planning institution such as zoning.
  - Strengthening and improvement of the practice of land-use zoning and development permit to guide private sector investments based on the updated zoning plan and development standards/guidelines.
  - Establishment of a transport and urban development planning process based on updated database, planning procedures and investment criteria. The Capital Investment Folio (CIF) which was practiced successfully during the early 1980s under the then Metropolitan Manila Commission (MMC) should be reviewed for possible introduction in the planning system. The University of the Philippines' National Center for Transportation Studies (NCTS) should provide the MMDA and other transport agencies with the needed technical support and training on state-of-the-art technologies on transport planning.
  - Coordination of mega projects, such as the MRT, expressways, arterial roads, and major terminals, is a critical function of the MMDA. Such coordination is not limited among transport agencies, but also between transport and urban development. Without effective coordination, it will become more and more difficult to pursue new infrastructure projects.
  - Improvement of traffic management, which will be of primary importance not only to maximize the effective use of the infrastructure, but also to upgrade management capacity and educate drivers and pedestrians in the process.
  - Introduction of other TDM measures, which will become more important to manage the demand and at the same time to expand user charges.
  - Promoting public involvement, which is becoming increasingly critical to implement impact projects/programs.

- 3) Promoting Public Transport-based Urban Areas: This should be placed in the center of the overall city planning and development policy which are to be supported by the following measures:
- Promotion of rail transit system as the backbone of the public transport system of the metropolitan area through the participation of the private sector, effective use of official development assistance (ODA) and integrated urban development.
  - Establishment of improved framework for private sector participation in MRT projects, including preference for solicited proposal approach, commitment of government support at least to infrastructure component and competitive bidding for operation and maintenance component by the private sector.
  - Promotion of transport terminal development. The MMDA is expected to take the lead to coordinate among stakeholders in the establishment of transport terminals. For this, new development methods, such as urban renewal and land readjustment systems, may provide alternative opportunities.
  - Improvement of public transport regulatory process to promote adequate submodal split, especially between bus, jeepney and rail mass transit, to restructure bus/jeepney routes along the MRT/LRT corridor and to strengthen feeder services to MRT/LRT.
- 4) Strengthening Traffic Management Capabilities and TDM: These are important and will become the more critical elements in short-term and high-impact transport development and management.
- Implementation and expansion of traffic management/low-cost measures/projects/programs such as TEAM, MMURTRIP, etc.
  - Implementation of expanded demand management schemes through congestion pricing, such as road pricing, Area Licensing Scheme, parking pricing, etc., as well as increase in car sales tax, registration fee and fuel tax.
- 5) Promoting Pedestrian and Nonmotorized Transport Facilities: These would improve safety of pedestrians and encourage environment-friendly transport modes such as walking and bicycling.
- Improvement of pedestrian environment, including providing pedestrian-only street, sidewalks, crossings, street lighting, and covered walkways.
  - Introduction of bicycle lanes and dedicated paths.
- 6) Promoting Supportive Measures to Accelerate Infrastructure Development: This should be expanded to include the following:
- Incorporation of major transport infrastructure with city development plans.
  - Government-led planning to protect and balance public interest and to ensure effective configuration of major roads and MRT/LRT as an integrated network to avoid overlap/conflict of investments in the future.
  - Justification of major infrastructure development not only for transport/traffic but also for urban development aspects especially in emerging areas.
  - Establishment of improved rules/guidelines on private sector involvement, particularly on BOT and joint venture projects.



- Introduction of new project development schemes such as integrated development, land readjustment, etc.
  - Strategic use of ODA (eg., from short-term project loan to long-term program loan for the MRT/LRT; urban rail development fund).
- 7) Securing New Sources to Fund Needed Transport Infrastructure: This is also critical for the future of the Study Area. It is hardly possible to improve transport conditions with the estimated funding constraints. Possible sources to be looked into are:
- Increase in taxes on vehicle sales, vehicle registration and fuel,
  - TDM measures (congestion pricing),
  - Development charges and taxes on urban development, and
  - User charges.
- 8) Strengthening Capacity on Transport Research and Education: The MMUTIS contributed to establishing initial database and planning procedure. However, requirements for improved and expanded transport planning capacity in the Study Area will increase in the public sector in both the Central Government and LGU level as well as in the private sector. For this, the capacity of academic institutions should be expanded to supply higher-grade human resource<sup>1</sup>, and graduates need to be encouraged to join the public sector. Opportunities for academicians and practitioners to get involved in various forms of transport research and planning activities should also be expanded.

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<sup>1</sup> The number of universities with transportation courses is less compared to that of Thailand, Indonesia, etc.

# **1 INTRODUCTION**

## **1.1 Background**

The National Capital Region has been experiencing the ills of rapid urbanization – worsening traffic congestion and environmental degradation. The road network expansion has not kept pace with the growth of the metropolis and increase in motorization. Inadequate as the roads already are, poor maintenance and inefficient usage exacerbate the situation. The latter can be traced to conflicting demands over scarce road space, undisciplined drivers and pedestrians, uncontrolled roadside activities, as well as inappropriate management techniques. This situation manifests itself into longer traveling time and trip distances, overcrowding in public transport, serious air pollution, and high level of traffic accidents.

Over the last 20 years, the metropolis muddled through one problem after another. Band-aid solutions were tried instead of a coherent, rational and systematic attack on the root causes of the daily traffic agonies. Their long-running cumulative impacts have drained the metropolitan region and the country as a whole of their economic and social vitality. Without a radical change in approach, it is doubtful whether development can be sustained into the next millennium.

It is for this reason that the Metro Manila Urban Transportation Integration Study (MMUTIS) was initiated, with funding and technical support from the Japan International Cooperation Agency (JICA). Rather than ad hoc, piecemeal, or seat-of-the-pants measures, what is needed is a realistic and long-range plan anchored on updated empirical data, application of knowledge, collaborative efforts, and efficient allocation of limited resources.

## **1.2 Scope of the MMUTIS Project**

### **Objectives**

The MMUTIS was organized to achieve the following objectives:

- 1) To establish an updated transportation database that will serve as the foundation for a continuing transportation planning process, as well as support research and education in the Philippines.
- 2) To formulate a comprehensive 20-year Master Plan for Transportation in the greater Metro Manila region, one that is tempered by realistic assessment of available resources.
- 3) To define a priority program over the next six years, often referred to as the Medium-term Transport Development Plan (1999-2004) that represents the first tranche of the Master Plan.

## Study Area

The Study Area encompasses a land area of 3,670 square kilometers (sq km). One part, 636 sq km in size, is the inner urban core consisting of the 17 component cities and towns of the Metropolitan Manila administrative region. Another part, the outer urban core, comprises 15 municipalities in Bulacan, 12 in Rizal, six in Laguna, and 14 in Cavite (see Figure 1.1). This delineation was purely a planning construct, dictated by the trend and swathe of urban activities in geographical terms and does not imply any political or administrative connotations.

### 1.3 Study Methodology and Outputs

The overall study framework is composed of five major phases:

- 1) Survey and Analysis of Existing Situation
- 2) Modeling and Forecast of Future Urban Conditions
- 3) Recursive Formulation of Transport Network
- 4) Selection of Alternative Transport Plans
- 5) Derivation of a Medium-term Program

The MMUTIS produced the following major outputs:

- 1) A long-range Transportation Master Plan (up to year 2015)
- 2) A Medium-term Investment Program (1999-2004)
- 3) A transport database system and analytical models, including the System for Traffic Demand Analysis (STRADA)
- 4) Sets of technical reports

During the course of the study, the Study Team also produced various technical notes and papers that were presented in workshops and seminars. The latter were meant to inform, educate and train, as well as create a shared vision of what needs to be done. It is hoped that this participative process will outlive the MMUTIS and make the Transport Master Plan dynamic.

A total of 16 seminar-workshops and 102 regular meetings were held, interspersed with presentations by 26 agencies and project proponents. Previous studies were reviewed and their findings and recommendations considered or incorporated, where appropriate, as the MMUTIS was meant to build on past plans.

Specific MMUTIS outputs are listed in Table 1.1.

Table 1.1  
MMUTIS Outputs

No.	Title
<b>A. TECHNICAL REPORTS</b>	
1	MMUTIS Transportation Survey
2	MMUTIS Database
3	Urban/Transportation Development Condition in Adjoining Areas
4	Transportation Demand Characteristics based on Person-trip Survey
5	Transportation Terminals
6	Urban Road Development in Metro Manila
7	Transportation Project Review
8	Traffic Management
9	Public Transportation
10	Traffic Environmental Study, Air and Noise Pollution in Metro Manila
11	Cost Estimation and Design Criteria
12	Water Transport in Metro Manila
<b>B. SURVEY REPORTS (Unpublished)</b>	
1	Cordonline/Screenline Survey
2	Cordonline Survey - Vehicle Volume Counts
3	Cordonline Survey - Vehicle Volume Counts in PCUs
4	Cordonline Survey - Occupancy Counts
5	Screenline Survey - Vehicle Volume Count
6	Screenline Survey - Vehicle Volume Counts in PCUs
7	Screenline Survey - Occupancy Counts
8	Public Transport Routes and Terminal Survey
9	Bus and Jeepney Operators Interview Survey
10	Public Transport Driver Interview Survey
11	Public Transport Passenger Interview Survey
12	Airport Survey
13	Truck Survey
14	Garbage Truck Movement Survey
15	Person-trip Survey
16	Road Environmental Survey
17	Road Inventory Survey
18	Traffic Accident Survey
19	Subdivision Road Inventory Survey
20	Travel Speed Survey
21	Parking Survey
22	PT Routes - Bus Routes
23	PT Routes - Jeepney Routes Vol. I
24	PT Routes - Jeepney Routes Vol. II
25	UVVRP Survey Reports
<b>C. OTHER OUTPUTS</b>	
1	Fact Book
2	MMUTIS Seminar/Workshop papers ( unpublished )
<b>D. MMUTIS DATABASE</b>	
1	Survey Data
2	Official Data
3	Network Data for STRADA

## 1.4 Study Organization

The MMUTIS was undertaken over a span of three years (from March 1996 to February 1999) by an international team of experts with counterpart staff from government agencies – such as the Department of Transport and Communications (DOTC), Metro Manila Development Authority (MMDA) and Department of Public Works and Highways (DPWH) – and the academe, i.e., University of the Philippines-National Center for Transportation Studies (UP-NCTS). Providing overall guidance to the Study Team were a Steering Committee, a Technical Advisory Committee and a JICA Advisory Committee (Figure 1.2). The members involved in the Study are listed in Table 1.2.

Figure 1.2  
Study Organization

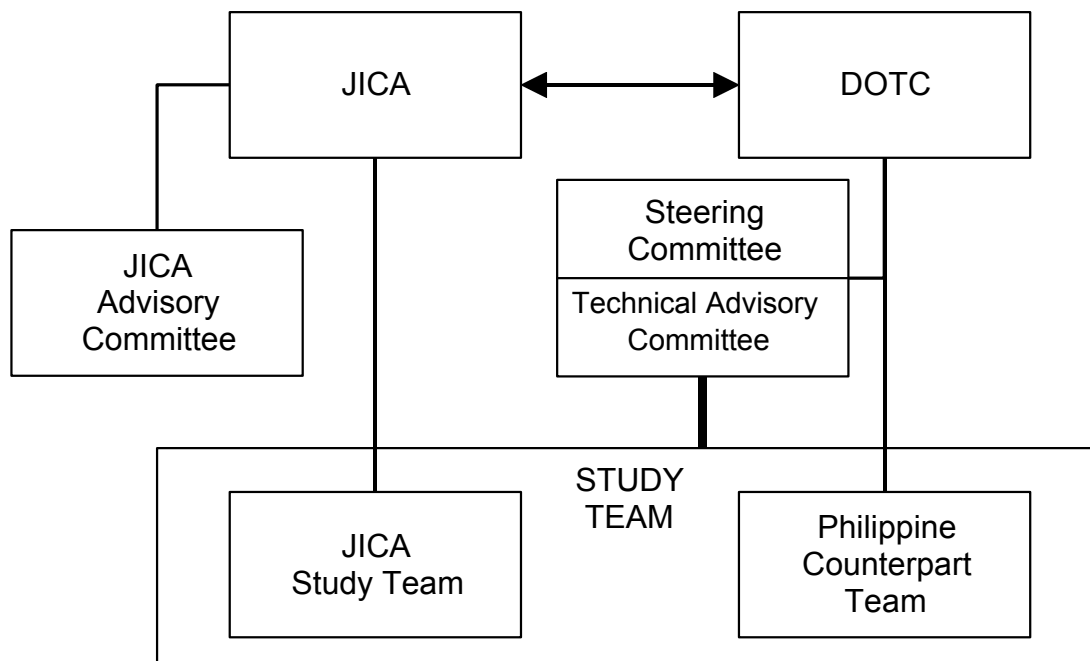


Table 1.2  
MMUTIS Members

<b>Steering Committee</b>		
Chairman	:	Undersecretary Dr. Primitivo Cal, DOTC
	:	Undersecretary Willie Evangelista, DOTC (successor)
Vice Chairman	:	General Manager Robert Nacienceno, MMDA
	:	General Manager Violeta Seva, MMDA (successor)
Members	:	Undersecretary Teodoro Encarnacion, DPWH
	:	Assistant Director-General Augusto Santos, NEDA
	:	Chief Supt. Job Mayo, PNP-NCR Command
	:	Director-General Dionisio dela Serna, HUDCC
	:	Chancellor Claro Llaguno, UP Diliman
<b>Technical Advisory Committee</b>		
Chairman	:	Assistant Secretary Cesar Valbuena, DOTC
	:	Assistant Secretary George Esguerra, DOTC (successor)
Vice-Chairman	:	General Manager Violeta Seva, MMDA
Members	:	Assistant Secretary Manuel Bruan, LTO
	:	Chairman Dante Lantin, LTFRB
	:	General Manager Jose Dado, PNR
	:	Administrator Manuel Clasara, LRTA
	:	Assistant Secretary Manuel Bonoan, DPWH
	:	Director Godofredo Galano, DPWH-TEC/BOT
	:	Director Elisa Joson, DPWH-TECH/BOT
	:	Director Ernesto Camarillo, MMDA
	:	Director Ricardo Sigua, NCTS
	:	Director Ruben Reinoso, NEDA
	:	Chairman Arsenio Yulo, PEA
	:	Col. Rogelio Luis, President, PNCC
	:	Commissioner Romulo Fabul, HLRB
	:	Director Amelia Dulce Supetran, EMB-DENR
<b>JICA Advisory Committee</b>		
Chairman	:	Dr. Shigeru MORICHI
Vice Chairman	:	Dr. Haruo ISHIDA
Members	:	Dr. Seiji NISHIOKA, Urban Transportation Planning
	:	Mr. Kazuhiro TANAKA, Public Transportation Planning
	:	Mr. Hiroshi YOSHINAGA, Public Transportation Planning
	:	Mr. Soki SATO, Public Transportation Planning
	:	Mr. Tetsuya KAMURA, Public Transportation Planning
<b>JICA</b> (First Social Development Study Division)		
Directors	:	Mr. Ikufumi TOMIMOTO
	:	Mr. Takao KAIBARA
Deputy Directors	:	Mr. Masami FUWA
	:	Mr. Masaei MASTUNAGA
	:	Mr. Eri HONDA
Members	:	Mr. Hiroyuki KANZAKI
	:	Mr. Yukihiko KOIZUMI
<b>(Philippine Office)</b>		
Resident Representative	:	Mr. Hiroshi GOTO
Deputy Resident Rep.	:	Mr. Toshiyuki KUROYANAGI
Asst. Resident Rep.	:	Mr. Hisakatsu OKUDA

**JICA Study Team**

Team Leader	:	Dr. Shizuo IWATA
Deputy Team Leaders	:	Mr. Takashi SHOYAMA, Public Transportation Planning 1
	:	Mr. Tetsuo WAKUI, Demand Forecast
Members	:	Dr. Katsuhide NAGAYAMA, Urban Development
	:	Dr. Geronimo V. MANAHAN, Land-use Analysis
	:	Mr. Kenji MARUOKA, Road Planning
	:	Mr. Kazuyuki OTSUKA, Public Transportation Planning 2
	:	Mr. Yoshinori KOTANI, Mass Transit Facility Planning
	:	Mr. Rene SANTIAGO, Public Transportation Project Management/Organization
	:	Mr. Seiya MATSUOKA, Traffic Management
	:	Mr. Michimasa TAKAGI, Transportation Node Planning
	:	Ms. Venetia Lynn M. SISON, Transportation Survey 1
	:	Dr. Tetsuji MASUJIMA, Transportation Survey 2
	:	Mr. Naoshi OKAMURA, Transportation Planning/ Modeling 1
	:	Mr. Masayuki ISHIYA, Transportation Planning/ Modeling 2
	:	Mr. Mazhar IQBAL, System Analysis/Modeling 3
	:	Mr. Alan J. PEAKALL, Financial/Fiscal Analysis
	:	Ms. Theresa. J. VILLAREAL, Macro Economy
	:	Mr. Roger ALLPORT, Transportation Policy
	:	Mr. Mitsuyoshi ASADA, Facility Planning
	:	Mr. Isao HARA, Construction Planning
	:	Mr. Yoshinori TANAKA, Engineering Design/Cost Estimate
	:	Mr. Tsukasa KISHIMOTO, Environmental Planning
	:	Mr. Yosuke SASAKI, Natural Condition Analysis

**Counterpart Study Team**

Project Director	:	Assistant Secretary Cesar Valbuena, DOTC
Project Manager	:	Assistant Secretary George Esguerra, DOTC
Assistant Project Managers	:	Director Cora Cruz, MMDA
	:	Director Elisa Josen, DPWH
	:	Director Olegario Villoria, Jr., NCTS
Members	:	Mr. Arnel Manresa, DOTC
	:	Ms. Cora Japson, DOTC
	:	Mr. Eleuterio Galvante, DOTC
	:	Ms. Marites Tuason, DOTC
	:	Ms. Josephine Bondoc, DOTC
	:	Mr. Victor Dato, NEDA
	:	Ms. Cora Marquez, MMDA
	:	Mr. Emmanuel Supe, DPWH-URPO
	:	Mr. Dante Inciong, DPWH-TEC
	:	Mr. Darren Badion, DPWH-URPO
	:	Mr. Florencio Alano, DPWH-BOT
	:	Ms. Sheila Gaabucayan, NCTS
	:	Mr. Noreil Tiglao, NCTS
	:	Ms. Aileen Mappala, NCTS
	:	Mr. Segundo Palancia, Jr., DOTC

## **2 THE CONTEXT FOR A TRANSPORT STRATEGY**

### **2.1 Historical Context**

The current radial-circumferential topology of the urban road network in Metro Manila can be traced back to the Major Thoroughfare Plan formulated by the National Planning Commission in the 1940s. To the extent that it has shaped subsequent developments, a City Plan could be construed as having existed and followed under government control. It was after the 1950s that the government seemed to have lost control – although not for lack of trying.

Several attempts were undertaken to guide, if not regain control over, metropolitan developments. They included the Urban Transport Study in the Manila Metropolitan Area (UTSMMA, 1973), the Metro Manila Transport, Land Use and Development Planning Project (MMETROPLAN, 1977), the Metro Manila Urban Transportation Improvement Project (MMUTIP, 1981), the Metro Manila Urban Transportation Strategy Planning Project (MMUSTRAP, 1982-85), the Metro Manila Transportation Planning Study (JUMSUT, 1981-84), the Metro Manila Urban Transport Development Plan (MMUTDP, 1991), and the Metro Manila Urban Expressway System Study (MMUESS, 1993). Substantial resources were deployed into these studies, but plan implementation has been limited and selective rather than systematic.

Pronouncements to the contrary notwithstanding, there is really no officially recognized development plan document (akin to the City Plan of the 1940s) which, in many other urban centers of the world, is used to determine infrastructure development programs. Without a widely accepted blueprint for development, much less a common planning database, it is no wonder that the metropolitan Manila region is a patchwork of individual actions of government agencies and aggressive private developers. While large transport projects were launched recently, but belatedly, much more needs to be done if metropolitan Manila is to lead the country into the next millennium.

### **2.2 Prospects Facing Metro Manila**

Metro Manila has been constantly growing and is expected to expand further to a size which only a few cities in the world have experienced.<sup>1</sup> It has to be recognized that the future will, and needs to, be very different from the past. A new direction needs to be set based on the substantive progress of the recent past. At present, there is a considerable consensus in the Philippines about the major thrust of the national policy which provides the framework for the Study Area. Several broad imperatives that dictate future approaches include the following:

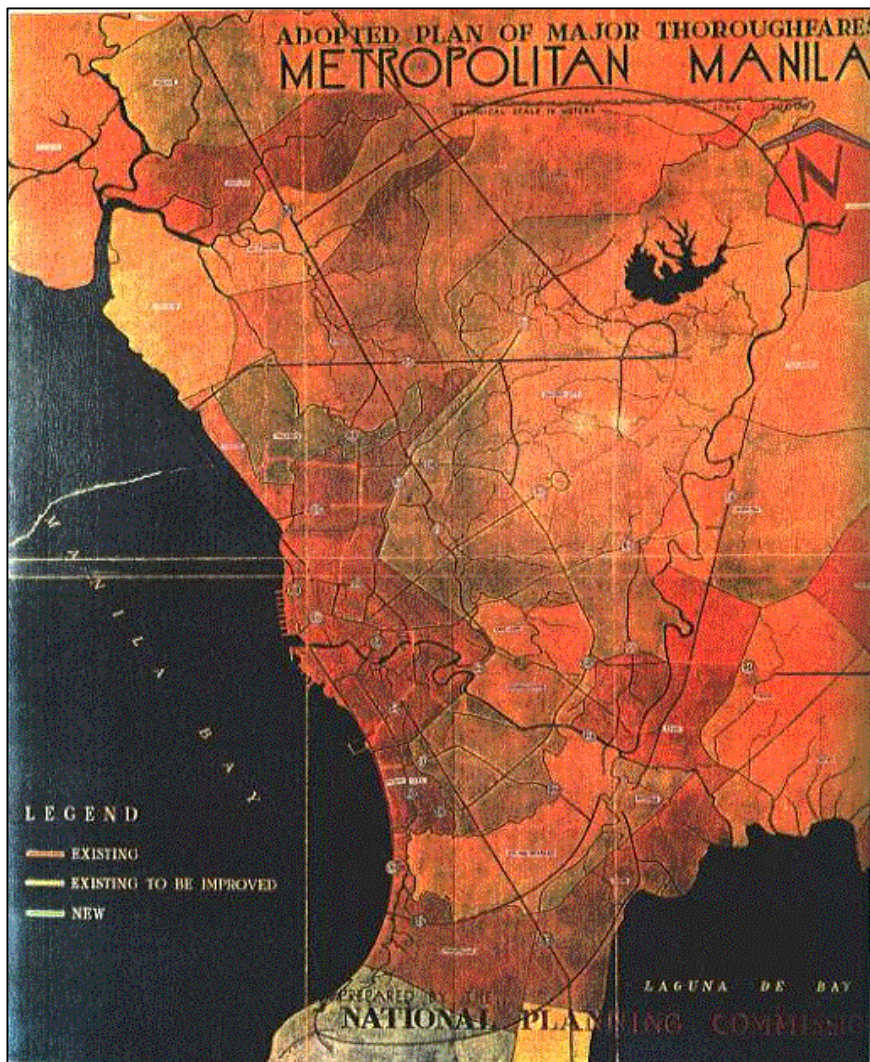
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<sup>1</sup> The present Metro Manila has 636 km<sup>2</sup> and 9.5 million population (as of 1995), while the actual metropolitan area has expanded beyond the administrative boundary and houses 14.5 million. It is predicted that this will further reach 25 million with the expanded urbanized area of 1,500 km<sup>2</sup> (refer to Figure 2.2).



Figure 2.1  
Major Thoroughfare Plan and the First City Plan for Manila

Major Thoroughfare Plan



City Plan of Manila

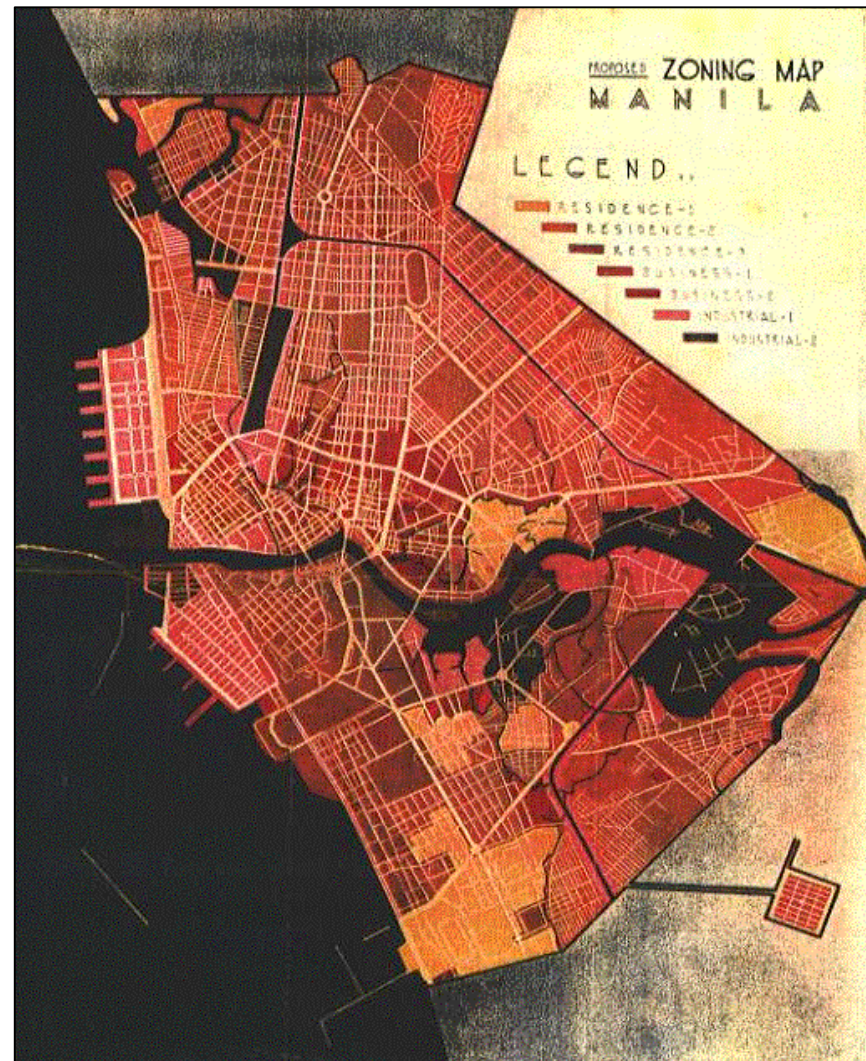
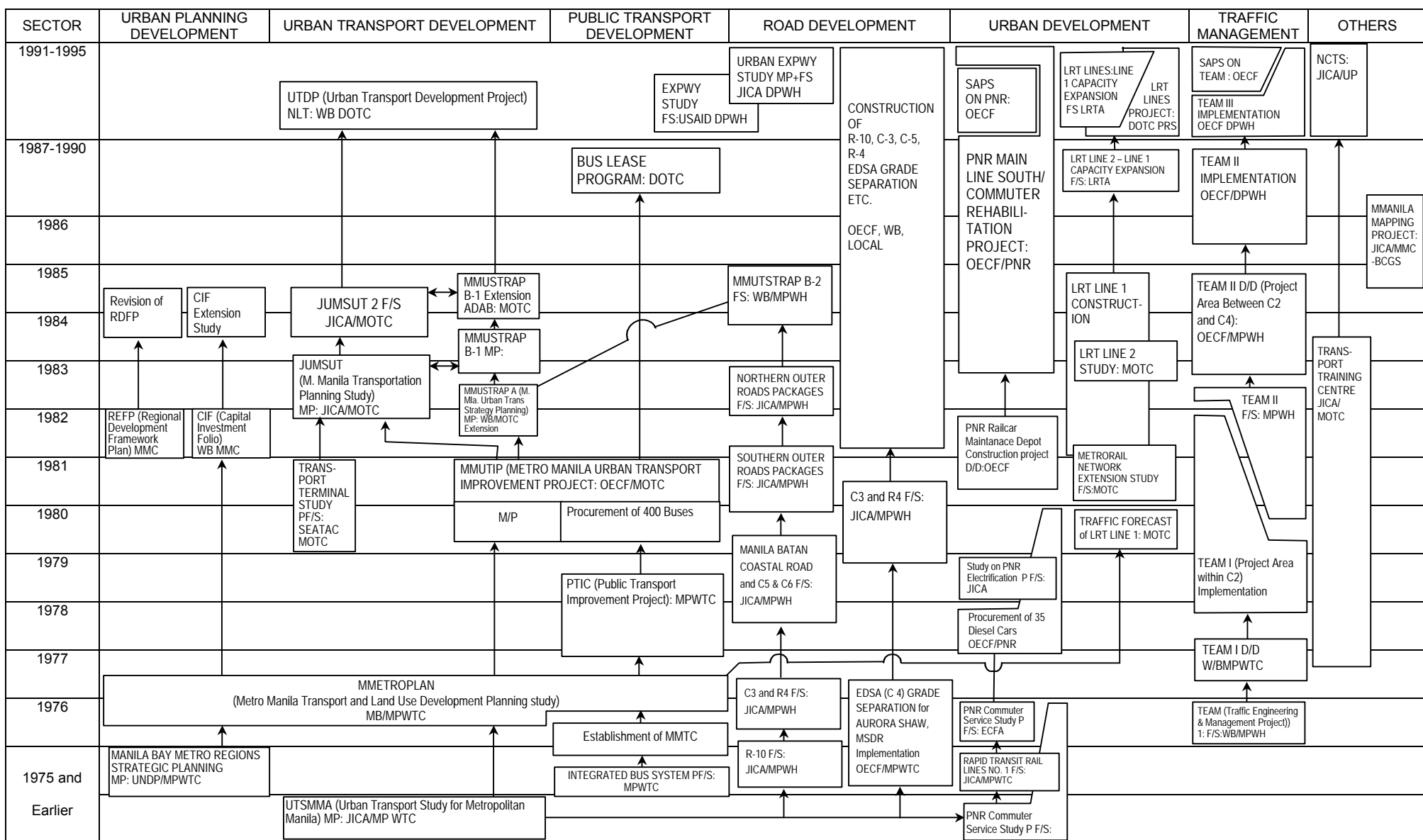


Table 2.1  
Genealogy of Transport Studies in Metro Manila



II 2-3

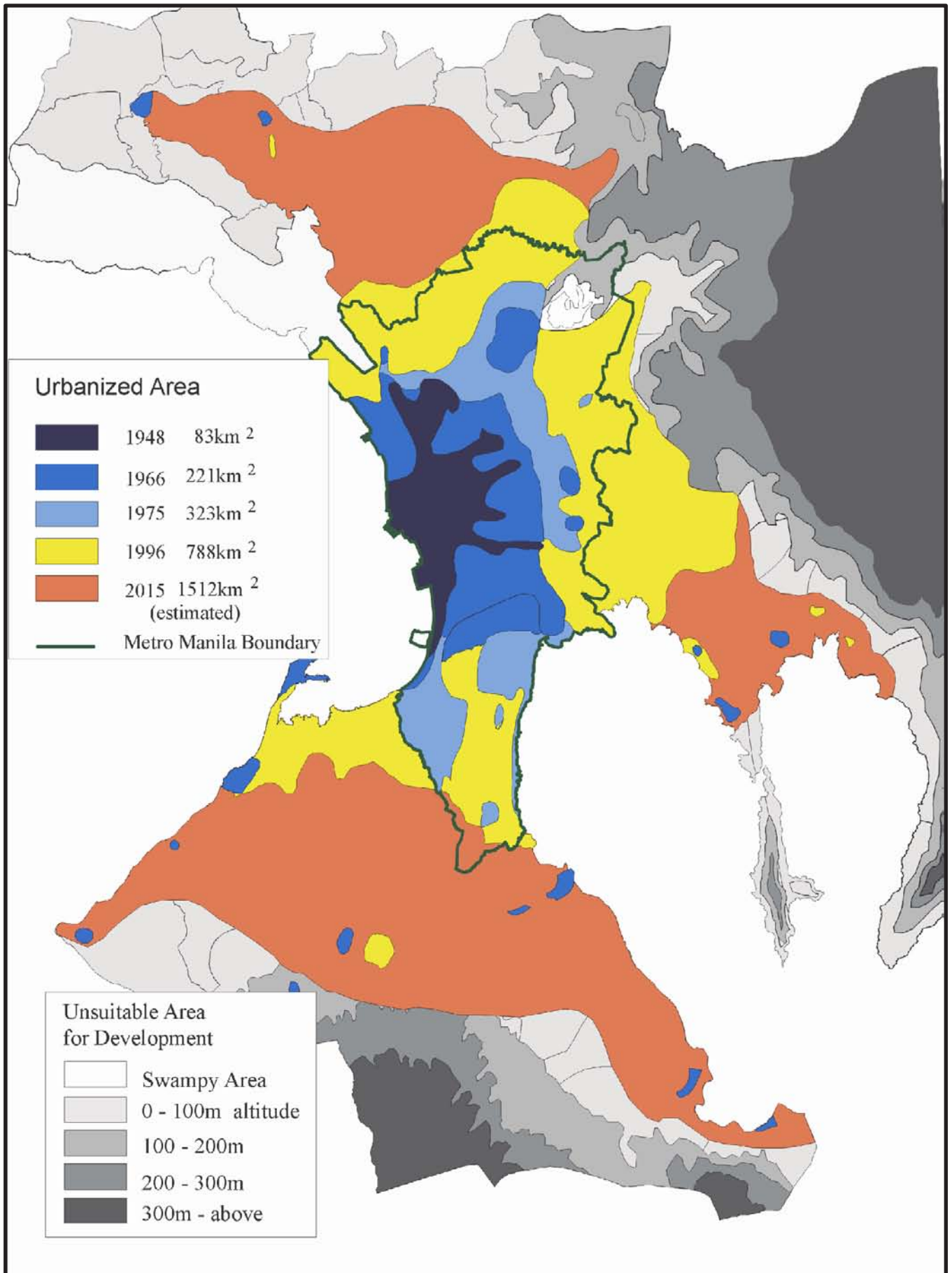
MMUTIS Final Report

MPWTC: Ministry of Public Works, Transportation and Communications  
 MPWH: Ministry of Public Works and Highways  
 MOTC: Ministry of Transport and Communications  
 MMC: Metro Manila Commission  
 PNR: Philippine National Railways  
 NEDA: National Economic Development Authority

LRTA: Light Rail Transit Authority  
 MMTC: Metro Manila Transit Corporation  
 JICA: Japan International Cooperation Agency  
 OECF: Overseas Economic Cooperation Fund  
 WB: World Bank  
 D/D: Detailed Design

UND: United Nations Development Program  
 ADAB: Australian Development Aid Bureau  
 SEATAC: Southeast Asian Agency for Regional Transport and Communications  
 P F/S: Pre-Feasibility Study  
 F/S: Feasibility Study

Figure 2.2  
Expansion of the Urban Area within the Study Area



- Recognition that the private sector needs to have a substantial stake in many aspects of future activity,
- Recognition that while much has been achieved recently, the performance of the transport sector should be further improved, and
- Recognition that city governance needs to be further strengthened to promote and ensure environmentally and financially sustainable urban development and management.

There is a strong link between the development of major urban areas and wealth production. Cities are often able to generate goods and services far in excess of their share of the national population because of their high productivity and related economies of scale. However, cities today are competing not just on the basis of their traditional comparative advantages in transport, communication, skilled labor, etc. but also in terms of such attractions as lifestyles, good housing, cultural attributes, cost of living, and tourism opportunities. Quality-of-life issues are becoming increasingly important in international competitiveness.

It is increasingly recognized as well that the social dimension is of fundamental importance in the successful design and implementation of any major urban management scheme. Earlier models of urban management concentrated on command and control mechanisms. More recent models in many developing countries recognize the tendency of a growing web of interest groups in business, local communities, environmental nongovernment organizations (NGOs), and other sectors that want more influence in policy- and decision-making. This trend is certain to increase as the private sector becomes more involved in the urban management process. Any long-term perspective must take full account of the social dimension of urban management systems for there to be public debate and participation in the decision-making process.

An aspect of livability which receives inadequate attention relates to environmental management. Rapid population growth, urbanization and urban sprawl, worsening traffic congestion and safety, polluted air and water, and inadequate solid waste disposal and sanitation facilities are all characteristics of many cities in the region. How these issues have been addressed and the relationship between physical and environmental planning will become more and more critical issues of mega cities.

Public/private sector role-sharing has become an important aspect of the government's formulation of a workable policy and institutional framework, because the resources and capabilities of the private sector for urban development are usually much bigger than those of the public sector. Therefore, the basic role of the public sector is to encourage and guide private sector initiatives and actions in urban development. In Metro Manila, there are examples of successful private sector involvement in urban development: expressways built in the 1960s, CBDs developed in Makati, Ortigas and Cubao in the 1950s through the 1970s and the reclamation along Manila Bay in the 1970s are testimonies to this success. Ongoing BOT projects, however, are subject to questions and scrutiny regarding their compliance with BOT rules.

### **2.3 Government Policy Objective**

Urban management is a central policy issue that has not been adequately addressed in the past, and this is the root cause of current urban problems. To a considerable extent, the deterioration of the environment and mobility has resulted from the failure of the transport strategy to address the sector's needs and the lack of control of the authorities over its growth. To ensure the improvement of transport systems it is thus necessary to complete some "unfinished work", of extending basic infrastructure networks and providing for their adequate maintenance. It also requires attention to the new problems posed by uses of better-quality services and by the adverse effect of rapid motorization. To support a better quality of life on a long-term basis, "sustainability" has become the basis of a more demanding transport policy focusing on economic, financial, environmental, and social sustainability. Increasingly, urban sustainability has become the objective of city administrators worldwide.

To achieve this goal, the bottom line is "governance issue" or good management of a city. Many city issues are due to the lack of management capability of governments in almost all subsectors and at all stages of the development cycle, from planning to implementation. In the planning stage, reliable database and planning tools are lacking, the ability of the planner is low, and planning organizations are not properly staffed nor equipped with proper facilities. Planning coordination between the central government and the local government as well as between local governments is difficult. Investment programming is also affected by the same problems, resulting in investment plan that is often a mere summation of projects of different agencies without proper project prioritization. Management at the implementation stage should also be greatly improved to coordinate interrelated and complementary projects effectively.

Although it is not difficult to identify deficient areas and problems in managing developing cities, it is extremely difficult to work out effective improvement strategies and schemes and to implement them successfully. The socio-political context in which urban management systems are employed is also of critical importance.

### **2.4 Sector Constraints**

The three major constraints in the transport sector are funding, institutional effectiveness and land for needed infrastructure.

Despite limited public funds, there is still no systematic and rational allocation to planned transport projects. Short-term political expediency often determines what is eventually implemented. Although private funds for infrastructure projects substantially increase the volume of investments, recent experiences show that such projects still use up public funds somewhere along the process.

A number of fundamental institutional problems have been noted: harmonization of activities at the metropolitan level is still ineffective; local government units might have asserted their rights over land-use controls only to cede them to developers; traffic management and enforcement have been unified but still weak and adhocratic.

Another major problem is the acquisition of rights-of-way (ROW) which has derailed the implementation of many vital transport projects. Legitimate property owners as well as informal occupants find ways to exploit the legal system to the consternation of infrastructure agencies. This is due to the latter's failure to plan and reserve ahead and to their competing and conflicting priorities.

## **2.5 Ongoing Initiatives**

There are three major studies that have impacted on the MMUTIS and vice versa. These are the Asian Development Bank-funded Philippine Transport Strategy Study (PTSS), the Metro Manila Urban Transport Improvement Project (MMURTRIP) and the Cavite-Laguna (CALA) Urban Development and Environment Project, both funded by the World Bank. The first two are finished, while the third has just commenced. The PTSS concerns the national transport strategy and its implications on the MMUTIS including the PNR ROW and operation and access to the Manila Port and the Ninoy Aquino International Airport (NAIA).

The MMURTRIP prepared short-term solutions on transport improvement on selected corridors such as the LRT Line 2 corridor, the EDSA corridor, the C-5 corridor, the Southern Luzon Expressway (SLE) corridor, and the Marikina Valley area.

The CALA study aims at formulating long-term transport strategies in compliance with the MMUTIS proposal and short-term specific projects for implementation.

Other initiatives include TEAM 4, which will replace and upgrade the area traffic control system in the main urban area, the ADB-funded Air Quality Improvement Project and PNR Restructuring Study and the WB-funded Learning Innovation Loan (LIL).