

# Chapter 7. URBAN TRANSPORT

## I. Introduction

1. People living in Metro Manila increasingly face traffic congestion, polluted air, unsafe roads and vehicles, the absence of parks, sidewalks, and open spaces, and the realities of more cars and motorcycles in the future. For these urban dwellers, costly delays, accidents, and the health effects of pollution make city living a great burden. The cost of vehicle congestion alone was estimated at about 100 billion pesos annually in 1996<sup>1</sup> or close to 5% of the gross domestic product. The World Bank<sup>2</sup> noted in its review of the Philippine infrastructure sector that the high levels of congestion, poor condition of parts of the road network, inadequate connectivity for inter-city or inter-regional movement, and the lack of sustainable road safety strategy had reduced the efficiency of the road sector in promoting economic growth and providing safe access in the country.

2. Many cities in the Philippines are on the threshold of full urbanization and motorization. In the last decade, many municipalities, mainly the capital towns of provinces, have attained cityhood status despite their having agriculture as the principal economic base. These cities include Tuguegarao, Sorsogon, Silay, Bago, Dapitan, Koronadal, Tacurong, and Koronadal, to name a few. The price of economic growth includes the double-digit increase in the number of motorcycles and tricycles, a new development occurring in most Philippine cities, and associated problems of congestion and air and noise pollution. Transport decisions taken now will affect how people will live in these cities in the future. Paradigms have to shift from a focus mainly on vehicle transport to a focus on urban transport in a city for people.

3. As an active member of the United Nations, the Philippines has committed to fully implement the Istanbul Declaration on Human Settlements and Habitat Agenda,<sup>3</sup> notably the transport system priorities to be accorded to “reducing unnecessary travel through appropriate land-use and communication policies, developing transport policies that emphasize mobility alternatives other than the automobile, developing alternative fuels and alternative-fuel vehicles, improving the environmental performance of existing modes of transport, and adopting appropriate pricing and other policies and regulations.”

4. The current focus on transport and the environment further strengthens the resolve to pursue the country’s commitments to Millennium Development Goals (MDGs). While the MDGs can best be achieved through a comprehensive multi-sector approach ranging from health and education to political and economic reforms, the role of transport is important. The mobility of people and of goods is a vital fabric of social, cultural, institutional, and economic activities.

5. This review of the urban transport performance of key cities in the country aims to assess the gaps and obstacles in the efficient and sustainable functioning of these urban areas, the consequences of business-as-usual transport and land-use policies and measures, and the opportunities for further concerted action to overcome these obstacles.

6. For purposes of this review, 65 cities were considered to provide representative insights on the current situation and prospects of 117 cities in the Philippines. The list of

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<sup>1</sup> Metro Manila Urban Transport Integration Study, Final Report, JICA, 1999.

<sup>2</sup> Philippines: Meeting Infrastructure Challenges, World Bank, 2005.

<sup>3</sup> *Report of the United Nations Conference on Human Settlements (Habitat II)*, Istanbul, 3-14 June 1996.

these cities was taken from the continuing Philippine Cities Competitive Ranking Project<sup>4</sup> (PCCRP) of the Policy Center of the Asian Institute of Management. The PCCRP is an annual assessment of the capacity of cities to provide an environment that nurtures the dynamism of their local enterprises and industries and to uplift the living standards of their respective residents. An urban transport database of these 65 cities has been generated through recent transport and urban studies and the research, including comprehensive land use plans, posted on the web sites of local government units.

## II. Current Trends in Urban Transport

### A. Urbanization and Motorization

7. Asia holds 61% of the global population. The region's share of the global urban population has risen from 9% in 1920 to 48% in 2000, and it expected to increase to 53% by 2030. For the Philippines, the rate of urbanization is estimated at 3% annually. As of 2005, Philippine urban population reached nearly 50% of the total—higher than Malaysia, Indonesia, or Thailand. Metro Manila dominates the country's urban scene, with a population of 10.8 million within its 636-square-kilometer boundary, plus about seven million more in adjoining areas within its urban sphere. Of the 16 highly urbanized cities (HUCs), 11 were classified as entirely urban. These were the HUCs in Luzon and the Visayas and three HUCs in Mindanao, namely, the cities of Cagayan de Oro, Marawi, and Cotabato (Table 7.1). The HUCs that were not entirely urban were the cities of Zamboanga, Iligan, Davao, General Santos, and Butuan, which are all in Mindanao.

**Table 7.1 Highly Urbanized Cities, 2000**

Highly Urbanized Cities	Entirely Urban	Not Entirely Urban
Luzon		
Baguio City	✓	
Angeles City	✓	
Olongapo City	✓	
Lucena City	✓	
Visayas		
Iloilo City	✓	
Bacolod City	✓	
Cebu City	✓	
Mandaue City	✓	
Mindanao		
Zamboanga City		✓
Cagayan de Oro City	✓	
Iligan City		✓
Davao City		✓
Marawi City	✓	
Cotabato City	✓	
General Santos City		✓
Butuan City		✓

Source: NSO, 2000 Census of Population and Housing

<sup>4</sup> PCCRP started in 1999 with 10 cities. It categorizes cities into small-sized cities (with a population below 200,000 people), medium-sized and non-metropolitan cities (with a population at least 200,000 people), and metropolitan cities (part of either Metro Manila, Metro Cebu, or Metro Davao).

8. In terms of vehicle population, 31.2% of the 5.1 million total motor vehicles was registered in the cities and municipalities of Metro Manila in 2005, not including close to 1.4 million vehicles from CALABARZON and Region III which mainly operate daily within the metropolis. Table 7.2 presents the number of registered vehicles in the Philippines by region.

**Table 7.2 Vehicle Registration by Region, 2000 and 2005**

Region	2000	2005	Average Annual Growth, %
I	194,635	268,697	6.7
II	124,049	178,501	7.5
III	438,742	628,086	7.4
IV	487,648	710,084	7.8
V	96,001	151,755	9.6
VI	200,019	276,458	6.7
VII	297,646	400,384	6.1
VIII	69,515	105,875	8.8
IX	89,842	148,698	10.6
X	83,902	137,791	10.4
XI	182,870	189,621	0.7
XII	66,586	164,794	19.9
Metro Manila	1,286,176	1,580,753	4.2
C.A.R.	47,213	63,921	6.2
CARAGA	36,329	54,335	8.4
<b>Total</b>	<b>3,701,173</b>	<b>5,059,753</b>	<b>6.5</b>

Source: Land Transportation Office

8. Appendix 7.1 illustrates the wide variety of Philippine cities that have collected common urban transport indicators. The cities range in size from San Fernando, La Union, the smallest city with a land area of 10.2 km<sup>2</sup>, to Puerto Princesa City, the largest city with an area of 2,540 km<sup>2</sup>. In terms of both land area coverage and population, Davao City is the largest city in the Philippines. Along with Puerto Princesa and Zamboanga, Davao City is one of three cities included in the analysis which has a land area of more than 1,000 km<sup>2</sup>. The average land area of cities which have common urban transport indicators is 303 km<sup>2</sup> and the mean population density is 94 per km<sup>2</sup>.

9. The level of motorization of the 65 cities is more than double the national average of 50 vehicles per 1,000 population. Tagaytay City has the highest vehicle density at 687 vehicles per 1,000 population, while Marawi City has the lowest vehicle density at 5.3 vehicles per 1,000 population.

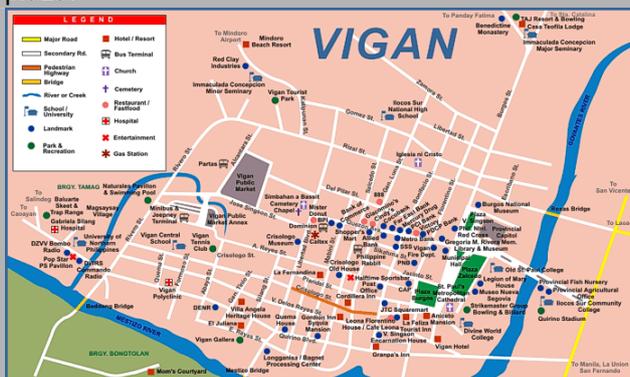
## B. Road Transport Situation

10. The transport network system in most cities in the Philippines, including the metropolitan regions, is road-based and characterized by the historic period they were developed. Most local cities, such as Vigan, Cotabato, and Tacloban, still have the 19<sup>th</sup> century Spanish road network pattern (Box 7.1). In this pattern, the road network at the *poblacion* (town center) is narrow and the building structures are close to the streets. On the other hand, cities like General Santos have new developments in road transport, e.g. wider roads at city centers and dispersal of urban developments. Despite this observation, traffic

congestion and other urban transport and traffic problems are present in these urban centers.

### Box 7.1 Vigan Town Planning

Strategically located at the mouth of the Abra River along the northwestern coast of Luzon, Vigan was an important coastal trading port from the pre-colonial era to the 19<sup>th</sup> century. The town plan is representative of the style the Spanish colonizers had designed and established in the 18<sup>th</sup> century. It conforms to the Law of the Indies that specified the lay-out of structures, street patterns, and open spaces of all new settlements during the Spanish era in a grid street pattern radiating from a central plaza.



Dominating the central plaza (Plaza Salcedo) are the administrative and religious buildings: the Casa Real (Provincial Administrative Office), the Municipio (Municipal Hall), the Seminario (Archdiocesan Seminary), the Colegio de Niñas (now St. Paul's College), the Arzobispado (Archbishop's Palace), and the Cathedral (St. Paul's Cathedral) with its detached belfry.

Source: Vigan City website ([www.vigancity.gov.ph](http://www.vigancity.gov.ph))

11. Thus far, there are three major metropolitan areas in the country: Metro Manila, Metro Cebu, and Metro Davao. Of these three, only Metro Manila has a formalized institutional organization, the Metro Manila Development Authority (MMDA). The other metropolitan areas can still be considered more of having metropolitan arrangements among the urban centers. The recent Japan International Cooperation Agency (JICA) study on regional growth centers<sup>5</sup> noted the emergence of Metro Bacolod, Iloilo, and Cagayan de Oro. Table 7.3 shows the coverage of these new metropolitan areas.

**Table 7.3 Emerging Metropolitan Areas**

Metropolitan Area	Cities and Towns Covered	Total Land Area, km <sup>2</sup>	Vehicles per 1,000 People
Bacolod	Victorias City and municipalities of Enrique Magalona, Pulupandan, and Murcia in the province of Negros Occidental	1,530.7	34.9
Iloilo	Iloilo City and municipalities of Leganes, Zarraga, Sta. Barbara, Pavia, Oton, San Miguel, and Cabatnan, in the province of Iloilo	460.9	50.4
Cagayan de Oro	Cagayan de Oro City and the municipalities of Gitagum, Laguindingan, Alubijid, El Salvador, Opol, Tagoloan, Villanueva, and Jasaan in the province of Misamis Oriental	1,121.0	32.6

Source: JICA Study on Road Network Improvement for the Development of Regional Growth Centers

12. Based on Appendix 7.1, which shows comparative data on road infrastructure, metropolitan cities have road densities greater than the national average of 0.7 km of roads

<sup>5</sup> Study on Road Network Improvement for the Development of Regional Growth Centers, Final Report, JICA, October 2004.

per km<sup>2</sup> of land area and paved road ratios ranging from 60% (Davao City) to 100% (Metro Manila cities). For small to medium-sized cities, those traversed by the national trunkline roads, such as the cities of Tarlac, Calamba, Cotabato, Ozamiz, Panabo, among others, have similar road densities as metropolitan cities, with most roads having concrete or asphalt pavements.

13. Most urban centers in the country already experience varying levels of traffic congestion and other transport and traffic problems. The carrying capacities of the road network in urban centers, notably at the city centers or Central Business Districts (CBDs) cannot cope with the increasing volume of vehicles using the network. For instance, Calamba has heavy traffic congestion at the national highway crossings and at market areas. Tagbilaran has road traffic problems in the CBD, which led to its decision to establish a satellite growth area in Barangay Dampas where the public market and the integrated bus terminal were transferred. An analysis of Baguio City CBD peak hour traffic showed that 2,500 jeepneys converge daily in the city center, where the capacity of the seven main thoroughfares has a combined total of only 581 jeepneys. Metro Cebu shares the same transport and traffic problems of Metro Manila cities. Major sections of Metro Cebu, like markets, schools, and business districts, are prone to traffic congestion. A number of cities have stringent regulation on the use of tricycles, noting their surfacing as principal causes of congestion because of their sheer number and extent of operation. For the emerging metropolitan areas (Box 7.2), the increasing inter-city vehicle traffic creates another dimension to the worsening traffic situation.

14. The condition of the urban center's road network likewise reflects the level of service of the overall urban transport system. Deteriorating conditions and lack of proper maintenance further reduce the efficiency of the road network, resulting in longer travel times and worsening traffic congestion. Similarly, an ineffective and outdated drainage system contributes to the situation especially during the rainy season, resulting in flash floods which have become normal occurrences in urban areas, particularly in Metro Manila cities.

## C. Public Transport Situation

### 1. Public Transport Modes

15. The Philippines is home to many variants of urban public transport modes. Some of the more conventional forms such as buses and urban railways are in use mainly within Metro Manila and its surrounding areas. However, the jeepney dominates as public transport mode in Metro Manila, as well as in many of the larger cities in the Philippines.

16. Other public utility vehicles include taxis, FX<sup>6</sup>, vans, multicab<sup>7</sup>, tricycles<sup>8</sup>, other localized transport such as “kuliglig” (i.e., a cart pulled by small tractor), and “skylab/habal-habal” (i.e., motorcycles which use extensions to allow more than one passenger to ride). Non-motorized versions include the “trisykad,” is a pedal-powered tricycle.

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<sup>6</sup> An “FX” uses the type known as Asian Utility Vehicle (AUV) which usually has a basic capacity of ten or fewer passengers, is arranged more like an automobile, but with short row seats at a hatched compartment.

<sup>7</sup> A “multicab” has a jeepney-like arrangement but seats only twelve passengers. Its fare usually follows the jeepney fare system.

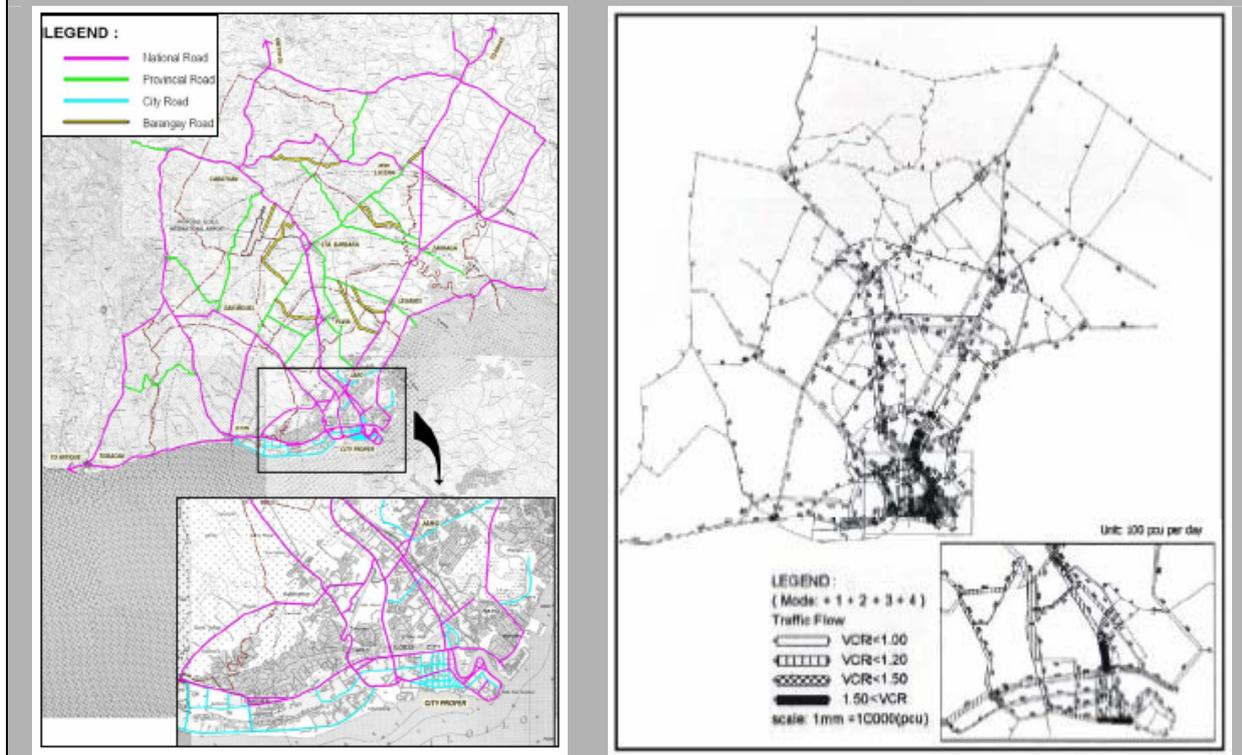
<sup>8</sup> A “tricycle” is a motorcycle with an attached, covered sidecar. Passengers may sit either behind the driver or in the sidecar.

### Box 7.2 Metro Iloilo Road Network Issues

The urbanized areas of the towns of Oton, Pavia, and Leganes are formed at a 10-km radius from the Iloilo City proper. On the other hand, the towns of San Miguel, Sta. Barbara, and Zarraga are at a 15-km radius, while Cabatuan is at a 23-km radius. Due to the lack of circumferential roads, trips between these town proper (such as Oton to Pavia or vice versa) have to pass through Iloilo City. Among inter-city roads, the Iloilo-Roxas Road carries the heaviest traffic, followed by Iloilo-Sta. Barbara-Kalibo Road and Iloilo-Antique Road. When the airport is transferred to the Cabatuan/Sta. Barbara site, the Iloilo-Sta. Barbara Road will carry the heaviest vehicle traffic volumes.

A mesh-type road network is formed within the Iloilo City proper. The sides of its roads have been densely built-up, making the widening of existing roads or the construction of new roads difficult. In the future, heavy traffic will be concentrated on roads not only inside Iloilo City but also within the 10-km radius of Oton, Pavia, Leganes, and Iloilo City.

Inside Iloilo City, all radial roads will exceed their traffic capacity. Most roads have only a slight possibility of being widened. Inside the Iloilo City proper, most roads, except the four-lane divided roads, will exceed their road capacities. However, further widening of such roads is deemed difficult.



17. The rise of the tricycle as a principal mode of transport in most Philippines cities has been attributed in part to their low capital and operating costs, which attracted investments from overseas workers. Overall, motorcycles and tricycles comprised about 43% of all motor vehicles in 2005. The phenomenal increase in the use of motorcycles and tricycles is more pronounced in small and medium-sized cities, except Baguio City. In the country, where the share of motorcycles and tricycles range from 22% (in San Fernando, Pampanga) to 80% of the motor vehicle registrations (in Dipolog). Besides Dipolog, Sorsogon, Puerto Princesa, Koronadal, Ozamiz, Pagadian, and Tagum have motorcycle/tricycle populations of more than 70%. Box 7.3 presents the tricycle experience in Puerto Princesa.

## 2. Urban Rail Systems

18. So far, only Metro Manila has a network of rail-based mass transit systems that augments the road network system in meeting the traffic demand in the metropolis. Three mass transit systems are now operational and four more are in the planning stage or already in the pipeline. The three mass transit systems in operation are the following:

- LRT Line 1 from Monumento in Caloocan City to Baclaran in Pasay City;
- LRT Line 2 from Santolan in Marikina to CM Recto in the City of Manila; and
- MRT Line 3 from North Avenue in Quezon City to EDSA in Pasay City.

### **Box 7.3 The Tricycles of Puerto Princesa**

Puerto Princesa covers 253,982 hectares of land, making it the country's largest city. It is located 306 nautical miles southwest of Manila and stretches 106 kilometers long with its narrowest breadth in Bahile, where only 8.5 kilometers of land separate the east and the west coasts. Settled areas are highly dispersed, while heaviest concentration exists on the east coast, where the city proper and the urban growth point area lie close to each other.

The population increase in Puerto Princesa led to an increasing demand for mobility during the past years. Except for year 2003, the volume of tricycles increased exponentially since 2000, with about 70% of the registered tricycles in Palawan located in Puerto Princesa City. In 2001, the tricycle population increased dramatically. By 2003, the tricycle population had ballooned to more than 3,000 tricycles and traffic congestion was bad. In 2005, about 4,000 tricycles served commuters within the poblacion and adjacent barangays while about 230 passenger multicabs plied their assigned routes within the city proper and adjoining barangays and municipalities.

The 2005 ADB tricycle air and noise pollution study<sup>9</sup> conducted a survey in Puerto Princesa City in April 2004. The study established the population's high dependence on tricycles as a means of public transportation. About 58% of the total respondents are regular tricycle commuters who take at least two rides daily. Moreover, tourists prefer taking the tricycle to go around the city because of the convenience and comfort it offers. For transporting passengers and cargoes to distant destinations, jeepneys and buses provide the required services.

Despite the health and environmental hazards that tricycles bring, the ADB study found that the city continues to experience increases in tricycle population due to high unemployment and absence of alternative livelihood, a limited road network, and an increase in the commuting population. To relieve congestion, Mayor Edward Hagedorn implemented a number-coding system which later became a color-coding scheme for the tricycles. Under this scheme, tricycles colored blue and white plied the city streets on alternating days. This scheme effectively halved the number of tricycles plying the city streets and reduced air and noise pollution.

19. Rail-based mass transit systems are also being studied by other major urban centers like Metro Cebu and Metro Davao. Even regional cities, such as Cagayan de Oro, are also clamoring for mass transit systems to address their urban transport and traffic problems. There are groups proposing the development of busway systems in Metro Manila and in the other major urban centers of the country. At present, a feasibility study of the development of the busway system in Metro Manila is being undertaken. The Jakarta experience in busway systems can serve as a model for Metro Manila.

## 3. Urban Public Transport Operation

20. With the exception of the LRT and MRT in Metro Manila, most investments in public transport are on a small scale, with some operators having only a handful of vehicles. While operators try to choose their routes based on their own perception of profitability, a franchise

<sup>9</sup> Air and Noise Pollution Reduction from Tricycles: A Strategic Plan for Quezon City and Puerto Princesa City, Philippines, Asian Development Bank, 2005.

which describes the allowed route, service area, and other service characteristics must first be granted by the Land Transportation Franchising and Regulatory Board (LTFRB).

21. The government provides neither operational subsidies nor incentives (e.g., tax deductions) to would-be public transport providers. In contrast, rail transport is heavily subsidized and incurs an estimated P4.2 billion per year. However, it should be noted that fares collected for LRT 1 and 2 and MRT 3 more than cover operating costs, although not capital expenditures.

22. Fare structures for road-based public transport modes are regulated by the LTFRB, while tricycle fares and operations fall under the jurisdiction of the LGU. Despite these challenges, public transport operators manage to operate by reducing expenditures on maintenance<sup>10</sup> and by operating longer hours.

23. Table 7.4 shows a comparison of the fare rates of various public transport modes for Metro Manila. The rates for buses, jeepneys, and taxis may be lower in other areas.

**Table 7.4 Fare Rates in Metro Manila**

Types of Public Transport	Per Distance Travelled	Per Type of Passenger	
		Regular	Student
Ordinary bus	First four km	P 3.00	P 2.50
	Per km if more than four km	P 0.50	P 0.43
Jeepney	First four km	P 4.75	P 3.80
	Per km if more than five km	P 0.60	P 0.50
Taxi	Flagdown (first 500 meters) Every succeeding 300 meters Waiting time	P 25.00 P 2.00 P 2.00/minute	
MRT 3 (EDSA)	From North Avenue – Taft Avenue	P 9.00 plus P 0.50 for every station, children below 3 ft are free of charge	
LRT 1 (Taft-Rizal Line)	From Monumento – Baclaran	P 12.00 for 8 stations or less P 15.00 for more than 8 stations Except: Senior citizens and the disabled. Children below 3 ft are free of charge	
LRT 2 (Aurora Line)	From Santolan - Legarda	P 12.00 for 1 – 3 stations P 13.00 for 4 – 6 stations P 14.00 for 7 – 9 stations P 15.00 for 10 stations	

Source: LTFRB Data, LRTA Data and MRT Data

#### 4. Inter-Urban Passenger Transport

24. Inter-urban passenger bus transport is often referred to as “provincial buses.” However, in many cases, jeepneys also ply routes between cities. The availability of either kind of transport depends on the economic conditions of the region where it is found. Inter-urban public transport is served by jeepneys and buses, rather than the other public transport modes, because of their higher speeds and carrying capacities. Jeepney fares tend to be cheaper due to the lower level of comfort and speed.

<sup>10</sup> See Bayan, J.M. (1995), Cost Characteristics of Bus and Jeepney Transport Systems in Metro Manila, *Master's Degree Thesis*, University of the Philippines School of Urban and Regional Planning.

## 5. Non-Motorized Transport

25. The development of bikeways is another transport initiative being considered by some cities. With the assistance of the World Bank (WB) and Global Environment Facility (GEF), Marikina City was able to construct its system of bikeways. Other cities in Metro Manila, such as Quezon City and Makati, have already prepared their plans for establishing their bikeway routes. Quezon City had piloted this in one of their districts and Makati has already identified an area for this purpose. Davao City in Mindanao is planning to develop its own bikeway system.

## 6. Public Transport Terminals

26. Many small terminals exist as dispatch areas for either inter-urban or intra-urban public transport modes. Reflecting the fact that most operators are small and have a few vehicles under their management, the dispatch of the vehicles from terminals follows a first-in, first-out (FIFO) arrangement. The terminal operation usually consists of staging ground, usually an empty lot with minimal improvements, and staff that includes dispatchers and collectors. These dispatchers serve various and independent operators by overseeing the FIFO dispatch and thus reducing the chance of some operators cutting into the queue. Jeepneys and tricycle operators often avail of this kind of set-up to facilitate their operations.

27. Many cities have built large public transport terminals to relieve CBD traffic congestion and to integrate several public transport service types and allow for smoother transfers, such as between inter-urban with intra-urban. When public transport terminals are built outside the central areas of cities, the objective is often traffic decongestion.

28. Many Philippine cities have embraced the integrated bus terminal as a component of urban development strategies and programs. Many cities, kargely aided by donor countries and agencies, have availed of funding support for the construction and management of integrated bus and jeepney terminals. Generally, the series of Municipal Development Projects (MDP) in the Philippines showcase a number of "success and best practice initiatives" in different fields, notably urban infrastructure, local finance, central-local partnership, local autonomy, economic development, an integrated approach to project development, and capacity building.

29. The World Bank-assisted Regional Cities Development Projec—the first major urban intervention outside of Metro Manila covering the country's largest regional centers, i.e., Bacolod, Cagayan de Oro, Davao, and Iloilo—started in 1983. RCDP consists of the following interrelated components: sanitation and drainage, municipal enterprises, shelter, livelihood pilot project, urban transport, and technical assistance and training. The US\$27.6-million transport component involves the upgrading and construction of city streets, improvement of road maintenance capability, limited traffic engineering measures, and construction of bus terminals. The Cagayan de Oro Agora Market and Bus Terminal and the Davao City Overland Transport Terminal were constructed using RCDP funds.

30. Under phase one of the Municipal Development Project (MDP), World Bank provided another US\$ 36 million assistance for the development of basic infrastructure and services in secondary cities and municipalities of the country areas and for the strengthening of local technical and financial capacity for project implementation and service management. The infrastructure component includes the improvements to sanitation, drainage, slum areas, solid waste management, roads, traffic management, and bus terminals and the upgrading of markets and slaughterhouses. Among the most successful MDP projects are:

- the public market projects in the municipalities of Bauan, Batangas, and Pulilan (all in Bulacan) and in the cities of Marikina, Tagum, Davao, Bogo, Cebu, and Palawan

- the integrated bus and jeepney terminal projects in the cities of Tacloban, Naga, and Surigao and Butuan
- the school building projects in the municipalities of Bauan and Mabini, Batangas and San Pablo City, Laguna
- the health center projects in San Jose City, Nueva Ecija and the municipality of Balanga, Bataan

31. With Japanese funding, the Cebu South Bus Terminal was completed in 1992. The number of bus services has increased from 250 departures per day in 1993 to 335 departures per day in 2001. The shop occupancy rate in the terminal building, which was 50 in 1993, has grown to 95 in 2001. About 15,000 people per day use the shops. The development of the terminal has resulted in increased passenger comfort and safety and has contributed to improved convenience by enhancing connections with buses, taxis, and jeepneys.

32. Tables 7.5 to 7.7 present the status of city bus terminal projects in Luzon, Visayas, and Mindanao, respectively.

**Table 7.5 Integrated Bus Terminals in Luzon**

City/Town	Bus Terminal Name	Owner/Operator	Terminal Details
Laoag	Laoag Central Terminal	City-owned/operated	<ul style="list-style-type: none"> <li>• Land area of 3 ha.</li> <li>• Cost of P33 million with DBP loan</li> <li>• Operated since 2003</li> <li>• Terminal fee of P35/bus</li> </ul>
Cabanatuan	Cabanatuan Central Transport Terminal	City-owned; private sector operation (GROGUN, Inc.) under a 25-year lease-operate agreement in March 2003	<ul style="list-style-type: none"> <li>• Built using Land Bank loan of P27 million and operated in 1995</li> <li>• Terminal fees of P120/bus and P60/mini-bus</li> <li>• By July 2005, terminal fees will be raised to P160/bus and P75/mini-bus</li> </ul>
Lucena	Lucena Grand Central Terminal	City-owned; private sector operation under a 25-year lease-operate agreement	<ul style="list-style-type: none"> <li>• 6-ha land of the city</li> <li>• 100-bus capacity terminal</li> </ul>
Puerto Princesa	Puerto Princesa Bus and Jeepney Terminal	City-owned/operated	<ul style="list-style-type: none"> <li>• Completed in 2000 at the cost of P26.4 million</li> <li>• 8,000 sq m terminal for 14 buses, 25 jeepneys and 30 vehicle parking</li> </ul>
Naga	Naga Central Bus Terminal	City-owned; private sector operation under a 3-year lease-management agreement, renewable by another 3 years	<ul style="list-style-type: none"> <li>• Built on donated 2-ha. lot at the privately-developed CBD II area and currently serving 800 buses daily</li> <li>• Project cost of P48 million partly funded from World Bank-assisted Municipal Development Project, Phase 1</li> <li>• Facilities included 41 commercial spaces; terminal fee set at a maximum of P350/bus departure</li> </ul>
Metro Manila	Proposed Northern Intermodal Transport Terminal Complex	Unsolicited BOO project (financing, construction, operation and maintenance under 25-year concession period) with private consortium	<ul style="list-style-type: none"> <li>• Located 11.7 ha land owned by Phil-Ville Devt &amp; Housing Corp.</li> <li>• 5-level structure with total floor area of 66,450 sqm at cost of P969 million</li> <li>• NEDA ICC first pass approval of project last October 2004, including terminal fees of P100 for buses, vehicle parking fees and office rental</li> </ul>

**Table 7.6 Integrated Bus Terminals in the Visayas**

City/Town	Bus Terminal Name	Owner/Operator	Terminal Details
Metro Cebu	Cebu South Bus Terminal	Province-owned/ Operated	<ul style="list-style-type: none"> <li>• 40 bus loading bays and parking space for 50 vehicles on 1.2 ha land</li> <li>• Costing P442 million with OECF loan</li> <li>• Operational since 2003</li> <li>• Terminal fee of P40/bus departure</li> <li>• Net annual income of about P10 million</li> </ul>
Tacloban	Tacloban Integrated Bus Terminal	City-owned; Private sector operation (Far East Marketing)	<ul style="list-style-type: none"> <li>• Built using WB-MDP loan and completed in 1993</li> <li>• New P300 million bus terminal cum commercial complex proposed by City officials through bond market</li> </ul>
Bayawan	New Bayawan Integrated Bus Terminal and Farmer's Market	City-owned/operated	<ul style="list-style-type: none"> <li>• Construction on-going on 3 ha land</li> <li>• Cost of P31 million through Land Bank and EDF-LGU loan</li> </ul>

**Table 7.7 Integrated Bus Terminals in Mindanao**

City/Town	Bus Terminal Name	Owner/Operator	Terminal Details
Cagayan de Oro	Cagayan de Oro Agora Integrated Bus Terminal	City-owned/operated	<ul style="list-style-type: none"> <li>• Funded under RCDP loan from World Bank</li> </ul>
Iligan	Iligan Integrated Bus and Jeepney Terminal	City-owned/operated	<ul style="list-style-type: none"> <li>• 5-ha land area located 2 km from the city center</li> <li>• Funded through ADB-assisted Philippine Regional Municipal Development Project</li> <li>• Completed in 2002</li> </ul>
Butuan	Butuan Integrated Bus and Jeepney Terminal	City-owned/operated	<ul style="list-style-type: none"> <li>• Funded under MDP Phase 1 from World Bank, with jeepney terminal later constructed with loan from MDP Phase 3</li> </ul>
Surigao	Surigao Integrated Bus and Jeepney Terminal	City-owned/operated	<ul style="list-style-type: none"> <li>• Funded under MDP Phase 3 from the World Bank</li> </ul>
Ozamiz	Ozamiz Integrated Bus and Jeepney Terminal and Public Market	City-owned/operated	<ul style="list-style-type: none"> <li>• Funded by USAID</li> </ul>
Panabo	New Panabo Integrated Bus and Jeepney Terminal	City-owned/operated	<ul style="list-style-type: none"> <li>• Project cost of P38 million, funded by ADB-assisted Mindanao Basic Urban Services Sector Project</li> </ul>
Tagum	Tagum Integrated Bus and Jeepney Terminal	City-owned/operated	<ul style="list-style-type: none"> <li>• Funded by USAID</li> </ul>
General Santos	New General Santos Integrated Bus Terminal and Commercial Complex	Proposed for BOO implementation with private sector	<ul style="list-style-type: none"> <li>• Proposed construction on 3-ha city land</li> <li>• Project cost of P150 million</li> <li>• For BOO bidding</li> </ul>

## D. Ports and Airports

### 1. Location in Major Urban Centers

33. The Philippines stretches over 1,850 km north to south and 1,100 km east to west and consists of 7,107 islands. Given these geographical conditions, sea and air transportation services play critical roles for the efficient movement of passengers and goods in the country and for the connection of widely distributed areas needed to support the socio-economic development of the entire archipelago.

34. Seaports and airports are indispensable transport infrastructure for an archipelagic country like the Philippines. More than being simply intersections of different transportation modes, they are primarily the bases for supporting socio-economic activities. Port-related and other industries gravitate around ports. Ports in remote areas likewise play a vital role in supporting the daily lives of the community. Lastly, ports can act as catalysts in promoting the exchange of people and goods between wealthy urban areas and developing regional areas.

35. Given the development of coastal towns into port cities in the country, the location and efficient management of passenger, cargo, and vehicle flows to and from port areas have much impact on the functioning of Philippine cities. Moreover, a number of major airports are located within city centers and their presence impose restrictions on land use development and serve as key generators of vehicle traffic.

### 2. Traffic and Environmental Impacts

36. Ninety percent of international container cargo flows in and out the ports in Manila. Some of this cargo is transported to or from other areas as domestic container cargo. This concentration of transport demand has created serious traffic congestion in Manila. The JICA 2004 national port study<sup>11</sup> proposed to develop international gateway ports outside Manila, which would allow shippers to import or export from or to foreign countries directly from their areas. In addition, it proposed that the expansion of existing ports in Manila be avoided and, instead, that ports in Subic and Batangas be developed to handle cargo, especially international container cargo.

37. The ADB intermodal transport study<sup>12</sup> for Mindanao and Palawan noted that heavy localized traffic congestion occurs within the access road junctions of principal ports and airports in Mindanao, requiring a geometric re-design of the intersections and road widening. New airport access roads were recommended, particularly for the Puerto Princesa and Cotabato Airports, to improve vehicle movements. Moreover, traffic engineering and management measures have been proposed to minimize the local congestion immediately outside the port and airport sites.

38. Ports and airports also have potential environmental impact. The construction of airports and seaports may disrupt the existing natural and social balance of the immediate area, potentially causing changes in land use, changes to the social dynamics of the population, and living conditions and health. Apart from these changes, potential environmental impacts may occur temporarily during construction and also during the operational period of the project.

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<sup>11</sup> Study on the Master Plan for the Strategic Development of the National Port System in the Philippines, *Final Report*, JICA, January 2004.

<sup>12</sup> Intermodal Transport Development Project for Southern Philippines, *Final Report*, ADB, September 2006.

39. According to the JICA national airport study,<sup>13</sup> there are six airports with claims received from surrounding communities concerning aircraft noise. The claims are against the Ninoy Aquino International Airport (NAIA), the Zamboanga International Airport, and four secondary airports. Twenty five percent of both international airports have noise complaints since the international airports are located in the urban area with much air traffic everyday. However, due to the small number of aircraft noise complaints, only two airports—NAIA and Puerto Princesa—have taken measures to lessen the noise. There are no airports that have budgets to buy monitoring equipment for measuring aircraft noise.

#### E. Traffic Safety

40. Road safety has become a critical issue in the Philippines. Directly, road accidents cause loss of life, personal injuries, and property damages. Indirectly, they affect the efficiency and performance of the country's road network and the quality of life of all residents. With previously experienced high economic growth and the continued increase in vehicle registration and their use on the road network, road fatality indices are growing in the Philippines compared to other countries in the ASEAN region (Table 7.8).

**Table 7.8 ASEAN Road Fatality Indices, 1993 and 2000**

Country	Population ('000)		Motor Vehicles ('000)		Fatal Accidents		Fatality Indices			
	1993	2000	1993	2000	1993	2000	Risk <sup>a</sup>		Rate <sup>b</sup>	
							1993	2000	1993	2000
Brunei	261	342	132	213	47	41	18.0	12.0	3.6	1.9
Cambodia	9,460	12,014	165	332	95	401	1.0	3.3	5.8	12.1
Indonesia	192,220	210,490	11,373	18,224	11,000	10,000	5.7	4.8	9.7	5.5
Lao PDR	4,470	5,250	105	193	166	358	3.7	6.8	15.8	18.5
Malaysia	19,050	23,200	6,712	10,599	4,666	6,029	24.5	26.0	7.0	5.7
Myanmar	43,120	48,124	247	423	613	1,021	1.4	2.1	24.8	24.1
Philippines	67,000	78,400	2,103	3,701	2,621	3,040	3.9	3.9	12.5	8.2
Singapore	2,873	4,020	559	684	258	214	9.0	5.3	4.6	3.1
Thailand	58,336	61,880	11,242	20,836	9,496	11,988	16.3	19.4	8.4	5.8
Vietnam	69,210	77,690	2,720	6,966	4,350	7,500	6.3	9.7	16.0	10.8
Total	466,000	521,410	35,358	62,171	33,312	40,592	7.1	7.8	9.4	6.5
Japan	124,764	126,926	78,682	79,661	10,942	9,066	8.8	7.1	1.4	1.1
United Kingdom	57,700	58,655	24,826	29,521	3,814	3,580	6.6	6.1	1.5	1.2
United States	258,119	275,372	192,497	225,821	36,254	37,526	14.0	13.6	1.9	1.7

Notes: <sup>a</sup>Fatality risk - fatal accidents per 100,000 population

<sup>b</sup>Fatality rate - fatal accidents per 10,000 motor vehicles

41. Traffic accident statistics in the Philippines are recorded by road location and summarized on a regional basis. For LGUs, only Metro Manila has a comprehensive database on traffic accidents under the Metro Manila Accident Reporting and Analysis System (MMARAS). The main source of information on road accidents is the Department of Public Works and Highways (DPWH) Traffic Accident Reporting and Analysis System, which is limited in scope to national roads.

42. In the Department of Health's (DOH) 2000 report, DOH stated that traffic accidents ranked sixth as the major cause of deaths (after heart disorders, tuberculosis, pneumonia, cerebro-vascular diseases, chronic lower respiratory diseases, and malignant neoplasm of

<sup>13</sup> Master Study on the Strategy for the Improvement of National Airports in the Philippines, Final Report, JICA, March 2006.

the lung). DOH estimated that 5,680 deaths resulted from road accidents in 2000. In 2003, the Philippine National Injury Survey cited vehicular accidents as the leading cause of injuries from all forms of accidents (including falls, injury by sharp objects, being struck by an object, animal/insect bites, burn, assault, machine/tool injury, electrocution, and self-harm). More importantly, the survey reported that about 9,000 deaths were caused by traffic accidents in 2003.

#### F. Vehicle Emissions

43. Vehicular emissions are among the major concerns of air pollution in Asian cities. According to the World Health Organization (WHO), 12 of the 15 cities with the highest levels of particulate matters and 6 of the 15 cities with the highest levels of sulfur dioxide are located in Asia. Vehicular emissions are predominantly severe in the Philippines

44. The Philippine Clean Air Act (CAA) of 1999 provides that in-use, new, rebuilt, and imported second-hand motor vehicles were required to comply with the emission standards prior to registration starting January 2003. Motor vehicles introduced in the market beginning January 2003 were required to comply with the emission standards equivalent to Euro 1. The passage of the bill has resulted in the phase-out of leaded petroleum products nationwide by the end of year 2000.

45. The air pollutants typically emitted by motor vehicles follow:

- Concentrations of total suspended particles (TSP) and *particulate matters* PM10 and PM2.5 remain suspended in the air for hours or days and can travel significant distances from the source. These particles enter the respiratory tract and reach deep into the lungs.
- *Carbon monoxide* (CO) is emitted when there is incomplete combustion. CO enters the blood stream by combining with hemoglobin, the substance that carries oxygen to the cells. CO adversely impacts health in many ways by causing people to feel tired and drowsy and have shortness of breath and by causing chest pain in people with heart disease.
- *Nitrogen oxides* (NOx) are formed during combustion as nitrogen in the air reacts with oxygen at high temperature. Nitric Oxide and nitrogen dioxide are the two most critical types. NOx is a precursor to acid rain, which may affect both terrestrial and aquatic ecosystems.

46. About 43% of total vehicular population in the Philippines is made up of two- and three-wheelers, which are popular transport modes in both urban and rural areas. A study commissioned by ADB to look into tricycles focused on two urban cities, Quezon City and Puerto Princesa (refer to Box 7.3). Quezon City registered the highest population of tricycles in the country with 20,316 units in 2003. In Puerto Princesa City, the 2,824 tricycle units plying the city proper account for about 153 million tons of carbon dioxide emissions. These tricycles are major causes of air and noise pollution, traffic congestion, and accidents.

47. In the ADB study, based on the tailpipe noise level measurement of April 2004, all tricycles tested under running condition make noise that exceeds the maximum permissible environment noise level for motorcycles of 77 dB set under ECE Regulation 41. Tricycles with two-stroke engines produce noise levels ranging from 83-87 dB and 90-97 dB, while that of four-stroke engines ranges from 78-86 dB and 82-91 dB in Quezon City and Puerto Princesa City, respectively. In terms of engine age, tricycles aged above 15 years contribute the most to noise pollution. For roadside conditions, noise levels are measured in areas where tricycles predominate. In Quezon City, the average noise level was registered at 88

dB. In Puerto Princesa City, it was at 74 dB. The measured levels in both cities are above the local permissible standard of 70 dB for commercial areas.

48. Tricycles are also perceived to be more accident-prone than four-wheeled vehicles due to the instability of the sidecar attached to the motorcycles, which serve as passengers' seat, and the obstruction it brings as its height usually exceeds the driver's line of sight. The ADB tricycle passenger survey in April 2004 showed that, in Quezon City, about 37% of the respondents claimed that tricycles are not safe. Among the types of accidents encountered are colliding with a fixed structure, a person, or another vehicle.

49. The League of Cities in the Philippines recently launched, through its Environmental Unit, the Clean Air Management Program (CAMP) in Philippine cities with technical support from the U.S. Agency for International Development. CAMP aims to replicate the successful models of air quality management tried in San Fernando, La Union and Puerto Princesa City. To date, CAMP preparation has been conducted in the cities of Mandaue and Calbayog. In cooperation with Clean Air Initiative-Asia and the local affiliate, the Partnership for Clean Air, further CAMP work in other cities is planned.

#### G. Urban Transport Governance

50. The Local Government Code of 1991 (RA 7160), which defines the governance of local government units (LGUs), basically describes urban transport management at the local level. Two new features of the code which are important in urban transport are the regulation of tricycles as local means of public transport and the preparation of land use plans formalized by zoning ordinances<sup>14</sup>. Pertinent laws and regulations in urban transport are presented in Table 7.9. With respect to financing urban transport projects and programs, the urban center or LGUs depend on their income, Internal Revenue Allotments (IRA) coming from national taxes, loans from local and international financial institutions, or other financial schemes such as bond flotation, public-private partnership, etc.

51. Based on the hierarchy of the road network, the local urban roads are managed and maintained by the LGUs, while the national roads and highways are under the national government through the Department of Public Works and Highways.

**Table 7.9 Major Laws and Regulations in Urban Transport**

Law	Description
RA 7160 s1991	Local Government Code that defines the powers and responsibilities of 4 layers of sub-national government units
RA 7924 s1994	Revised charter of the Metro Manila Development Authority, which gave it responsibilities for services (e.g., garbage and traffic) common to 17 LGUs in the national capital region, and delineated its relationships with other national government agencies like DPWH and DOTC
CA 146 s1936	Public Service Act – CA 146 prescribes the framework which regulates public services (including bus service, jeepney, toll roads, etc.), covers fare regulation, quality of service, and the like, is the basis for requiring franchises or Certificates of Public Convenience for public services
RA 8749 s1999	Clean Air Act, which provides the legal framework for addressing air pollution throughout the country and, among others, stipulates annual vehicle inspection and acceptable lead content in gasoline and sulphur content in diesel

Source: Philippine Transport Sector Review: Urban Transport Study, World Bank, July 2005

<sup>14</sup> Philippine Transport Sector Review: Urban Transport Study, World Bank, July 2005

52. Likewise, at the national level, the Department of Transportation and Communications (DOTC) coordinates the planning and execution of transport programs and projects of regional or national importance. Table 7.10 summarizes the linkages of the LGUs with the transport-related national line agencies in Metro Manila and other urban centers in the country. At the regional level, coordination for regional impact transport programs and projects are coursed through the Regional Development Councils (RDC) to which cities belong.

**Table 7.10 Transport Organizations and Their Responsibilities**

Entity	Policy	Regulation		Operation / Other Functions	Remarks
		Economic	Technical		
<b>Road transport (infrastructure)</b>					
DPWH	✓		✓	✓	
TRB		✓	✓	✓	Regulate toll roads
PNCC				✓	Original franchisee of NLE and SLE
LGUs	✓		✓	✓	O&M of city roads
PEA				✓	SOE that served as joint venture partner in R-1 Expressway
MMDA				✓	Reviews proposed investments in its role under a Regional Dev't Council
Coastal Road Corp.				✓	Project company for the R-1 Expressway
Private				✓	Consulting & construction firms
<b>Transport service</b>					
DOTC	✓		✓		
LTFRB		✓			
LTO			✓		Also enforces transportation & traffic laws
OTC		✓	✓		For transport cooperatives only
Private				✓	Common carriers
IMBOA, FEJODAP, FTODAP, etc.				✓	Transport industry associations
<b>Traffic management</b>					
MMDA	✓	✓	✓	✓	Also serves as land use & transportation coordinating body
LGUs	✓	✓	✓	✓	
<b>Rail transport (infrastructure and service)</b>					
DOTC	✓	✓	✓	✓	Operates LRT 3
PNR	✓	✓	✓	✓	O&M for suburban rail
LRTA	✓	✓	✓	✓	O&M for LRT 1 and 2
MRTC					Project company for LRT 3
Private				✓	Consulting & construction firms

Source: Philippine Transport Sector Review: Urban Transport Study, World Bank, July 2005

53. With respect to traffic management and other local urban transport functions, depending on the size of the cities, levels of urbanization, and importance of traffic

management, the cities have their own traffic management units or offices. Cities, like Davao and Cebu, and most cities in Metro Manila have their distinct traffic management office or board, though operating under the Office of the Mayor or adjunct to the latter with their own plantilla of personnel and budgets. In Cebu, apart from CITOM and the local traffic management unit, the city also has a Transport Management Commission. On the other hand, Davao City has a Traffic Management Coordinating Board (TMCB), which includes representatives from transport-related national line agencies and the private sector. In other cities, traffic management is placed under the General Services Office or Public Order and Safety Office (POSO). At the provincial level, there are already a number of provinces that have established their own traffic management units. The Laguna Traffic Management Office of the Province of Laguna is among those provinces that have their office or unit in charge of traffic management. In fact, thus far, only the Province of Laguna has its own traffic impact assessment (TIA) ordinance.

54. Still, even though LGUs in Metro Manila have their local traffic management units, traffic enforcement and management is the primary responsibility of the Metro Manila Development Authority (MMDA). The MMDA is a special administrative body under the Office of the President, which is responsible for coordinating national and local programs and projects, including transport, of metrowide concerns. The Metro Manila Development Authority (MMDA) was reorganized under RA 7924 in 1994, succeeding the Metro Manila Authority of 1990 (under EO 392) and the earlier Metro Manila Commission of 1976. The governing and policy-making body of the MMDA is the Metro Manila Council, which is composed of the 17 LGUs, the president of the Metro Manila Vice-Mayors League, and the president of the Metro Manila Councilors League. Heads of related national agencies such as DPWH and DOTC are non-voting members of the council. The MMC is headed by a chairman who is appointed by the Office of the President.

55. From the above two tables and the discussions, it can be noted that governance in urban transport management involves infrastructure planning and implementation, provision and maintenance of roads, public transport services, traffic enforcement and management, and land use planning and control. Summarizing the management of urban transport, it could be suffice that there is supposedly coordination and clear delineation of functions and responsibilities. However, in reality, this is not the case, notably in Metro Manila.

#### H. Financing Urban Transport Projects

56. As cited earlier, a number of foreign-assisted municipal development projects have been carried out to assist LGUs in implementing their urban transport projects, including road construction and improvement, traffic engineering and management projects, and construction of integrated jeepney and bus terminals. Recently, the Local Government Infrastructure Fund (LGIF), a USAID-funded program in the Philippines, provided support to the implementation of basic municipal infrastructure by local governments in partnership with the private sector. This includes improvements in roads and other transportation-related facilities. The Department of Financed-managed Municipal Development Fund established a revolving fund capitalized and funded from proceeds of foreign loans, assistance, or grants made available to local governments for specific purposes, project components, and activities set forth in international agreement with foreign governments and international organizations. A Municipal Development Fund Office (MDFO) facilitates the financing of lower-income local governments and social and environmental projects that find great difficulty in getting financing from government and private banks. Projects may include road improvements as well as the construction of integrated bus terminals.

57. For other cities with the capacity to pay, government financial institutions such as the Land Bank of the Philippines (LBP) and the Development Bank of the Philippines (DBP) have provided access to funds for capital expenditure in urban infrastructure improvements.

One example is Davao City, which borrowed close to P1 billion directly from LBP to upgrade its traffic signal system and other urban infrastructure projects. On the other hand, the DBP allows for loans under the types of Public Utilities and Community Development. Under Public Utilities, land, air and water transportation projects may be financed. Under Community Development, general infrastructure projects may be financed.

### III. Critical Issues, Challenges, and Opportunities

#### A. Traffic Congestion in City Centers

58. An array of urban transport issues has continuously plagued cities and metropolitan regions in the country, particularly Metro Manila. Many of these transport issues have become aggravating and result in increasing economic costs to road users. A study commissioned by JICA in 2004 on regional growth centers identified the following problems that beset urban growth centers<sup>15</sup>. These problems clearly illustrate the interrelationships of urban transport problems:

- The concentration of people and socio-economic activities at the narrow downtown area is worsening the urban environment and amenity.
- Serious traffic congestion in urbanized area is paralyzing sound socioeconomic activities and causing traffic pollution.
- Due to lack of proper urban road network development, pressure is only absorbed along the areas of existing inter-city arterial roads, thus sound urbanization is affected.
- Due to the above, the transport efficiency and urban function of the inter-city arterial roads are seriously affected.
- The increase in slow-moving vehicles, such as tricycles and jeepneys, in urban areas is further worsening the transport efficiency of intra-city roads and inter-city arterial roads.
- The inter-modal connection between road traffic and sea or air traffic has not been planned harmoniously, resulting in traffic concentration and congestion at the port and airport terminals.
- Bus and jeepney terminals located at the downtown area generate heavy traffic, which is worsening traffic congestion in the CBD area.

59. As cited in the section on road transport, the present road network system in each of the Philippine cities can no longer cope with the growing vehicle traffic, thereby causing traffic congestion and other urban transport problems. However, the perceptions of people on traffic congestion vary among the cities in the Philippines. For instance, what people in Davao City or Iloilo considered as traffic congestion would be normal traffic for people in Metro Manila.

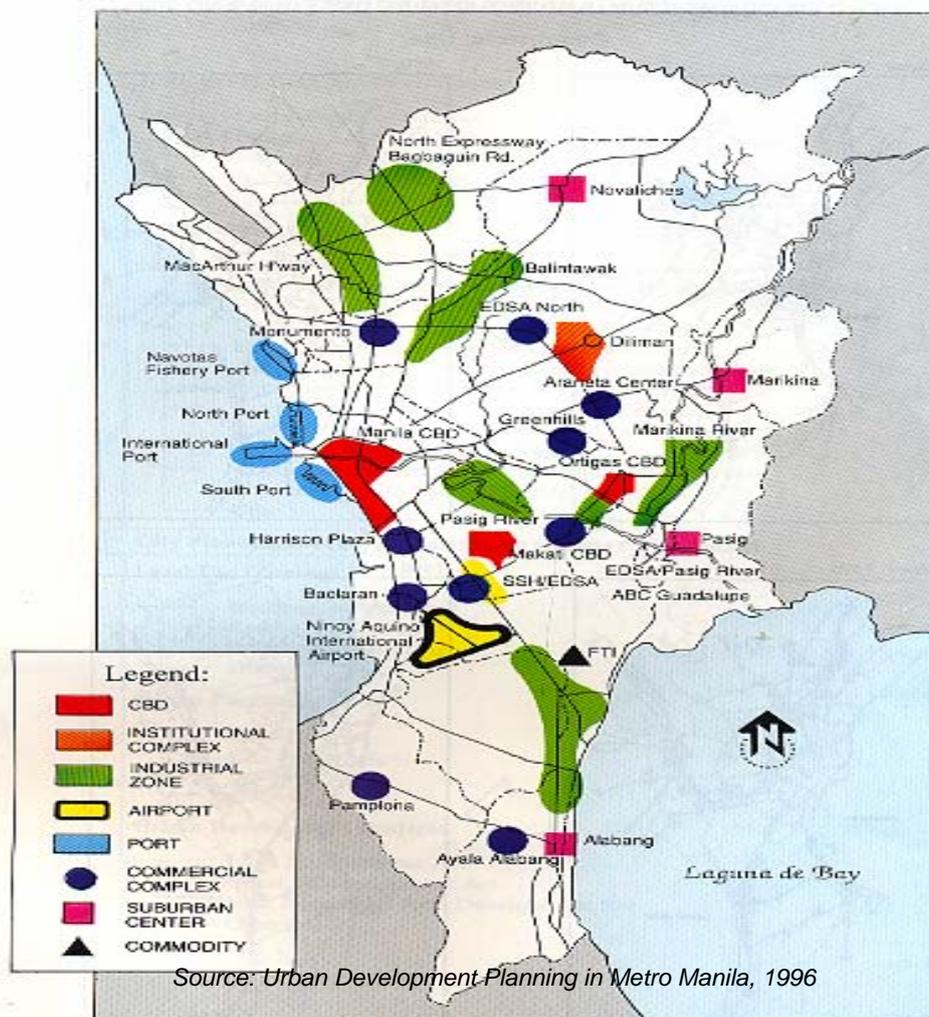
60. The urban transport problems or issues can be classified into poor governance with no performance accountability, lack of a coherent traffic management program, unsystematic provision of transport infrastructure, and negative externalities of urban transport (e.g., accidents, air and noise pollution). In understanding their implications, it is best to acknowledge that what most of the people perceive as transport or traffic problems are merely manifestations of various inadequacies. Urban transport governance is narrow-minded due to a lack of a shared metropolitan vision for metropolitan regions, particularly in Metro Manila, the absence of a clear-cut transport development framework consistent with the envisioned development of cities and regions, weak or ineffective land-use controls, an archaic regulatory regime, and a weak capacity for traffic management. What further

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<sup>15</sup> The Study on Road Network Improvement Development of Regional Growth Centers in the Republic of the Philippines, JICA, October 2004

worsens the situation is the lack of political will to enforce traffic laws, rules, and regulations, indicating that there is a weak institutional mechanism to effectively and efficiently address urban transport issues and problems.

61. The uncontrolled urbanization of cities and/or urban growth at urban cores, as illustrated by the proliferation of commercial centers and other urban developments, contributed to the worsening traffic situation in those cities. Increasing in-migration to the cities from the nearby towns and provinces and growing informal urban settlers are likewise contributory to the rising urban transport problems. The proliferation of commercial developments and other developments has indeed increased the number of traffic generators and attractors. Figure 7.1 culled from the 2005 PTSR Urban Transport Study, shows the main traffic generators and attractors in Metro Manila. Notably, most of the traffic generators and attractors are located at central areas along major thoroughfares.



**Figure 7.1: Main Traffic Generators and Attractors in Metro Manila**

62. Another factor that is now accepted as intensifying the magnitude of transport problems in Philippine cities is the lack of mechanisms in assessing the impacts of urban developments on the environment, particularly transport impacts. The lack of such assessments resulted in the lack of measures to lessen transport impact. Related to this is the absence of proper coordination and integration of land use and transport planning, which results in the incompatibility between urban developments and transport systems. The location of inter-regional or inter-provincial public transport terminals that are not properly

planned is a clear example of this incompatibility. The effects of this incompatibility indicate the imbalance in the transport demand and supply in cities.

63. Other factors which worsen the transport situation at urban centers are the increasing vehicle ownership, lax traffic enforcement, improper travel behaviour of road users, the limited capability of personnel in charge of transport and traffic, the proliferation of unauthorized public transport systems, and the absence of proper traffic education for the general public. Increases in household income, coupled with the introduction of attractive financing schemes by the motor industry, have led to the affordability of vehicles and the rise in household vehicle ownership in many cities in the country.

64. Many cities, even in metropolitan areas, have not yet institutionalized their traffic enforcement and management. Many cities and municipalities have no traffic management plans, schemes, or codes to guide the LGUs in handling their transport and traffic situations. The rampant disregard of road users for traffic and transport rules, laws, and regulations and their improper behaviour on the road further worsen the traffic situation. It is therefore imperative that traffic education be institutionalized. Due to lack of proper knowledge on the formulation and implementation of effective traffic management schemes and transport policies, many urban centers tend to come up with measures that are not responsive in addressing traffic and transport problems, particularly traffic congestion. The practice of experimenting on traffic management schemes is expensive and, at times, inappropriate.

65. The presence of too many jeepneys and buses on routes that do not need that number of units is a clear example of proliferation of public transport in most urban areas. Similarly, in urban centers outside Metro Manila, notably in Mindanao, the growing number of the so called “habal-habal” or motorcycle taxis is becoming a concern. Likewise, most cities are still dependent on tricycles, which are not only contributing to the deterioration of the environment but likewise add to the worsening traffic in those urban centers. There is a need to develop an appropriate and efficient public transport system for local cities.

66. As already cited, the lack of responsive institutional mechanisms in addressing traffic issues has resulted in the inefficient management of urban transport systems in Philippine cities. Lax enforcement of land use and zoning schemes and measures is another indication of the worsening traffic congestion. Hence, it is imperative that the formulation, implementation, and enforcement of traffic and transport schemes and measures be comprehensive and far-reaching.

67. There is a need to institutionalize transport impact assessment (TIA) to address transport impacts. The development of traffic measures should be the product of proper planning supported by transport studies. The location of public transport terminals should consider the land-use configuration of urban centers and should be properly integrated with the transport system of the urban centers. It is imperative that, in the development of urban centers, either cities or regional center, proper integration of land use and transport systems be done.

68. Some cities that are already conducting TIA—like Tacloban, Dagupan, Lucena, and Tagum—have built their integrated public transport terminals outside their CBDs. A study on the development of an integrated public transport terminal outside the city center was recently completed. Similarly, the relocation of ports and airports outside city centers is another initiative being considered. Iloilo City and Bacolod City are two cities where concrete plans are already laid out for this purpose. There was also an attempt for a similar plan for Legaspi City.

69. In Metro Manila, many studies have been conducted to address its transport and traffic problems, especially traffic congestion. What should be done is for those concerned to

review these studies and put in place the appropriate technical and institutional recommendations.

70. In summary, to address traffic congestion and urban transport problems, a comprehensive approach with due consideration on the root causes has to be done appropriately. The identification of measures to lessen traffic congestion is not enough. These measures should be supported by studies with strong institutional mechanisms, capability building programs, traffic education, and the support of the population.

## B. Paratransit Modes

71. Paratransit modes such as FX, motorcycle, tricycle, trisikad, and their variants are faced with many concerns that are partly due to the informal nature of their establishment. “Informal” refers to the lack of institutionalized mechanisms for looking into aspects such as safety and impact on the environment.

### 1. Safety Concerns

72. While these concerns are by no means completely addressed among the other modes, the paratransit modes are particularly problematic because they are not completely covered by legal description. For example, many FXs are covered under other descriptions (such as Mega-Taxi) but they do not operate as such. In case of accidents, the driver is likely to flee the scene because the extra-legal nature of his operation only worsens the level of liability attributed to him. This lack of genuine accountability means that passengers may be at risk.

### 2. Environmental Issues (Air and Noise Pollution)

73. Modes like the tricycles are visible sources of air and noise pollution. Because of differences in LGU administration, the kind and extent of regulation of these modes has had various results. While some cities have successfully managed the growing number of tricycles and their environmental effects, as in the color-coding scheme in Puerto Princesa, others have been prevented from doing so by organized tricycle operators’ organizations wielding political pressure.

### 3. Countermeasures/Best Practices

74. The ADB-funded Study on Air and Noise Pollution Reduction from Tricycles, which explored options for Quezon City and Puerto Princesa City<sup>16</sup>, suggested the following strategies:

- An LGU-led maintenance program focusing on preventive maintenance (short-term measure)
- The mandatory orientation of tricycle drivers on traffic and safety rules (short-term measure)
- Tricycle volume reduction through the elimination of illegal tricycle units (short-term measure), the restriction of new and renewal of tricycle franchise applications for tricycles with engines aged above 15 years (short-term measure), and the promotion of alternative transportation and a shift to less-pollutive types (medium to long-term measure)

## C. Mass Transit Options for Metropolitan Cities

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<sup>16</sup> According the same study, an experiment was conducted in Puerto Princesa City in April 2004, where the number of tricycles operating in the city was reduced by 20% per day, with drivers reporting that their income levels of between 30% and 50%, depending on their areas of operation.

## 1. Bus Rapid Transit

75. Bus Rapid Transit (BRT) has been promoted as an affordable, adaptable, and cost-effective mass transit option. It provides an exclusive right-of-way for bus transit, separating it from the rest of the road traffic, thus allowing ease in operation and operations planning. Users then benefit from a service that is reliable and relatively inexpensive.

76. BRT cost-effectiveness also allows financially sustainable service in areas where high levels of patronage are unattainable. The following table shows a cost comparison among BRT and other rail systems in various cities of the world.

**Table 7.11 City Cost Comparisons of Bus Rapid Transit (BRT) and Rail<sup>17</sup>**

City	Type of System	Length of Segregated Lines (km)	Cost per Length (US\$ million / km)
Taipei	BRT	57	0.5
Quito	BRT	10	1.2
Curitiba	BRT	57	1.5
Sao Paulo	BRT	114	3.0
Bogota	BRT	40	5.3
Tunis	Light Rail Transit (LRT)	30	13.3
Lyon	LRT	18	18.9
Bordeaux	LRT	23	20.5
Los Angeles (Gold)	LRT	23	37.8
Zurich (2005 ext.)	LRT	20	42.0
Bangkok (BTS)	Elevated Rail	23	73.9
Madrid (1999 ext.)	Metro Rail	38	42.8
Hong Kong	Metro Rail	82	220.0
London (Jubilee)	Metro Rail	16	350.0

77. The most famous examples of this kind of system are in place in the cities of Curitiba, Brazil and Bogota, Colombia.<sup>18</sup>

78. The most striking characteristics of the BRT systems are the following:

- Provision of busways separated from other road traffic
- Integrated operations (although ownership of individual buses may not be singular)
- Policy and institutional framework modifications
- Clear leadership to get these BRT projects done

## 2. Rail-Based Systems

79. These urban transit systems fall into the different right-of-way categories<sup>19</sup> and may be of the following types as quoted from Gray (1992):

- Tramways - Category C right-of-way consists of the operation of one, two, or three coupled vehicles, mixed to the general traffic, though enjoying partly exclusive running facilities in some sections. In general, tramways are characterized by good dynamic specifications and interesting running comfort. However, their reliability and operating speeds are highly dependent on the traffic conditions met on the line.

<sup>17</sup> Training Course Materials, Moving Forward: Bus Rapid Transit Training Workshop in Metro Manila, 29-30 November 2005

<sup>18</sup> From DVD documents compiled by the GTZ with the intention to support the Mass Transit Training Course (being available as a PDF on [www.sutp.org](http://www.sutp.org)).

<sup>19</sup> Category A: fully exclusive right-of way; Category B: partly exclusive; Category C: Shared right-of-way.

- Light-Rail Transit System - operating on a Category B right-of-way consists of one to three particularly comfortable vehicles on rights-of-way protected along most of the line. The system enjoys better speed and reliable qualities as the traffic right-of-way is protected particularly in dense traffic areas and tunnels.
- Heavy-Rail Transit System - That system linked to Category A represents the optimal public transport system for high-capacity lines. It is operated on a reserved right-of-way without any possibility of outside interferences. It is highly reliable and reaches maximum operating speeds, especially in the case of automatic control.

80. In general, rail-based systems allow a single driver to operate sets of trains comprised as many as 10 vehicles. Thus, the ratio of staff productivity to passengers carried is high. Unfortunately, these systems involve the highest investment costs; their use is thus restricted to areas having high travel demand.

#### D. Safe Roads and Vehicles

81. To promote safe roads and vehicles, various measures are currently being implemented by city governments as well as local government units. The most common of these measures is the implementation of a traffic management plan that aims to reduce negative externalities, such as traffic congestion, environmental pollution, and accidents. In addition to traffic management, the various schemes are also being widely used.

82. *Loading regulation* has been strictly enforced now in the North Luzon Expressway to avoid traffic accidents. Overloaded trucks are not permitted to enter the toll road.

83. The *relocation of public transport terminals* means moving them away from the center or the concentration of economic activities. Public transport terminals are almost always located inside the central business district (CBD). This condition creates traffic congestion and concentration of vehicle emission in the area. Relocating the terminal away from the CBD will reduce congestion and pollution.

84. *Pedestrianization* can be done by either closing a certain road segment used by vehicles or by building walkways for exclusive pedestrian use to increase human mobility. This is most effective in areas with high density of people and vehicles. Traffic circulation can be improved by rerouting vehicles to the nearest possible streets. In some CBDs in Metro Manila, the use of walkways to connect business establishments and/or malls has become an effective method to reduce conflict between vehicles and people. Among the most successful cases of pedestrian walkways are in Ayala Center, Makati City, and Araneta Center in Quezon City.

85. The bicycle has gained popularity because it is a clean and sustainable means of transport. To *promote bicycle use*, Marikina City built exclusive bikeways in 2003. The bikeway master plan involves the construction of bicycle paths and routes on 66 km of roads in the city. Significant increases in the use of bicycles for work trips have been achieved.

86. Efforts are being exerted to conduct an *information and education campaign* on road safety. Teaching modules on this topic have been developed for elementary and high school students. The modules have been pilot-tested and are being used in selected schools in Quezon City, through the initiatives of the Society for Philippine Motoring Journalists (SPMJ) and Safekids, a non-governmental organization. The program aims to incorporate the teaching modules into the regular curriculum and concerted efforts are being made to seek the Department of Education's approval.

#### E. Vehicle Emission Control

87. Below are some of the vehicle emission controls being implemented in Philippine cities.

88. The *Unified Vehicle Volume Reduction Program* started implementation in Metro Manila in the mid-1990s as a number coding scheme to reduce the vehicular flow in major arteries. The Metro Manila experience shows that an 11% daily reduction of vehicles along the thoroughfares was attained when the program was implemented (MMUTIS JICA, 1999). Consequently, the amount of vehicle emissions was reduced.

89. With the *Motor Vehicle Inspection System*, most vehicles were expected to comply with set emission standards. However, extra precautions should be imposed with respect to the engagement of private emission test centers, as they are sometimes associated with corruption.

90. There are efforts to *switch to four-stroke tricycles or three-wheelers*. These efforts aim to gradually replace two-stroke tricycles, which comprise 95%-98% of tricycles in Metro Manila, with four-stroke tricycles. The PM10 emission factor of four-stroke motorcycles is approximately 1/5 of that of two-stroke tricycles.

91. The Department of Energy has been promoting the *use of alternative fuels* such as Compressed Natural Gas (CNG), Liquefied Natural Gas (LNG), and Coco-Methyl Ester Blends (CMEB) for public utility vehicles. Executive Order No. 290 had been signed by President Gloria Macapagal-Arroyo on 24 February 2004 to promote the use of natural gas on public transport vehicles.

92. A pilot project has been done in the Manila-Batangas route for 100 buses initially to use CNG. The project aims to increase the number of buses in Metro Manila using CNG, and refuelling stations have been provided along SLEX and in Batangas to support the project. Another initiative is the promotion of Liquefied Natural Gas (LNG) use in taxis. Some big taxi companies have now shifted to LNG and the number of refuelling stations has also started to increase. These initiatives will have large impacts in the reduction of emission factors.

## F. Resource Mobilization and Coordination

93. In the pursuit of decentralization in the government bureaucracy and fiscal management, the Local Government Code (LGC) of 1991 empowered LGUs to perform the principal task of delivering basic public services to their communities. To date, the record of performance of each LGU varies widely, with chartered cities leading the way with their vast resources and highly motivated and trained pool of civil servants. For instance, the Philippine Cities Competitive Ranking Project 2005, which assessed the competitiveness of 65 cities nationwide as a place for living and doing business, conferred top honors to Davao City (metropolitan city category), Bacolod City (mid-size city), and Dagupan City in the small city category. All these cities were gauged on the basis of seven development drivers, namely, cost of doing business, dynamism of local economy, linkages and accessibility, human resources and training, infrastructure, responsiveness of local government to business needs, and quality of life.

94. The World Bank and ADB report on decentralization in the Philippines<sup>20</sup> follows a series of development policy studies on local governance and financing. These studies include the initiatives of the Bureau of Local Government Finance, the Department of Finance, which deal with local economic development framework and local government

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<sup>20</sup> World Bank and Asian Development Bank, "Decentralization in the Philippines: Strengthening Local Government Financing and Resource Management in the Short Term," March 2005

finance management, and donor country-sponsored programs such as the Philippines-Canada Local Government Support Program. More specifically, the WB-ADB report reviewed two aspects of the decentralization policy currently engaging policymakers, namely, the sources of financing under decentralization and cross-cutting processes to strengthen the accountability of resource use. Key recommendations focused on administrative actions in the areas of enhancing LGUs' ability and capacity to raise their own revenues and access other resources and strengthening key resource management systems and procedures such as planning, budgeting, procurement, and financial management.

95. One potential source for LGU finance is revenue from local public economic enterprises operated by LGUs. While success stories of well-planned and managed economic enterprises<sup>21</sup> have been reported, these stories are few and far between. Most public economic enterprises operated by LGUs, such as integrated transport terminals, are a net drain on local operating revenue. A variety of issues exist in regard to economic enterprises. Some LGUs are of the view that they are obliged to directly operate such services as markets, slaughterhouses, bus terminals, etc. under the LGC. Other LGUs are apparently satisfied that the requirements of the Code are fulfilled if services are present regardless of whether they are operated publicly or privately. It has also been suggested that LGUs have received confusing signals from the national level regarding the desirable role for LGUs in public economic enterprises.

#### IV. Recommendations

##### A. Urban Transport Planning Process

96. Many high-performing LGUs have already shown that they are best placed to provide urgently needed public services, including the development and management of the transport network. However, as cited in the section on Urban Transport Governance, most cities have set up various functional units responsible for road infrastructure (e.g., a city engineer's office) to overall city planning (e.g., a city planning and development office). Few LGUs have created special units to address road traffic operations, either as independent bodies or lodged in the General Services Office or the Public Order and Safety Office.

97. While the type and nature of the transport organization would depend to a greater extent on the characteristics and components of the urban transport system within each of the cities, two unifying mechanisms need to be established and strengthened within the LGU organization. These are **a transport database and the transport planning process**. Despite the present arrangements where national government agencies are directly involved in planning and decision making on national transport infrastructure and operations (e.g., DPWH for roads, DOTC for rail systems, airports and ports, LTO for vehicle registration, and LTFRB for public transport franchises), local transport databases should be developed. More specifically, the set of urban transport indicators prepared for this review of Philippine cities should form part of a comprehensive, city-wide, or sector-specific benchmarking work, which involves the collection of up-to-date information.

98. The need for integrated land-use and transport planning becomes more pronounced when LGUs are confronted with proposals for commercial building construction, on the one hand, to Planned Development Unit projects of the private sector, on the other hand. The TIA process that has been adopted selectively by LGUs should be fully institutionalized and further work has to be undertaken to account for land use issues in the planning process.

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<sup>21</sup> Financed through the Municipal Development Fund Program of the World Bank

## B. Road Safety

99. Based on the review of road sector performance in selected Philippine cities, LGUs lack extensive information in the areas of traffic accidents and road safety strategies. Because road accidents is one of the leading causes of deaths and disabilities in the country, local authorities must play a crucial role in implementing a rational road safety program. At the national level, the government has adopted a medium-term road safety action plan, which included specific actions to be undertaken by LGUs, particularly within their city boundaries. However, to date, the national road safety plan has yet to be translated to detailed activities for LGUs.

100. The availability of the road safety fund under the DPWH-led Road Board is a funding mechanism ready to be tapped for LGU road safety-related projects. In the past, fund disbursements were made mainly to traffic signs, pavement markings, road section improvements, and installation of other safety devices for national roads. The LGUs, possibly through the League of Cities in the Philippines (LCP), could benefit from a focus study on road accidents in local areas. This study could recommend the means to align the national program with local initiatives.

## C. Urban Transport and the Environment

101. The rapid growth in motorcycles and tricycles poses serious threats to city dwellers, in the form of safety concerns and air and noise pollution. The current initiatives of LCP in partnership with donor countries and institutions in piloting the Clean Air Management Program to additional cities are welcome developments. CAMP should be expanded to cover other cities and municipalities in the country. Specific training and planning work modules on bikeways, pedestrian zones and road greening or environmental zones should be incorporated as new components of the existing CAMP design.

102. The results of the urban transport assessment indicate that cities with high population of motorcycles and tricycles are priority LGUs to cover under the expanded CAMP.

## D. Bus Rapid Transit

103. The conduct of a BRT pre-feasibility study for Metro Manila is a welcome development. Further training and seminars on busway systems around the world should be pursued. For future urban rail studies, including the study planned in Davao City, the busway system should always be considered as an alternative in the planning activity.

## E. Integrated Transport Terminals

104. The concept of integrated transport terminal as a component of urban development strategies to relieve urban core congestion has been adopted by many LGUs. However, to date, no serious review of the terminals' efficacy and economic impact after operation has been undertaken to identify lessons learned from successful and unsuccessful projects.

105. Such a study on integrated transport terminals should include the consideration of possible relocation of airports outside the CBD or to new growth centers within the city boundary. New studies and projects include the feasibility study of the Panglao Airport , involving the transfer of airport operations from Tagbilaran City, and the new airports for Iloilo City (in Sta. Barbara/Cabatuan), Bacolod City (in Silay), and Cagayan de Oro (in Laguindingan). One major work being considered by the government is the transfer of international air traffic from NAIA to Clark International Airport.

## F. Urban Transport Action Agenda

106. Following the above recommendations, the proposed Transport Action Agenda is presented as Table 7.12.

**Table 7.12 Urban Transport Action Agenda**

Strategy	Activity	Performance Targets/Indicators			
		Present	2010	2020	2030
1. Strengthen LGU urban transport planning capability	1.1 Urban transport benchmarking study for Philippine cities	Phase 1 covers 65 cities	Phase 2 covers the remaining 52 cities, including Metro Manila towns	Phase 3 covers capital towns	
	1.2 Full institutionalization of TIA process	Conduct of TIA training	Adoption in all Philippine cities		
	1.3 Develop Integrated Urban & Transport Impact Assessment	Preparation of framework and detailed process	Training and pilot-testing in 30 cities	Adoption in all Philippine cities	
2. Enhance road safety in cities	2.1 Road safety review in pilot cities	Preparation of TOR and implementing arrangements	Completed study of 65 cities	Completed study of Phase 2 cities	Completed study of Phase 3 cities
	2.2 Expansion of DPWH Traffic Accident Reporting and Analysis System (TARAS) to include local roads	Integrate TARAS with MMDA's Metro Manila Accident Reporting and Analysis System	Expansion of TARAS to cover local roads		
	2.3 Local road safety program	Preparation of Program of Work for priority LGU road safety projects using the Road Fund	Implementation of priority LGU road safety projects using the Road Fund	Implementation of priority LGU road safety projects using the Road Fund	Implementation of priority LGU road safety projects using the Road Fund
3. Strengthen LGU air quality management capability (mobile sources)	3.1 Expansion of Clean Air Management Program to other cities and towns	Preparation for training delivery and workshops/ planning study in 65 cities	Preparation for training delivery and workshops/ planning study in 52 cities, including Metro Manila towns	Preparation for training delivery and workshops/ planning study in capital towns	
	3.2 Motorcycle/tricycle conversion to 4-stroke engines	Prepare program in cooperation with DENR/DTI/DOTC/LGU	M/MC conversion in 30 pilot cities	M/MC conversion in the remaining cities	
4. Promote the development of Bus Rapid Transit	4.1 Development of busway projects	Preparation of FS for Metro Manila	Introduction of busways in Metro Manila	Introduction of busways in Metro Cebu and other major cities	
5. Selective introduction of integrated transport terminals	5.1 Benchmarking study	Preparation of TOR and implementing arrangements	Completed study for regional/capital cities	Completed study for the remaining cities	Completed study for major towns
	5.2 Relocation of airports/public transport terminals	Preparation of FS for priority cities	Implementation of capital projects	Implementation of capital projects	Implementation of capital projects

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## Appendix 7.1 Urban Transport Indicators in Philippines Cities

Appendix 7.1 - Philippine Cities																
A. Small Cities (Population less than 200,000 people)																
City	Land Area, sq km		Population		Vehicle Registration, 2005				Road Network, km			Road Transport Indices				
	Total	% Urban	2000 Census	2005 Estimate	Private	Public	M/MC	Total	Nat'l	Local	Total	Veh/1000 popn	% M/MC	km/1000 popn	km/sq km of area	% Paved Road
1 Cavite	12.4	100.0	99,367	107,099	7,876	15,651	20,536	44,063			9.0	411.4	46.6	0.1	0.7	91.0
2 Dagupan	43.6	88.5	130,328	133,685	7,934	12,934	26,370	47,238				353.4	55.8	0.0	0.0	
3 Legaspi	204.2	10.7	157,010	178,772	3,548	5,468	12,567	21,583			176.7	120.7	58.2	1.0	0.9	60.6
4 Lucena*	89.1		196,075	220,834	7,071	13,253	17,299	37,623				170.4	46.0	0.0	0.0	
5 Naga	84.5	17.4	137,810	149,561	5,165	10,000	16,644	31,809				212.7	52.3	0.0	0.0	
6 Olongapo	185.0		194,260	211,135	4,991	9,863	13,275	28,129				133.2	47.2	0.0	0.0	
7 Puerto Princesa	2,539.8	5.8	161,912	213,343	1,960	4,931	18,461	25,352	155.9	375.6	531.5	118.8	72.8	2.5	0.2	40.0
8 San Fernando, LU	10.5	19.2	102,082	114,206	6,017	11,401	14,158	31,576				276.5	44.8	0.0	0.0	
9 Sta Rosa	39.1		185,633	204,954	NA	NA	NA									
10 Sorsogon*	312.9		134,678	148,987	1,195	2,801	9,574	13,570				91.1	70.6	0.0	0.0	
11 Tagaytay	66.2		45,287	51,740	6,691	17,007	11,827	35,525				686.6	33.3	0.0	0.0	
12 Tuguegarao*	113.9	2.2	120,645	138,235	3,971	7,545	19,134	30,650				221.7	62.4	0.0	0.0	
13 Cadiz	524.6		141,954	157,962	2,607	2,083	5,785	10,475				66.3	55.2	0.0	0.0	
14 Dumaguete	33.6		102,265	113,686	5,007	8,591	29,690	43,288				380.8	68.6	0.0	0.0	
15 Ormoc	613.6		154,297	156,547	2,536	5,067	9,113	16,716				106.8	54.5	0.0	0.0	
16 Roxas	95.1		126,352	135,058	3,445	6,664	21,614	31,723				234.9	68.1	0.0	0.0	
17 San Carlos	451.5	12.0	118,259	136,364	2,206	2,625	10,169	15,000				110.0	67.8	0.0	0.0	
18 Silay*	214.8	16.8	107,722	107,722	4,314	4,914	3,556	12,784	7.5	39.5	47.0	118.7	27.8	0.4	0.2	87.0
19 Tacloban	108.8		178,639	191,877	4,695	7,796	10,965	23,456				122.2	46.7	0.0	0.0	
20 Tagbilaran*	32.7	11.4	77,700	91,042	5,999	12,664	23,311	41,974			136.4	461.0	55.5	1.5	4.2	61.6
21 Bago*	418.2	16.9	141,721	156,730	NA	NA	NA		65.8	34.9	100.7			0.6	0.2	81.8
22 Bislig	442.6		97,860	107,716	604	935	1,912	3,451				32.0	55.4	0.0	0.0	
23 Cotabato	176.0	38.7	163,849	184,388	964	3,678	2,946	7,588	8.4	201.4	209.8	41.2	38.8	1.1	1.2	41.6
24 Dapitan*	295.2		68,178	73,991	NA	NA	NA									
25 Digos*	287.1	88.0	125,171	141,412	1,295	2,291	9,164	12,750	23.7	175.0	198.7	90.2	71.9	1.4	0.7	29.4
26 Dipolog	241.1		99,862	106,052	759	1,595	9,707	12,061				113.7	80.5	0.0	0.0	
27 Gingoog*	568.4		102,379	121,066	1,317	2,269	4,802	8,388				69.3	57.2	0.0	0.0	
28 Koronadal	277.0	7.9	133,786	152,700	1,472	2,356	12,286	16,114	24.2	541.6	565.8	105.5	76.2	3.7	2.0	
29 Marawi	22.6		131,090	151,674	200	409	198	807				5.3	24.5	0.0	0.0	
30 Oroquieta	263.9		59,843	64,246	936	2,556	7,012	10,504				163.5	66.8	0.0	0.0	
31 Ozamiz	164.1		110,420	120,130	1,094	2,200	9,283	12,577			220.5	104.7	73.8	1.8	1.3	38.5
32 Pagadian	378.8		142,515	164,334	950	2,045	7,519	10,514				64.0	71.5	0.0	0.0	
33 Panabo*	251.2	12.1	133,950	148,764	NA	NA	NA		32.9	743.1	776.0			5.2	3.1	10.1
34 Surigao	261.2	8.0	118,534	135,095	1,144	3,244	9,144	13,532				100.2	67.6	0.0	0.0	
35 Tacurong*	153.4	0.6	76,354	84,012	2,201	3,692	9,117	15,010	29.0	223.8	252.8	178.7	60.7	3.0	1.6	
36 Tagum	195.8		179,531	204,812	4,074	7,198	35,422	46,694				228.0	75.9	0.0	0.0	
37 Valencia*	621.6		147,924	165,729	1,769	3,404	4,043	9,216				55.6	43.9	0.0	0.0	
B. Mid-Sized, Non-Metro Cities (Population greater than 200,000 people)																
38 Angeles	62.2	42.9	263,971	286,902	16,456	26,073	22,524	65,053				226.7	34.6	0.0	0.0	
39 Baguio	57.5	100.0	252,386	280,756	10,548	20,188	1,792	32,528	93.2	250.8	344.0	115.9	5.5	1.2	6.0	95.0
40 Batangas	283.0		247,588	289,399	10,160	22,534	21,526	54,220				187.4	39.7	0.0	0.0	
41 Cabanatuan*	282.8		222,859	243,173	11,090	19,961	28,357	59,408				244.3	47.7	0.0	0.0	
42 Calamba*	144.8	68.0	281,146	367,446	NA	NA	NA		27.0	82.8	109.8			0.3	0.8	98.5
43 Lipa	209.4		218,447	272,225	12,360	29,549	31,429	73,338				269.4	42.9	0.0	0.0	
44 San Fernando, P.	67.7		221,857	265,073	10,854	24,356	9,875	45,085				170.1	21.9	0.0	0.0	
45 Tarlac	425.5	10.7	262,481	280,822	9,804	19,882	35,168	64,854			474.8	230.9	54.2	1.7	1.1	20.4
46 Bacolod	160.8	42.7	429,076	459,737	18,105	19,418	14,737	52,260	72.1	31.3	103.4	113.7	28.2	0.2	0.6	94.6
47 Iloilo	70.2	67.2	365,820	402,511	16,062	27,669	11,255	54,986	58.2	49.1	107.3	136.6	20.5	0.3	1.5	96.0
48 Butuan	668.9		267,279	290,783	1,151	3,012	3,585	7,748				26.6	46.3	0.0	0.0	
49 Cagayan de Oro	488.9	64.1	461,877	500,767	8,749	13,024	9,043	30,816	80.3	118.6	198.9	61.5	29.3	0.4	0.4	76.9
50 General Santos	536.1	14.2	411,822	526,853	3,421	5,427	18,767	27,615	55.3	443.9	499.2	52.4	68.0	0.9	0.9	63.2
51 Iligan	813.4	7.2	285,061	298,565	2,525	5,847	2,851	11,223				37.6	25.4	0.0	0.0	
52 Zamboanga	1,414.7	5.3	601,794	716,817	6,970	15,595	37,925	60,490	141.4	689.6	831.0	84.4	62.7	1.2	0.6	43.0
C. Metropolitan Cities																
53 Las Pinas	33.0	100.0	472,780	546,222	31,488	27,189	18,757	77,434	11.9	59.7	71.6	141.8	24.2	0.1	2.2	100.0
54 Makati	27.4	100.0	471,379	511,735	45,370	25,508	11,229	82,107	65.6	369.4	435.0	160.4	13.7	0.9	15.9	100.0
55 Mandaluyong	11.2	100.0	278,474	294,859	28,501	10,430	15,075	54,006	25.6	94.2	119.8	183.2	27.9	0.4	10.7	100.0
56 Manila	38.3	100.0	1,581,082	1,581,082	95,770	97,029	56,583	249,382	236.0	537.6	773.6	157.7	22.7	0.5	20.2	96.6
57 Marikina	21.5	98.2	391,170	457,722	26,167	27,524	20,841	74,532	12.4	359.6	372.0	162.8	28.0	0.8	17.3	94.2
58 Muntinlupa	46.7	100.0	379,310	446,830	29,396	21,346	12,745	63,487	33.4	27.1	60.5	142.1	20.1	0.1	1.3	100.0
59 Pasay	18.0	100.0	354,908	354,908	24,551	17,493	20,857	62,901	47.8	99.8	147.6	177.2	33.2	0.4	8.2	100.0
60 Pasig	31.0		505,058	544,091	46,661	34,984	25,974	107,619	35.9	228.8	264.7	197.8	24.1	0.5	8.5	100.0
61 Quezon City	166.2	72.0	2,173,831	2,390,688	32,621	26,632	34,284	93,537	146.5	1,616.4	1,762.9	39.1	36.7	0.7	10.6	100.0
62 Cebu	291.2	19.2	718,821	784,729	26,735	32,004	20,898	79,637	98.5	220.8	319.3	101.5	26.2	0.4	1.1	87.8
63 Lapulapu	58.1		217,019	252,808	5,247	7,967	14,965	28,179				111.5	53.1	0.0	0.0	
64 Mandaue	34.9		259,728	311,768	10,426	12,071	12,126	34,623				111.1	35.0	0.0	0.0	
65 Davao	2,443.6	10.0	1,147,116	1,318,884	26,703	29,163	28,786	84,652	253.9	1,517.8	1,771.7	64.2	34.0	1.3	0.7	59.6