ABSTRACT

**Background:** Even though megacities have many positive features, a number of problems arise, out of which environmental pollution and traffic congestion are the most important ones.

**Purpose:** The objective of this report is to give a broad description of urban development and transportation in Metro Manila.

**Mode of procedures:** To fulfil the above mentioned purpose, close contacts were held to international organisations such as the Worldbank and the ADB, government agencies such as the DOTC and the MMDA as well as institutes and private companies such as the University of Asia and the Pacific, the Centre for Transportation Studies at the University of the Philippines, and Palafox Associations.

**Results:** Metro Manila is the country’s foremost industrial and commercial centre. High population growth rate has a direct effect on the intensity of urbanisation and development in the region and population is expected to reach 13 million people by the year 2015.

Urban transport congestion is one of the most pressing problems in Metro Manila as air pollution has a major impact on public health and particularly affects children and the elderly.
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GLOSSERY

ADB  Asian Development Bank
DOH  Department of Health
DOTC Department of Transport and Communications
DPWH Department of Public Work and Highways
ESCAP Economic and Social Commission for Asia and the Pacific
GDP  Gross Domestic Product
GNP  Gross National Product
JICA Japan International Cooperation Agency
LRT  Light Rail Train
MMDA Metro Manila Development Authority
MMR  Metro Manila Region
MMTIS Metro Manila Transport Integration Study
PM  Particular Matter
PNR  Philippine National Railroad
UN  United Nations

Peso : USD rate (2001/01/18): ~53:1
Peso : SEK rate (2001/01/18): ~ 5:1
PROLOGUE

"The most air polluted cities in the world are located in Asia. One of them is the Philippine capital Manila. That is the finding of a recent survey funded by the World Health Organisation. One has therefore to ask the question: What price development? So far, the implicit answer has been that no price is too high. Authorities have tended to focus on the making of money at the expense of most other things. That is understandable, given the poverty that has long dogged Asia. But can any responsible authority really gamble with the health of present and future generations just to satisfy a sense of entitlement? The ultimate goal of any government should be not just for the nation to become richer, glorious though that may be, but to build societies that address all human needs – justice, civility, culture, health and yes, livelihood. As for the argument that many Asian countries can ill afford to be environmentally friendly, the counter-argument would go: Better to spend a little now than a lot later. It is probably cheaper to institute pollution controls while the country is still in development flux. Once everything is rigidly in place it will be that much harder to effect changes. Similarly, once pollution reaches a point where its costs become tangible, then the process of cleaning up will already have become more expensive than trying to curb such pollution in the first place. Almost always, prevention is better than the cure. It is therefore of tremendous importance for development countries to work towards an ecological sustainable economy right from the beginning. To focus on short-term monetary profits and ignore longer term, if less tangible, issues would be short-sighted indeed."\(^1\)

\(^1\) Financial Times
1 INTRODUCTION

1.1 Background

This chapter provides the reader with the necessary background information and presents the problems that will be discussed in the study.

According to a study that was published in the Annual Report of the Asian Development Bank in 1996, Asia will soon see a doubling in the number of its mega cities – urban areas with a population of over 10 million – with an attendant rise in congestion, pollution and crime. Over the past 30 years, the Asian urban population has nearly tripled from 400 million to 1.1 billion people and there has been a corresponding increase in the level of urbanisation. There has been a sharp rise in megacities. Today, Asia has nine megacities – Beijing, Bombay, Calcutta, Jakarta, Osaka, Seoul, Shanghai, Tianjin and Tokyo. Soon four more will be added – Bangkog, Dhaka, Karachi and Manila. If today’s trend is not stopped and the migration from rural to urban areas in Asia continues, the number of megacities will expand to 20 by the year 2025.²

Figure 2: Asian Megacities, 1995 and 2025
Source: ADB, Annual Report, 1996

The most striking difference between the Asian cities of today and 25 years ago is the shift of people and economic activity from rural agrarian communities to urban and industrial centres. This change has been most dramatic in low- and middle-income nations in the East Asian and Pacific regions. From 1970 to 1997, the fraction of their GDP originating in agriculture dropped from 35 to 18 percent, while the rural populations fell from 78 to 67 percent of the total population (see figure 3). These numbers indicate that the urban per capita income is almost eight times higher than the rural per capita income. This leaves many people without a choice but to try their fortune in the cities, which explains the rapid immigration seen in Asian metropolis. As there is no industry whatsoever existing in rural areas, the only way to find employment is in the cities. And even though unemployment is high and a large majority of people ends up selling household articles or cigarettes on the highway, they still are economically better off than if they stay on the countryside.

Figure 3: Asian Urban Population
Source: ADB, Annual Report, 1996

The economic growth resulting from this transition had major impacts on poverty. By 1995, poverty declined to 33 percent. In 1975 there was an estimated number of poor in Asian countries of 1,149 million. This number declined to 824 million in 1995 despite explosive population growth.³

³ Asian Environment Outlook 2001, 1999
These improvements notwithstanding, urbanisation and industrialisation have created a host of social, economic and environmental problems some of which will be taken up in this study. A proliferation of slum areas, impossible traffic congestion, uncontrolled industrial growth, unprecedented degradation of air quality, encroachment on natural systems and public health degradation from water pollution, poor drainage and solid waste disposal practices are the norm in major cities.

The Philippines are experiencing rapid population growth and today’s number of 67.6 million people is forecasted to reach 104.5 million people by the year 2025. Its urban population will then have doubled from today’s 36.6 to 77.6 million people. Covering an area of 636 square kilometres and a population of 9.5 million, Metro Manila is the largest, most densely populated and most economically advanced urban centre in the country. Not surprisingly it is facing a range of environmental problems and issues similar to those being experienced in other mega cities. Among the environmental problems, air pollution is the most pressing considering its severity and adverse effect on public health and its significant adverse impacts on socio-economic conditions.

Surveys have shown that poor air quality has a major adverse impact on public health and particularly affects children and the elderly. While the number of completed studies in the Philippines relating health to air quality is limited, those that have been conducted demonstrated a strong correlation between the incidence of morbidity and poor air quality, particularly for those groups living within and adjacent to road environments. Studies elsewhere confirm that air pollutants are extremely harmful to the human body, are a major cause of premature death and illness, and are the primary reason for a wide range of chest and respiratory ailments. The Asian Development Bank has therefore granted a 400 million USD loan to the Philippine government in order to improve air quality in Metro Manila.⁴

Motor vehicles account for nearly 80 percent of all transport-related energy consumption and are a major factor in global warming. In addition, a car that is stuck in a traffic jam produces three times as much pollutants as one that is running on the road. Particulate matter (black smoke) and lead are the two most serious air pollutants in the region. Motor vehicles are also the dominant source of the two. High particulate matter and lead emissions are promoted by the slow and stop-go traffic conditions prevalent especially in the region’s core area where streets are narrow and intersection density is high.⁵

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⁴ Report and Recommendation of the President to the Board of Directors on Proposed Loans and a technical assistance Grant to the Philippines and the LandBank of the Philippines for the Metro Manila Air Quality Improvement Sector Development Program, 1998
⁵ http://www.aim.edu.ph/rpa/Papers/Metro-Manila’s…20Problems.html
“These high concentrations of air pollutants have serious effect on the Metro Manila residents. Even though the use of leaded fuel for transportation has decreased during recent years, serious health effects can be observed at relatively low concentration levels. It is known for instance that lead components damage the kidneys, liver, reproductive system, blood formation, basic cellular processes and brain function. Small children are particularly vulnerable to lead pollution as lead affects brain development. An analysis of the 1996 exposure levels to lead is calculated to have caused 223 premature deaths, 40,000 cases of coronary heart disease and 99,000 days of restricted activity per year.

Particulate matter (PM) is characteristic of older diesel engines and consists of small particles. They affect the respiratory system and if they are of small size they are able to bypass the respiratory system’s own filtering process and penetrate the lungs, causing such illnesses as bronchitis. Exposure of PM$_{10}$ is estimated to have resulted in 5,000 premature deaths, about 500,000 cases of lower respiratory illness and 25,000 restricted activity days per year.

The air quality data collected in Metro Manila clearly demonstrates that the levels of pollutants in the air are well above levels that affect human health. Surveys conducted with World Health Organisation assistance indicate that people who spend a large portion of their time in the road environment are especially prone to chest ailments and children have high blood lead levels. Analysis of the impact of air pollution on society has concluded that the poor are the most adversely affected group. The costs from polluted air to residents of Metro Manila are estimated to more than 5000 million pesos in lost earnings and medical expenses.

1.2 Problem Discussion and Problem Formulation

Transportation is considered by many planners working in developing countries to be one of the necessary catalysts for economic development. A functioning transportation system in the newly arising megacities will be absolutely

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6 Rogat, 1998
7 Report and Recommendation of the President to the Board of Directors on Proposed Loans and a technical assistance Grant to the Philippines and the LandBank of the Philippines for the Metro Manila Air Quality Improvement Sector Development Program, 1998
8 Report and Recommendation of the President to the Board of Directors on Proposed Loans and a technical assistance Grant to the Philippines and the LandBank of the Philippines for the Metro Manila Air Quality Improvement Sector Development Program, 1998
9 Mahayni, 1972
necessary in order to continue the economic growth many of the Asian countries are facing today. To provide such a system will be one of the biggest challenges city planners are facing today.

Among the challenges to be met are the need to develop functioning transport systems, to tackle rapidly increasing urban transport problems, to address the predicted large increases in motorisation, to reduce the large and increasing toll of traffic-related deaths and injuries, and to address the profound concerns associated with increasing air pollution.\footnote{Allport, Key & Melhuish, 1998}

This study will give an overview on urban development in Metro Manila since the arrival of the Spaniards more than 400 years ago. It will also describe a likely scenario on the region’s development over the next 20 years and present a detailed and accurate description of the transportation infrastructure in Metro Manila and its public transport means. Believing that there is a connection between the transportation problems the region is facing today and the way the city developed over the last few centuries, the study will discuss possible solutions to solve the transportation crisis the region is facing today. This results in the following questions:

- How has Metro Manila developed over the past centuries?
- How does today’s traffic situation in Metro Manila look like and what are the main transport modes?
- How will urban development and transportation in Metro Manila look like in 20 years from now?
- How could today’s transportation problems be solved?

\section*{1.3 Purpose of the study}

The main objective of the study is to give a broad description of transportation and urban development in Metro Manila and thus contribute to improve the understanding of urban transport issues of developing countries. In the second place the study will present possible solutions to the current transportation problems in Metro Manila.

\section*{1.4 Limitations}

This study was taking place in Metro Manila and will not examine urban development or transportation in any other part of the country. Nevertheless some comparisons to other Asian cities will be made in the following chapters.
However these will only be of basic character and no detailed information about other cities will be presented. Even though cities like Tokyo and Singapore show no similarities with Metro Manila it is important to present the differences. The study was limited by the fact that recent data was not always existing. Due to the limit of time only a few interviews could be carried out.

1.5 Disposition

The study is divided into three parts. The first part is a general introduction focusing on urbanisation in Asia and some of its most severe impacts. Chapter two is devoted to discuss the methods and sources used for this study. The second part contains the empirical findings of the study. Chapter three presents an overview of the history of Metro Manila and gives a general description on how the city looks like today. Chapter four describes transportation infrastructure and public transport in Metro Manila. The last part then is used to summarise the findings of the study and its implications for transportation planning in Metro Manila. Chapter five analyses the gathered material and presents some possible solutions. Chapter six summarises the study, presenting some basic conclusions on urban development and transportation in Metro Manila.
2 THE METHOD OF THE STUDY

Before data collection could be started, it was necessary to make thorough preparations, both in Sweden and the Philippines. Those began in Sweden during autumn 2000 and ended in the Philippines during the period of November 2000 - January 2001. Since traffic congestion is a quite unknown phenomenon in Sweden, the pre-study phase was dedicated to build up a pre-understanding through the study of literature on this topic. Literature was found both in libraries in Sweden and the Philippines as well as the Internet.

This study contains both primary data in form of interviews and secondary data in form of literature on the topic. Material was gathered in cooperation with representatives of international organisations such as the Asian Development Bank and the Worldbank, government agencies such as the Department of Transport and Communications and the Metro Manila Development Authority, as well as institutions and private companies, e.g. the University of the Philippines, the University of Asia and the Pacific and Palafox Associations.

Working conditions in the Philippines have been very pleasant. Openness has been high and I had no difficulties to get insight into the material I asked for. All my interviewees have been very friendly and gave me the impression of being somewhat important to them.

2.1 Sources of Data

Before this study was carried out, a broad description about the traffic situation in Metro Manila has not been available. Even more important, none of the existing material combined urban development and transportation even though they are strongly connected to each other and often explain each other.

What could be found though, is certain case studies, whether it is on the Jeepney market, the Lightrail train (LRT), squatter colonies or traffic congestion in general. The availability of these different case studies, be it a case study of a specific country or a case study of a specific transportation project, serves as a background for this study. Like in a puzzle, the gathered material is then put together, resulting in a broad but nevertheless rather detailed description of the transport situation in Metro Manila.

The sources of data used in this study have been drawn from the publications of international agencies and governmental documents. The ADB and the Worldbank are two of the most active international agencies in researching developing countries. Their publications have been the main sources for this study. A central part was of course also the Metro Manila Transport Integration
Study, conducted by the Japan International Cooperation Agency in 1999. Even the publications of the United Nations, notably the publications of the Economic and Social Commission for Asia and the Pacific have been helpful.

Reports and studies conducted by government agencies such as the MMDA, the Department of Public Work and Highways and the DOTC as well as the National Centre for Transportation Studies at the University of the Philippines have shown to be very valuable.

Available literature, especially in the fields of transport and development planning, has served to reinforce the theoretical and general aspects of this study and could be found at the libraries of the ADB, the University of the Philippines and the University of Asia and the Pacific.

Numerous articles in many professional journals of different disciplines, discussing transportation and urban development, were also reviewed and quoted in this study.

Even though the material presented in this study comes from a variety of sources, the reader ought to have in mind that some of the data might be uncertain. It was not always possible to receive the latest numbers (some data might be from the early nineties) due to a lack of statistical material. Furthermore some of the material was written for a certain task group (investors, government officials...) and are sometimes lacking objectivity. This has been taken into consideration and whenever it was possible the data was compared with other sources. Last but not least one cannot rule out that I, due to the large amount of material that I’ve gathered, missed out or misinterpreted some important information.
3 URBAN DEVELOPMENT IN METRO MANILA

The purpose of this chapter is to give the reader a basic understanding on how Manila developed historically as well as its geographical situation. Furthermore a general description of the land use will be given and future development trends will be presented.

3.1 History

“Long before the arrival of the Spaniards headed by Adelantado Governor General Miguel Lopez de Legazpi in Manila in 1571, a town called “Maynilad” was in flourish. The city’s name is derived from that of the nilad plant, which once grew profusely in the nearby area. When the Spaniards arrived, the name was shortened to Maynila before it became its present form. Pre Spanish Maynilad was originally a Moslem settlement. It was a small but prosperous trading port lying between two great bodies of water, Pasig River and Manila bay. Under Spain, Manila became the great port of entry in the Far East and an intense shipping traffic existed between the Philippines and Mexico.”

Manila has been the principal city of the Philippines for four centuries. It was virtually levelled in the closing days of the Second World War, when the American forces drove out the occupying Japanese. Yet people from the provinces flocked endlessly into the rebuilding city after the war, faster than basic and essential services could be provided, in search for economic life. In the 1950’s, Metropolitan Manila had only a population of 1.2 million and did not rank among the 30 largest cities in the world. But by 1975 its population had grown to 4.5 million and the city was among the worlds largest according to a United Nations survey. The city’s population is projected to reach 12.3 million in the year 2010 and by that be ranked as the 15th largest city in the world. Such a population growth is brought about by population inmigration and a rapid urbanisation process, as Metropolitan Manila is the country’s financial, political, educational and cultural nerve centre. Like so many other fast-growing Asian metropolis, it is saddled with one of the basic urban problems, the slum problem. Studies from the early 80’s show that squatters or slum dwellers constituted around one fourth or 26 percent of the cities population. These numbers have probably grown until today. Squatter colonies seem to be concentrated in the municipalities of Manila and Quezon City. Separated from each other by the Pasig river, these used to be two independent cities. But due to rapid immigration, they have now grown together without any clear borderlines. Together with the 15 other municipalities they form what is called Metro Manila. In terms of land area, squatter communities are not very large. Because of the relatively limited land area where slum communities were resettled, population density per land area is quite high with occupants poorly housed with

http://www.tourism.gov.ph/top_8/manila.htm
almost non-existent public amenities. For instance, Makati has a density of 40,000 persons per square kilometre, with other areas, especially in the Manila area reaching up to 90,000 persons per square kilometre. To contain these many people, the very limited space is highly devoted to houses and other physical structures at the expense of other amenities such as service roads. The progressive deterioration of facilities and services due to the rapid population growth has become too apparent in its ill-planned communities, squatter colonies, disorganised road networks, transport lack and congested traffic. As integrated today, Metropolitan Manila covers 636 square kilometres and has a population of 9.5 million. This makes Metropolitan Manila not only the largest but also the most densely populated urban centre in the country.

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12 The share and care apostolate for poor settlers, 1983
13 Abanes-Pujalte, 1981
3.2 Geography

Metro Manila has an area of 636 square kilometres. It is located on the west coast of the Philippine main island of Luzon, surrounded by fertile plains. It lies on the eastern shore of Manila Bay, a large inlet with access to the sea through a channel 12 miles wide to the southeast. The city occupies the low, narrow deltaic plain of the Pasig River, a short navigable stream, which flows northwestward to Manila Bay out of a large lake, Laguna de Bay south-east of the city (see figure 12). Manila Bay lies to the west, the swampy delta of the southward-flowing Pampanga River to the north, the mountains of the Bataan Peninsula to the west and Laguna de Bay to the southeast. Although the region’s area is constricted, it is an excellent port site because of its sheltered harbour, its access to inland agricultural areas by way of the river and its relative proximity to the Asian mainland.14

3.3 Land Use

Urban planning in Manila is carrying two colonial baggages, which have highly influenced the development the region has taken during the last 400 years. One of them is the 16th century Laws of the Indies, which was applied to all colonies of Spain - so even the Philippines.

The urban design revolves around a town plaza where the church and the municipio (municipal building) are situated. Around the plaza are the houses of the principalias and ilustrados (the elite in the community). Such an urban structure indicates the concentration of jobs, trade and commerce within the easy commuting distance for only a small number of people.

Today, unfortunately, after more than four centuries, the situation has not changed. There is the concentration of jobs and commercial activities at the Makati Central Business District and the Ortigas Centre (Pasig city) – the modern day town plazas – where these are surrounded by low-density villages. These so called villages were started to be build when the Americans arrived and today there are more than 1,800 of them spread out over the whole area. It is in these villages were the upper class lives, in large houses with big surrounding gardens. Isolated by a wall from the outer area and with guards patrolling the entrance gates, these villages cannot be entered by any non-residents as ID:s have to be presented. (taking large areas of land (see also figure 5), these villages create huge problems for transport planners, as roads and highways have to be build around these isolated enclaves.

14 http://www.tourism.gov.ph/top_8/manila.htm
Nowhere else in the more progressive cities in the world could large single family houses be seen close to Fifth Avenue, New York or in the inner cities of London and Paris. While these rich-people villages surround the business districts, office workers live two to three hours away from their places of work. Past surveys have revealed that the Makati Business District has a daytime population eleven times higher than the nighttime population. So the problem is bringing in this 11 times population in the morning and bringing them out of Makati in the evening.

In contrast to European cities or British colonies like Singapore, their town squares were surrounded by higher density townhouses, apartments and shop houses, so that there were people living within walking distance to the town centres. Large homes were located in the suburbs.

The Americans reinforced this urban planning problem with the introduction of the cars in the 1950s. Urban planning became now very much car-oriented. The
rigid zoning during that time segregated the place of work from the place of residence. It was understandable during that time because cars were cheap and so was fuel. But after the oil crisis in the 1970s, the proponents of the rigid zoning realised the inefficiencies of long hours of travelling to and from places of work. However, in Metro Manila, this outdated planning practices of rigid zoning or segregating land uses are still used and largely explain the present traffic difficulties Metro Manila is facing today.\textsuperscript{15}

Metro Manila contains 17 municipalities, of which four are cities – Manila, Makati, Pasig and Quezon.\textsuperscript{16} It consists of an old Spanish influenced inner city, called Intramoutras and located just a few hundred metres away from the port area. It is small in area but very densely populated, surrounded by a much larger area of shoddy, nondescript buildings of recent origin, even these areas very densely populated. In some areas population density is recorded to 90,000 persons per square kilometre, which is considerably higher than in Manhattan and central Paris, which are two of the most densely occupied Western cities with a recorded density of about 3,000 persons per square kilometre.

But like in other poor cities, the city centre is less clearly identifiable than in richer cities. This is because the tertiary sector, i.e. institutions, entertainment,

\textsuperscript{15}Torre dela, V., R., 1998
\textsuperscript{16}http://www.worldbank.org/pics/pid/ph57731.txt
\textsuperscript{17}MMDA, Intern material
government services, higher education, commercial services, travel and tourism, etc. is far less developed in Metro Manila. More people work in the city centre. There are relatively few major enterprises and public buildings. The city centre is characterised more by the intensity of activity than by the type of activity. People sell food and household equipment on large markets, while others make their living by moving around lorries with mango, bananas, balot (chicken embryos - a Philippine speciality), cleaning utilities or newspapers. Still others, mostly young children patrol the roads, selling cigarettes to the bypassing cars. Hence the centre tends to merge into the surrounding areas with no clear line of demarcation.

As a major metropolitan area, Metro Manila is exhibiting a land use pattern, which is significantly different from other urbanised areas within the Philippines. Three major specialised employment oriented districts – “Quiapo”, the traditional centre, “Ermita”, the tourist area (and therefore also the area where most of the prostitution is going on) and “Makati”, a major commercial and business complex, which started in the 60’s – have been developed in different portions of the metropolitan area (with Quiapo and Ermita located in Manila City and Makati located in Makati City). The new Americanised commercial centre of Makati, 8 kilometres from the old city centre, has been so successful commercially that it now outshines the old Spanish city centre.

This trend toward dispersed city centres is desirable in large cities like Manila as it reduces commuting trip lengths and consequent demand on the road system. But the development of large, low-density residential belts principally on the eastern and southern sides of the Metropolitan area, are an undesirable feature from a transportation perspective as it increases trip lengths. This will make it more difficult to serve carless families in these outlying areas and result in a more costly public transport as well as the need to provide additional costly road infrastructure.

Metro Manila’s land use may be grouped into residential, commercial, industrial and other uses, including military and institutional uses.

Residential Areas

Residential areas are of two types. The first type comprises housing areas characterised by high density and often inadequate support facilities as well as unfavourable location (because of flooding or topography). Slum areas are estimated at 245 sites with 2.4 million residents. Their highest concentration is

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18 Thomson, 1969
19 Philippines Urban Transportation Sector Review, 1983
in the middle and upper parts of the coastal margin (Manila and north towards Caloocan) as well as in scattered pockets in Quezon City and Pasay. Their relevance to the transport problem is not so much peoples’ need for transport but their inclination to squat along the edge of main roads. It is not high density in itself, however, which causes the intolerable overcrowding of Manila: it is the combination of high density and low building. It is certainly possible – and may be cheaper for the city as a whole – to provide satisfactory conditions for high-density living by building higher.

The second residential type comprise the better quality housing areas and subdivisions found mostly around the centre of the Guadalupe Plateau (Makati, San Juan and Pasig) as well as areas to the north-east in Quezon City. Most of the richer classes own cars and can therefore build themselves fashionable suburbs from which they can commute by car to the city centre. As has been mentioned before, there are about 1,800 so called villages in Metro Manila and half of them are enclosed. One consequence is that a disproportionately large area of land is devoted to the satisfaction of the rich class in form of big houses and gardens. The spacious and often grand facilities provided for a tiny minority of the population occupy a large part of the city area, while the great mass of poor people are crammed into a relatively small area with minimal amenities. It is not unusual for three generations to share a house with one or two rooms only. Another aspect of this class division is the desire of the rich to segregate themselves from the poor. With high walls surrounding the villages, this leads to a clear separation of residential areas and the concentration of car traffic on certain routes.

**Commercial Areas**

Commercial Areas comprise 8 percent of the Metro Manila Region area. Up to the late sixties, the region had one dominant centre located in the middle part of the coastal margin (in Ermita, Quiapo, Divisoria and Binondo districts of Manila City). However, because of the congestion and the general outward push of the population (combined with a trend toward construction of large multi-purpose commercial complexes) other centres have emerged. This development started in the early seventies and the main business districts are now located in Makati and Pasig-Ortigas (see also figure 5).

**Industrial Areas**

Industrial areas occupy about 5 percent of Metro-Manila. The industrial land use pattern shows that transport is a major determinant of industrial location. The port area (located in the western part of Manila City) in the central coastal margin and areas along the Lower Pasig River were the first to attract a

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20 Filippino Ways, 1997
concentration of industrial establishments taking advantage of the port services for freight transportation. With the development of the north and south expressways, industrial location shifted to the north and south expressways corridors.

The trend in recent years is for new industrial development to locate farther to Bulacan in the north and north-east and to Laguna in the south. Linking the emerging industrial zones in these two outer provinces and with the main port area in Manila remains a problem.

Other types of land use

Institutional land uses, which include government facilities, military camps and educational institutions, currently occupy about 5 percent of the MMR. In the event that some of these facilities are relocated outside of the capital region (particularly the military camps found along EDSA and in Makati/Taguig), there is an opportunity to create additional space for residential and commercial purposes. This will reduce the current pressure on the MMR’s outer periphery.21

3.4 Future Development

Metro Manila is and will remain the country’s foremost industrial and commercial centre. It is also the political and administrative centre. Despite efforts by government to disperse development to the countryside, there is still an overwhelming concentration of industries, services and employment opportunities in the Metro Manila region. These factors combine to make the region a major growing centre of population.

The fastest growing area in the region is Quezon City, even though at present it still has a relatively low population density, which is due largely to its big land area (which covers a quarter of the MMR). Quezon city’s rapid growth has been the result of extensive government and private subdivision development, which started in the fifties and sixties and continues to the present. It is anticipated that the city will remain an important focus on development (particularly residential development) in the coming years, notably the area along its north-eastern portion.

To reduce settlement pressure in the Metro Manila region, it has been discussed to relocate industrial activities and related employment opportunities outside of Metro Manila. However, until such time that viable alternative growth centres are established – probably in 10 years from now – it is expected that Metro Manila will continue to experience population infilling within its boundaries.

21 http://www.aim.edu.ph/rpa/Papers/Metro-Manila’s…20Problems.html
combined with increased pressure for outward expansion toward the outer areas of the Metro Manila region.\textsuperscript{22}

By the year 2015, the size of the region’s population is expected to reach about 13 million or 20 percent of the country’s total population. This figure does not include transient workers and students temporarily residing in Metro Manila. Population density figures show that the average number of persons per square kilometre in Metro Manila in 1999 was 15,800 compared with 7,200 in 1970. Population density has therefore almost doubled during the thirty-year period since 1970.\textsuperscript{23}

Figure 6: Population Density
Source: Research on Transportation Information of Major Asian Cities, 1997

This makes Metro Manila the second most densely populated city in Asia, just slightly behind Tokyo.

It is predicted that suburbanisation will be further accelerated. As a result, the estimated size of the urban area in 2015 would be doubled to roughly 1500 square kilometres (see figure 7). The current trend is directed to the south and east, while the movement to the north has been limited due to geographical conditions described earlier in this chapter.\textsuperscript{24}

\textsuperscript{22} http://www.aim.edu.ph/rpa/Papers/Metro-Manila’s…20Problems.html
\textsuperscript{23} http://www.aim.edu.ph/rpa/Papers/Metro-Manila’s…20Problems.html
\textsuperscript{24} MMUTIS, 1999
4 TRANSPORTATION

This chapter includes both some information from secondary data as well as from primary sources. First a general outlook on transportation facilities in Metro Manila is given. A summary of important economic and environmental problems will then be presented.

Urban transport congestion, with its related impacts, is one of the most pressing problems in the Philippines. Economic prosperity in recent years has accelerated motorization and the demand for mobility, causing severe traffic congestion and environmental problems. Residents perceive traffic congestion as their number one problem, followed by air pollution (the primary source of which is the transport sector), garbage collection, flood control and the need for security.
There is hardly a Manilan who has not experienced “heavy” traffic. Rush hours have expanded to three hours in the morning and the same amount of time at night. The average wait for a ride during rush hours doubled during the 1980’s to a full hour. The level of congestion in Metro Manila is severe enough to cause an average travel speed only slightly faster than that of Bangkok, which has the slowest travel speed of any major Asian city (see figure 8).

Figure 8: *Average Travel Speed by City*
Source: Research on Transportation Information of Major Asian Cities, 1997
The average trip length in 1996 was 6.4 kilometres, up 20.8 percent from the 5.3 kilometres registered in 1980. This manifests the increasing separation of residences with workplaces and educational sites (as has been pointed out in chapter 3), which further stresses the existing road network as people spend more time on the road.

According to local press, traffic problems have significant impact on the city’s economy. Congestion causes an annual loss of fifteen billion pesos (USD 300 million). This amount represents losses caused by inefficient fuel consumption, unproductive man-hours, damaged car parts and government investment to cope with the problem.

The total number of linked person trips generated by Metro Manila residents is estimated to be 17.8 million per day excluding walk trips. Future transport demand in the study area is forecasted to be as much as 32.8 million trips.

25 http://www.baruch.cuny.edu/slas/departments/natural_science/writing/no_framesManila.html
26 http://www.worldbank.org/pics/pid/ph57731.txt
27 http://www.worldbank.org/pics/pid/ph57731.txt
(motorised) by the year 2015, which is 1.84 times the number in 1996. While motorization levels in Manila are low compared to levels in other Asian cities (see figure 9), major increases are forecasted and the government supports the trend, implicitly or explicitly.

During the decade up to 1996, the number of vehicles in the Philippines increased at an annual growth rate of 10.6 percent. Traffic projections undertaken as part of the long-term strategic transport needs of the metropolis indicate that the number of vehicles in Metro Manila will increase to 2.2 million (almost twice the number in 1996) by 2005 if growth of the economy and population increase in the same speed as today.

Traffic accidents become a serious social problem once cars come into wider use. In fact they already are, even though the number of cars in Metro Manila is considerably lower than in any other Asian megacity. Statistics show that Metro Manila despite the relatively low amount of vehicles is the second most dangerous city in Asia when it comes to traffic related deaths. Only Kuala Lumpur is having a worse statistic (see figure 10).

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28 MMUTIS, 1999
29 Urban Sector Strategy, 1998
4.1 Transport Infrastructure

Like many cities in the region, Manila depends on its roads for all, or nearly all, its transport. For most journeys there is no choice but to use the roads and the roads are mostly inadequate to carry the traffic that is loaded on to them. The main roads must be described as highly defective in their network design and, with few exceptions, of inferior standard. For the most part they are badly congested, dangerous, ugly and noisy.

Out of 9.9 percent of Gross National Product expenditures on communications, roads and transport, only 3 percent is spend on infrastructure, which is much lower than in Malaysia, Indonesia or any other country in the region. Metro Manila shares only 1/5 of the country’s road network, while the number of privately owned registered vehicles is 1.2 million which is about 65 percent of the nation’s total.30

As of 1992, the total length of all road types in Metro Manila was 3051 km. In recent years the construction of roads has been stagnated mainly because of difficulties in acquiring rights-of-way and generating the necessary funds. Highways with elevated structures have been planned for the last 15 years, but so far only a little part could have been completed. In the period of 1982 to 1992, total road length has therefore only increased with 14 percent compared to Singapore which has a similar road length but where roads have increased with more than 26 percent during the same period.31

30 http://www.worldbank.org/pics/pid/ph57731.txt
31 Transportation in the Philippines, 1995
Metro Manila has a ring-radial road network consisting of ten radial roads and five circumferential roads. Circumferential road 4 (EDSA), with six lanes per direction, has two bus priority lanes and absorbs more than 250,000 vehicles/day.\textsuperscript{32} The average motorised trip length in Metro Manila is as mentioned before 6.4 km, which is rather short, compared to other cities in the Philippines. The short trip pattern may be due to the highly concentrated land use pattern that has developed in Metro Manila. According to a survey conducted by the Worldbank, the most important travel purpose in Manila is work (25 percent). Education is the second most important purpose for travel (14.3 percent). This is explained by the age structure of the population, which is heavily skewed toward persons of school age.\textsuperscript{33}

Today, more than 30 percent of the travel links are already heavily congested (defined as those with speeds under 15kph).\textsuperscript{34} As mentioned before, travel speed will be down to 3 km/h if no action is done. This can be compared to Singapore, where the average travel speed is 30 km/h (see figure 8). Traffic planners are therefore already working on the design of elevated express highways above the city (see figure 11).

\textsuperscript{32} Transportation in the Philippines, 1995
\textsuperscript{33} http://www.baruch.cuny.edu/slas/departments/natural_science/writing/no_framesManila.html
\textsuperscript{34} Philippines Urban Transport Sector Review, 1983
Planning and construction is managed and monitored by the *Citra Metro Manila Tollway Corporation*, a private company which is trying to encourage foreign investors to get involved into the project. Because of the ongoing political crisis foreign investors are rather reluctant and so far only part 1 out of three parts could have been completed (see figure 12). Undoubtedly, this would further decrease the living conditions for the residents of Metro Manila.

While the Southern Luzon Highway is using a closed system – meaning that the toll is based on the travelled distance (at present 1.66 Peso/km), the skyway operates on the bases of an open system. This means that every vehicle has to pay a certain amount once they enter the road. The amount was initially 27 Peso but due to the dollar exchange rate (53 Peso/ dollar on January 18, 2001) the rate is now 55 Peso (with buses and trucks paying twice as much and cargo travels paying three times as much). In the beginning such a high fare was regarded as exorbitant by the majority of Metro Manilians. Nevertheless, the rate is now generally accepted as travel time could have been reduced drastically. Travelling from Bictuan to Makati now only takes one hour, compared to the three hours vehicle owners had to spend in their cars before the opening of the skyway. Furthermore the amount of fuel that can be saved due to shorter travel times exceeds the amount that has to be paid for using the skyway.\(^{35}\)

However, there is at present an average of 30 000 vehicles/ day using the skyway, which is considerably lower than was forecasted in 1992. At that time, project managers forecasted an average number of vehicles/ day of up to 50 000. There are mainly two reasons for why travel demand is much lower than forecasted. At present the toll station is only having three lines in each direction which is exactly the number of lines on the road. To guarantee smooth travel the *Citra Metro Manila Tollway Corporation* says that the toll station should have at least 18 files. Until this can be adjusted, car owners will have to live with long queuing. Another reason is that so far only temporary ramps with one line only could be constructed. This is mainly due to complicated right of way negotiations as people are reluctant to be relocated. The government has of

\(^{35}\) Interview with Mr Erfe, 16/01/2001
course the possibility to expropriate people but complicated law cases lead cause a big delay in time.

Low travel demand is making foreign investors even more reluctant to invest their money into the project. With only stage one completed and stage two still having to be approved by the government, it is very unlikely that the project can be completed before the year 2006, as has been planned originally. Instead most experts now believe that the project can be completed earliest in 2010, but even this sounds highly optimistic.\textsuperscript{36}

\textsuperscript{36} Interview with Mr Erfe, 16/01/2001
Figure 12: Metro Manila Skyway
Source: Metro Manila Skyway Planning Office
4.2 Public Transport

By definition public transport includes any vehicle that can be rented by more than one person at one and the same time. Public transport operation in Metro Manila is dominated by road transport and consists mainly of buses and jeepneys (see figure 13). The provision of public transport of these highly unsatisfactory roads has grown up on a basis of free enterprises with less regulation than in many Western cities. This has led to a wide variety of competing types of transport modes.

4.2.1 Road Transport

Of the total travel demand of 17.8 million person trips/day, about 70 percent is met by public transport modes, 8 percent by semi-public transport modes (which is defined to include taxi, HOV taxi, private bus) and 21 percent by private modes. No other Asian city has a higher share of public transport (Singapore and Tokyo maintain a public transport share of 66-67 percent).

Figure 13: Modal Split of Total Travel in Metro Manila

As is shown in Figure 13, passenger cars cover only 21 percent of the total transportation demand. Therefore, most of the people depend on public transport

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37 Filippino Ways, 1997
38 http://www.baruch.cuny.edu/slas/departments/natural_science/writing/no_framesManila.html
that has been providing relatively good services with a combination of LRT, bus and jeepney. While the service level has been quickly decreasing as congestion worsened and comfort reduced, new types of services such as Tamaraw FX (a shared air-conditioned taxi with about 10 seating capacity providing point to point service) as well as air-conditioned express bus services emerged.\footnote{http://www.baruch.cuny.edu/slas/departments/natural_science/writing/no_framesManila.html}

One of the reasons for the relatively high share of public transport in Metro Manila is attributed to the lack of enforcement measures against different kinds of illegal vehicles, which have encouraged jeepsneys to penetrate places where demand-supply gaps exist. Many Jeepney and FX drivers operate without a license. Without these illegal vehicles and operations, the current service level of public transport can hardly be maintained. However, the urban traffic situation, to which the ever-increasing jeepney also contributes, is becoming worse.\footnote{Metro Manila Planning Transportation Study, 1983}

Bus services operate routes to northern and southern Luzon. Even though the number of routes and terminals has been reduced considerably, the number of operating units had more than doubled from 5000 to 12900 units and the number of passengers has increased by about 94 percent within the last ten years. Approximately 381 bus companies were recorded in 1994. Records indicate that 273 companies, or 73 percent operate with a fleet-size of at most 10 units. Only twelve operators have a fleet-size of more than a hundred buses. These large operators control approximately 34 percent of the total number of vehicles. However, all of these units constitute a very small share (1 percent) on the total amount of vehicles registered in Metro Manila.\footnote{Bayan, Villoria & Ieda, 1994}

Nevertheless, frequent stopping to load and unload passengers either anywhere or at designated stops is observed to disrupt traffic flow and is perceived as one major cause of traffic congestion.\footnote{Sigua, 1991}

Depending on the destination a trip costs about 10 Peso. Timetables are generally not available and the only way for people to know where buses are going is a little hand written sign in the window screen.

After World War II, the American GIs left behind the rugged, all-terrain army jeep. This type of jeep evolved into what is now known as the jeepney (see also attachments) and has become a major mode of transportation in the country. Nowhere else in Asia (or in any other city of the world) can a similar vehicle be found, which again makes the Philippines somewhat unique (see figure 14).
The popularity of this mode could be attributed to its local availability (manufacturing technology is readily available), its intermediate size which is compatible of Metro Manila’s road network and its accessibility as it provides services practically any time of the day and place that equates an almost door-to-door service. With a maximum fare of 5 Peso, using a jeepney is also very cheap. These factors eventually led to the unprecedented growth of the number of jeepneys.\(^{43}\) The number of units has nearly doubled during the last few years, from 35600 to 63200 units, but the number of passengers has increased only by about 56 percent. But wherever jeepney services operate successfully they arise criticism from other road users similar to the buses. The bus companies complain that they take away their traffic, the taxi drivers regard them as cutthroat competitors and motorists and other drivers blame them for congestion and accidents as they virtually drop anywhere on the middle of the road to load or unload passengers. Whether theses critics are justified or not, riding a jeepney is a unique experience. Not only that every single bump of the road can be felt but also that people more or less are sitting on each others knees, as the driver is trying to get in as many people as possible to make the trip worthier for him. Especially on the countryside this can lead to the extreme situation that people sit on the top of the roof.

4.2.2 Rail Network

The Philippines pioneered the earliest rail transport system in Asia. Now called the Manila Railway, the rail system of the Philippines started and ended at the heart of the city of Manila with lines extending up to San Fernando, La Union

\(^{43}\) Bayan, Villoria & Ieda, 1994
(about 300km) and Legaspi city in the south (about 550 km). The tramway or trambiya as local folks call it was first introduced during the early 1900s.

The Philippine National Railroad (PNR) is currently operating a low volume, high cost passenger service into the centre of Manila. Service is every 30 minutes in the off-peak and every 15 minutes in the peak. This service covers roughly 20-30 percent of its operating costs and loses considerable potential revenue because as many as half of the riders are not ticketed. The condition of the track is generally poor. Furthermore, the throwing of stones into the train from the neighbouring houses is a regular appearance. People almost live on the trails and many families have lost somebody in train accidents. Their anger is expressed in sabotaging the train service as much as they can. Total travel demand is low compared to other transport modes (less than 1 percent) making the train not represented in statistics over public transport modes.

One railway project, however, proved to be successful. To ease the traffic, the MMDA started a few light railway projects on elevated rails above the city. These constructions occupy the inner lanes of some thoroughfares, thus making traffic even worse. The Light Rail Transit (LRT) Line 1 was made operational in 1985 between Monumento in Caloon City and Baclaran in Paranaque. An elevated system is running 15 km along Rizal and Taft Avenues. The service is offered at a high cost (12 Peso compared to 4 Peso for a jeepney) and trains run every 10 minutes in the peak. System capacity is about 20 000 persons per hour per direction. However, the service does not fully cover its high construction costs but may be the only solution in the ever-worsening traffic situation in Metro Manila. The Metro Star Express (Line 3) between North Avenue and Taft Avenue was made operational in June 2000. Both lines can, when needed, carry as many as 600 000 riders daily.

An ongoing construction is Line 2 (Aurora/ Ramon Magsaysay Route) along EDSA. It is expected to be completed late 2003. Other LRT lines are under study. Proposed lines are Line 4 along Quezon Avenue, Line 5 along Shaw Boulevard and Line 6 from Baclaran to Bacoor, Cavite, which is an extension of Line 1.

4.2.3 Water Transport

Water Transport fulfils a very small portion of personal transportation needs in and around Metro Manila. However, for those who use it, water transportation is important. The banca, which carries about 26 000 passengers a day, is an important timesaving mode for low-income residents, while ferries carry about

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44 Philippines Urban Transportation Sector Review, 1983
45 http://www.baruch.cuny.edu/slas/department/natural_science/writing/no_framesManila.html
46 Philippines Urban Transportation Sector Review, 1983
1000 passengers a day along the Pasig River. The StarCraft Ferry was made operational in August of 1998. Service frequency is 35 trips one-way with a transportation time of 15-30 minutes. With a passenger capacity of 32, the average number of passengers is 900/ day.

4.3 Private Transport

Private transport includes cars, taxis, tricycles and vans. While it has been shown in figure 13 that private cars cover 21% of the total modal share, only little data is available on taxis. However judging from the result of surveys, both supply and demand have largely increased and today there is an estimated total of 22 000 taxis operating in Metro Manila which makes them a significant actor on the transport market.

Tricycles, motorcycles with a sidecar (see also attachments), have shown the most remarkable increase in terms of number of operating units and number of users. According to the MMUTIP study there were about 17 000 tricycles in operation in Metro Manila in 1996. This number is likely to have increased rather than decreased until today. A trip normally costs about 6 Peso. Tricycles play a significant role on local roads, serving local trips and providing feeder services to main bus and jeepney routes. They are however undesirable along well-travelled and thus highly congested roads. Tricycles have lower acceleration and speed capabilities than other vehicles. Consequently they do not mix well with other vehicles on high-speed roads: they cause delays and congestion and expose their passengers to serious safety hazards. They have the tendency to weave through traffic in an attempt to occupy the small spaces between vehicles. In so doing they increase the lateral friction in the traffic stream and contribute to congestion.

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47 MMUTIS, 1999
49 MMUTIS, 1999
50 Philippines Urban Transportation Sector Review, 1983
51 Garcias, 1986
5 PROBLEM ANALYSIS AND POSSIBLE SOLUTIONS

In this chapter the results of the findings of chapter 3 and 4 will be summarised and carefully analysed. The chapter will also present a detailed discussion about likely solutions for the future in order to provide decision makers with recommendations for future actions. These are a result of deep discussions with my interviewees.

In earlier centuries people were able to cope with urban problems because population growth and technological changes were not great enough to demand a quick response. A continuing process of relatively minor adjustment accomplished balance in the system. Today this is not enough as the changes affecting urban areas are massive and relentless.52 “The pressures facing urban areas in the developing countries in Asia are unprecedented in world history. Never before has there been economic migration on this scale from rural areas to cities and this increase in population is placing strains on all urban services; transport, housing, water, power, sewerage, education, health etc. But transport is in a special category all on its own, as the demand is increasing not simply in line with population but exponentially as the compounding growths in trip length and motorisation are added. Transport is central to delivering prosperity and the quality of life most countries aspire to. This is because the impacts of transport policy are pervasive: on economic performance (and therefore incomes), on the shape and structure of human settlements through its impact upon physical development and economic structures, on the distribution of income (and therefore the balance of winners and losers, and on poverty) and on the environment (and hence on the quality and enjoyment of life).”53

“The situation in developing Asian cities is clear. Even the most ambitious road-building program cannot keep up with the growth in demand and therefore restraint in the use of private vehicles, especially during rush hours on city streets, is essential. The responses of Governments around the region to the urban transport problem have varied widely. Most have analysed the problem in great depth, most have had the benefit of strategic transport studies carried out by professional planners with considerable experience, and most have endorsed plans that would have alleviated the worst of the problems. The major variation has been in the degree of commitment to the plans and their implementation.”54 Cities such as Hong Kong and Singapore have been following consistent transport policies for over 20 years, such as not allowing traffic problems to get out of hand, constantly upgrading public transport, and ensuring the financial

52 Owen, 1989
53 Allport, Key & Melhuish, 1998
54 Development of urban transport: the case for balanced transport development in Asian cities, 1995
viability of the public transport operators through fare increases when necessary to maintain profitability. Other cities such as Manila displayed little or no commitment to strategic plans and as a result investment has been haphazard, public transport has declined and the general public have felt compelled to arrange private means of travel for themselves.  

While transportation has always been important to cities, it is critical to the development of Metro Manila. The sheer scale of the region puts enormous demands on transport systems capable of moving large volumes of passengers and freight at affordable costs. Like in most mega cities, this development is not met, leading to the familiar problems of congestion and long travel times (many of Manila’s urban poor, for example, travel as much as two hours each way to get to their jobs). This not only tries the patience of travellers but also reduces the living environment of those who lack the means of travel. Difficulties in moving around restrict job opportunities and make it difficult for low-income families to gain access to educational and recreational opportunities, as well as medical and other services offered by the community. Many people in Manila, when asked to name the most critical problem in their household, answer “transportation”. What they mean is that transportation is necessary for getting a job, earning income and getting enough to eat. Outlying slums and squatter settlements contain practically no jobs, so that survival depends on making a trip into the city to find work. People fortunate enough to have work in the city must depend on packed jeepneys and buses.

5.1 What are the causes of the traffic problem?

The causes of the problem are understood. Most experts agree that the problem goes beyond transport. The problems of rapid urbanisation and the inappropriate planning and development influences from Metro Manila’s colonial past have created urgent problems and solutions are needed quickly. Clogged with traffic, Manila suffers delays and poor service, which raise the cost of everything that is produced and consumed. First and foremost, politics intrude very extensively in the sector. This has almost completely subverted the planning and implementation process. The road investment and maintenance budgets are approved annually by Congress and are under constant uncertainty. The present political situation with the impeachment process of president Estrada makes uncertainty even higher. In addition, funding is spread far too thinly, leading to patchy and insufficient project implementation. As a result, DPWH has found it increasingly difficult to develop and implement a clear, coherent strategy and to deliver what it is mandated to deliver. There seems to be two main reasons for the ever-worsening traffic situation in Metro Manila.

55 Development of urban transport: the case for balanced transport development in Asian cities, 1995
56 Owen, 1989
As described earlier, Metro Manila consists of 17 municipalities. With the non-existence of any coordinating body a long time strategy for the transport sector does simply not exist. Instead each of the 17 mayors is interested in developing his area, disregarding what is best for the region as a whole. The consequence is that money is put into improving a road here and there while no money is put into developing some form of long-term strategy. Leaving everything to the private sector wouldn’t solve the problem, as private industry is neither capable nor interested in putting money into developing a transportation strategy for the whole region.

Another explanation is that there is hardly any redevelopment in central Manila. Since the opening of LRT1 the buildings along this route are still the same as they have been 25 years ago. In any other city of the world, housing would be booming and the area would attract companies and shops. It is not easy to find an explanation for that but probably the reason lies in the legal difficulties and high prices to purchase land in the inner city. As a consequence, Manila, which has been a flourishing business centre just 26 years ago, is now falling apart and new business areas such as Makati and Ortigas arose, thereby creating huge trip lengths as housing and workplace get more and more separated from each other. Furthermore the trend goes towards enclave villages with no through roads as identification is needed at the subdivision gates and roads therefore are not open for public use.

Even the climate in the Philippines is having an unfavourable effect on transportation in the country. It is very hot and humid and temperatures lie constantly between 30 - 40 degrees almost all the year round, which turns only the shortest walk inevitably into a sweaty experience (not to mention what effect a ride on a bike would have). It also seems common courtesy for employees and business men to wear suits and you would hardly find any Manilan wearing shorts and T-shirt. Furthermore, during the wet season (June-November) heavy showers within minutes turn streets into knee-high floods, making roads impossible to pass and causing a total collapse in traffic. Due to the non-existence of parks and poor sewerage systems, the water simply has no way to go.

5.2 What can be done?

Solutions are not easy to find. The cost of improving urban transport is a heavy drain on municipal funds needed for other basic services such as education and health. Constructing a new subway, improving commuter rail service and

57 Interview with Mr Melhuish and Mr Poinsignon, 06/01/2001
building an expressway around (or above) the city involve billions of dollars of construction and operating costs, while other living conditions continue to worsen and more than 400 000 people are added to the overcrowded city every year.\footnote{Cities in Transition, 2000}

The question therefore is not simply what has to be done but also what can be done. Public transport is already having a share of 70 percent and making it attractive to car owners will be very hard to do, even if the quality of public transport would be improved drastically. Most of the car owners in the Philippines have their private drivers and it must be more or less impossible to attract people out of their air-conditioned cars. Furthermore increasing the standard of public transport could only be reached if fares and wages are increased. But with 85 percent of the wages being fixed and the ongoing economical and political crisis this is not going to happen. Even if it could be done and wages could be increased considerably, one has to ask the question whether this wouldn’t increase the number of car owners even more rapidly. The numbers are as mentioned earlier already very low compared to other Asian cities (see figure 8). With the number of cars already rising by more than 10 percent every year, politicians soon risk to lose control over the situation unless the number of cars can be constraint somehow.\footnote{Interview with Mr Melhuish and Mr Poignsignon, 06/01/2001}

What ought to be done is to make public transport less road dependent. An alternative to buses and jeepneys would be train systems. Unfortunately the Philippine National Railways (PNR) has a long record of decline. Repeated investments have failed to deliver service and government recognises that the time has come to face difficult questions. Part of the problem has been the failure of successive governments to recognise the realities about the role of railways and part has been mismanaged by the PNR. It was considered very likely that railways should have a long-term strategic role in the Metro Manila region because of increasing – and largely insoluble- road congestion. But the high costs involved in railway projects made further investments impossible. Six of the rail projects proposed for implementation each have estimated costs of over USD 1 billion. Experience suggests that most if not all such costs would need to be borne by government. Contrast this with best estimate availability of public funds: USD 1.3 billion for the whole transport sector in the Philippines each year. However desirable, such projects are simply not affordable.

Another difficulty is that new systems have long lead times, for example, it would take about 7 years to design and construct a new LRT line. Buses and jeepneys will therefore provide the bulk of public transport in Metro Manila for the short to medium term.
Constructing elevated highways might become necessary (even if not desirable as they further decrease the city’s attraction), but like the LRT, hard to finance. In fact the construction of such elevated highways has been planned for almost 15 years and should have been completed by 2006. But so far little has happened. The opening of circumferential road 5 (C-5) has given some improvement and the road along EDSA (the most heavily used traffic corridor in Metro Manila) can now operate (5 years ago it wasn’t possible to move) but capacity high will soon be reached and without the construction of new roads it doesn’t take much before Metro Manila is transformed into a total gridlock.  

But even more important than constructing new roads (in fact there is only little space remaining for such plans), the primary need is to maintain, rehabilitate and upgrade the infrastructure that exists. Many of the important arterial roads in Metro Manila show serious pavement deterioration as they approach the end of their economic life. Use of these roads is well below capacity due to their poor condition. Such conditions exacerbate air emissions from vehicles and contribute significantly to mobile source pollution. Here the critiques from the ADB are harsh. According to a recently published report, there is much room for improvement, particularly in the crucial roads sector. The report points out the Department of Public Highways as the core problem, as it is not sufficiently proactive in maintaining and developing the road network. The symptoms of this problem are many: there is no strategy for the sector with priorities to what to do, how, where and when and there is a patchy system of maintenance, some good but much is not good. Planning is substantially ineffective; design and construction are often poor, with lengthy construction times that reduce estimates of economic viability. Furthermore there are still large areas with network deficiencies.

The strategy for urban planners must be to deal with urban traffic not simply by building more roads but also by exerting an influence on demand and making more effective use of the transport facilities already available. The automobile, which may carry the smallest percentage of traffic, gets most of the space; the bus, which carries a high proportion of traffic, gets relatively little space and pedestrians, often the largest part of traffic, usually get the least consideration. The solution for Metro Manila and many other Asian cities might be to introduce some form of road pricing. The idea is to let people pay for their impact on the environment and the infrastructure that has to be done. Some toll stations have already been installed along the southern and northern expressways as well as on the first stage of the skyway. But with drivers trying to bargain down the fee rather create more congestion than there would be without the toll stations. More drastic solutions like in Singapore are needed but might be hard to implement. Opponents like to point out that Singapore has

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60 Allport, Key & Melhuish, 1998
61 Owen, 1989
unique characteristics, which make it much easier for them to control pollution and to limit sprawl through tight land-use control. Nonetheless other cities should have understood more clearly the predicament they faced and taken early steps to try to avoid the decline in mobility which they have suffered. Singapore, which is ranked as number four among the cleanest cities in Asia, is having far stricter anti-pollution laws and much higher fines than the Philippines. Moreover it punishes car owners, taxing cars with more than 100 percent and thereby raising the price of a middle class car to USD 50 000. \(^{62}\) But imposing very stiff fines like in Singapore would be considered as exorbitant to many Filipinos. Moreover, this approach would strike hardest against the poor since the rich are in better position to keep their vehicles well maintained as well as pay the fines. One cannot ignore the fact the Singaporeans are enjoying a living standard which is comparably higher than in many Western European countries.

Two solutions worthy to note however, which politicians in Metro Manila have come up with, is the so-called “colour-coding”. The colour-coding scheme bans all motor vehicles from using all Metro Manila roads between 7am and 7pm for one day a week, excluding weekends and holidays, depending upon the last digit of license plate numbers. Another solution is the banning of trucks from some of the most congested roads. The policy prohibits trucks to pass certain roads between 6am and 9pm.

Unfortunately these efforts have shown only minor improvement and must be regarded as insufficient to cope with the enormous demand on Metro Manila’s roads. Furthermore the delivery of trucks during nighttime increases crime and residential areas are suffering from the increased noise and vibration at nighttime. \(^{63}\)

What really is needed is the awareness of the public. This might be easier said than done as people like everywhere else in the world are used to free mobility and many Filipinos are very suspicious to anything that intrudes into their private freedom. But people have to learn to stop at pedestrian ways, to use only one line and not to park on the sidewalk.

This of course demands improved law enforcement. Policemen have to be educated and corruption has to be overcome. But like in any other sector in the Philippines, corruption among the police core is very outspread and unless all policemen are replaced little can be done to overcome the problem. \(^{64}\)

What ought to be clear by now is, that there is simply too many people and too little money and western standards will be hard to adopt. Maybe the problems

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\(^{62}\) Sueddeutsche Zeitung, 21/11/2000  
\(^{63}\) Filipino Ways, 1997  
\(^{64}\) Interview with Dr De Vera, 05/01/2001
Metro Manila is facing today have grown so big, that it takes more than conventional solutions. One of the more visionary suggestions, made by one of the most respected city planners in the Philippines, Felipo Palafox, is the development of compact, walkable neighbourhoods, municipalities or even cities. Such places should have clearly defined centres and edges. The centre, necessarily, includes a public space, public buildings (such as a library, a medical clinic and sport facilities) and shops. Public transportation should connect neighbourhoods to each other, the central city and the surrounding region.65

But it may as well be the simple solutions, which would be the most successful. As 22 percent of car journeys and 32 percent of jeepney journeys are less than 2 kilometres long, a better urban environment and walking areas might persuade people to walk rather than drive or take transport. These short trips are considered a major contributor to local traffic congestion.66 But considering the climate in the Philippines described earlier in this chapter, to teach people to walk and use their bicycles instead for taking their cars or any other motorised vehicle might be impossible to do.

Some hope in the dark might be the rapidly improving communication systems. Once e-commerce reaches out to the majority of households, many of the trips that are carried out because one little phone call cannot solve the problem, would become unnecessary. Once people could just pick up their grocery at the nearest parking space, the trip to the supermarket would become superficial.

According to many experts, facing the disillusioning facts in this study, one ought to be happy, if the present traffic situation is not becoming worse.

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65 Torre dela, V., R., 1998
66 Metro Manila Urban Transport Integration Project, 1999
6 CONCLUSIONS

This chapter will summarise the basic conclusions on transportation and urban development in Metro Manila that have been presented in this study.

In the light of the analysis of the various issues of concern in the previous chapters, it should be noted that there is a need to improve the level of understanding of urban transport issues of both decision makers and the general public - something this study hopefully can contribute to. The nature of the problem is complex and multi-faceted in that it has political, cultural, economic and technical dimensions. To address the problem therefore requires that all these aspects be considered and this necessitates cooperation across the whole spectrum of public administration from politicians, land use planners, transport planners to the police. Any weak link in the chain of responsibility will result in failure to achieve the objectives.

There are of course no simple solutions. The main conclusion of this study is that transport demand in urban areas needs to be controlled and managed if congestion and pollution are not to rise to levels that will affect the functioning of the region as engine of economic growth. There is a real danger that the traditional role of cities, with a wide range of employment opportunities as well as social and cultural activities, will be unable to function owing to the inability of the inhabitants to move around because of congestion created by private transport, the poor quality of public transport and serious atmospheric pollution, causing health problems.

It has to be pointed out that most of the policy-level officials, regional transport professionals and politicians generally have underestimated the effects of natural growth of and mass migration to urban areas on traffic demand. This underestimation led to the belief that problems could be solved by the construction of highways. It is now generally recognised that even the most ambitious road-building program cannot keep up with the increased demand. New roads built to relieve existing traffic-saturated roads in fact create additional demand. When roads are congested, trips are not made. When new facilities open this latent demand is added to existing traffic flows until the new facility itself become congested. Therefore, as sufficient road space cannot be provided, demand restraint measures need to be imposed on private vehicles, coupled with improved public transport systems to offer a comparable alternative in terms of comfort, convenience and journey times.

Just because Singapore has a unique political system doesn’t mean that well-planned and intelligent traffic politics cannot be done in other countries.
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