

Principal Issues to Improve the Urban Transport Problems in Jakarta

Muhammad Zulkifli MOCHTAR* and Yasuo HINO**

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Synopsis

Transportation issues are very complex because various social, economic and cultural aspects are involved. In big cities in developing countries such as Jakarta, also have many problems in transport sector. The populations will reach 17 million persons in 2015, vehicle growth 10 % and only less than 1% infrastructure growth. This situation creates traffic congestion, air pollution, traffic accident, decreases performance of public transport system. Eventually the public transport is steadily losing passengers. Other impact of bad transport management system are difficulties for walking or cycling as sidewalks are scarce, badly designed, and frequently obstructed.

This study will try to investigate some principal issues of transportation system problems in Jakarta. The concept of NMT (Non Motorized Transport) also will be put as one of main issue to be delivered in the study. This concept refers to the one where transportation system is directed toward any means of non motorized system like walking and using bicycle.

Key Words: Jakarta Transportation System, Urban Transport Problems, Non Motorized Transport.

1. Introduction of Jakarta

1.1. Background of Demographic Characteristic

Jakarta is the most populous urban centre in Indonesia. Home to approximately 3.9 million people in 1970, Jakarta's population had increased to 7.6 million in 1990, and is projected to grow to 17.2 million by the year 2015, making it one of the most populous cities in the world.¹⁾ A dramatic rise in urban migration over the past twenty years is the primary cause of Jakarta's rapidly growing population.

The number of population was expected to grow continuously due to natural growth as well as migration for better expectation of economy and employment in the city. The significant increase in mobility of person and goods movement, number of motorized vehicles, and traffic volume would evolve in a way of such spatial distribution of population.²⁾

The majority of these migrants are young people who come from outlying regions in search for better employment, and as a result, Jakarta has an age structure that is skewed heavily toward the young. In 2004, about 42.7 per percent of the city's population were under 20 years of age, 50.1 per cent were between 15 and 64, and 7.2 per cent of all residents were over 65 (Jakarta Statistic Agency, 2005). The average annual rate of population growth in Jakarta declined from 6.1 per percent during the 1950s to 3.4 per cent in the mid-1960s, but then increased to 4.4 percent in the mid-1970s. Since 1980, there has been a decline in the annual rate of growth of Jakarta, which is partly attributable to delays in age at marriage, rising levels of education, and the success of the *Family Planning Program* in Indonesia (a comprehensive family planning program has seen Indonesia's annual population growth rate fall from 2.3 percent in 1972 to around 1.6 percent in 1996). The annual growth rate is projected to decline further to a level of 2.36 per cent per annum by 2015.

By Jakarta Statistic Agency 2005, in 1980, 22.4% of the population lived in urban areas and the number had increased to 37% in 1998. During 1990-1995, urban population grew by 13.7% and rural population grew by 11%. The urban growth is expected to slow between now and 2015, while the rural areas are expected to experience population declines. Efforts such as the *Transmigration Program*, where the government assisted those who voluntarily resettled to the outer islands, have slowed growth in densely populate.

Nonetheless, with a metropolitan population that is approaching 13.5 million, Jakarta is now the world's fourteenth largest city. It recently surpassed Manila as the largest in South-East Asia and is likely to move

* Student, Master Course of Department of Civil Engineering

** Professor, Department of Civil Engineering

into the top ten by the year 2015 with a projected population of 17.3 million.³⁾ Population density is extremely high 14.500 per km²: In a country (Indonesia) with some 225 million people (the fourth largest in the world), more than 5 per cent are live in 661 km² – only 0.03 per cent of the total land area.

1.2. Background of Economic

By National Economic Census 2004, Jakarta's overall share of the gross domestic product (GDP) represented 9 per cent of the national total, though this varied among sectors: 14 per cent of transportation and communication, 15 per cent of manufacturing, 25 per cent of trade and services and 65 per cent of banking and financial services. The major manufactured goods that Jakarta produces include textiles, processed foodstuffs, published materials, chemicals and electronic devices. However, its share of the national GDP declined from 49 per cent to 24 per cent during 1969-1983 partly due to the development of port facilities elsewhere in the country, and GDP in 2004 grew at 5.13% as shown in Fig. 1.

Shortage of land for industrial estates, pressures on industries to reduce pollution levels, and a low skill level of the labor force of the city have all contributed to the slow development of Jakarta's manufacturing sector.

Reflected from the investment as shown in Fig. 2, a downswing in investment was obvious for both domestic and foreign investment. In terms of number of projects and investment value, the figure trended down. In fact, attracting new investment is crucial for the country if it is to enjoy economic growth of between 6% and 7%/year, and provide enough jobs for the millions of unemployed.

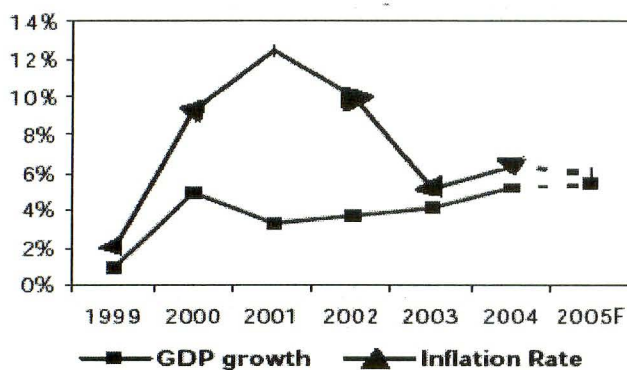


Fig. 1. GDP and Inflation Rate, 1999 – 2005

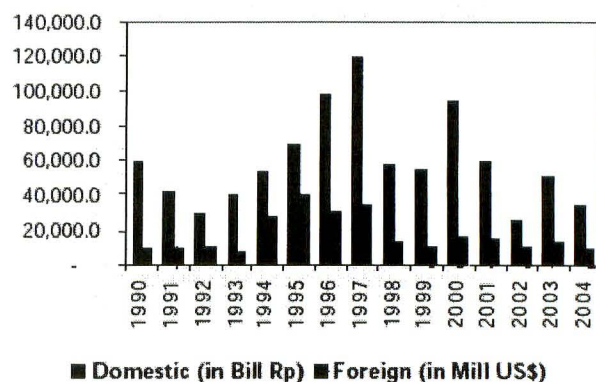


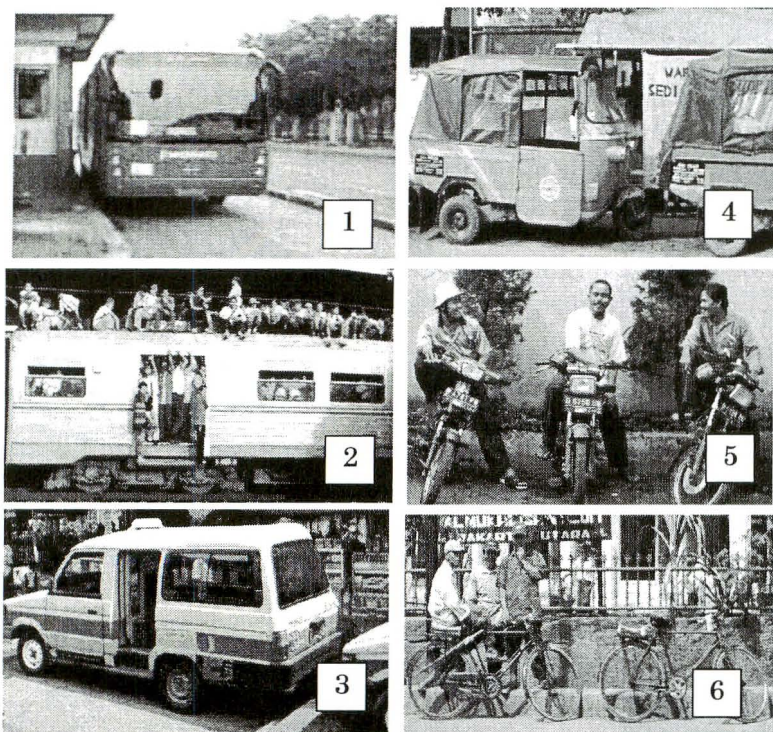
Fig. 2. Investment Approval, 1990-2004

2. Jakarta Transportation System

2.1. The variety of Jakarta Public Transport

Urban Structure in Jakarta has two faces. First is the urban face which located near with main roads, and second the village face which located behind the urban face the variety of public transport in Jakarta (see Fig. 3).

1. Bus (*bis*): There are a large number bus companies servicing routes in Jakarta. Many of the larger buses seat 25-40 people (depending on type of bus: big, medium or small).
2. Train: A commuter train runs several times daily from Bogor to Jakarta. These trains are quite simply furnished and often quite dirty.
3. Angkutan Kota/Angkot : *Angkot* are smaller vans/mini-buses serve set routes on smaller main roads. They seat 9-12 people, depending on the type. Fares run from Rp 800 – 1.500, depending on the distance.
4. *Bajaj* : Traditional vehicle with seat two passenger. Their areas of operation are limited to one mayoralty in the city. Fare determination is by bargaining.
5. Bike Taxi (*Ojek*) : Began appearing in Jakarta after *Becak* (*Becak* are widely missed by people who live in houspassenger, same like *tuktuk* or *riksaw*, fit for two passenger) were banned in 1994. There is no government licensing for or control over *ojek*.
6. Bicycle *Ojek* ; Rarely seen in areas of Jakarta outside Kota and Tanjung Priok in North Jakarta. Bicycle *ojek* is operated much like *ojek*, except for shorter distance.



Jakarta Public Transport	
(Source : State of Jakarta Police, 2004)	
The Amount Of Permitted	
Big Bus	4,522 unit
Medium Bus	4,979 unit
Small Bus	12,063 unit
Tri Cycles/Bajaj	16,082 unit
Taxi	23,351 unit

Fig. 3. Jakarta Public Transport

2.2. Overview of Jakarta Transportation

A study conducted by SITRAMP-JICA in 2002 estimated that daily trip demand in Jakarta will reach 14.2 million in 2015, and the average “to work” trip length had increased from 2.69 km in 1985 to 3.52 km in 2000. By 2005, 50% of trips are made by bus, 30% by car and 13% by motorcycle. While on one hand, number of trips by bus will be increased continuously, compared to the modal share in 1985, the share of public transport has been decreasing slightly from 57% to 52%.³⁾

There are railways throughout Jakarta, however, they are not popular and inadequate in providing transportation for the citizens of Jakarta. Commuter trains come to Jakarta from four different suburbs: Tangerang in the west, Serpong in the southwest, Depok in the south and Bekasi in the east. The major rail stations are Gambir, Jatinegara, Manggarai, Tanah Abang and Jakarta Kota. The quality of the service is even worse than the bus service.

Jakarta's transportation also depends on toll road. The major toll road is the inner ring road from Tanjung Priok-Cawang-Grogol-Tanjung Priok. The outer ring road is now being constructed and is partly operational from Cilincing-Cakung-Pasar Rebo-Pondok Pinang-Daan Mogot-Cengkareng. A toll road connects Jakarta to Soekarno-Hatta International Airport in the north of Jakarta. Also connected via toll road is the port of Merak and Tangerang to the west, Depok and Bogor to the south, and Bekasi, Cibitung and Karawang, Purwakarta and eventually to Bandung to the east.

To reduce traffic jams, some major roads in Jakarta have a ‘three in one’ rule system during rush hours, first introduced in 1992, prohibiting vehicles carrying less than three passengers on certain roads. In 2005, this rule covers the areas of Sudirman and Gatot Subroto.⁴⁾ On the other hand, the implementation of this rule has provided new income for some people, who are paid to join a vehicle and boost its number of passengers to the obligatory three. In sum, the implementation of three-in-one has not been as effective as expected.

However, Jakarta's road is notorious for behavior of the traffic. The traffic rules of the road are broken. Furthermore in recent years the number of motorcycles on the streets has been growing almost exponentially, ensuring many a problem due to ill-disciplined motorcyclist

Most bus public transport in Jakarta was operated under traditional management and owned by individuals or co-operatives. The role of the government on this system is only to give the licensing to operate based on determined number of buses on the proposed route by private companies or individuals. The government doesn't have authority to control the quality of service of the public transport. Sometimes the proposed route has more than 50% overlaps with other routes. The bus drivers don't care with the quality of service to the passenger such as its punctuality, convenience and safety.

In Jakarta, transport planning and management is the responsibility of the Infrastructure and Communication Agency. This institution is responsible for making changes related to transport and traffic in

Jakarta, such as one-way routes, public transport provision, route permit, public transport and taxi tariffs. However, all final decisions are made only after consultation with the Provincial Government of Jakarta, i.e. after consideration by the Local Development Planning Board of Jakarta (Bapeda) and a hearing with the Local Parliament (DPRD) – Commission D in this case. Public participation is rarely included in this process. On the other hand, as Jakarta is the capital of the Republic of Indonesia, the central government also has a main role in Jakarta’s transport related decision-making process. This makes decisions for Jakarta’s transport planning and management relatively complex compared to other areas of the country.

2.3. Jakarta’s Non Motorized Transport

Based on Survey SITRAMP (2000), almost 41 % of Jakarta’s population used non-motorized transport. Non-motorized transport includes pedestrians, becak, bicycles and other types of non motorized vehicles (See Fig. 4).⁵ Until recently, three-wheeler pedicabs (becaks) played an important role in non motorized transport, but this was changed in 2001 when they were banned even from residential areas.

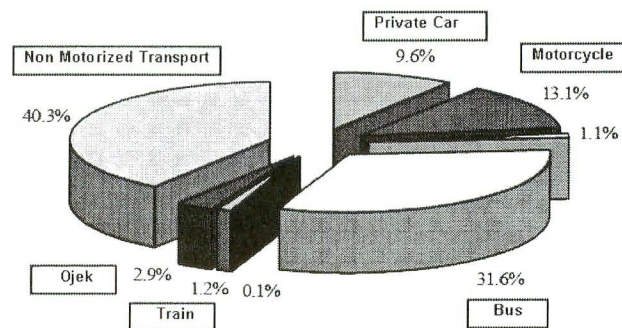


Fig. 4. Non Motorized Transport using in Jakarta

Pedestrian facilities are very limited in both quantity and quality. Zebra-crossings are largely non-functioning due to the behavior of drivers who ignore the presence of pedestrians. Some sidewalks are obstructed by street vendors, telephone booths, improperly trimmed landscaping plants, parked cars and motorcycles, and the access ramps to pedestrian overpasses (See Photo 1). These obstructions force pedestrians into the street, creating dangerous conditions. One of the major reasons that more people in Jakarta do not use public transportation is the poor quality of pedestrian facilities, and the danger faced by pedestrians.⁶



Photo 1. Examples of Poor quality for pedestrians

3. Jakarta Transportation Issues

Jakarta has suffered due to negative externalities from implication of its transportation system. A huge investment on road base transportation system has driven car dependency behavior on the society. This situation has created several problems as follows.

3.1. Traffic Congestion

Road development to provide enough space for private vehicle mobility has triggered high rate of vehicle ownership growth rate (See **Photo 2**). As a result, during the last decade, the vehicle ownership growth rate is 8 % per year as shown in **Fig. 5**. Based on police department data in 2003, monthly vehicle acceleration in Jakarta reaches about 6,300 private cars and 37,500 motor cycles, decreasing average travel speed in Jakarta from 20-30 km/h to 5-15 km/hour during the peak hour in 2002. High annual private vehicle growth by 8% during last two decades (from 0.92 million in 1983 to 4.12 million in 2002) indicated the transportation policy has limited attention to support public transport and non motorized transportation modes. This situation has been creating harmed condition for walking or using other non motorized forms of transport in Jakarta, especially for the small children, pregnant women, the elderly and the handicapped.



Photo 2. Example of traffic Congestion

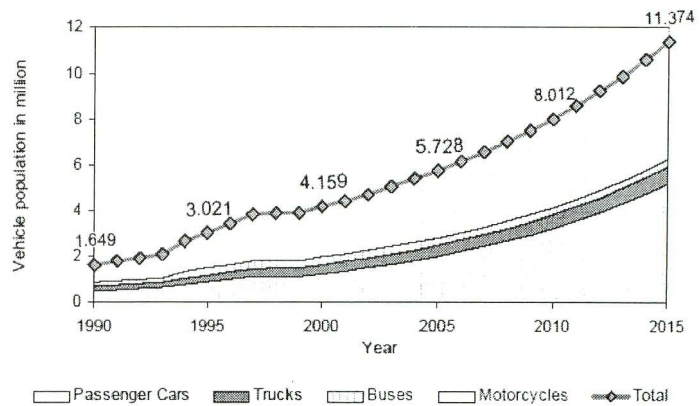


Fig. 5. Vehicle Growth and Traffic Congestion

3.2. Air pollution

Jakarta is covered by air pollution (See **Photo 3**). Motor vehicles are responsible for around 70% of NO_x , more than 40% of PM10 and TSP (Total Suspended Particles), a significant share of the SO_2 (from diesel), and most of the CO. Air pollution levels in Jakarta already exceeded international standards by as much as four times, and is projected to increase by 60% or more over the next decade, as shown in **Fig. 6**.

Jakarta was an occasional annoyance in the past, but Jakarta has suffered the disgrace of being in the category of cities with the worst air quality worldwide and it has become a new chronic issue as a threat to the health of the urban people. In the early 2000s, UNEP ranked Jakarta as the third most polluted mega city in the world, after Mexico City and Bangkok.⁷⁾



Photo 3. Jakarta covered by air pollution

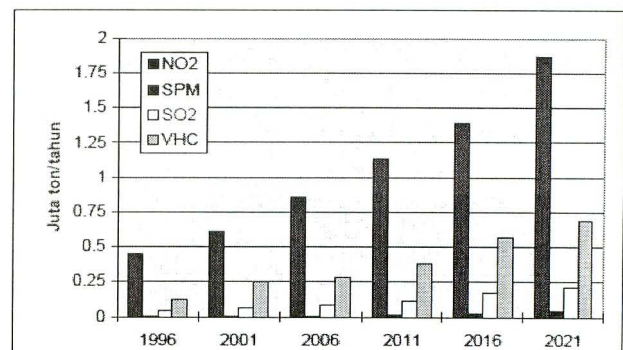


Fig. 6. Air pollution in Jakarta

3.3. Road Safety

According to Jakarta Police Department data (**Table 1**), every year more than 700 people died and 48 thousands people injured because of road accident.⁸⁾ Out of that numbers, 68% casualties of road accident caused by passenger cars and motor cycles (24% and 47%) are young people between the ages 16-30 years old.⁹⁾

Table 1. Jakarta Traffic Accident (1995-2003)

Year	Number of accidents	Number of fatal accidents
1995	1,344	521
1996	1,454	508
1997	1,568	817
1998	1,229	744
1999	1,236	403
2000	1,238	324
2001	1,330	461
2002	1,358	262
2003	1,492	503

3. 4. Inefficient Fuel Consumption

The high density of motorized vehicles in Jakarta affects people's mobility. Instead of increasing their mobility and reducing travel times, the higher vehicle population has had the opposite effect. As previously mentioned, most motorized vehicles in Jakarta are private, used for transporting five people maximum but with the average being less than two.

The proportion of public to private transport has resulted in dispersed congestion in Jakarta, which has made energy consumption (in this case fuel) very high. On average, a vehicle consumes 0.5 liters more fuel per day than its fuel economy specification. The combination of motorized vehicles using low-quality fuel has resulted in high quantity, low quality gas exhaust.

Fuel economy improvement can be implemented by raising traveling speed and replacing overage vehicles with fuel saving ones like hybrid cars. Especially traveling speed has a significant effect on fuel consumption and the lowest fuel consumption rates occur in a speed range of 40 to 55 km/hour.

4. The New Initiative of Jakarta Transport Public Improvement

4.1. Jakarta Bus Rapid Trans System Project

To deal Jakarta Transportation issues above, in 2004, the government formed a busway system named Trans Jakarta (See **Photo 4**); it serves the initial 1st corridor route running from Jakarta Kota to Blok M. The bus-way takes less than half an hour to traverse a route which would normally take more than an hour during peak hours. Construction of the 2nd and 3rd corridor routes of the bus-way is completed in 2005, serving the route from Pulogadung to Kalideres. Bus-way serving 2nd and 3rd corridor routes have been operational since January 2006.¹⁰⁾

4.2. Jakarta Monorail Project

The Jakarta Monorail is a monorail system currently under construction in Jakarta, Indonesia. Two lines are being built: The green line serving Semanggi-Casablanca-Kuningan-Semanggi and the Blue line serving Kampung Melayu-Casablanca-Tanah Abang-Roxy. The project has been dogged by financial problems and frequent technology changes (See **Photo 5**).

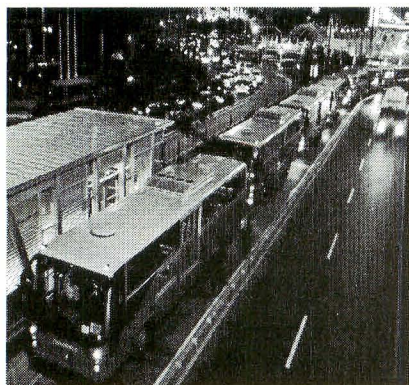


Photo 4. Type Bus and Route Map Bu-sway

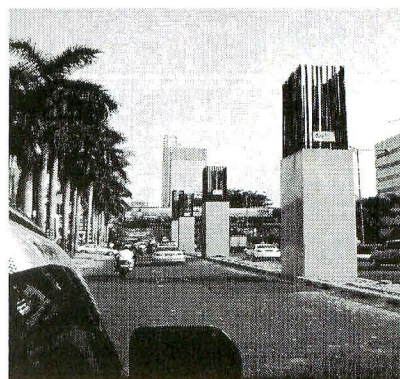


Photo 5. Monorail under-constructed at Rasuna Street¹¹⁾

In March 2006, Dubai's Bank consortium had join this project by given assurance in financing statement for continuity of the project. When completed, the monorail will include two lines. One 14.3 km line will serve the business districts of the city. The second line will be 13.5 km and will run from Kampung Melayu to Mal Taman Anggrek.

4.3. The New Initiative of Jakarta Transport Public Policies

There are three major transport-related policies initiatives are under way in Jakarta:

1. The Blue Skies Program, was launched in 1996 to address air-pollution problems in Jakarta. It is part of a larger municipal environmental program, but is in many ways separate from municipal transportation management. The program includes free testing of vehicle exhaust at a number of locations, the introduction of unleaded gasoline and an effort to increase urban greenery. It also promotes shifting fuel from gasoline to natural gas. Achievements for which the program takes at least partial credit include an increase in the percentage of vehicles meeting pollution standards, and an increase in the number of natural gas vehicles to 3000 taxis, 500 passenger cars, and 50 public buses by 1997, although the shift began well before 1996.
2. Leaded Gasoline Phase-out, In July 2001, the Indonesian oil and gas company Pertamina and the Indonesian government introduced unleaded gasoline sales in greater Jakarta. Indonesia is scheduled to complete its lead phase-out program by 2003, but this is dependent on completion of various refinery projects. A recent projection is that 80% of the country will be supplied with unleaded gasoline by 2005.¹²⁾
3. Cutting the Fuel Subsidy, as an oil producing country, Indonesia has traditionally kept the price of oil products in domestic markets below world prices. While no doubt boosting the economy, this policy has probably contributed to the sprawl and car-orientation of Jakarta and other Indonesian cities. An effort to cut the fuel subsidy has had some success, but the prices of diesel remain low.¹³⁾

5. Principal issues to improve serious problem in Jakarta Transport system

5.1. Summary of Major Problems in Jakarta Transport system

The current condition of the urban structure and some previous studies give some lesson in identifying what are the transportation issues in the Jakarta. The populations will reach 17 million persons in 2015, vehicle growth 10 % and only less than 1% infrastructure growth. This situation creates traffic congestion, air pollution, traffic accident, decreases performance of public transport system. Eventually the public transport is steadily losing passengers. Other impact of bad transport management system are difficulties for walking or cycling as sidewalks are scarce, badly designed, and frequently obstructed.

5.2. A Proposal on the Concept of Non Motorized Transport

Considering that introducing new network transportation system in the city might be costly, this study will also take into account the possibility to introduce the improvement the current network transportation system. The concept of NMT (Non Motorized Transport) also will be put as one of main issue to be delivered in the study.

For further research, this study will limit its area on elaborating the feasibility to implement the concept of NMT in Jakarta. This study will technically analyze the capability of Jakarta to be deployed with this concept such as; is it technically reasonable if Jakarta is completed with many special lanes for pedestrian - bicycle, Cost Benefit Analysis of Implementation, etc.

To deal with these issues, this study will deploy a number of study activities as follow.

1. Literature review that is intended to get basic concepts of city planning in urban areas, problem related to transportation as well as some alternative solution to overcome such problems.
2. Survey that is aimed at getting the real idea of on-spot condition in Jakarta and the possibility to implement those alternative or improvement network transportation system.
3. Comparative study in some big cities in the world such as Osaka and Singapore. In terms of survey itself, there are may be some activities that will be conducted under this activity such as distributing questionnaires asking information about society perception concerning the opinion, participation and program.

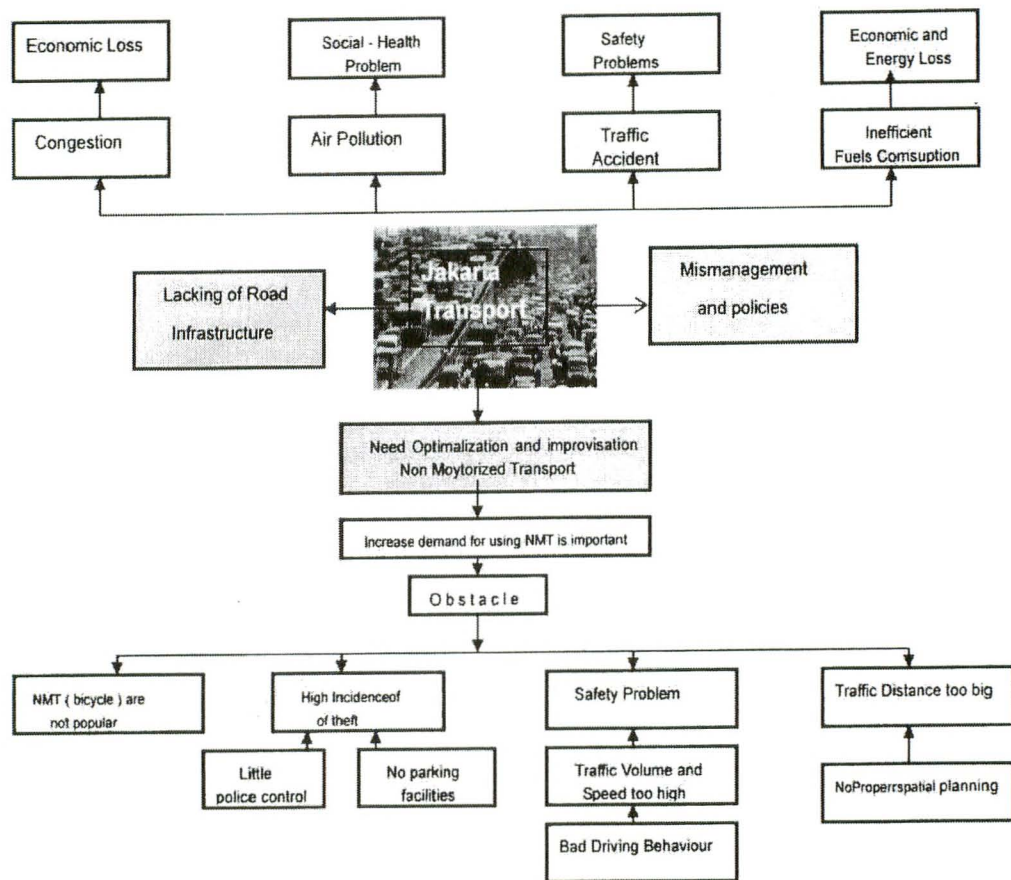


Fig. 7. Principle Issues to improve transport problems in Jakarta

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