EXISTING STATUS OF HANOI URBAN TRANSPORT AND SOLUTIONS

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abstract: Through the main data on Hanoi urban transport and traffic demand forecast, the author drew challenges such as rapid population increase, economic growth and poor transportation infrastructure etc. The recent efforts of the Government and the solutions for urban transport matters, especially the master plan of the urban transport and mass transit systems for Hanoi were also given in the paper.

1. INTRODUCTION

Past time, when Thang Long and Chuong Duong bridge not yet been built, Hanoi resident have known what traffic congestion was at few main junctions. Recent years, Hanoi people know more traffic jams at numerous junctions such as: Cau Giay, Cua Nam, Kham Thien - Le Duan etc.

So far, Hanoi has not yet been seriously affected by traffic congestion. However, given Vietnam's continuing rapid growth it is only a matter of time before Hanoi is subjected to high levels of traffic congestion, which will retard its further economic development.

Hanoi's people Committee and related Authorities have drawn many solutions in order to avoid serious traffic congestion in Hanoi. The solutions consist of building the Traffic Control Center, widening pedestrian, designated streets, arranging of parking lots etc.. Parrallenly some pre-feasibility studies on Hanoi urban transport were made by Vietnam Institutions for examples: RITST, VRDI and Hanoi Transport Authority as well as foreign Companies included JICA, CONTRANS AB, ITF Intertraffic etc.

2. MAIN DATA ON HANOI URBAN TRANSPORT.

- Population: 3,057,000 people, included more than 1 million in urban area;
- Total area: 2,139 km^2, included 40 km^2 of urban area;
- The area for public transport purpose: 3.5% total area;
- Road density: 0.66 km/km^2;
- There are 340 streets and roads in the inner area with total length of around 200 km, the average road length is 500-600m;
- Most of roads are narrow (less than 14m);

- 46% of total road length is 6m to 10m wide;
- 45% of total road length is 10m to 15m wide;
- The total area of sidewalks around 80,000 m^2 ;
- The traffic road area only occupies 8% of city inner area;
- There is the main railway line with total length of 12km across the City.
- There are 8 main junctions at-grade and 30 train pairs running a day.
- Non-motorized traffic, mostly bicycle, and motorized traffic are not segregated on the most roads, and the mixed traffic causes a speed reduction for 4 wheel vehicles and safety problems for non-motorized traffic.
- The present built-up area and the opposite side of the Red River, where various land developments are planned, are connected by only 3 bridges:

- Chuong Duong Bridge, having 2 lanes for 4 wheelers and 2 sides lanes for motorcycles;
- Long Bien Bridge, having the single track railway and 2 side lanes for bicycles; and
- Thang Long Bridge, having a double deck with 4 lanes for motorized vehicles on the upper deck and a double track railway and 2 side lanes for bicycles on the lower deck.

The total traffic capacity of three bridges will not be sufficient for the future traffic demand.

The existing public transport means only meet 2,5% travel demand (0.18 bus per 1000 inhabitants). The speed average of motorized vehicles is 20 km/h.

With Hanoi urban transport infrastructure and population increasing, it is very difficult for Hanoi to avoid serious traffic congestion in next few years.

3. HANOI TRANSPORT DEMAND FORECAST

The total number of trips in the study area will increase from 3.3 million trips per day in 1985 to 8.93 million trips per day or 2.7 times in 2015. The trips within the area south west of the Red River, where the present built-up area located, will increase from 0.42 million trips per day in 1995 to 5.73 million trips per day or 2.9 times. The trips crossing the Red River will increase from 0.42 million trips per day to 1.43 trips per day or 3.4 times, and the trips within the area north east of Red River will increase from 0.87 million trips per day to 1.78 million trips per day or 2 times.

4. CHALLENGES

4.1 Increasing of Population and Expansion of Urban Area

Since 1986, the economy has been progressing under "Renovation" policy. There is an increase in share of urban population engaged in business and commercial sectors. The urban population increase in Hanoi recorded the high rate of 3,7% per annum in 1995, and the annual growth rate is forecast to reach to 6% on average over the next 5 years.

The total population in the study area was estimated at 2.4 million in 1995 and is forecast to increase in 2015 to 4.68 million, out of which will reside in the area surrounding the present built-up area.

The urban area will expand to 3.6 times the present size in the next 20 years. The expansion of the urbanization has already started. Individual housing developments without sufficient infrastructure are seen in the sub-urban area surrounding the present build-up area.

4.2 Rapid Economic Growth and Motorization

In the 1989-1993 period, Vietnam's GDP was 6.9% per year. This high economic growth is forecast to be at the higher rate of 7-9% per year over next 20 years.

The total number of registered vehicles in 1995 in Hanoi was 47,300 (annual increase of 7-8% - see Figure 1) including 12,600 cars. The passenger car ownership was calculated at about 11 cars per 1,000 inhabitants. Moreover, the open market economy policy and the Vietnam Foreign Investment Law have given a rise to the establishment of 13 car manufacturing joint ventures and two other joint ventures are waiting for approval at present.

The total number of registered motorcycles in Hanoi in 1995 was 462,000 (annual increase 20% - see Figure 2), and the ownership was 1 motorcycle per 2.7 inhabitants.

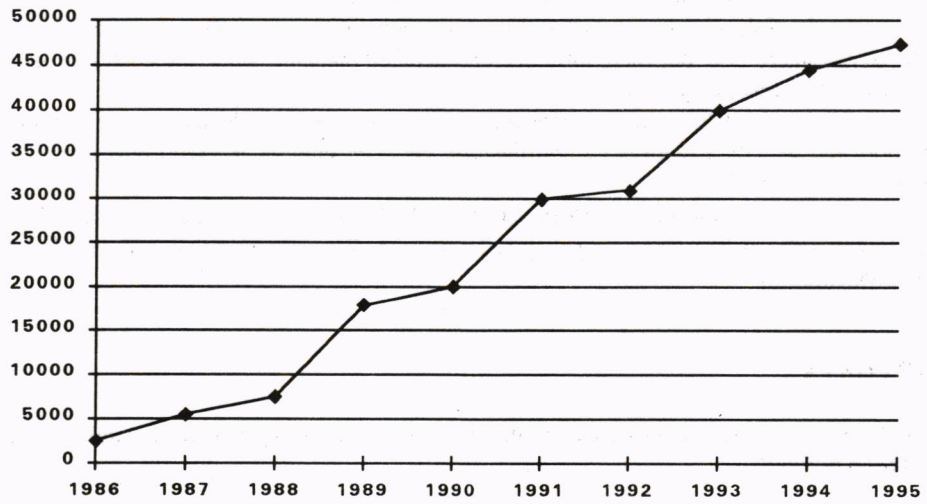

Figure 1: Vehicle Registration

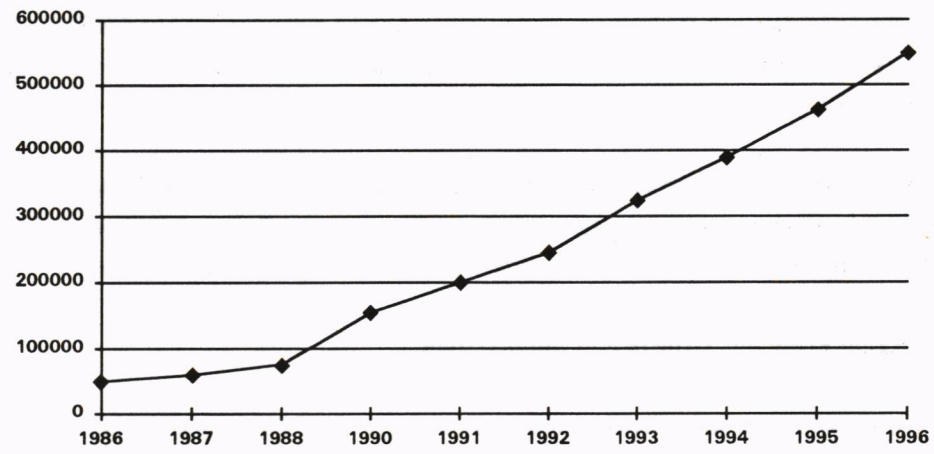

Figure 2: Motorcycle Registration

If the Vietnam economy continues to increase with the annual growth rate of 7-9% in real terms for the next 20 years, GDP per capita in Hanoi will reach to 1,100 US$ in the target year of 2015. Accordingly the passenger car ownership is forecast to increase by 3 times, and the number will increase by 10 times, based on the past trend in the other cities. If all the approved car manufacturing joint ventures start to operate, the numbers of cars in the country may increase more.

4.3 Some Other Urban Transport Problems

- No attention was paid on needs of pedestrians for long time;
- Lack of development control: Hanoi development and rehabilitation has occurred as far as anywhere else, but there have been no detailed planning, only few legal regulations to restrict development type or scale;
- Lack of public transport planning: There have been little investment for urban transport and generally there is no coordination between railway, intercity buses, train and urban bus services;
- No single coordinating urban transport Authority having strong authority from a legal framework, enabling it to set policy and carry out all project planning and coordination of implementation.

5. EFFORTS

Recently the Government has paid attention on urban transport issues. Several solutions have been fulfilled:

- Road traffic laws and enforcement and road traffic safety directive were approved by the Government;
- Widening and cleaning sidewalks for pedestrians;

- Making more effective use existing road space by traffic engineering techniques for example: traffic management; giving priority to moving people rather than vehicles;
- Building of the traffic control center and traffic signal with assistance of the Republic of France;
- On-street parking control and area licensing;
- Lane markings, road chanelization, one way street networks etc.

6. FUTURE SOLUTIONS:

6.1 Short-term Investment:

- Bus service strengthening;
- better use the existing road network by traffic engineering technique.

6.2 Long-term Investment:

- Making Hanoi urban transport planing in detail and cooperating with foreign consulting companies like JICA, Japan Railway Technical Service, ITF Intertraffic (Germany) etc. to make pre-feasibility studies on Hanoi Urban transport;
- Selecting suitable urban transport mode for Hanoi (light rail, metro, monorail);
- Find out finance resources for Hanoi urban transport Projects;
- Enhancing economic productivity: through servicing the transport needs of urban business and industry;
- Increasing personal mobility: through improving access by all elements of the population to urban services and job.

7. MASS TRANSIT SYSTEMS IN HANOI

At present, traffic congestion happen as a daily matter at some area in Ha Noi and Ho Chi Minh city. The situation has not been improved day by day, but getting worse. Almost people and authorities concerned with urban transport have known only rail guided transport can solve the traffic congestion. That is why the Government and concerned Authorities paid much attention on development plan of Hanoi mass transit systems. Several pre-feasibility studies on Hanoi urban transport systems were carried out.

Some main data of pre-feasibility studies are given below:

Main extension area:

- West-Northwest Highway No 32
- Southwest Highway No 6
- South Highway No 1
- East Highway No 5

Extension scope:

Main axles: 6-8km (1996)
10-15km (2015)

Share of individual and public transport:

Future:
- 40% individual
- 60% public

Today:
-98% individual
-2% public

Which are consisting of

Bicycles	40%
Motorcycles	30%
Private cars	16%
Cyclo	7%
3 wheel vehicles	5%
Buses	1.5%
Others	0.5%

The Comparison of technical and operational parameters of Mass Transit Systems is given in the Table 7.1. The Cost for the various alternatives is given in the Table 7.2. The total cost for the Mass Transit Systems is given in the Table 7.3.

Table 7.1: Comparison of technical and operational parameters of Mass Transit Systems

	Regional train	RRT	Metro	LRT
Running time (min.)	120-125	50-70	40-75	60-90
Train configuration	4	8	6	3
Length of train (m)	70/140	145	100	27/54
Length of station (m)	160	160	120	60
Gauge (mm)	1000	1000	1435	1000
Propulsion	Diesel	Electric	Electric	Electric
Length of lines (km)				
At grade	58.5	-	-	88.5
Elevated	10	33	-	5
Underground	-	-	38	1,5
Quantity of vehicles	30	18	15	135
Additional buses	400	280	200	125

Table 7.2: Cost for the various alternatives.

	Regional train	RRT	Metro	LRT
Track level				
At grade	58.5	-	-	88.5
Elevated	10.0	33.0	-	5.0
Underground	-	-	38,0	1.5
Construction cost (MUS$)	1437	1273	4440	1620


Concept of public transport Hanoi
1. Suburban transport, survey of rail network
railway network (existence)
sky railway, city passage and connection of airport
light rail transport

Concept of public transport Hanoi

2. Rapid rail transport (RRT)

railway network (existence)
sky railway, city passage and connection of airport
rapid railway line 1
rapid railway line 2

Concept of public transport Hanoi

3. Metro

- railway network (existence)
- sky railway, city passage and connection of airport
- metro line 1
- metro line 2
- metro line 3

Concept of public transport Hanoi

4. Light rail transport

railway network (existence)

sky railway, city passage and connection of airport

light rail transport


Di airport
Di Lang Son
YEN VIEN
GA GIA LAM
GA PHU DIEN
Di Son Tay
KHU CN DICH VONG
YEN HOA
THANH XUAN
BACH MAI
GA GIAP BAT
KHU CN VINH TUY
KHU CN PHAP VAN
KHU CN CAU DIEU
VAN DIEN
Di HOA BINH
GA HA DONG
Di T.P Ho Chi Minh
Cong khuyen Luong
Concept of public transport Hanoi
5. Light rail transport with bus lines
railway network (existence)
sky railway, city passage and connection of airport
light rail transport
bus lines

Table 7.3: Total cost for Mass Transit Systems

	Regional train	RRT	Metro	LRT
Length of network (km)	68.5	33.0	38.0	95.0
Total cost (MUS$)	1587	1489	4575	1958
split into:				
- Construction	1437	1273	4440	1620
- Vehicles	150	216	135	338
Unit cost per km (MUS$)	23.2	45.1	120.4	20.5

Based on the pre-feasibility studies some Mass transit Systems were outlined (see Concept of Public Transport Hanoi 1-5).

8. CONCLUSION

So far, Hanoi's Traffic congestion is not serious like Bangkok, but the traffic problem is getting worse. There is good news, recently the Government has paid attention on urban transport issues. The Urban Transport was considered as one of items of the transport Modernization and Industrialization Program of the Vietnam. We do hope that in the near future, large cities such as Hanoi and Ho Chi Minh City will select suitable urban transport Authority, step by step to implement successfully urban transport Projects.

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