

Policy on Travel Management in Beijing City



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1 Urban Sector Review

1.1 Basic General Data

Beijing is a political and cultural center of China and international exchange hub. Beijing is the capital city of China, which has a total of over 14.5 million residents among which 11.4 million people are registered permanent ones.

Beijing's land area is 16410 (16807.8) km², City Area: 1040 km², 18 districts & counties, 8 urban districts, 8 suburban districts, 2 counties.

Beijing is home to the well-known "Peking Man" relic that dated back 200,000 to 700,000 years ago. The city has stood on its current site for well over 3,000 years. It was the capital city for Liao, Jin, Yuan, Ming and Qing dynasties in ancient and contemporary Chinese history. Cultural relics in Beijing like the Forbidden City, the Great Wall, Zhoukoudian Peking Man Relics, the Temple of Heaven, the Summer Place and the Ming Tombs are World Cultural and Natural Heritage approved by the United Nations. There are a total of 7,309 historical and relic sites in Beijing.

The main development is referred to three aspects: social and economic modernization, urbanization, and transport motorization. With the rapid development, traffic problems are getting serious.

From 1996, the GDP per person in Beijing has been increasing at speed of 9% to 11% per year. In 2005, Beijing's population had reached 15.36 million, with an increase of 1.74 million than that of 2000; and 70% of them are in urban. It is forecasted that In 2010 it will be 18.00 million , the increased Population is a threat to the Beijing urban traffic for the future. Before 2010, Beijing economy will develop at a speed of 10%.

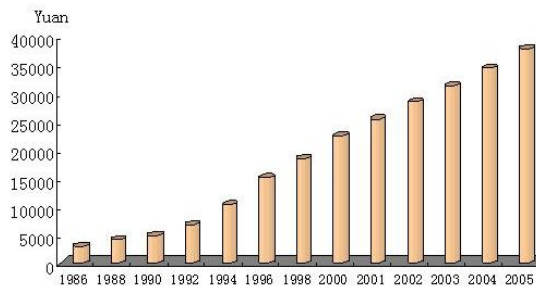


Figure 1 Beijing tendency of GDP per person (unit: yuan)

Urbanization is the historical process by which there is an increase in the proportion(not number) of people living in urban areas. Urbanization is an inevitable trend of modern society; Urbanization is also the key to solving many contradictions existed in economic and social development of our country. In 2005, the ratio of urbanization of Beijing has reached 85%.

1.2 Urban Facts and Figures related to Urban Transport

Beijing is an important hub for aviation in China's comprehensive transportation system. Annual passenger is more than 40,000,000 in 2005, New terminal and lane will be set up in 2007, the capacity will be more than 60,000,000.

Beijing is the city of national railway hub. Beijing-Shanghai, Beijing-Tianjin high-speed railway are building.

(1) transportation infrastructure investment

From 2001 to 2006, a great investment of 130.4 billion RMB has been given to transportation infrastructure, as 5.1 % of the GDP of the same period.

As many other urban areas have discovered, building more road capacity results in yet more road traffic. especially at peak times when the pressures of demand is highest.

(2) motor vehicles

In the past ten years, motor vehicles annual increase of 14% on average. In the coming years, the annual growth rate for private car will remain at around 10%.The motor vehicle quantity is 2.8 million in 2007.

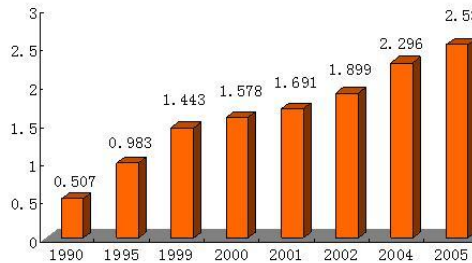


Figure2 Beijing motor vehicle tendency (unit: million)

(3) public transport(PT)

——Metro Transport system

Nowadays, There are 114 km metro and urban railways with the daily ridership of 2 million. there are 19 thousand buses and 620 bus lines with the length of 18 thousand km and the daily ridership of 10 million.

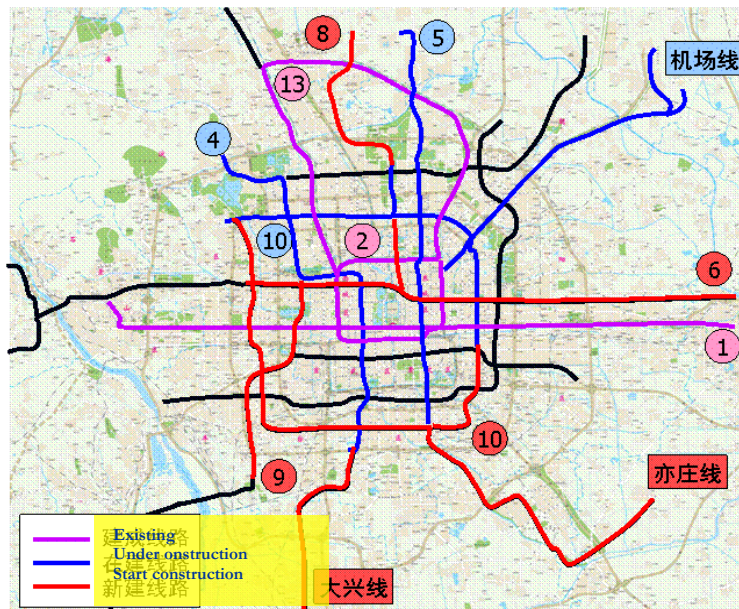


Figure 3 the metro lines in Beijing including existing and under construction

The Beijing Metros are under construction step by step. There is a race against time to build more underground arteries, according to the planning option ,In 2007, 8 metro lines (206 km) will be under construction, that is to complete 1 line (28 km), continue 3 lines (87 km), and start 4 new lines (91 km). This will relieve bus and car congestion along the major travel corridors.

—*Bus services*

Although there are 19 thousand buses and 620 bus lines with the length of 18 thousand km and the daily ridership of 10 million.

Existing bus services are currently under pressure due to the volumes of passengers wishing to travel during peak periods, with over-crowding at bus stops and many passengers having to stand throughout their journey.

Bus travel is increasingly seen as unattractive in comparison with private motoring. Although the number of daily bus journeys has risen in absolute terms, the rate of growth in recent years has declined. In central areas during peak times, the heavy volumes of buses and minibuses required to meet demand has led to passenger and vehicle congestion issues. Percentage of PT in 2005 is 3.3 more than that in 2000, however, that of car mode is 6.6, Time expenditure of PT is more than cars.

Peak hour traffic levels are approaching road capacity and congestion is evident in central areas. Bus passengers encounter over-crowding at stops and on buses, and there are reliability issues in terms of travel times and service provision.

In some cases, air-conditioned and non-air-conditioned buses serving the same route stop at different stops. In an effort to improve journey times, numerous bus lanes have been introduced and the number of bus stops has been rationalized, resulting in relatively long inter-stop distances. On major roads, even with these measures, many bus routes share a single cluster of stops and ‘bus-on-bus’ congestion is evident.

Such problems are common on YaoJiaYuan Road in Chaoyang district , in peak hour, it will cost one hour traveling ten kilometers , the bus speed is lower than bicycle speed.

The overall effect is that passenger comfort during peak hour trips is low. They suffer prolonged waiting times, crushed conditions in the vehicles and the probability of irregular travel times and delays. There are sometimes long and unpleasant delays.

1.3 Policy

There are several urban management policies of Beijing. From the urban plan perspective, there is Beijing Urban master plan which is to guide the land use of the city. And from the transportation perspective, there is Beijing Transportation Development Outline.

Beijing Urban Master plan has taken action in these aspects:

- ◆ Construction of the “2-axis-2band –multi center” pattern urban form to Optimize urban spatial structure and functional layout, promote harmony development between city and transportation system.
- ◆ Construction of “Modernization Integrated Transport System” to guide urban spatial structure improvement and function distribution optimization to develop multimodal transport system, give priority to public transport.

There are five basic policies in Beijing Transportation Development Outline:

- ◆ Transport Leading Policy
- ◆ Public Transit Priority Policy
- ◆ Differential Regional Supply Policy
- ◆ Car Traffic Guide Policy
- ◆ Transport Property Marketing Policy

1.4 Actors and their Roles

Stakeholders primarily consist of various government agencies involved in the day-to-day management of roadway facilities, plus information media that disseminate real-time roadway information.

At the local level, Beijing transportation committee is in charge of urban transportation management, including the investment of urban transportation,

making transportation planning and strategies. It plays the most vital role in the urban transport management field.

2 Organisation

Research Institute of Highway the Ministry of Transportation (RIOH) is the biggest comprehensive research institute directly under the Ministry of Transportation(MOT) of the People's Republic of China. The RIOH has total staff about 1700 (2007) , including academicians of the Chinese Academy of Engineering; senior researcher and engineers; PhD supervisors in road and railway engineering, bridge engineering, and traffic engineering. It also has Postdoctoral Workstation; Human Resource Development Center based on Sino-Canadian cooperation program for personnel trainings for road and transport industry; and Proving Ground for Highway and Traffic Engineering. The RIOH undertakes key R&D projects commissioned by the government, including formulation of the national and ministerial standards and specifications concerning road and transport.

3 Urban Problem

Beijing city has developed over many years on its transport, and the government has put much money on the construction of the infrastructure. Nevertheless , in recent years, problems such as congestion and traffic pollution have become more and more severe.

Photo: Beijing in rushhour



Source: www.news.cn

Congestion has been worsening for several main reasons including :

(1) The increased car demand for road space serving major activity centers due to growth in population, economic activity, and incomes. As urban populations grow, incomes increase and the community's expectations rise in terms of cars' mobility and convenience. Increases in population and income will largely shape future changes in travel demand. If unrestrained, increasing personal incomes will propel car ownership.

(2) Provision of infrastructure capacity has lagged behind demand growth. it will take many years to complete the Metro construction planning programme, which means that the roads and the buses will have to accommodate much of the increasing demand for travel.tendency.

(3) Public transport is not adequate, while vehicles grow quickly. Compared to 2000, the increasing rate of public transport is a half of car trips. The percentage of all Transport modes from 1986 to 2005 are listed as follow.

Table 1 the Percentage of all Transport modes

year	other mode	the Percentage of bicycle	the Percentage of car	the Percentage of public Transport
1986	8.8	62.5	4.4	24.3
2000	11.8	38.5	23.2	26.5
2005	10.1	30.3	29.8	29.8

Source: Beijing Urban Transport Report (2006), Beijing Transport Committee

So the questions about urban transport development of Beijing City are:

(1)How can city government solve the worsening traffic congestion problem while the city' s urbanization and motorization develops rapidly ?

(2)How should city government manage increasing car ownership so that the limited resources can be used more efficiently and cars can be used on a reasonable and orderly basis?

4 Proposal for Change and Improvement

4.1 Traffic congestion under rapid urbanization

(1) Confronted with the challenge of rapid urbanization, urban government must give more financial support for the urban transport infrastructure in order to make it keep pace with rapid urbanization.

The rapid urbanization and economic development has brought many rural workers to the cities. As more urban residents expect more transport services, there is a growing demand for transport supply. Meanwhile, in order to accelerate the urban-rural integration and improve the quality of life, it is necessary for urban government to spend more money on construction of transport infrastructure and services. Otherwise, the government will be considered as unsatisfactory , and it is not good for building a society of harmony.

(2) City government should rethink the methodology of city's infrastructure planning and designing and remove the obstacles preventing the efficient urban infrastructure use.

There are large costs to society in the construction and maintenance of transport infrastructure. Infrastructure improvements will continue to play a key part in the development of urban transport systems.

According to study on traffic congestion problems in many cities, we can see that one of the causes of congestion comes from unscientific urban road plan or incorrect design. In a typical city, 10-50% of congestion delays can be avoided with better planning. Such programs tend to be more cost effective than building additional roadway capacity. By improving interagency planning and coordination, they can increase the efficiency with which public services are provided. It is therefore necessary for the city government to provide advice on how the efficiency and effectiveness of the transport system can be improved.

(3) City government need to improve the urban spatial plan and urban transportation structure to reallocate road space which includes reducing motor traffic and expanding public transport system.

Transport policies need to be developed to provide a better urban spatial plan that sustains development of the city and reduces/ minimises fuel dependency and

emissions/pollution. This will include encouraging short trips, reducing motor traffic and expanding public transport system.

On the one hand, the road network density should be optimized by scientific planning and construction. Road space reallocation can be particularly appropriate on congested roadways and it can encourage the use of alternative modes and create a more efficient transportation system. On the other hand, to improve the urban transportation structure, giving priority to public transportation, and making use of cars reasonable and efficient is suitable to the realistic situation of urban development and transportation development. The percentage of all Transport modes from 1986 to 2005 are listed as follow.

Cars not only use too many resources, but also cause heavy air pollution. Compared with buses with the individual travellers as the unit, the road surface area per capita used by cars is 9 times higher, energy consumption 5 times higher. The public transport industry should be further opened up and more dynamic support policies should be implemented. Financial support will be given to urban public transportation.

4.2 Car usage management

Traffic management and control measures will be applied to enhance the efficiency of the existing road network.

Travel demand management (TDM) is usually thought as a suite of measures that can be considered as an alternative to simply increasing the capacity of the transport system, for example, vehicle restriction, carpooling, parking controlling, etc. Travel demand management can modify travel decisions so that more desirable transport, social, economic and environmental objectives can be achieved, and the adverse impacts of travel can be reduced. Legal measures may be implemented to enforce car use. Examples include prohibiting car traffic in city centers, decreasing speed limits, and introducing parking regulations. The assumption is that people will comply with these measures. A major problem in implementing coercive TDM measures is public opposition. Traffic congestion can become more severe if everyone behaves in a incorrect way to a certain degree. It is necessary for everyone to be responsible to deal with traffic. Public information campaigns targeting attitude change would increase public

acceptability. City government should strengthen education and training of the urban transport management at the same time. There are several different TDM measures. In Table2 four types of TDM measures are distinguished which are targeting different antecedents of travel demand and are based on different assumptions of how behavioral changes may be elicited.

Table 2 Travel Demand Management Measures

TDM Measure	Examples
Physical change measures	<ul style="list-style-type: none"> - improving public transport - improving infrastructure for walking and cycling - park & ride schemes - land use planning to encourage shorter travel times -technical changes to make cars more energy-efficient
Legal policies	<ul style="list-style-type: none"> - prohibiting car traffic in city centers - parking control - decreasing speed limits
Economic policies	<ul style="list-style-type: none"> - taxation of cars and fuel - road or congestion pricing - kilometer charging - decreasing costs for public transport
Information and education measures	<ul style="list-style-type: none"> - individualized marketing - public information campaigns - giving feedback about consequences of behavior - social modeling

Strengths:

The proposal will expand the capacity of the road network, increase the efficiency with which public services are provided, encourageshort trips, reduce motor traffic and expand public transport system. This means we deal with traffic congestion from two sides, not only from transportation supply but also from travel demand.

Weaknesses:

The assumption is that people will comply with TDM measures. A major problem in implementing coercive TDM measures is public opposition . Public information campaigns targeting attitude change would increase public acceptability. Therefore we must strengthen education and training of the urban transport management at the same time.

Opportunities:

There are not any travel demand management policies implemented before in Beijing. Just after Beijing Olympic Games, vehicle restriction policies were implemented, but the effect has not been seen until the next year. If the result is satisfying, TDM could be a long-term measure to be implemented by the city government.

Threats:

The private car has become so attractive that its positive effects are becoming outweighed by a host of negative effects. However, reducing current car use in the industrialized countries or the growth in car use in developing countries may constitute a threat to economic and social sustainability.

5 Personal Action Plan

5.1 Short term plan(2009)

The project in the short term plan is to research the application of the Beijing Vehicle Restriction policy to evaluate its usefulness as a travel demand management tool for solving traffic congestion problem. The goal is to find the weakness of the policy and to make recommendations to improve the travel demand management.

5.2 Long term plan(five years)

The project in the long term plan is to research the principles of traffic management of Beijing city based on analyzing the traffic demand and discussing the root and feasibility of travel demand management(TDM) and to put forward the policy frame of the urban transportation management.

References

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