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Urban Travel in China: Continuing Challenges with Rapid Urbanization and Motorization

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ABSTRACT

In the last two decades in China, as the rapid economic growth and urbanization, the motorization has been speeding up in Chinese large urban areas, which result to tremendous urban traffic increase. In recent years, the annual growth rate of motor vehicles, especially of private cars, is continuously over 30 percent in China, and heavy urban surface traffic congestion, serious air pollution and rapid fuel consumption increase have occurred in Beijing and other super and big cities. The existing problems in the field of urban traffic, such as imperfect urban transport infrastructure, backward management patterns, insufficient coordination among related sectors and so on, have complicated historical and institutional reasons. This present paper summarized the China's urbanization progress and analyzed the current situation of urban transport system, and put forward the development plan and policy choice of urban transport system in the future in China.

Keywords

Urban traffic, Urbanization, Motorization, Urban public transport, Sustainable transport system, Transport policy

1. Rapid Urbanization Development in China (mainland)

In the last two decades in China, the economic growth has been increasing steadily and rapidly. In the social and economic development, to make effort to push on urbanization has been carried out as one of the national strategies. From 1990 to 2003, the number of cities in mainland increased from 467 to 660, among which the number of super cities (with the population of 2 million and over) doubled and the big cities (with the population between 1 million to 2 million) increased obviously. See table 1.

Table 1. **Number of Cities: Grouped by Population in Urban Districts**

Year	Total	2 mil. and over	1 mil. to 2 mil.	0.5 mil. To 1 mil.	Less than 0.5 mil.
1990	467	16	82	153	210
2003	660	33	141	273	212

Source: *China Statistic Yearbook* (1994, 2004)

From 1990 to 2003, the population of the whole nation increased from 1143.33 million to 1292.27 million, the average annual natural growth rate is 0.946 percent, during the same period the urban population increased from 301.95 million to 523.76 million, the urbanization rate rapidly increased from 26.41 percent to 40.35 percent. It is noted that Chinese government still puts strict inhabitant registration policy into practice, nearly 150 million non-urban residents (mainly peasants) are working and living in cities nowadays, but they are not calculated as urban residents according to current statistic system. It is estimated that the urbanization rate has been over 50 percent as international account. With the rapid increasing urbanization, urban infrastructures, such as housing, urban traffic, supplies of water, power and so on, have to be considered to meet the demands.

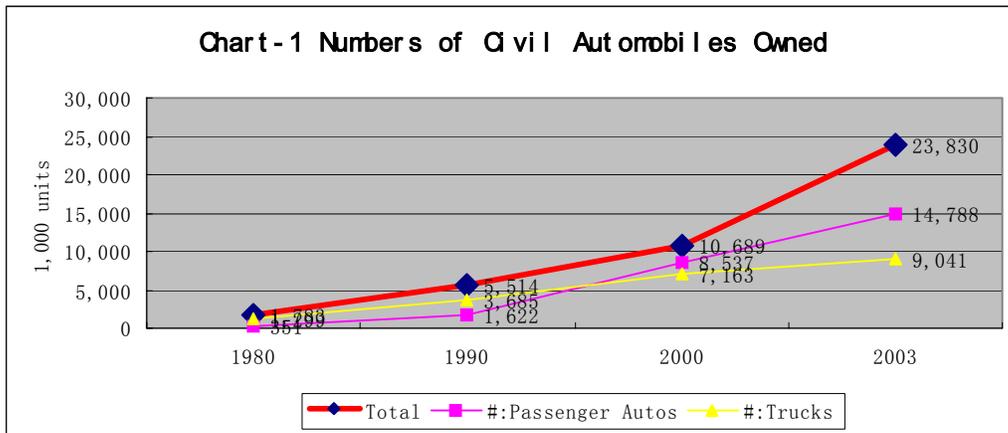
2. Current Situation of Urban Transport System in China

A. Increasing Motorization

As the rapid economic development in China, especially central government determined the development policy to set automobile industrial as prop industrial, automobile manufacture has become a main investment field and there are over 2 thousand enterprises of motor vehicle making or fittings manufacture at present. In 2004, the total production amount and sale amount of various automobiles were both over 5 million units. From 1980 to 2003, the number of civil automobiles owned increased from 1.78 million units to 23.83 million units, the average annual growth rate is 12 percent, especially in recent years the number of civil automobiles owned increased fast and the average annual growth rate reached 30 percent in three years from 2000 to 2003.

In recent years, the number of passenger automobiles increases faster than that of trucks, especially the number of private cars has increased very rapidly resulting from the policy of Entrance of Car into Family. To the end of 2003, the number of various passenger automobiles reached 14.79 million units among which there are 10.172 million cars, and the number of private cars is 5.87 million units. In many super or big cities, more and more families purchase car, for example, in Beijing there are 18 cars per 100 families currently and it is estimated that this number will reach 53 in 2010.

Chart-1 shows the increasing situation of the number of civil automobiles owned.



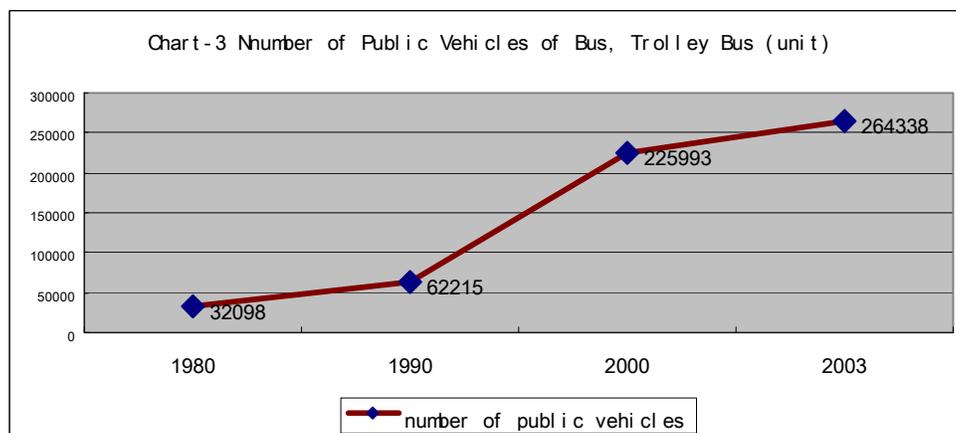
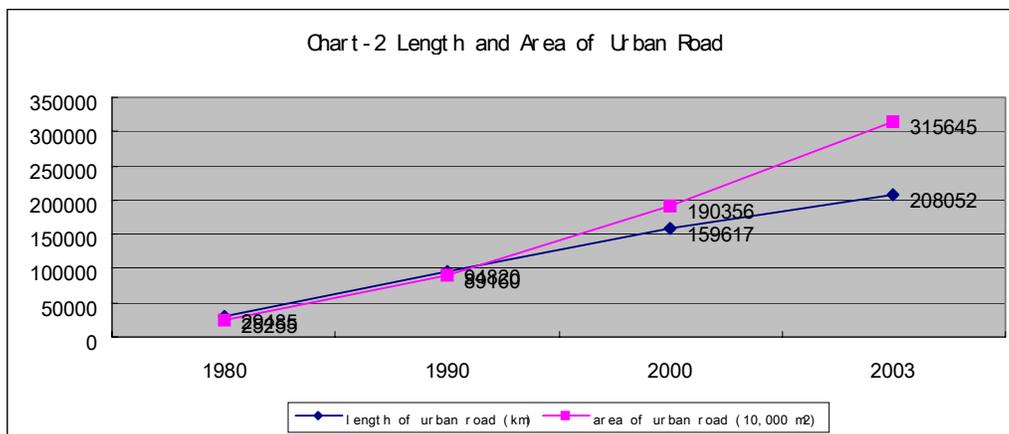
It is estimated that near 70 percent of total civil automobiles travel in urban areas in China, the rapidly increasing motorization directly results to:

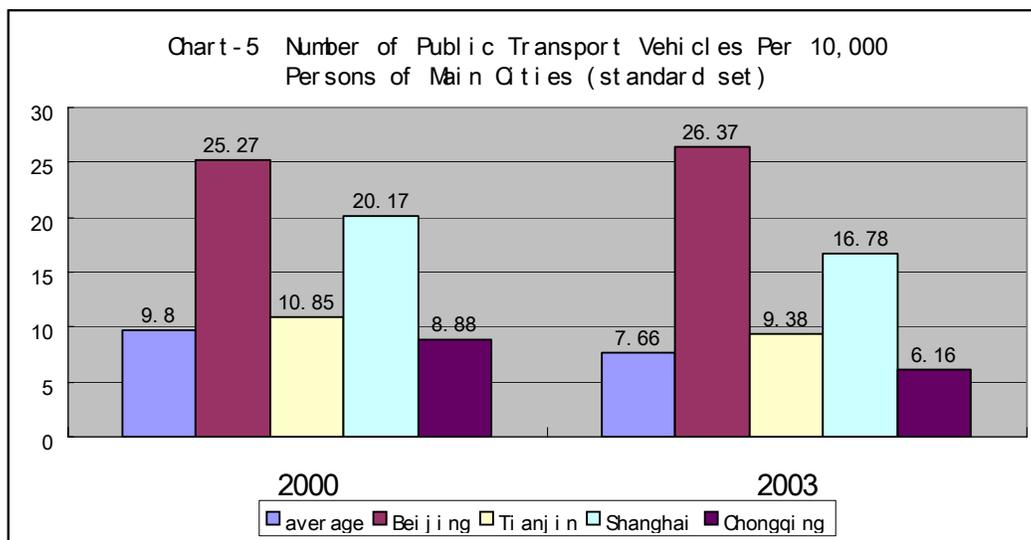
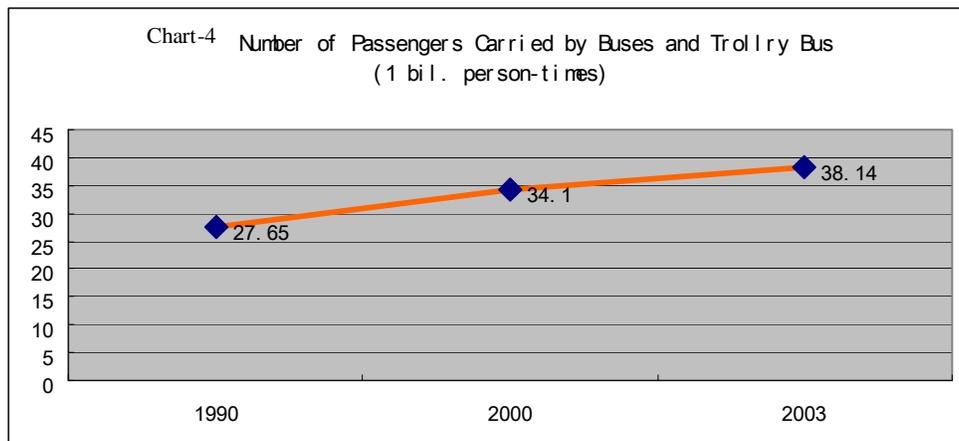
- Heavy traffic congestion in urban districts especially in super cities. According to related on-spot surveys, the average traffic volumes (cars per hour) are 5822, 2214 and 2319 respectively in Beijing, Tianjin and Shanghai. In Beijing, there are about 400 vehicles average per kilometer in urban district. Because most Chinese cities possess large amount of bicycles, this situation results to serious mixture traffic and made the urban road very crowded especially in peak hours.
- Serious air pollution from vehicles' emission. Air pollution from vehicles' emission has become one of main sources in many cities in China. For Beijing as an example, over 70 percent of CO and NO_x emitted from various vehicles.
- Serious urban traffic noise. According to related survey, the average noise values reached 69.7, 68.2 and 70.4 LeqdB(A) respectively in urban area in Beijing, Tianjin and Shanghai in 2003. The urban residents near the roads suffer from heavy vehicles' noise.
- Increasing road traffic accidents and losses. With the rapid motorization in China, road traffic accidents have become more and more serious. In 1997, 73861 persons were killed and 190 thousand persons were injured in various road traffic accidents, which incurred 1.85 billion yuan direct economic loss. In 2002, the numbers of the dead and injured increased to 110 thousand and 560 thousand and the direct economic loss was over 3 billion yuan.
- Rapid increase of fuel consumption. Vehicles have become the main fuel consumers in China, nearly all gasoline and 40 percent diesel were consumed by various vehicles. The total fuel consumption volume by various vehicles is near 100 million tons in 2004 according to related estimation and the oil import volume was over 100 million in 2004. Fuel economy level of motor vehicles in China was obviously lower than developed countries, to improve the fuel usage efficiency and save energy have been determined as one of the national long-term strategies.

B. Urban Public Transport Development

In Chinese urban transport system, because urban rail transit system has not been developed, the total length of urban rail lines of metro and light track are less than 300 kilometer in Beijing, Shanghai, Guangzhou, Tianjin, road transport always plays the absolute main role, bicycles and buses are the main travel and commutation means, at present, about 60 percent of urban travel is still taken by bicycles. It is imperative to improve the level of public transport.

In the past two decades, the length and area of national urban roads have increased quickly, and the number of public vehicles of buses, trolley bus and taxi also increased rapidly, but the number of passengers carried by bus and trolley bus increased comparatively slowly. For an example, the total length of urban roads increased to 208 thousand kilometers in 2003 from 94.8 thousand kilometers in 1990, doubled in 13 years, and the total area of urban roads added to 3156.5 million square meters in 2003 from 892 million square meters in 1990, over tripled in 13 years, and the total number of urban public vehicles of bus and trolley bus increased to 264 thousand units in 2003 from 62.2 thousand units in 1990, but the total number of passengers carried by buses and trolley bus increased to 38.1 billion person-times in 2003 from 27.7 billion person-times in 1990, only increased 37.5 percent in the 13 years. It is noted that the average number of public transport vehicles per 10 thousand persons was 9.8 standard sets in 2000 and this indicator was down to 7.6 standard sets in 2003, same situation occurred in Shanghai, Tianjin and Chongqing. See following Chart-2 to Chart-5.





C. Administrative Management System

The urban traffic administrative management system continues the management pattern established in the plan economic period, the typical features are departmental crossing and overlapping function. Although the reforms were carried out in the past years, the disadvantages of administrative management system have not been solved completely yet. The departments concerning the administration of urban transport system and their main functions are illustrated as below:

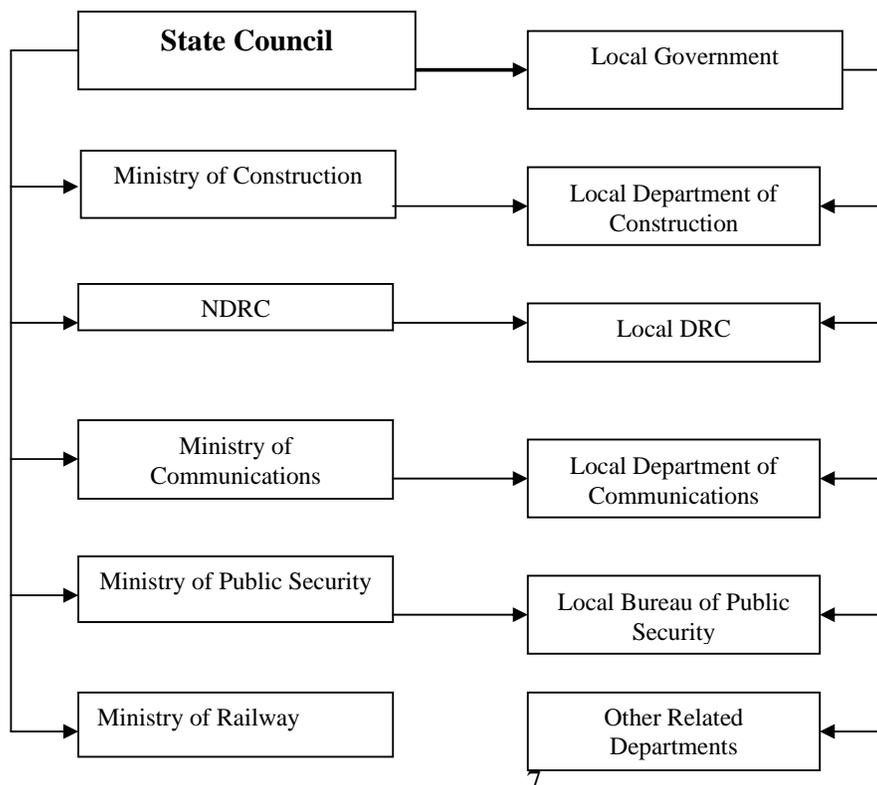
- Ministry of Construction: it is responsible for the planning of urban overall plan consisting the special plans of urban land use, urban road, parking area; to implementing the management of construction of urban traffic infrastructure, urban public traffic company and taxi operation. But the private motor vehicles and bicycles are not be managed by Ministry of Construction.

- National Development and Reform Commission (NDRC): NDRC is responsible for the approval of urban infrastructure projects especially the large projects like metro and roads which needs the investment from central government; all the pricing standards must be approved including urban transport service. NDRC also formulates the urban transport development strategy and equipment application policy.
- Ministry of Communications: it is responsible for the management of outer-city highway and waterway transportation. In the field of conjunction of urban area and suburb, the administrative function of Ministry of Communications and Ministry of Construction is overlapped, such as the plan, construction and management of road passenger transport station. In some cities, Ministry of Communications is also responsible for the management of taxi service.
- Ministry of Public Security: it is responsible for the daily management of urban traffic such as transport demand, maintaining the traffic order and safety. It also play an important role in the construction and renovation of urban transport infrastructure.
- Ministry of Railway (MOR): MOR mainly participates in the planning and construction of urban rail transit network and suburb railway.

In addition, other department like Ministry of Land and Resource, Ministry of Finance, General Bureau of Environment Protection are also concerned in respective administrative fields.

In the provincial and city level, corresponding bureaus are established vertically to central departments to implement related functions. Most city governments have decisive right in planning and implementing urban transport development and modal choice.

The following shows the draft framework of Chinese administrative management system:



To summarize the issues of Chinese urban transport development is as below:

- Lack of integrated consideration of planning and construction of urban roads in rapid sprawl.
- Less huge-capacity transport modes like rail transit network (light track of metro) and over relying on existing insufficient urban road networks in super and big cities.
- Heavy mixed urban traffic with motor vehicles, motorcycles, bicycles and pedestrians.
- Imperfect system of urban transport management and market-oriental public transport services.
- Shortage of utilization of modern transport management technologies and equipment.
- Insufficient co-ordination vertically among all levels of government and horizontally among different sectors.
- Some administrators and the publics have not been conscious of the morale of sustainable urban transport such as energy conservation and environment friendly.

3. Development Plan (to 2020) for Urban Traffic in China

A. Objectives

- Economically: to build up highly efficient urban transport systems corresponding to different type and scale of cities.
- Socially: to put the human being at first and provide convenient and universal transport services.
- Environmentally: to reduce vehicles' tail-gas emission and improve energy using efficiency.

B. Development Plan (to 2020)

In China, urban transport is still an independent section not included in the national transport system. NDRC and Ministry of Construction are drafting the development strategy of national urban transport for 11th-five-year Period and long-term to 2020, the key points are summed up as below:

- To speed up the urbanization continuously and the urbanization rate is expected to reach up to 50 percent by 2020 according to inhabitant registration statement. In the future the key task is to develop medium and small cities, as well as the towns.
- Motorization will continue increasing as implementing the national industrial development strategy of the automobile industry as a prop industrial. The new Automobile Industrial Development Policy, in which lots of encouraging policies for auto production and consumption are included, was issued in 2004 and this policy choice will lead more and more cars into families.
- Continuing to speed up the construction of urban transport infrastructure, especially constructing urban rail transit networks including in metro and surface light track in super cities to optimize the urban traffic structures and to ease up the pressure of road traffic.

- To carry out the strategy of “putting the Public Traffic as Priority” in super and big cities by means of setting up “Bus Exclusive Lane” or “Bus Rapid Transit” system. In medium and small cities the bicycles will still be encouraged as main travel and commuting means.
- To strengthen the traffic demand management by means of applying modern management technologies such as GIS, GPS etc. Modern transport technical equipment will also be encouraged to develop and apply such as energy saving automobiles and engines.
- To carry out the sustainable transport development strategy, including optimizing transport structure, encouraging application of vehicle technologies with clear energy and less pollution.

C. Policy Choice

In order to carry out the development plan, the following main policies will be strengthened:

- To take into serious consideration of urban planning within which urban transport system will be strengthened in the process of renovation and enlargement of urban districts.
- To devote major efforts to developing urban public transport, including construction of rail transit networks, bus rapid transit system, restricting overuse of private vehicles in super cities, investment and pricing measures will be taken to reach these purposes.
- More strict emission control standards have been determined to make the cities environment friendly. Clear energy and renewal energy will be encouraged to use in vehicles.
- To implement the China Medium and Long Term Energy Conservation Plan issued in 2004 to conduct the related actions, it aims to improve the energy using efficiency of the productive and living fields. In urban transport area, it is expected to improve the efficiency by means of optimizing transport structure, encouraging using clear vehicles and cycling, developing and applying energy saving transport technologies.
- The policy of fuel tax is under consideration aiming to send the right signals to automakers and private vehicle users. Much effort should be made to accelerate formulation of motor-driven vehicle fuel economic limited value standard and implement the standard by phase from July 1, 2005.
- In the “11th-five-year Transport Plan” (under drafting), urban transport development will be set as one of major areas concerning urban transport infrastructure, technology, administrative mechanism reform etc.
- The new Regulation of Road Traffic Safety had been come into force since July 2004 to strengthen the administration towards travel partners. This regulation is more strictly in order to rule the illegal travel behavior of partners and to reduce the traffic accidents.
- To reform the administrative management system of urban transport. Near the future, it is necessary to strengthen the institutional co-ordination and co-operation among crossing sectors, in the long term, urban transport should be governed by an integrated department.

4. Conclusion

China is still a developing country, but most problems encountered in some cities of developed countries have occurred in some Chinese big cities with the rapid urbanization and motorization, it is a huge challenge for Chinese government to successfully solve this mater. In recent years, many international organizations have devoted much effort to assist China improving urban transport system including related R&D researches, demonstration projects, project loans and training. I believe Chinese urban traffic will develop more and more well in the future.

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REFERENCES:

1. *China Statistics Yearbook*, 1981 to 2004
2. Liu Binlian, *Urban Transport Economic Analysis*, China Economic Press, July 1997
3. Wang Qingyun, *A Development Perspective of Transport*, China Science and Technology Press, April 2004
4. Wang Wei, Chen Xuewu, Lu Jian, *Study of Theoretical System on Sustainable Urban Traffic Development*, Science Press, February 2004.
5. Wu Wenhua, *Analysis on Urban Traffic Administrative Mechanism*, Oct. 2000
6. Shan Lianlong, *Prospects for Chinese Urban Traffic Development during 11th-Year Period*, August 2004.