Benchmarking Efficiency of Sustainable Urban Transport in China

—— 7 Challenges & 5 Strategic Priorities

Dr. WU Hongyang

CUSTReC
China Academy of Transportation Sciences-CATS, MOT
wuhy82@163.com

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**Challenge 1:**
Capacity Building to Adapt to Socio-Economic Needs

<table>
<thead>
<tr>
<th>GDP Increase</th>
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<tbody>
<tr>
<td>1978-2000</td>
<td>8-9%</td>
</tr>
<tr>
<td>2000-2020</td>
<td>7%</td>
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</tbody>
</table>

**Urbanization**

**URBANIZATION:**
- 1978: 17.8%
- 2007: 43.9%
- 2020: 57%

**1998 ~ 2007, annual growth rate in GDP share of the national total by cities:** 7.0%

**Annual average increase of vehicle trips 1998-2020:** 9.0%

**Great Potential of Private car Increase**

<table>
<thead>
<tr>
<th>Increase Rate</th>
<th>2020</th>
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<tbody>
<tr>
<td>Civil vehicles:</td>
<td>13%</td>
</tr>
<tr>
<td>Private vehicles:</td>
<td>23%</td>
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</tbody>
</table>

**Increase Rate 2020 (100 million vehicles)**

**Cars per 1000 persons**

- India: 6
- China: 22
- Brazil: 64
- Mexico: 136
- Briton: 428
- France: 501
- Japan: 523
- Canada: 598
- USA: 764

**Challenge 1:**
Capacity Building to Adapt to Socio-Economic Needs
The road infrastructure volume is lower than developed country’s cities. It is a big challenge to promote the infrastructure construction in the rapid motorized transport in China.
Challenges 2: How to relieve the transport congestion and improve transport efficiency?

Beijing:
- Travel time of 40% commuters per day >1 hour
- Economic loss due to congestion per day about 40 million Yuan
- Average speed of 11 roads in the city center is 12km/h

Shanghai:
- GDP reduction caused by traffic congestion 10%
Restraint factors:

• The long term mechanisms for TDM
• Personal trip planning
• Real time traffic information by ITS
• Road space separation and occupation for different travel mode
• Infrastructure construction
Challenges 3:

While the needs of the reasonable private car can be meet, how to minimize its negative impacts?

With increasing income, which kind of transport mode will you use?
Modal Split ———— private car

98% residents without private cars

RestRAINT FACTORS:

- People’s idea: pursue personal travel, and lack of the idea of energy saving and environment protection
- Motor industry development & the negative effect of the vehicle (full life cycling cost analysis)
- Crazy competition for the car-owning
- Lack of the policies and measures to promote the rational use of the private car
- Access and discard mechanism for the private car waiting for refined
Challenges 4:
How to support the economic development by improving the reliability and service quality of the public transport?

Survey in Beijing
Great shortage in public transport investment

Cycling is also decreasing....
Modal Split
— Public Transport

Compare with the international developed cities, the rate of bus trips in public transport in Chinese cities is higher, but the rate of rail transit in public transport is much lower.

For example:

Tokyo: 85%
New York: 70%
Nagoya: 83.5%
Chicago: 45.5%
Infrastructure
— Length of urban metro

500 Billion RMB investment needs for the new metro construction in the future 10 years

Metro is an important way to reduce the transport congestion in the mega-cities in China, but the huge investment will be an severe challenge for the city's government.
Beijing Case

2006: 114km
2008: 195km
2010: 250–300km
Satisfaction —— Investigation

The final satisfaction score: 4.69
Score: The highest is 9, the middle is 5, and the lowest is 1

Restraint factors:
- Vehicle quality
- Real-time information service
- Road space
- Subsidy mechanism
- Mass public transport
Challenges 5:
How to reduce transport pollution and emissions (including air pollution and noise) and improve the energy efficiency to achieve the clean and healthy transport systems?

- China: the 2nd largest oil consumption country and the 3rd largest oil import country. In 2007, 47% of China’s oil was imported.
- Fuel economy in China is 10~20% lower than that of developed countries.
- Oil consumption by the transport sector: 1/3 of the national total consumption; in 2020, 57%
Urban air pollution is shifting from coal burning emissions to vehicle emissions.

A 2007 survey of traffic noise in 401 cities: 20.9% exceeding standards

Letters that complained about noise pollution: 43% of all letters that complained about environmental pollution.
**Challenges 6:**

How to improve the **social equity** by providing multi transport services (including bicycles, walking, buses, and rural buses)?

36% residents own bicycles

60% of the population lives in rural areas
"E-bike" in China

- Rapid development of E-bike — why not allowed to use?
Chinese citizens prefer to choose walk, bicycle, and public transport as commuter comparing with the developed country cities. However, there are challenges to keep such trends in the procedure of economic development and private car increase.
Challenges 7:
How to provide safer urban road and transport systems to promote the increasing of the city’s competence?
In 2006, **378,381** traffic accidents, nearly **89,455** deaths, **431,139** injuries, and direct economic loss **14.9 billion** RMB.
# Development stage in China

<table>
<thead>
<tr>
<th>Field</th>
<th>Pattern change feature</th>
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<tbody>
<tr>
<td>Development idea</td>
<td>Speed - quality</td>
</tr>
<tr>
<td>Driving mechanism</td>
<td>Single Industry-Integrated economic transformation</td>
</tr>
<tr>
<td>Urban management</td>
<td>Government plan --- Market orientation</td>
</tr>
<tr>
<td>Urban-rural relationship</td>
<td>Urban --- integrated Urban and rural development</td>
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<tr>
<td>Policy implementation</td>
<td>Government – Government and public participant</td>
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</table>
Government activities

- The scientific concept of development
- Harmonious society
- Resource efficient and environmental friendly society
- Institutional reform
- Public transport priority
Vision

——Sustainable Urban Transport in China

An efficient, economical, harmonious, safe, and environmental friendly transport system suitable for the urban sustainable development

1. To meet the needs of the national social and economy
2. To reflect the stage character of urban transport development and different value and culture orientations of Chinese people
3. The harmony between the resource-environment and economic-society development
The new “Ministry of Transport” have been established by the state council on March, 2008. The responsibility of urban transport transferred to the new Ministry of Transport from former Ministry of Construction, which launched the first step to promote the comprehensive transport development in China.

- Modified the city transport authority according to the new MOT structure
- The coordination mechanism should be established for the separated management mode.
2. Prioritize Public Transport in Urban and Suburb Area

- Establish the Public Transport Planning integrated Urban and Suburb Area
- Improve the infrastructure construction of public transport, especially in BRT & Metro
- Establish the economic favorable policy cover urban and rural transport service
- Implement the access management between the urban street and highway, and refine the design guideline for the connect segment
- Accelerate the application of new technologies and intelligent technologies in Public Transport
State council mandates priority for public transport in Dec. 2005
3. Coordinate Transport and Land Use (TOD)

- Urban master plan and comprehensive transport plan should be integrated and coordinated.
- Integrated transport planning should be formulated based on the integration between urban and suburb areas, and between urban transport and inter-city transport.
- Integrated transport hubs with interoperability between different transport modes should be developed to ensure Transit Oriented Development (the TOD model).
4. Implement TDM, balancing demand and supply

- Guide the rational use of cars through integrated TDM measures, such as congestion charging and high parking fees in the city center.
- Adopt the integrated TDM measures according to traffic demands
- Regulate the spatial distribution of traffic demands through advanced traffic information service and price difference of tickets
- Establish some policy to promote the implementation of personal trips planning
Case: Limited the usage of private car in Beijing —— “Odd or Even number”

Before

After

<table>
<thead>
<tr>
<th>The whole network</th>
<th>Rush hour (Morning)</th>
<th>Rush hour (Afternoon)</th>
</tr>
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<tbody>
<tr>
<td>30.5</td>
<td>32.1</td>
<td>26.9</td>
</tr>
<tr>
<td>16.8</td>
<td>35.06</td>
<td>22.37</td>
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Speed (km/h) 
Increase rate (%)
5. Resource Conservation and Environmental Friendly Transport

- Improve environmental protection systems and strengthen governmental monitoring and supervision capability
- Slow growth in transport energy use, especially oil consumption
- Conserve land resources
- Control air pollution to improve urban air quality and health
**International Workshop on Integrated Transport for Sustainable Urban Development**

**Date and Venue:**
- December 8-10, 2008
- Beijing Continental Grand Hotel, Beijing Municipality, P. R. China

**Main Themes:**
- Institutional Innovation reform
- Finance schemes
- Integration of land use and transport
- Transport demand management
- Advanced technology applications,
- Links between urban transport, health and environment.

Welcome to attend this workshop!
Thanks for your attention