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Agenda Item: V1-1

Green Transportation in China: New Policy and Practice

Submitted by: Tsinghua University



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Green Transportation in China: New Policy and Practice

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Main Content

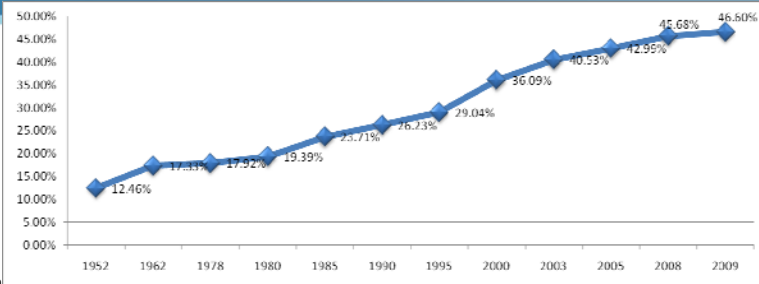
- Development in urbanization and transportation
- New change and challenge
- New targets and strategy
- Policy and action for Green Transportation
- Conclusion



China Urbanization and Transportation Development



Continuous and Rapid urbanization development

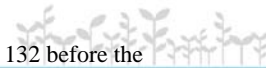


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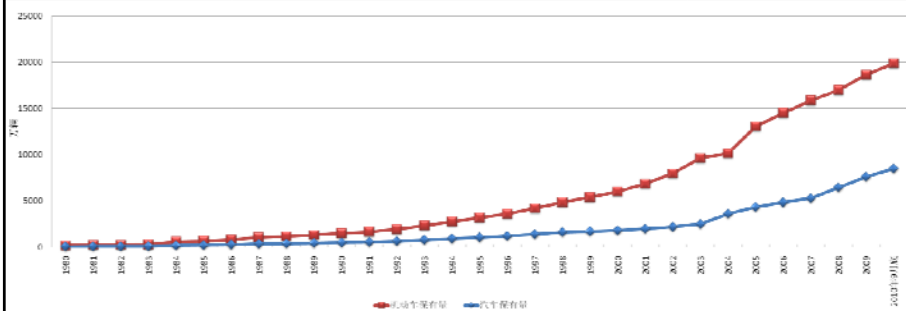
1978, by 29 percents during the past 21 years; starting from “the twelfth five years”, China will solve “half-urbanization” problems in the next two decades, in order to raise urbanization to 65% in 2030.

➤In 2008, the average urbanization in the world is 49.9%, 77.7% for high-income economies, 48.1% for middle-income economies, and 28.7% for low income economies.

➤The number of cities in China has increased to 655 in 2009 from 132 before the

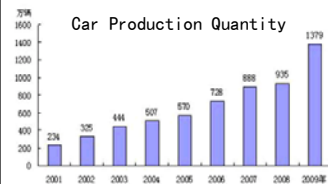


Rapid motorization development



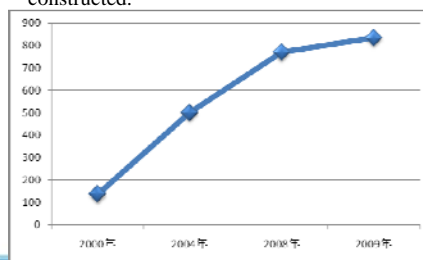
After Evolution (1980~2010) number of motor vehicle, trends in number of car

- At the end of 2010, the number of motor vehicle is 207million, including 91million cars, and 100million motorcycles.
- The number of motor vehicle increases to 207million in 2010 from 2million in 1980, by 100-fold, and the average annual growth rate is next to 20%
- However, the traffic mileage increases 9 times form 1980 to 2009



China road infrastructure development

- By 2009, China has 10 cities with rail transit, and the total length is 835km
- Rail transit infrastructure: The State Council has approved and will approve development of rail transit in 23cities. The investment in rail transit will exceed one trillion RMB, and 79 rail transit line be constructed.



Year	Number	City	Total Length (km)
2000	3	Beijing, Shanghai, Guangzhou	137
2004	10	Beijing, Shanghai, Guangzhou, Tianjin, Shenzhen, Nanjing, Wuhan, Chongqing, Changchun, Dalian	500
2008	10	Beijing, Shanghai, Guangzhou, Tianjin, Shenzhen, Nanjing, Wuhan, Chongqing, Changchun, Dalian	771
2009	10	Beijing, Shanghai, Guangzhou, Tianjin, Shenzhen, Nanjing, Wuhan, Chongqing, Changchun, Dalian	835

China road infrastructure development

- Road infrastructure: during the 11 years (1995-2006), the total length of paved roads increases to 241,351 km from 130,308 km, the total area of paved road to 4,114.47 million square meters from 1,181.81 million square meters, and the number of constructed bridges to 54,643 from 321,23. The growth rates are 85.2%, 248% and 70.1%
- Traffic management facilities By 2006, the total length of marking lines added is 185,000 km, and the number of traffic signs added is 160,000; for more than 400 cities, the rate of marking lines added climbs to 95% from less than 70%, number of traffic signs to 23 for each kilometer from 9, and the rate of intersection channelization in center urban area to 95.5% from 43%.
- More advanced traffic management tools: by 2006, in 568 cities of China, traffic control centers build up, which offer functions of alarm responds, information selection, traffic control and so on. "green wave" signal control is realized in 394 cities, and the number of intersections under signal control is 32,695 and the total number of television monitors reaches 10,081.



New Change and Challenge



New change and challenge (1)

New Constraints for urbanization

(1) Energy

Since 1993 China became a net importer of oil, the share of global demand for oil keeps growing. In 2003, the share is more than 40%, while more than 60% demand is dependent on foreign oil. Among all industries, transportation has the fastest growth in demand for oil, and nearly consumes 40%-50% of the oil each year.

(2) Land

In the extensive urban expansion mode, the growth of urban land scale in China cannot match the growth of population scale. From 1990 to 2004, the total area of urban land climbs to 34,000 square kilometers from 13,000 square kilometers. And for 41 cities of China, the growth rate of urban land scale exceeds 50%.

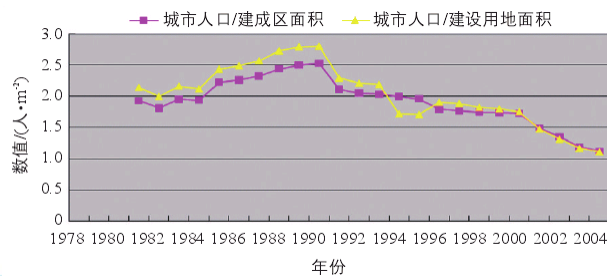
(3) Environment

Vehicle pollution has become the NO.1 in urban air pollution in place of the traditional soot pollution. In large cities as Beijing, the share of motor vehicle for CO, NO_x, HC emissions is 88%, 51% and 49%, and the share for concentration of pollutants is as high as 92%, 64% and 51%.

New change and challenge (2)

New relationship between land use and urbanization: the structural adjustment

- While the urban population scale develops rapidly, however, the urban population density decreases and land use expansion accelerates. After nearly ten years of urban land use expansion, we have to face the problems in the field of transportation, environment, and urban activity organization, which prompting the governments and policy-makers to reconsider the sustainable urban spatial development mode.

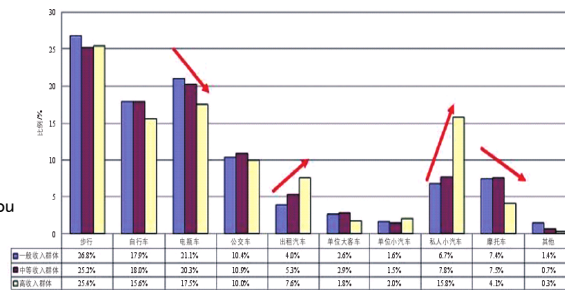


New change and challenge (3)

Travel demand in different level

The urbanization in China is the largest population migration in the world. The urbanization increases by one percent per year and we forecast that in 2015, the urban population will exceed the rural population for the first time, and the urban population scale will keep growing. Under this forecast, the income gap between different classes will also keep growing and their requirement for transit service are also different. So urban travel demand will present multi-level and multi-type features.

Income distribution in Suzhou



New change and challenge (4)

Traffic congestion: the “normal” situation

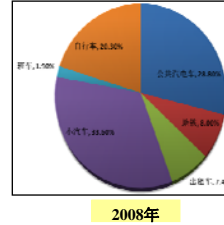
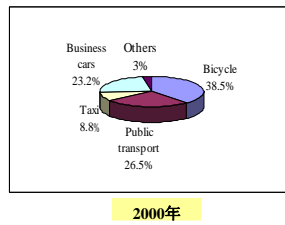
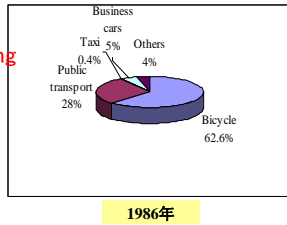
Since the 1980s, in urban area of China, the average speed of motor vehicle during peak hours has fallen to 20km/h and even 8-10km/h for some large cities, from 40km/h. In peak hours, for some big cities, the traffic stays in the situation of saturation, or “half-paralyzed”. With the popularity of motorization, traffic congestion is spreading from big cities to large cities and even medium-sized cities. And traffic congestion is a “normal” situation for the current China.



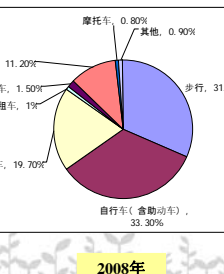
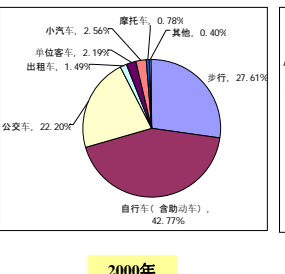
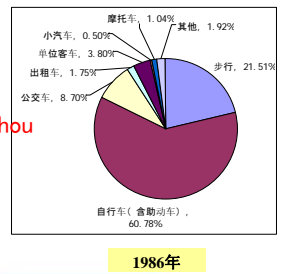
New change and challenge (5)

Structural change in travel modes

Beijing



Hangzhou



New change and challenge (5)

Structural change in travel modes

At the end of 2008, the share of public transit is around 25% for big cities in China, and only 10%-15% for the average city

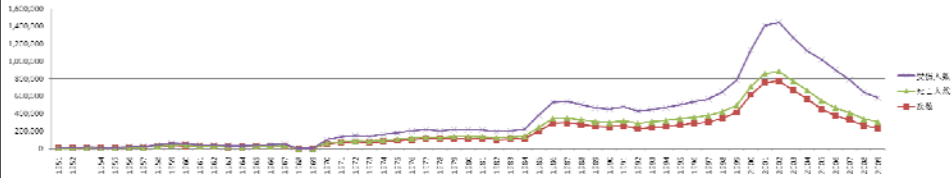
Share of public transit in different cities

	Beijing	Shenyang	Wuhan	Shijiazhuang	Chengdu	Foshan
Year	2008	2008	2008	2008	2008	2009
Share	28.8%	20%	23.4%	13.7%	20.7%	8%



New change and challenge (6)

Road traffic safety: still serious



Number of accident, death, and injured(1951~2010)

- In 2010, the total number of road traffic accidents recorded is 390,164, with an increase of 35.9%, among which 219,512 accidents involves casualty, 652,25 killed (less than 2009), and 254,075 injured (less than 2009), with direct property loss of 930million RMB (more than 2009).

- In 2010, the mortality rate per ten thousand cars is 3.26



New Target and Strategy



New Target and Strategy

Eco-city is the goal of urban development of China .

- An eco-city should be harmonious, efficient, sustainable, integrate and also regional.
- It should have a reasonable construction layout, improved urban infrastructure;
- It should choose to use clean energy;
- It should be able to control pollution to keep the environment in a good status;
- It should have a higher proportion of urban green coverage;
- Its residents should have a strong environmental awareness.



New Policy and Action



New Policy and Action

(1) Establish the Goal

➤ August 2010: State Development and Reform Commission launched the project “National Low-carbon Experimental City”

➤ 2010-2011: Ministry of Transportation issued "*on the construction of low-carbon transport system*", "*low carbon transport system guidance*," "*building a low carbon transport system*," at the same time being raise the overall framework, make clear of the objectives, tasks and measures of China's construction of low-carbon transport system.

➤ 2010: The Twelfth Five-Year Plan propose to “establish a green, low carbon development concept, to focus on energy conservation, improve the incentive and restraint mechanisms, accelerate the construction of resource-saving and environment-friendly production and consumption patterns, and enhance capacity for sustainable development, improve the ecological level of civilization”.

➤ February 2010: China puts forward the “Eco-city”, “Low-carbon city” and other eco-development mode as urban development goals in more than 259 cities, which makes up 90.2% of all cities in China.



New Policy and Action

(2) Public Transit Priority

Time	1980s	1990s	2004-
processes	Public Welfare	Commodities	Public Policy
	Government	Companies	
	Companies lack motivation; Service quality low; Burden for government	Public welfare ignored; Vicious competition	



Hu Jintao at Beijing Metro Line4



New Policy and Action

(3) Policy of Coordination between land use and transportation system

The policy of coordination of land use and transportation system focused on urban planning adjustment and regional planning policy adjustment.

➤ The regulation "Urban and Rural Planning Law" and others: transportation planning should be an important point for urban planning (road system, transportation hubs, rail transit system included)

➤ *State Council: on Strengthening the Management of Urban Rail Transit*

Construction Notice : Along the public rail transit lines, a special land use control planning should be prepared.

➤ 3 For Pearl River Delta, Yangtze River Delta, Beijing, Tianjin, the Northern Bay, the policy of coordination is emphasized.



New Policy and Action

(4) Transportation management system reform

➤ 2008: Urban and Rural Housing Department established

➤ 2008: Ministry of Transportation established



New Policy and Action

(5) Slow-travel system

➤ In 2007, Housing Department and Urban and Rural Construction Department launched the activities: “Public Transit Week” and “No Car Day” to strengthen the priority of public transit and promote the concept of green transportation.

➤ In 2010, Ministry of Construction started the project: *Demonstration of Walking and Bicycle Transportation System*

➤ Some cities like Hangzhou, Shanghai, Suzhou, and Tinjin, have the slow traffic system planning

➤ Since 2000, Ministry of Public Security, Ministry of Construction: “Smooth Project”

➤ Since 2003, Ministry of Public Security: “Green Transportation Model City”



New Policy and Action

(6) Motor vehicle emission management

- In 1999, The State launched the project “Clean Air –Clean Car”, and established the Coordination Office responsible for promoting clean cars.
- In 2000, The law “Air Pollution Control ” is revised: the use of clean fuels and energy conservation, as two key methods to control air pollution, are encouraged.
- In 2004, all light vehicles emission control level: the second phase level in Europe
- Focusing on motor vehicle emissions control, the major cities meet the national air environmental quality standards.
- In 2008, The Ministry of Technology: Project “Ten city, Thousand Clean Cars”



New Policy and Action

(7) Research and Practice

- Beijing: “Low-Carbon Urban Planning and Development Framework” “Beijing Low-Carbon Urban Planning Standards”
- Changsha “Green Road Changsha Design Guidelines”
- Committee of Science Council “China Development Report : Low-Carbon Eco-City”
- Institute of Transportation, Tsinghua University: “Green Transportation Planning and Design Guidelines”
- Ministry of Construction: “China Urban Planning Conference”
- Since 2006 “China Urban Development and Planning Conference ”

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NO Car Day



New Policy and Action

(7) Reasonable guide policy on car travel and encourage P&R

- In 2010, Ministry of Housing, Ministry of Public Security, and States Development and Reform Commission release management guidance on parking facilities planning and construction.
- In 2010, Beijing government introduces 28 regulations or guidance in order to ease the traffic congestion. (commonly known as “Beijing 28 clauses”)
- In 2011, Beijing implements the policy of “draw number” to limit the number of motor vehicle licenses.
- In 2011, Beijing implements the new parking fee policy. (15RMB per hour in the center urban area)
- Beijing constructs 26 large hubs and correspondent setting to encourage Park and Ride.
- The “Five day ride(each motor vehicle available for five days for one week)” policy limits the ride days of motor vehicle in Beijing.
- Taiyuan, Guangzhou and other cities introduces measures. (similar to Beijing 28 clauses)



Conclusion

1. During renovating old cities or building new cities, seize the opportunity to lower the traffic load for cities.
2. Construct green transportation systems, public transit as the main travel mode.
3. Promote public transit priority policy and accelerate the legalization processes.
4. Construct reasonable road network and improve traffic facilities to ensure the smooth and safe flow of urban traffic.
5. High-tech management tools can improve management efficiency and safety level.
6. Regulation of travelers behavior is important to solve urban transportation problems and also long-term task.
7. How to properly solve the parking problem is an urgent task currently.
8. How to solve transportation problems for a city is also a question in the field of system engineering.



Thanks

谢谢！

