

Urban Transport in Chinese Cities: Challenges and prospectives

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Sept. 27, 2007

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1. Opportunity and Challenges

✦ **Rapid economic development**

✦ **Turnover volume of passenger and freight transportation**

GDP Increase	
1978-2000	8-9%
2000-2020	7%

Increase in 2020 (compared with 2000):

Passenger Transport: 3 times;

Freight Transportation: twice

✦ **Rapid urbanization and motorization**

Urbanization

1978:17.9%

2004:41.8%

2020: 57.0%



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



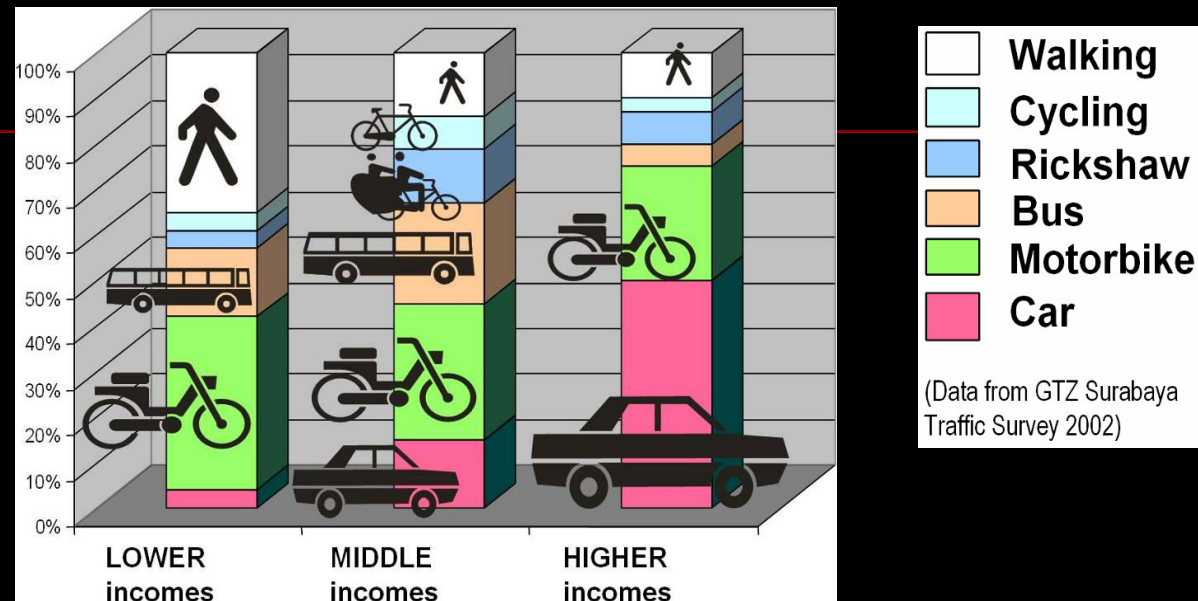
Motorization:

Annual increase rate and
total in 2020:

Civil vehicle: 13%, 130mil.

Private vehicle: 23%, 80 mil.

Example:
Indonesia



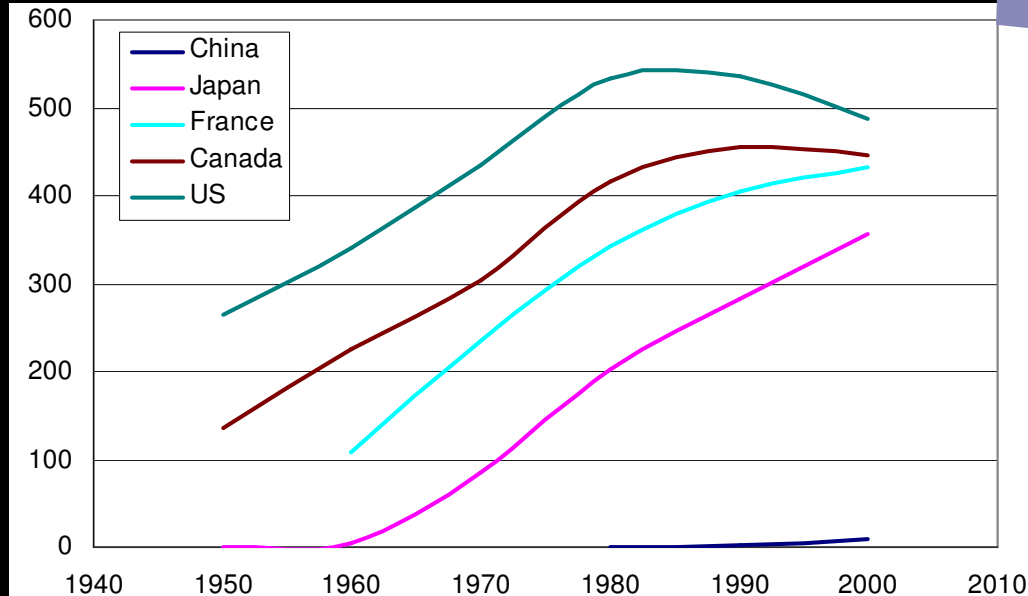
Travel pattern will be changes will be change with the increase of family incomes ?

It is urgent to have right policy and implementation plan to fight against congestion

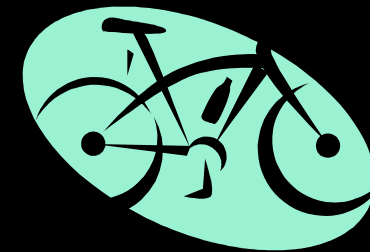
❖ Rapid Car Ownership

Beijing	Chengdu	Ningbo
3 mil.	1.7mil.	1 mil.
1200	600	200

❖ Motorization



99.55 % residents without private cars (2004)



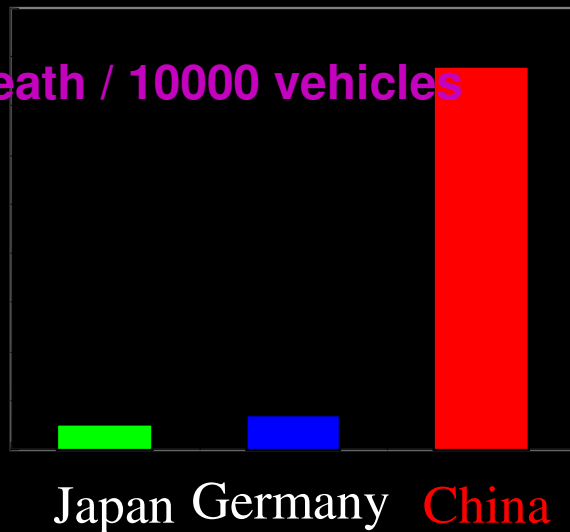
36 % residents own bicycles (2002)

Beijing: Travel time of 40% commuters per day > 1 hour

Shanghai: GDP reduction caused by traffic congestion: 10%

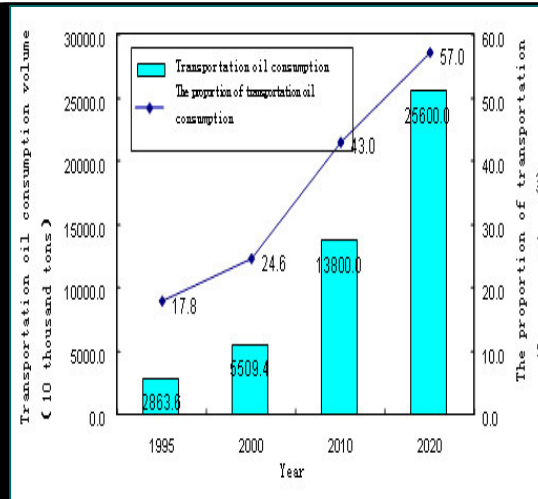
✦ Logistics

Death / 10000 vehicles

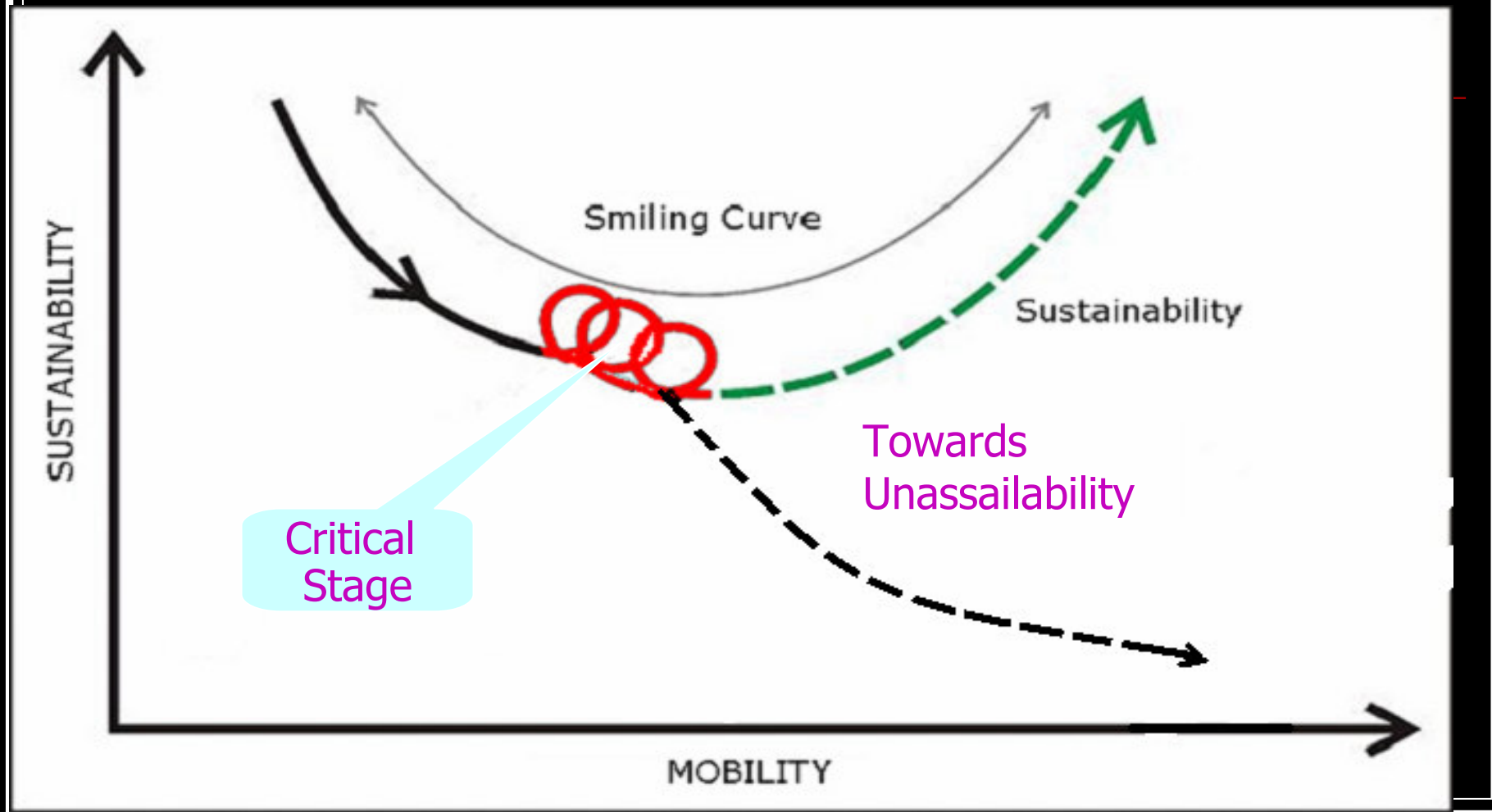


Proportion of the total cost of logistics to GDP

China	21.4%
USA	9.5%
Japan	8.7%

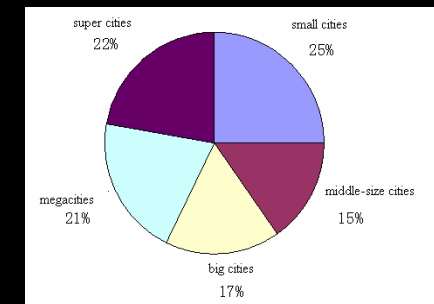


❖ High Time to Develop Sustainable Transportation in China



36 Chinese central cities

- Area: 5.3%,
 - Population: 17.6%□
 - GPD: 43.3%
 - GDP per capita: 2.5 times higher
-
- Freight : 30%
 - Passenger: 26%□
 - Highway hubs : 36/45
 - Buses and Taxi : 60□ 40□



2. Key issues

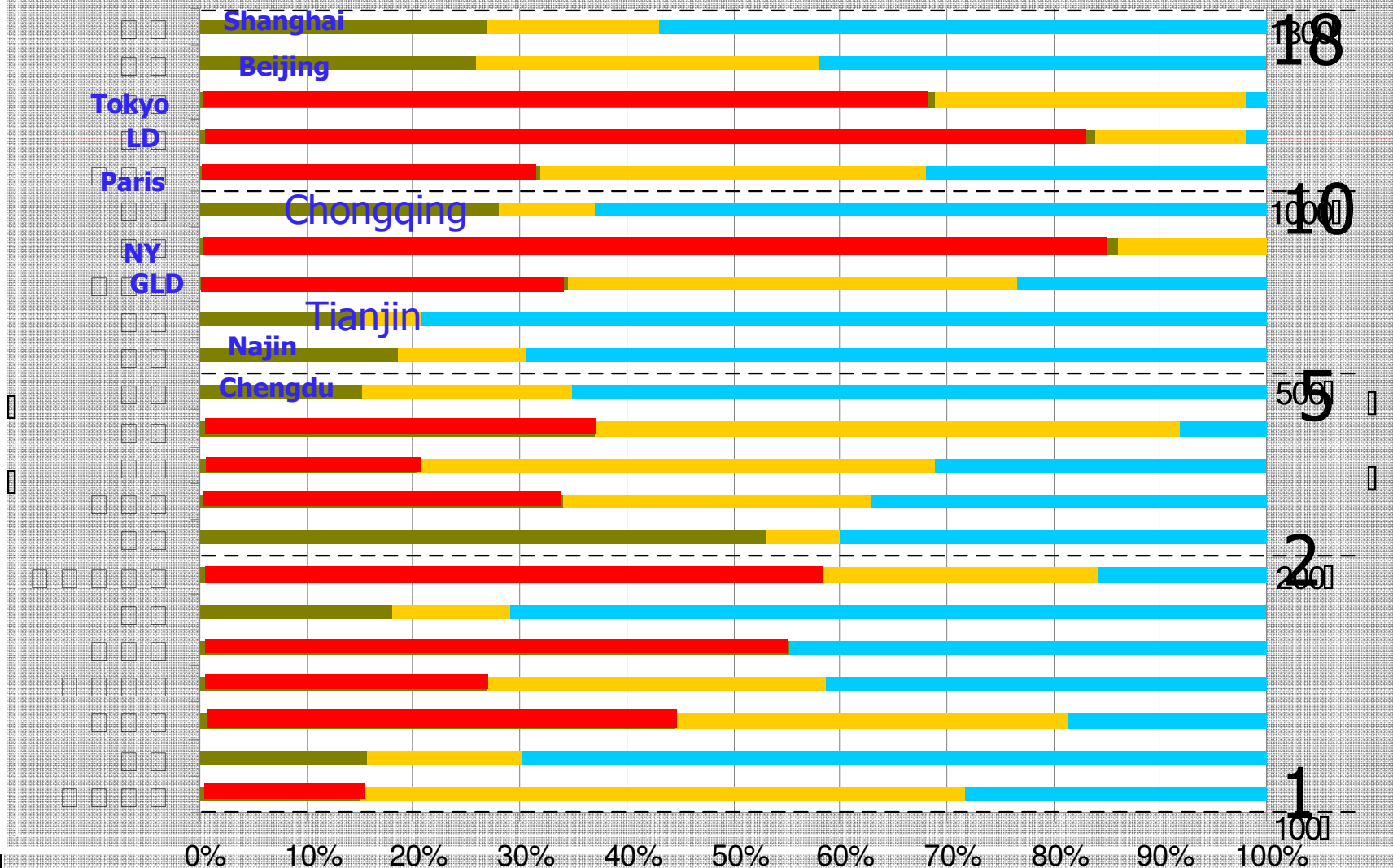


2. Key Issues

Transport Research Centre (CUSTReC)

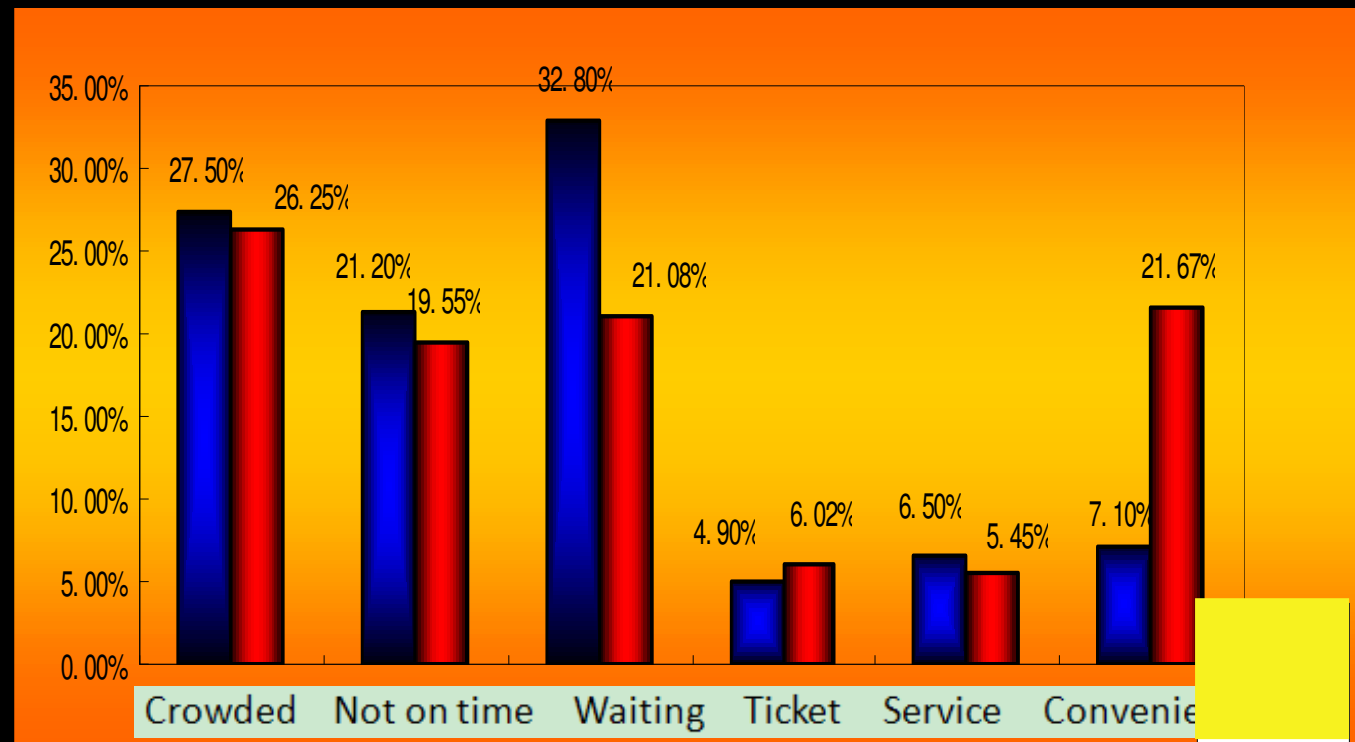


2.1 Public Transport Share is Low



<http://www.urbanstrans.cn>

Service Quality of PT Need to be Improved



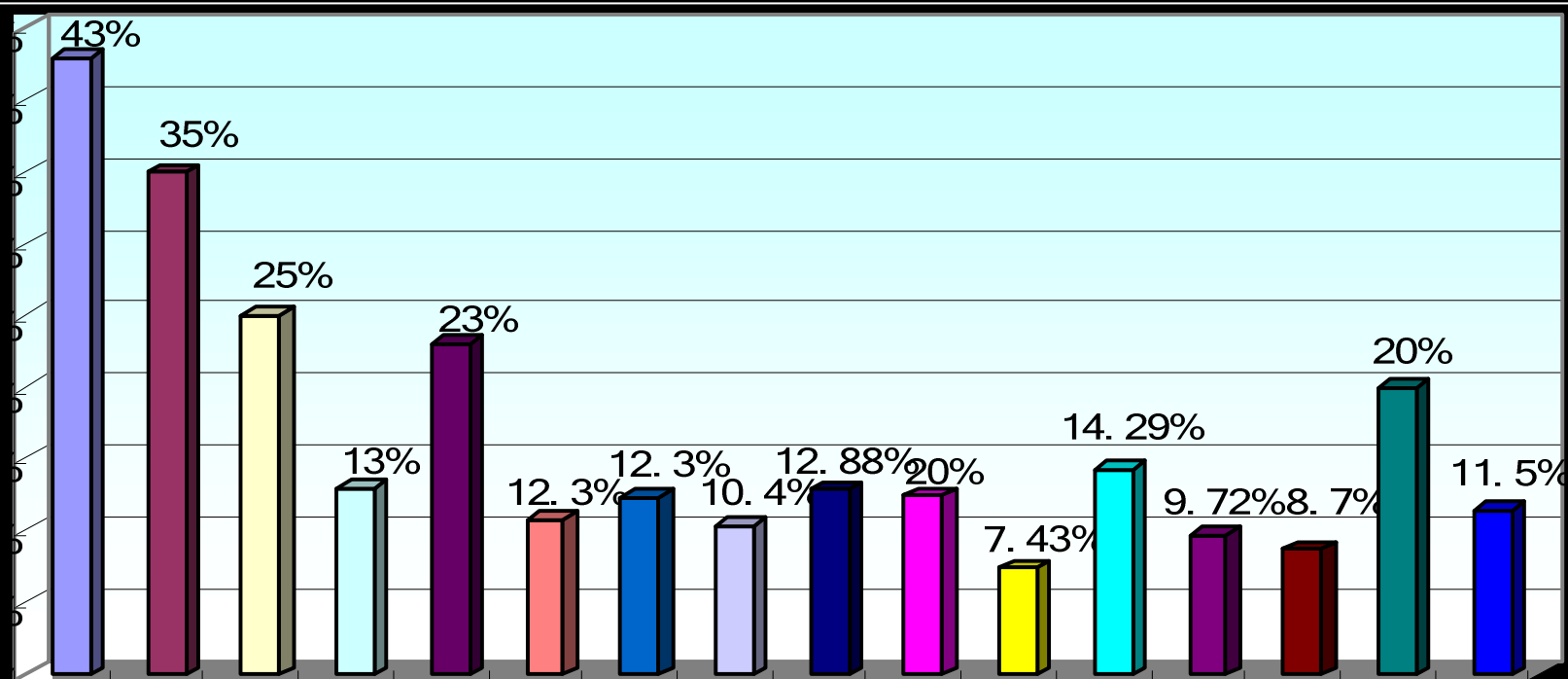
2. Main Issues

2.2 Insufficient Infrastructure

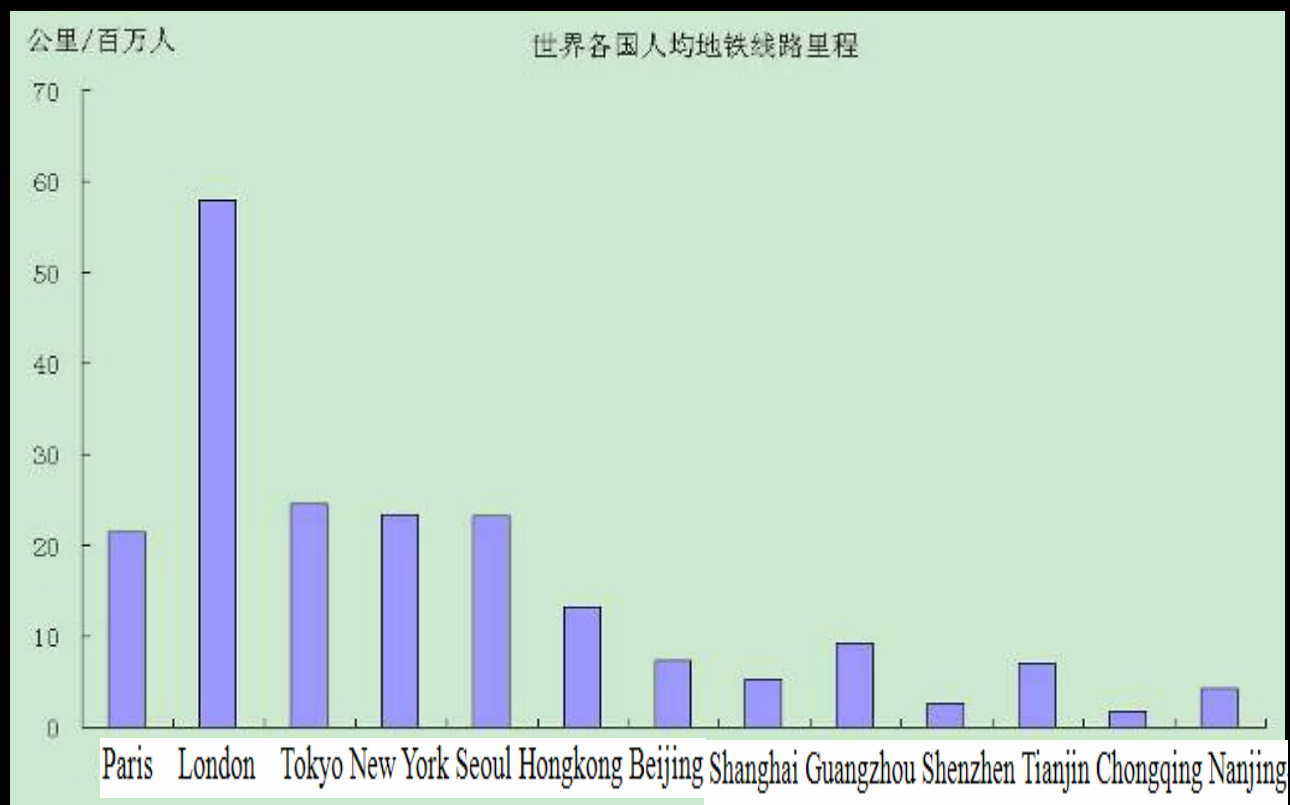
Road ratio of urban areas -- High
>30%

Medium
20-30%

Low
<20%



Tube/Tram/city Rail



■ Urban Bus Rapid Transit Network not Yet Established



■ BRT in Beijing, 2006

- There is not network completed



<http://www.urbansustrans.cn>

2.3 Insufficient Investment

No steady budget for urban transport national wide

Financing Source	1. Fuel (taxes per litre)		2. Vehicles (annual vehicle fees)	3.Land Development (pre-paid charge per m²)
For what purpose ?	National + Provincial + Rural ROADS	Rapid Mass Transport *** (optional)	Maintenance of the Urban Road Network (incl. Residential Roads)	New Construction of Local Residential and Commercial Urban Roads
			Bus Lanes for BRT	+ Bus Stop Installations
Why ?	Taxation of the moving traffic based on motor fuel consumption		Taxation of the standing traffic («Parking Tax»: based on motor capacity, horsepower, total weight or on vehicle value)	Supply Charge for Urban Infrastructure (not for illegal settlements outside the city border)
Who collects ?	Central Government (Road Fund)		Ctr. Gov. / City Council (Vehicle Registration Office)	City Council (Trust Fund)
How much ?	10 US Cents per litre petrol and diesel for the National Road Fund, with 10% for the cities	appr. 3 - 8 US Cents per litre**	appr. 75 – 200 \$ US per year on cars taxis and trucks (minimum for vehicles of 1400 ccm)	appr. 2 - 10 US \$ per m² by selling plots of land *
Who pays ?	Vehicle User		Vehicle Owner	Land Owner

* Basic rule: the price of land (including its development charges) may be in the range of 10% of the total for city houses.

** Transfers as in Germany for which city contribution often is 10% only.

*** In Colombia the fuel surcharge for Bogota's new bus system was appr. 5 - 8 US cents / litre during 1998 to 2000.

Fuel tax impact on nation's finance

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State Budget Approach

Taxation of Fuel

Indonesia



China



India



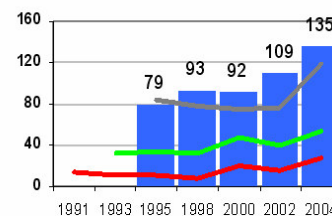
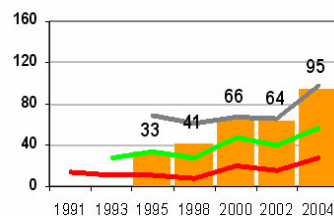
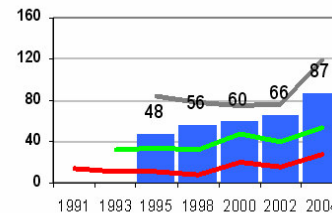
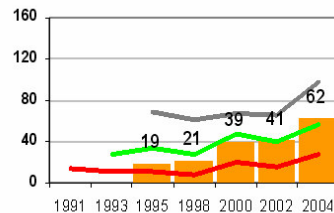
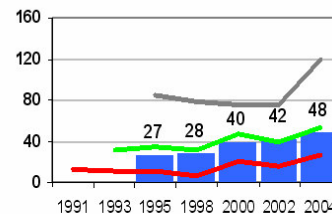
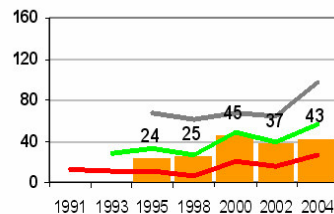
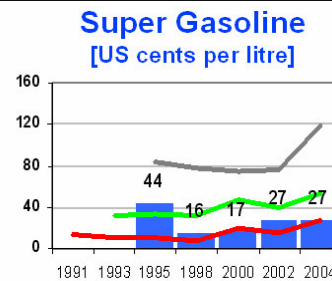
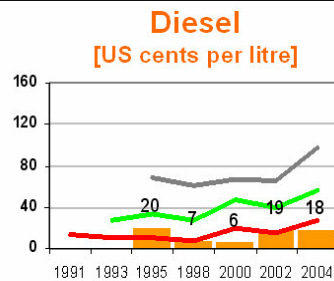
South Korea



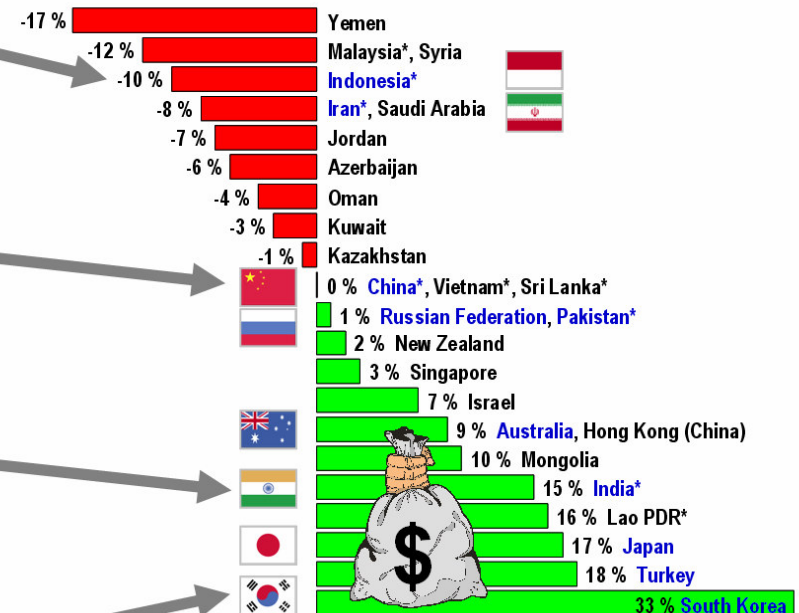
Germany

USA

Oil Price



Fuel Tax Contribution to Total State Revenues in 2004 at Asian Countries



Reading Samples:

Indonesia spends 10 % of its state revenues on subsidising fuel.
India receives 15 % of its state revenues from fuel taxation.

❖ Conclusion:

- increase of fuel tax can support the entire transport system, including increase national finance, reduce fuel consumption, etc.

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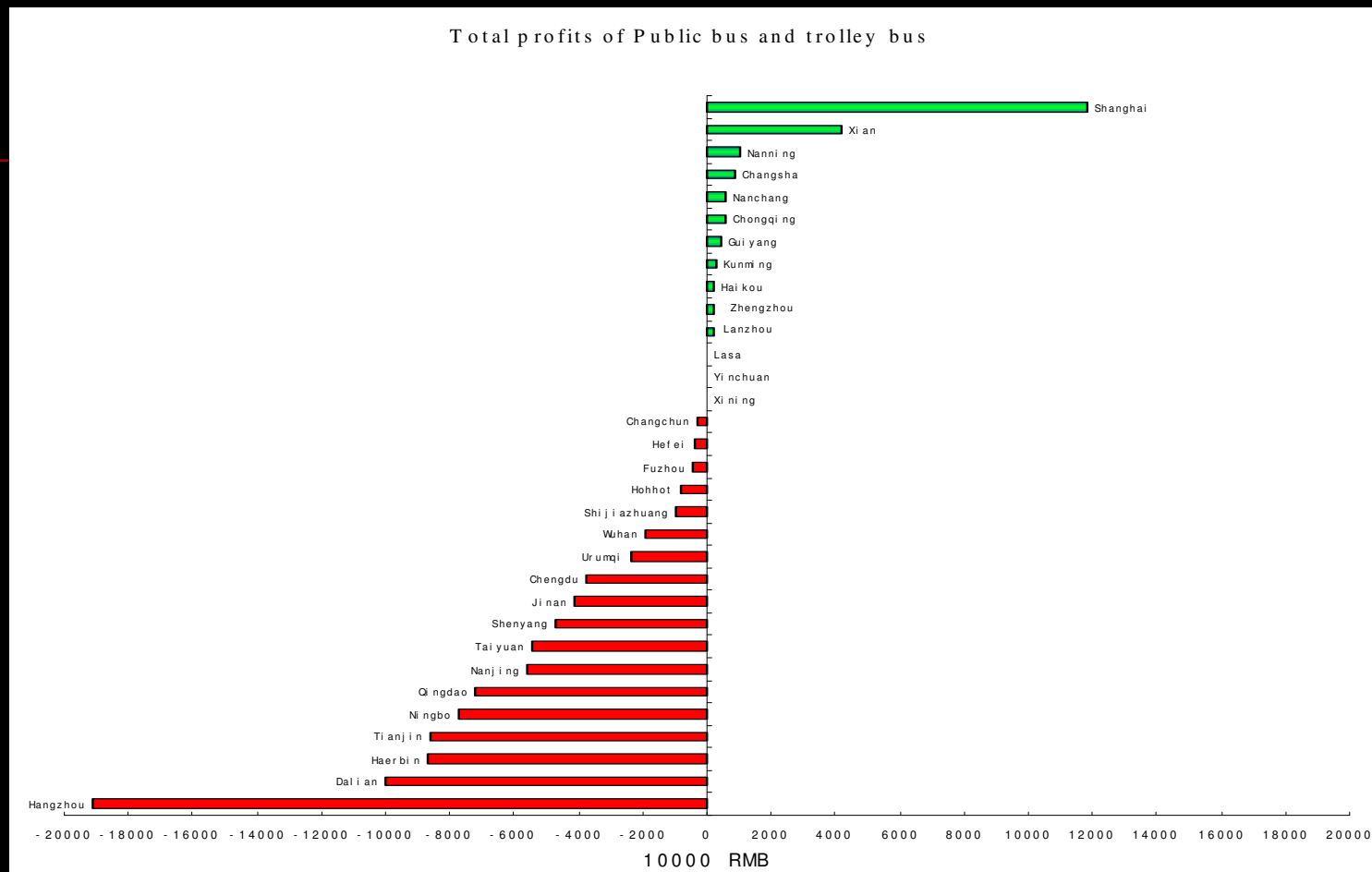
■ There is no fuel tax in China

■ China: oil price has increased 40% since 2005, no longer being one of oil subsidizing nations

■ At present, if adding 16 cents for gasoline and 4 cents for diesel, will that be used by transport development?

Diesel:	63 cents (+4)	69 cents	113 cents
S-gasoline:	69 cents (+16)	63 cents	128 cents

Lack of Incentive for PT

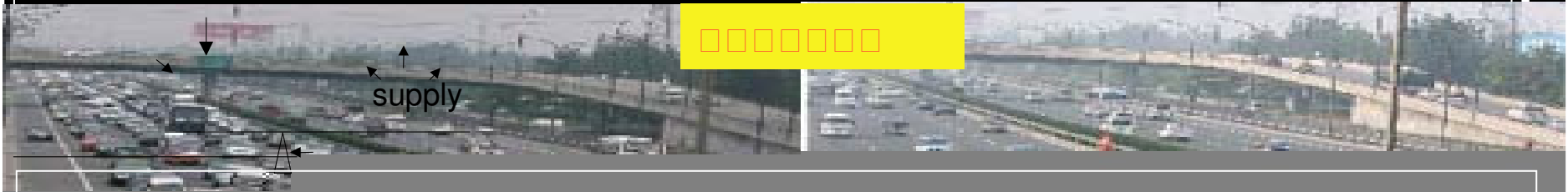


2.4 TDM has been not fully realized and implemented



Beijing: Environment Transport Test for “Good Luck Beijing”

1. **Odd or even number for car usage**
1.31-1.36 million vehicles stopped
2. **Flexible working time for shopping centers**



- ✓ 1.74 million passengers increased per day
- ✓ The speed of traffic has increased 15-20%

- **Air quality improvement**
- Air quality improvement
 - ✓ NO₂ reduction 20%
 - ✓ NO₂ reduction 20%
 - ✓ Air quality standard: second class
 - ✓ Air quality standard: second class

8 O'clock

8 o'clock, August 17,

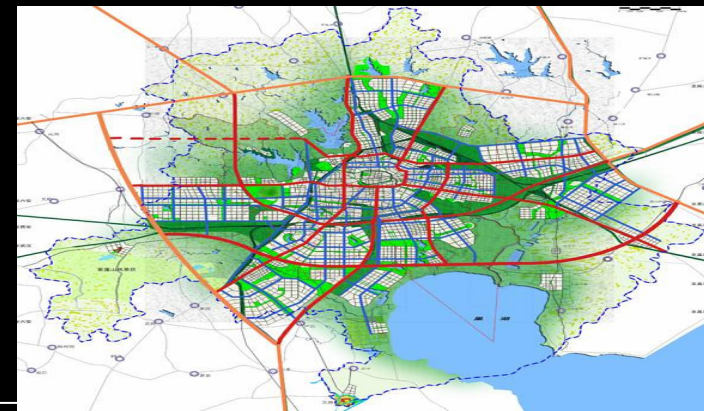
2.5 More others affecting the transport sustainability

- Fragmentation in administrative management
- Lack of Integration land use and transport planning
- Lack of air-quality and high energy efficiency management system

General Urban Planning of Hefei (2000)

Population --

- 1.65 million, reported in 1985
- 2.10 million, reported in 1999



3. Policy Options

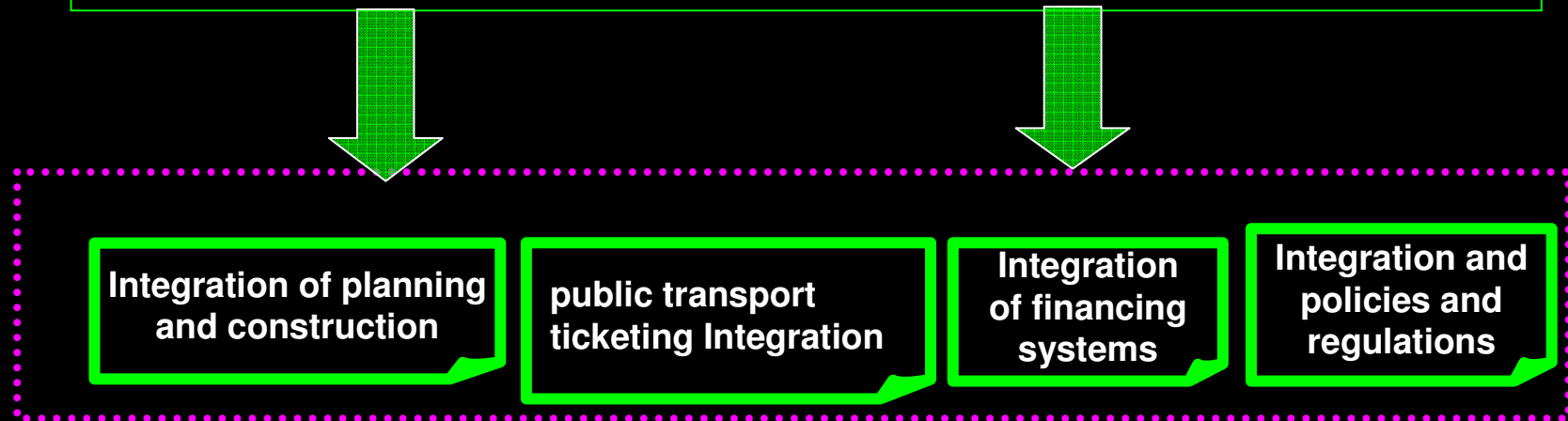
❖ Vision

Establish an efficient, safe, affordable, coordinated and environmental friendly transport system, to meet need for urban sustainable development in the context of door to door service.

3. Policy Options

3.1 Innovative institutional reform to establish comprehensive urban transport administrations

- Establish comprehensive urban transport administrations, and promote integration of urban and rural transport systems



3.2 Innovative institutional reform to establish stable, multi-source, sustainable financing system and rational expend distribution

- ◆ Establish joint fiscal schemes by national, provincial and local government by setting up special fund for rational urban public transport subsidy and infrastructure, such as fuel tax and car purchase tax
- ◆ All stakeholders at different levels should pay contribution to public transport service
 - ◆ Low price scheme is not always help to recover the public transport
 - ◆ Budget for “Soft” such as ITS should be enhanced

3. Policy Options

3.3 Public Transportation Priority

- ◆ New regulations to increase transparency and help authorities and operators improve the quality and efficiency
- ◆ Enhance the capacity building to the smooth running of transport services at regional level.
- ◆ Regulate to encourage private partnership for operating public transport is critical

3. Policy Options

3.4 Integrated transport and land use

- ◆ To coordinating to integrate urban multi- model transport planning with the economic, social development and land use plans simultaneously
- ◆ Appropriate organizational structure need to be established to facilitate the development and implementation such plans
- ◆ To explore the land value capture as tools to develop the transport infrastructure

3. Policy Options

3.5 Implement TDM to manage the pick hour traffic

- Strength parking management, adopt differential parking policies
- Reform the to collect as highway payment scheme of urban ring roads, leading to rational using of private cars by measures like access restriction to the center
- Give the incentive to city government to decrease the sharp increasing number of private car

3. Policy Options

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3.6 Strengthen air quality and energy efficiency management

- Establish mobility development policy for restricting high fuel consumption and high pollution, activate more rigorous emission standards, including freight transport
- Frame urban transport financing mechanism linked with urban air quality management, carry out effective surveillance and management of mobile transport sources
- Encourage using of clean and alternative fuels, subsidize the updates public transport and governmental vehicles

4. Research Brief

arch Centre (CUSTReC)



- China Urban Sustainable Transport Research Center □ CUSTReC □
 - as one of Future Urban Transport research centers funded by VREF, which is approved to establish at CATS in 2005

<http://www.urbansustrans.cn>

5. Project Brief

Research Centre (CUSTReC)



■ Main research areas

- 1) Benchmarking Efficiency of Urban Transport System in China
- 2) Financing of Urban Transport System in China
- 3) TOD
- 4) TDM
- 5) Low Carbon Transport
- 6) Pilot study: integrated modernization of urban transport in **Chengdu**
Private car policy for Olympic game and beyond in **Beijing**

■ Nangjing – Bicycle lane's intruder



Dr. Zhang Yong in Nanjing “Where can I walk?”

USTRAC



Perfect parking?



CUSTReC)



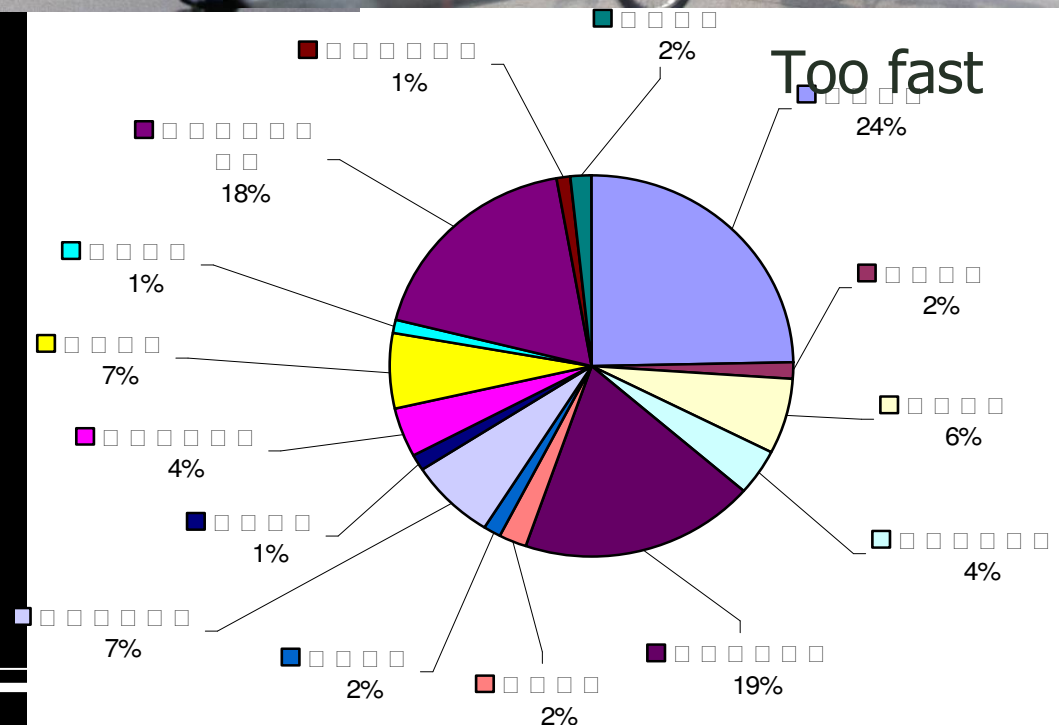
See, how we
park cars...



Weak awareness of safety



**Accident causes
analysis in Hefei
City, 2006**



Too fast

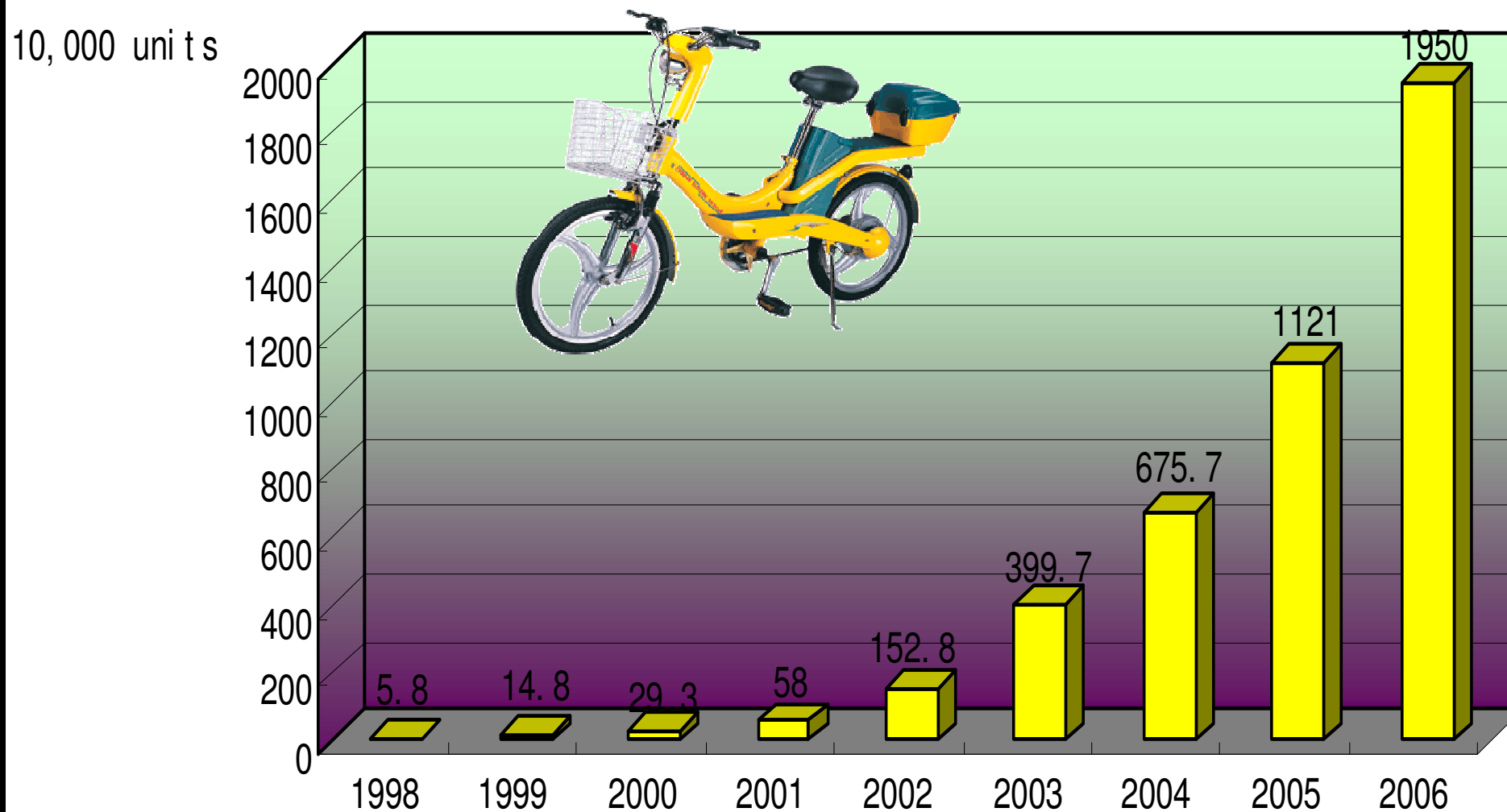
<http://www.urbansustrans.cn>

▪E-bike” in China

China Urban Sustainable Transport Research Centre (CUSTReC)



❖ Rapid development of E-bike —why not allowed to use?



Thank You □

