

# Chinese Transportation Markets and Policy in a High Oil Price Environment

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Higher Oil and Natural Gas Prices

- Impacts on Power Generation, Transportation Choices, and CO<sub>2</sub>  
Emissions

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The Auto Project on Energy and Climate Change (APECC) was founded in May 2004 as an independent group based in Beijing, China



We are in the process of forming a new NGO in China  
-Innovation Center for Energy and Transportation (*iCET*)  
- APECC will become a part of *iCET*

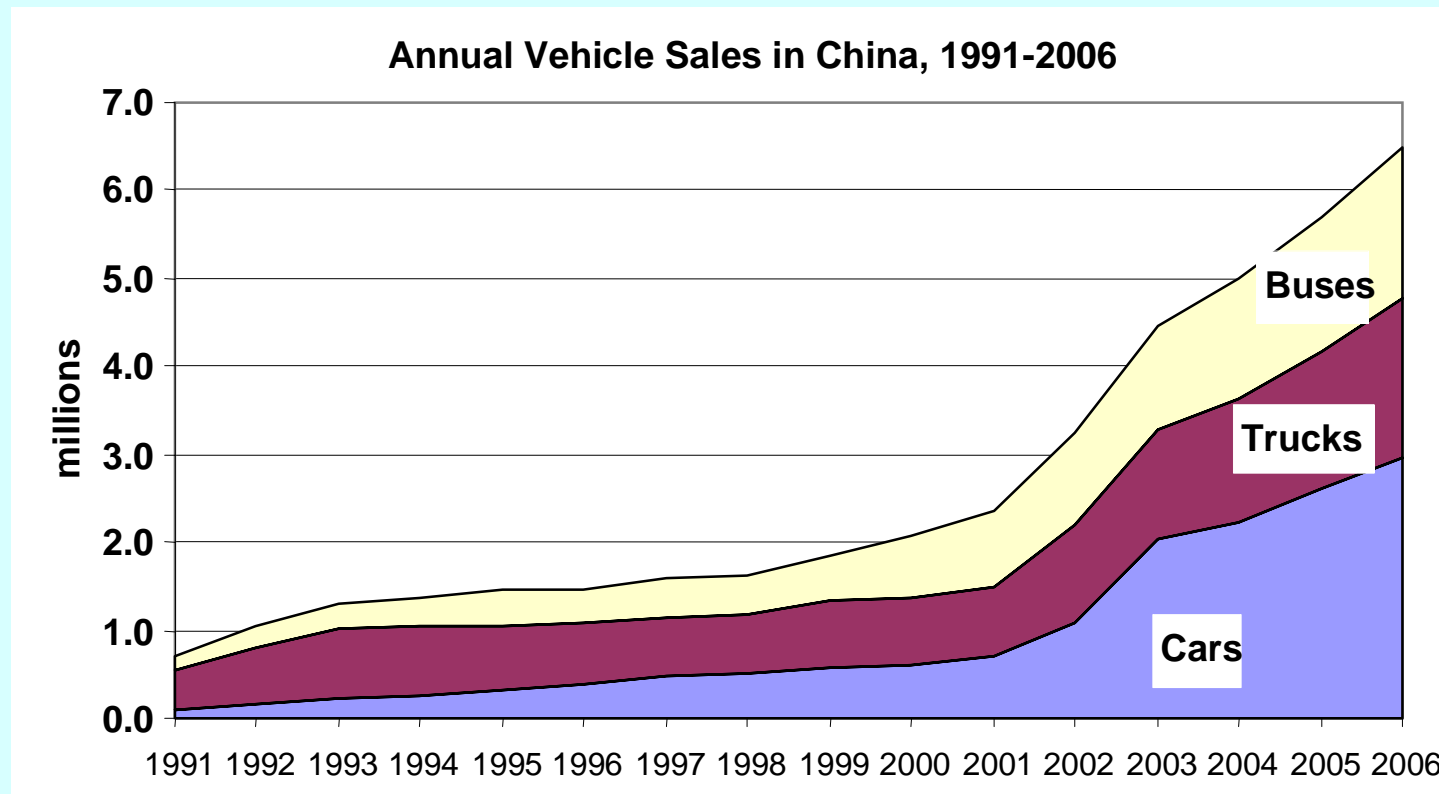


# Outline

- Snapshot on today's Chinese auto and oil market
- Updates on Fuel Economy Programs
- Updates on Passenger Vehicle Tax Reform
- China Environment Friendly Vehicle (EFVs) Programs
- Conclusions

China to become the second largest vehicle market this year, with total new sales projects to be 6.5 millions

Annual growth in new car sales averaged about 21% since 92 (55% and 86% in 02 & 03, 10-15% since), trucks 7%, buses 13%



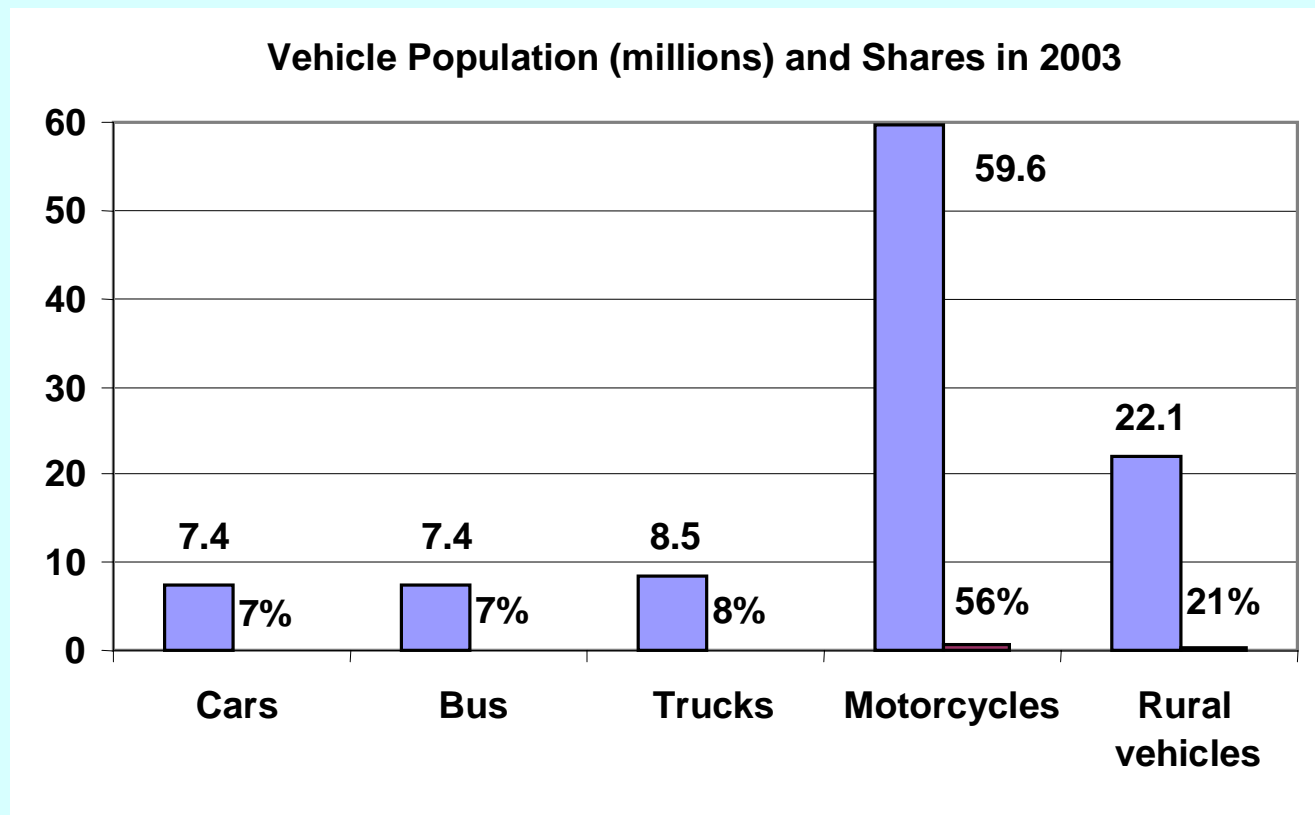
# Chinese vehicle stock in 2003

Total stock-106 millions

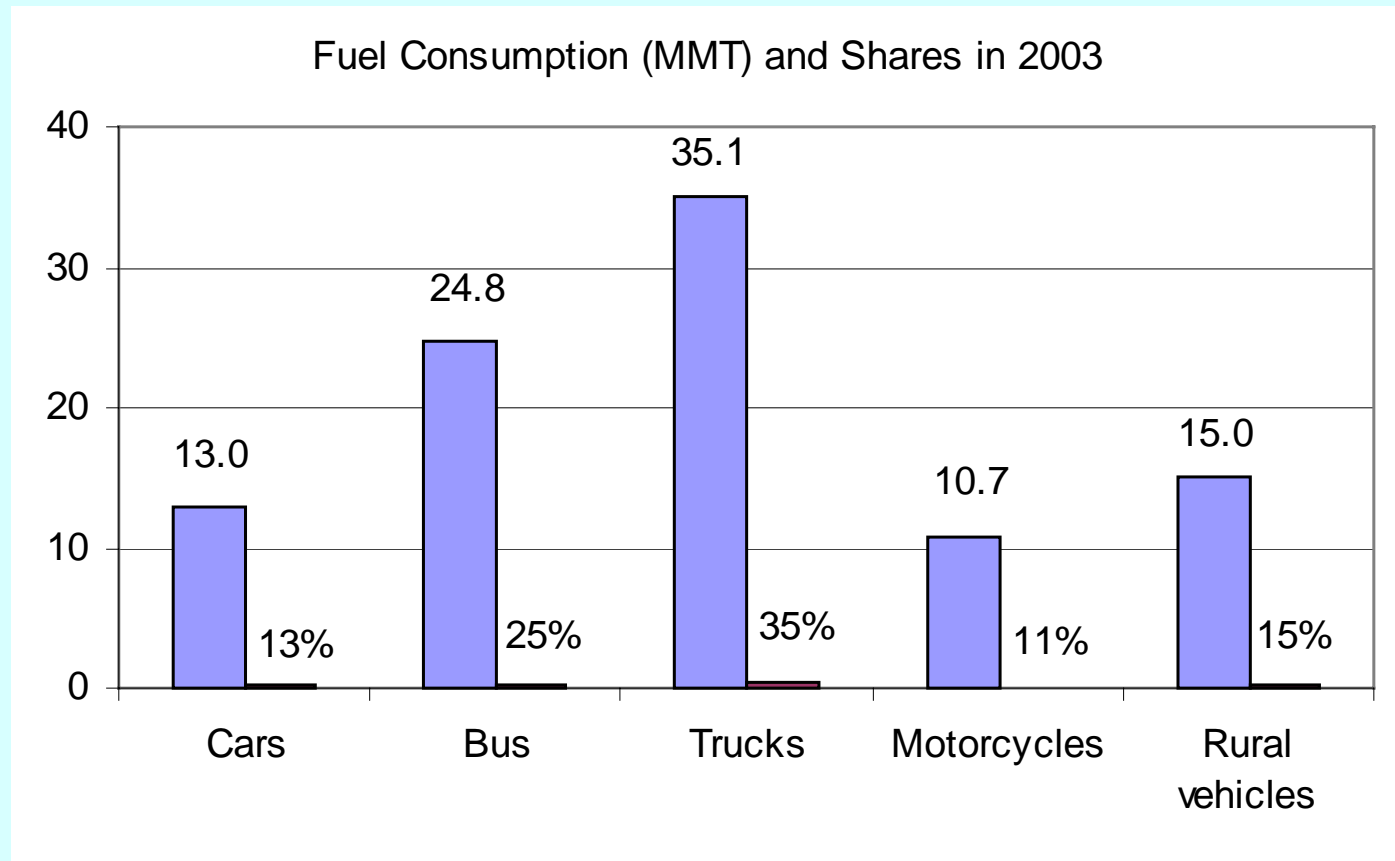
Motorcycles - 60 millions (one in twenty ownership)

Rural vehicles - 22 millions

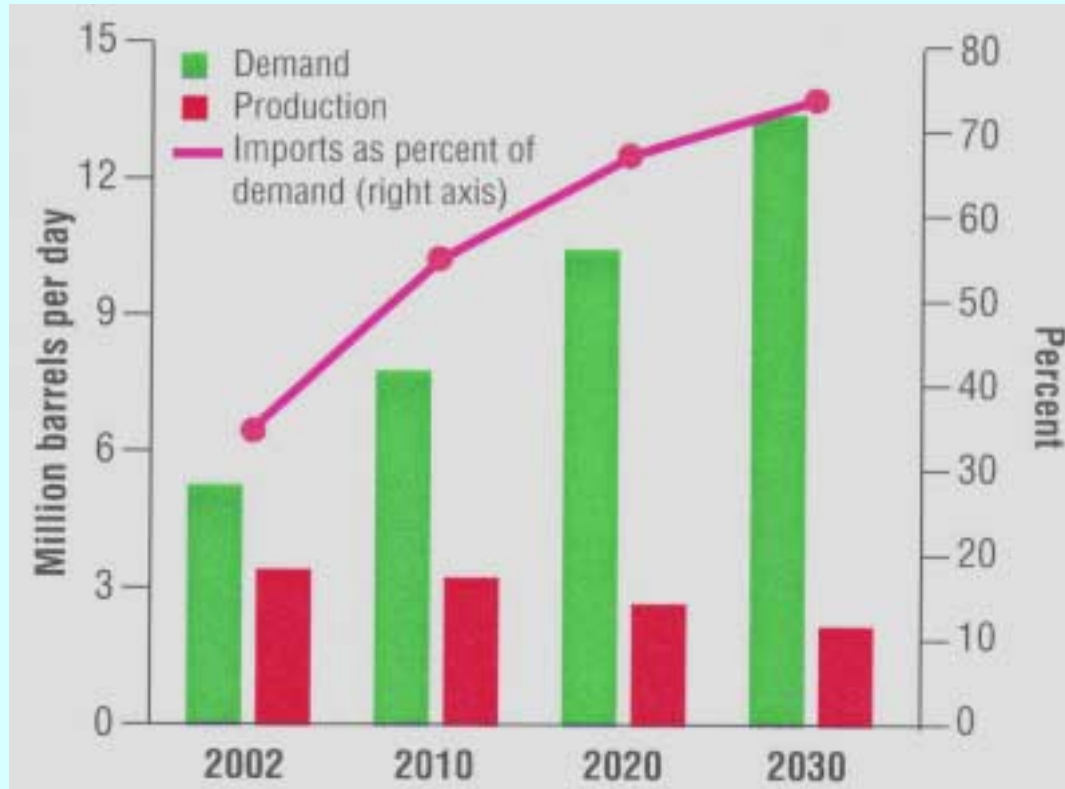
Car stock only 7.4 million (six per thousand ownership)



**Fuel consumption share dominated by trucks (35%) and buses (25%), followed by rural vehicles (15%), cars (13%), and motorcycles (11%)**



# China's petroleum production, consumption, and imports projected by IEA



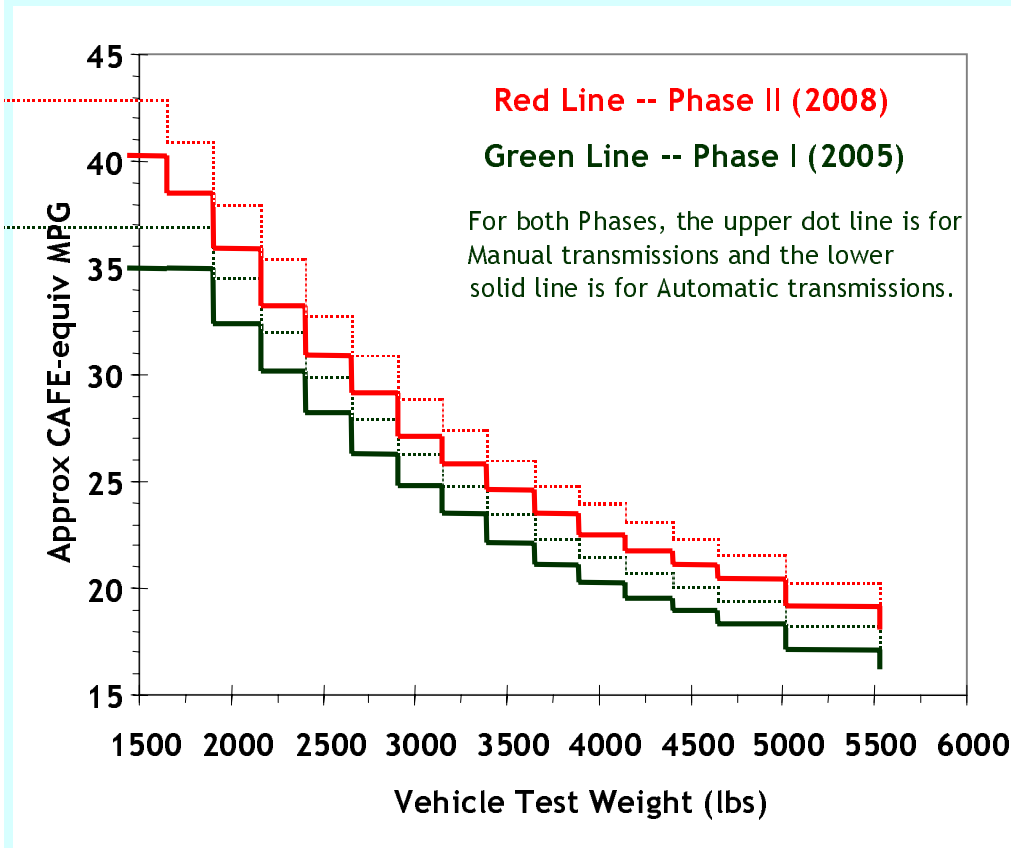
China currently ranked 2nd in oil consumption in the world after US. From 1993 China has turned into an oil net-import country, and in 2004 the net-import oil amount has reached 40% of the total oil use. About half of imports from Mideast.

Source: World Energy Outlook 2004

# Update on China Vehicle Fuel Efficiency Programs

- Adoption and Implementation of Fuel Economy Standards for M-1 Passenger Vehicles
  - Phase I, 2005/2006
  - Phase II, 2008/2009
- Passenger Vehicle Tax Reform
- Lift bans of “mini-cars” in Chinese cities
- Development of Fuel Consumption Standards for N1- and M2- type light-duty Commercial Trucks (under 3.5 tons)
- Heavy-Duty Commercial Vehicle Fuel Economy Study
- China Environment Friendly Vehicle (EFVs) Programs

# Highlights of Chinese Motor Vehicle Fuel Consumption Standards

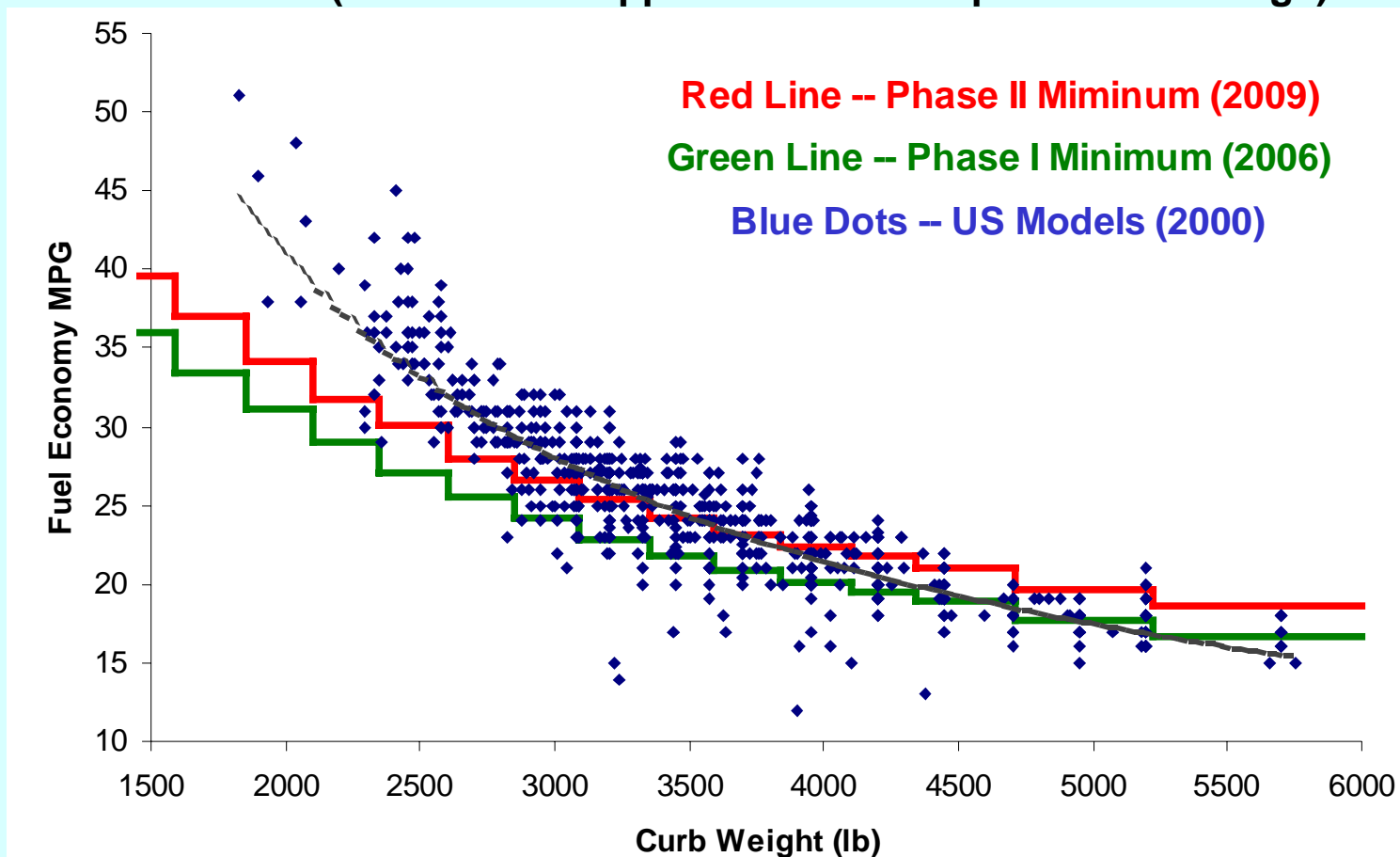


- M1 and M1G type vehicles (EU classification), including passenger cars, SUVs and MPVs less than 9 seats
- Two separate sets of standard for:
  - passenger cars with manual transmission
  - passenger cars with automatic transmission, SUVs and MPVs with 3+ rows (all transmission types)
- Weight-based, 16 classes (based on EU emission wt. categories )
- Based on European Test Cycle (NEDC)
- Liters/100 km
- **Maximum fuel consumption level for individual vehicle models within each wt. class**, instead of average value associated with each wt. class

# “CAFE-equivalent” Chinese Standards vs. US

- Loose on Light, Tight on Heavy Models

(converted to approximate U.S. equiv. CAFE ratings)



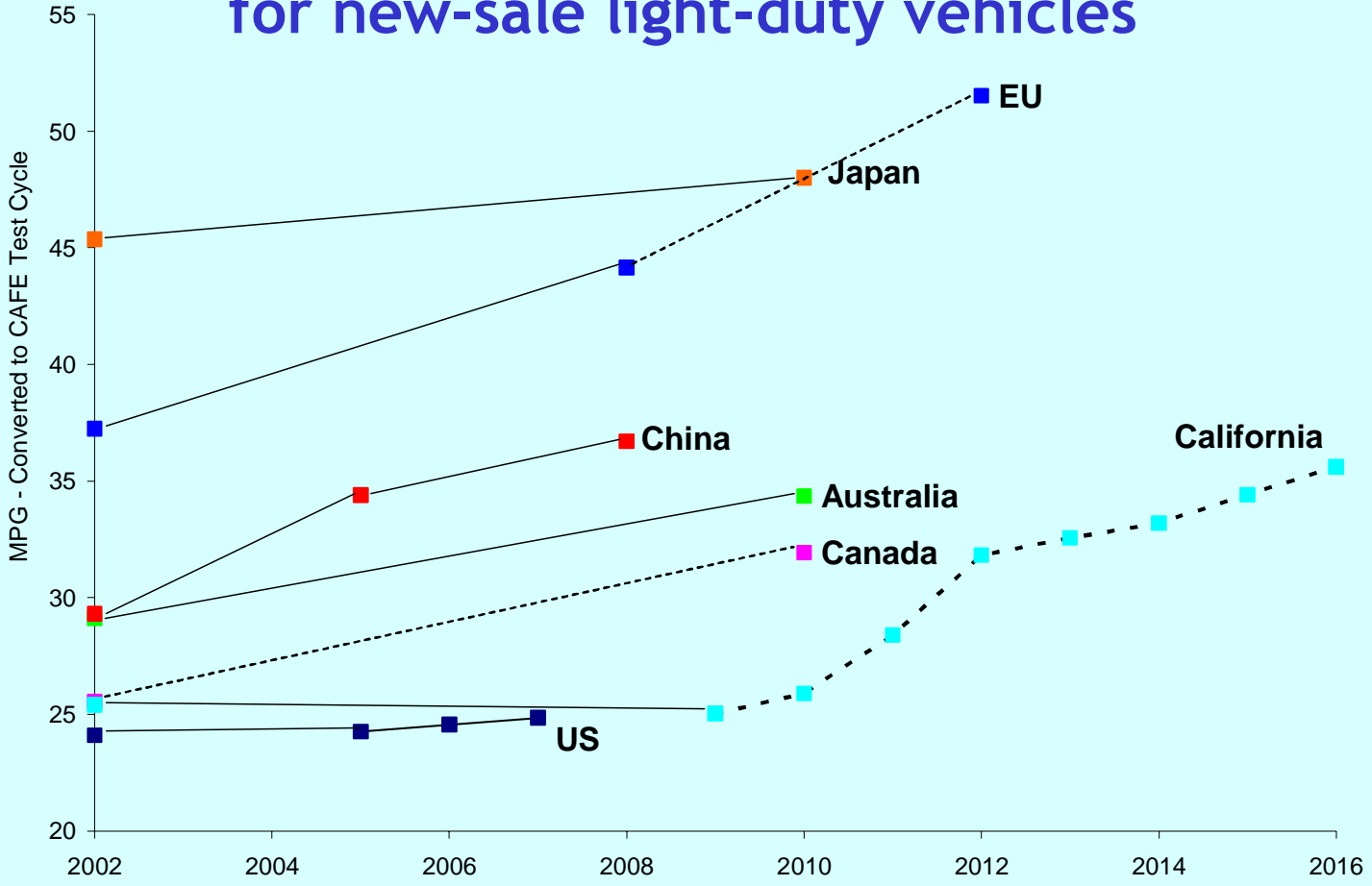
# Overview of Countries and Regions that have Vehicle Fuel Economy and GHG Standards

At-least nine countries and regions have established or proposed motor vehicle fuel efficiency or GHG emission policies. Due to various historic, cultural and political reasons, different countries and regions chose to adopt different fuel efficiency or GHG standards

<i>Country/region</i>	<i>Type</i>	<i>Measure</i>	<i>Structure</i>	<i>Test method<sup>a</sup></i>	<i>Implementation</i>
United States	Fuel	mpg	Cars and light trucks	U.S. CAFE	Mandatory
European Union	CO <sub>2</sub>	g/km	Overall light-duty fleet	EU NEDC	Voluntary
Japan	Fuel	km/L	Weight-based	Japan 10-15	Mandatory
China	Fuel	L/100-km	Weight-based	EU NEDC	Mandatory
California	GHG	g/mile	Car/LDT1 and LDT2	U.S. CAFE	Mandatory
Canada	Fuel	L/100-km	Cars and light trucks	U.S. CAFE	Voluntary
Australia	Fuel	L/100-km	Overall light-duty fleet	EU NEDC	Voluntary
Taiwan, South Korea	Fuel	km/L	Engine size	U.S. CAFE	Mandatory

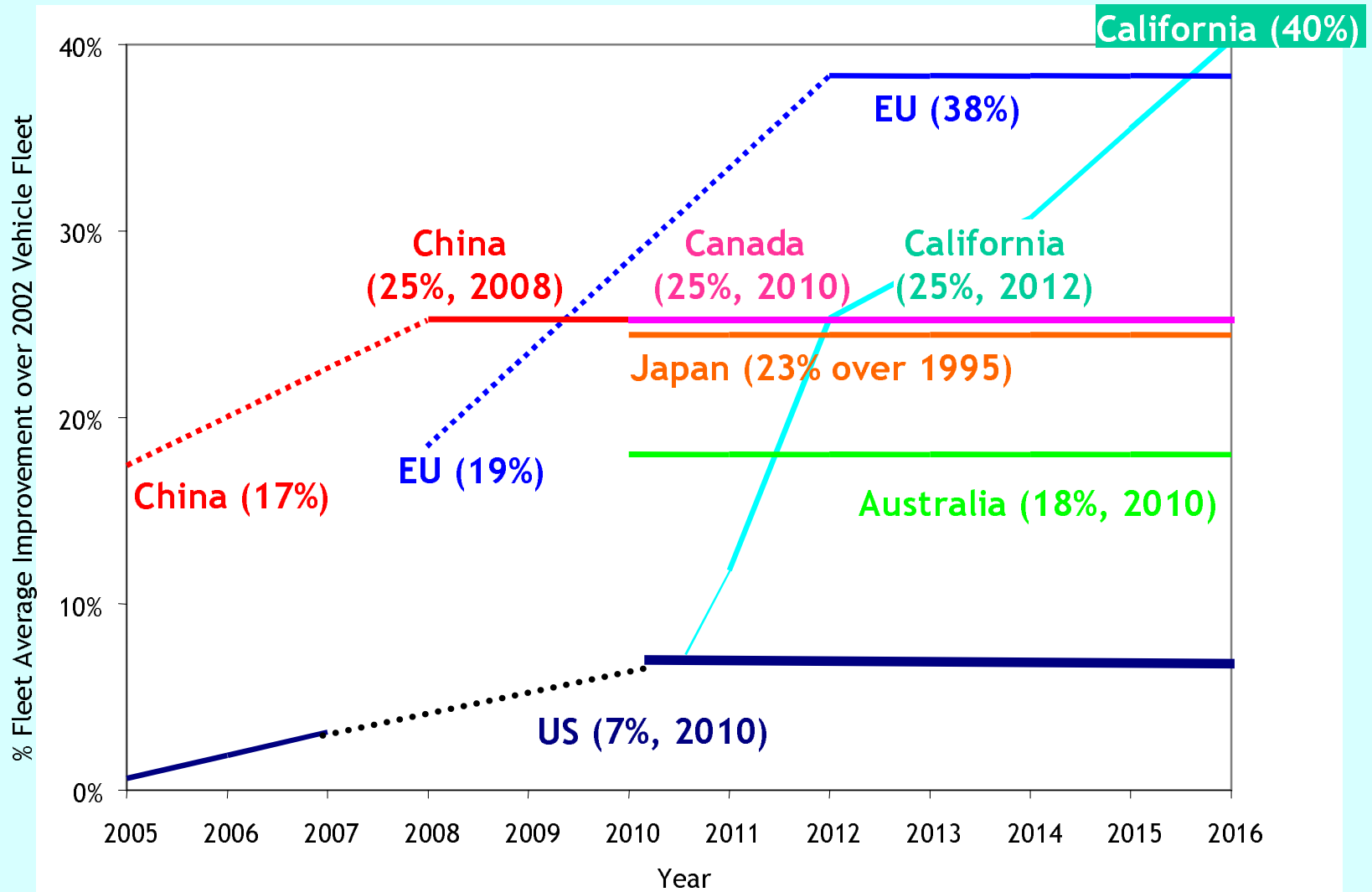
<sup>a</sup>Test methods include U.S. Corporate Average Fuel Economy (CAFE), New European Drive Cycle (NEDC), and Japan 10-15 Cycle. See Appendix for more details.

# Comparison of fleet average fuel economy and GHG emission standards standardized by CAFE-converted MPG for new-sale light-duty vehicles



Source: Comparison of Passenger Vehicle Fuel Economy and GHG Emission Standards around the World, by Feng An and Amanda Sauer, Report for *the Pew Center on Global Climate Change*

# Fleet Average MPG Improvement over 2002 Vehicle Fleet



# Current Vehicle Tax Reform

- Vehicle purchase tax has two components: exercise tax levied to automakers, and sales tax levied to consumers
- Sales tax levied to consumers - 10% (no reform proposal yet)
- Exercise tax levied to auto makers
  - Current structure 3-8% based on engine size
    - Reform proposal: reduce tax rate on small engine (1.0-1.5 L) from 5% to 3%, and increase tax rate on larger engine (> 4L, from 8% to 20%)
  - Current: SUV enjoys special rate of 5%
    - Reform proposal: eliminate SUV prestige
- Reform proposal: Levy penalty tax on vehicle models that fail fuel consumption standards (no formal announcement).

# Possible Future Vehicle Tax Reform Proposals

- Gradually increase sales tax portion, reduce exercise tax portion, so consumers have direct exposure to fiscal incentives and disincentives
- Introduce fee-bates scheme for sales tax
- CO2 or fuel economy based tax scheme (instead of engine size based)

# Other actions

- Lift bans of “mini-cars (engine < 1.0 Liter) in many Chinese cities
- Development of Fuel Consumption Standards for light-duty Commercial Trucks (under 3.5 tons)
- Heavy-Duty Commercial Vehicle Fuel Economy Study
- Promote hybrid cars, diesel cars and fuel cell technologies
- Fuel tax reform? Tough choice for China
- Alternative fuels program
- China Environment Friendly Vehicle (EFVs) Programs

# China Environment Friendly Vehicle (EFVs) Campaign

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- To be launched by State Environmental Protection Administration (SEPA) this year
- Run by Vehicle Emission Control Center (VECC) under SEPA
- Technical Support by the Auto Project on Energy and Climate Change (APECC), China Program
- Methodology and Rating System Developed by APECC & VECC
- Initially a voluntary system
- Link to economic incentives

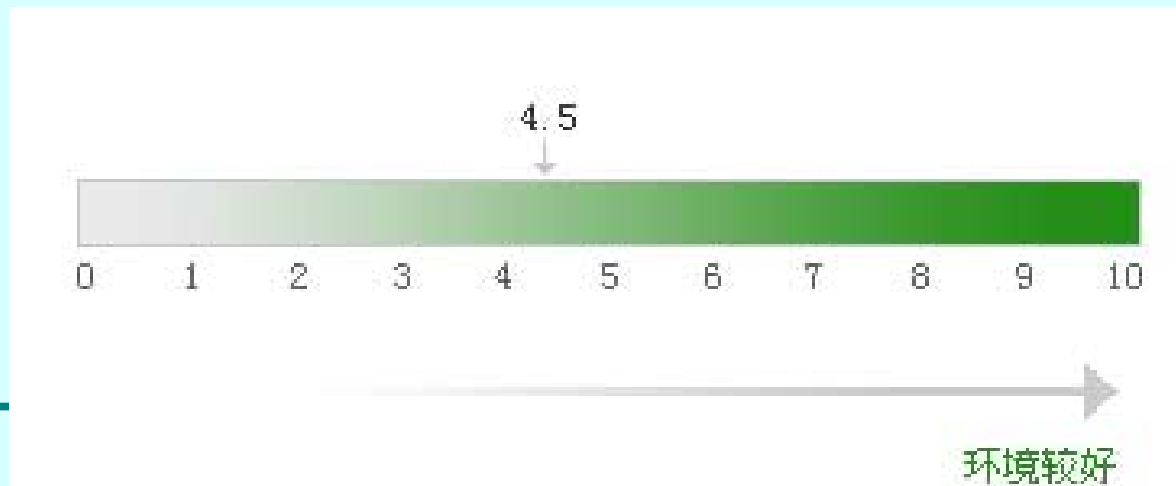
# Overview of Green Vehicle Rating Systems around the World

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- EU Environmental Labeling of Cars (A-F Rating based on GHG)
- The United States
  - ACEEE Green Book (0-100 “integrated” rating based on life-cycle environmental damage index)
  - EPA Green Vehicle Guide (0-10 rating based on relative performance in each class, separate GHG and criteria pollutants)
  - California Smog Index Label (0-1 score, based on vehicle tailpipe emissions standards and HC evap. emission rates)
- Australia (0-10 “integrated” rating, five stars system)
- Japan (star systems for pollutants, PM and FE, combined with incentives)
- Switzerland (five star system)

# Highlights of China Green Vehicle Evaluation System Development

- Integrated rating combining criteria pollutants, GHG and vehicle weight
- Only certified for cars that beat minimum requirements on FE and emissions
- Methodology: life-cycle environmental/health damage index
- Fuel quality/durability issues
- Cover multiple stages of emission regulations (Euro II-V)
- Applicable to all fuels and vehicle types
- 0 – 10 scale, 10 represents zero environmental damage
- EFV campaign: reach out to consumers and manufacturers

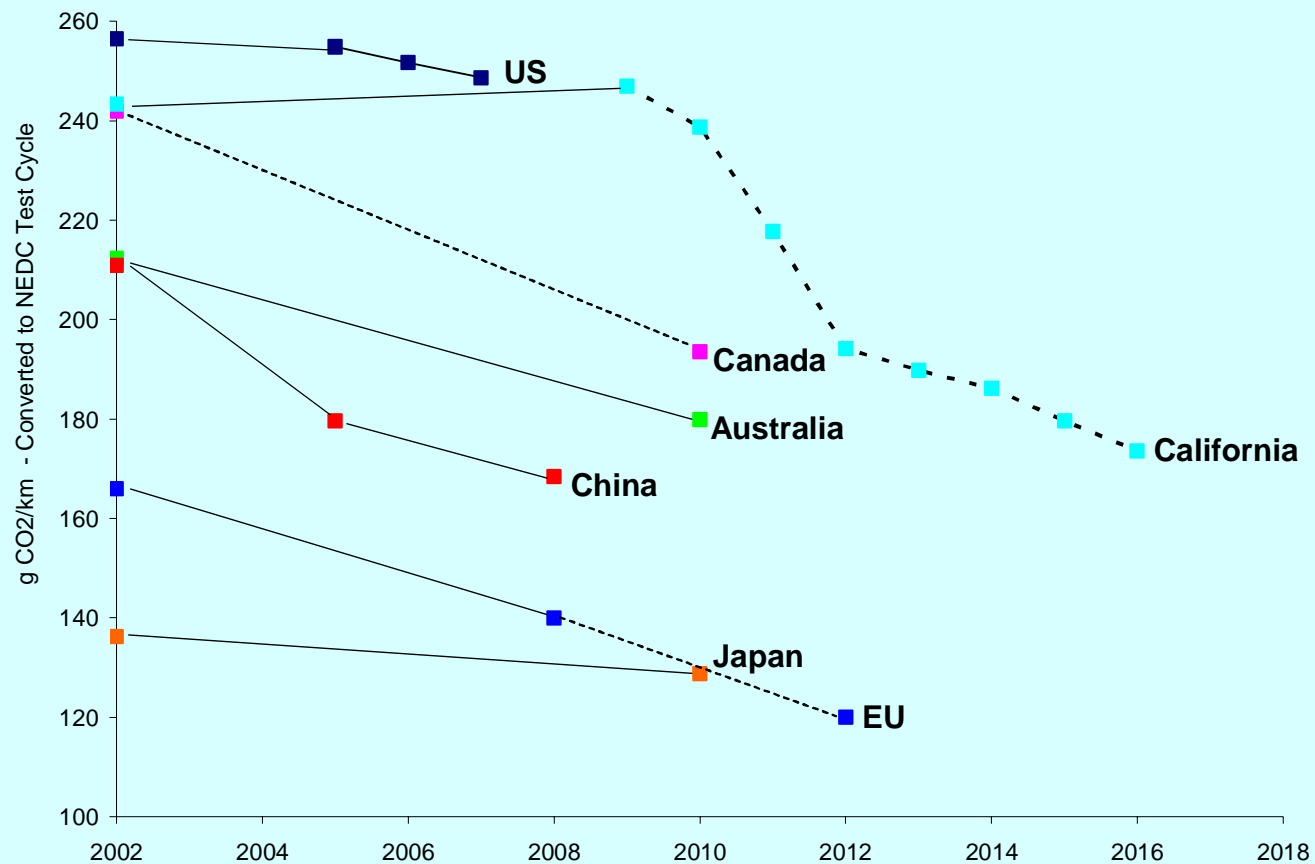


ate Change (APECC)

# Conclusions

- Chinese vehicle sales will continue to grow at double digit rates in the foreseeable future
- Oil consumption and imports will continue to grow rapidly
- A series of fuel-efficiency programs have been undertaken
- However, current actions insufficient to make fundamental changes
- Both environmental pressure and auto industry influence & lobby power are increasing
- More aggressive, but practical comprehensive short-, medium- and long-term targets and strategies are urgently needed
- Need international dialogue and collaboration

# Comparison of fleet average fuel economy and GHG emission standards standardized by NEDC-converted gCO<sub>2</sub>/km for new-sale light-duty vehicles



Source: Comparison of Passenger Vehicle Fuel Economy and GHG Emission Standards around the World, by Feng An and Amanda Sauer, Report for *the Pew Center on Global Climate Change*

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# Fleet Average CO2/Fuel reduction over 2002 Vehicle Fleet

