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# 能源供应状况及其对汽车工业发展影响

## **Energy Supply Situation and its Implications for Auto Industry Development**

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中国汽车产业发展国际论坛，天津，2005年9月27日  
**International Forum of Chinese Auto Industry Development**



中国可持续能源项目  
**The China Sustainable Energy Program**

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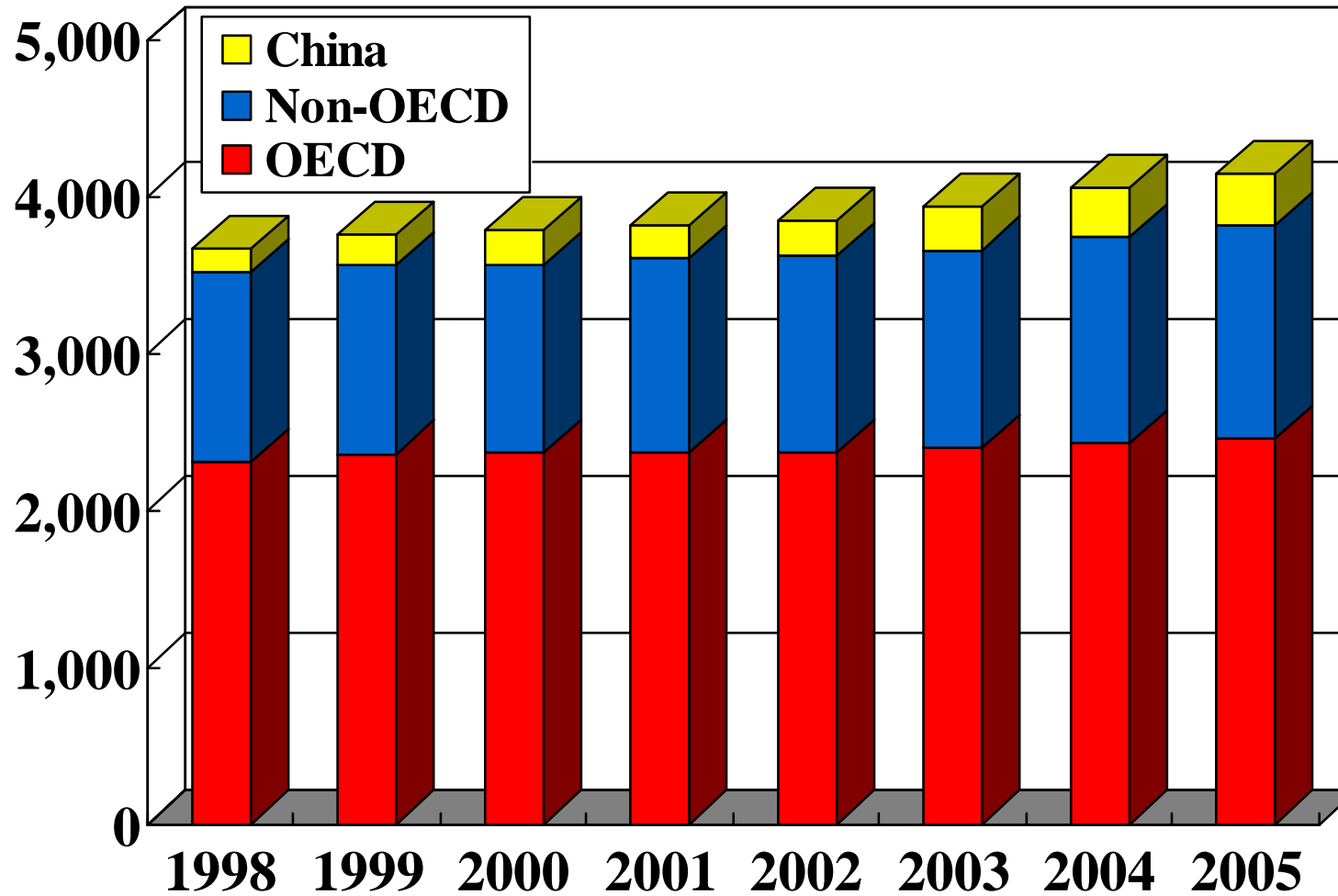
**1. World/China Oil Supply Situation**

**2. Responses to Oil Supply Situation**

**3. Implications for Chinese Auto  
Industry Development**

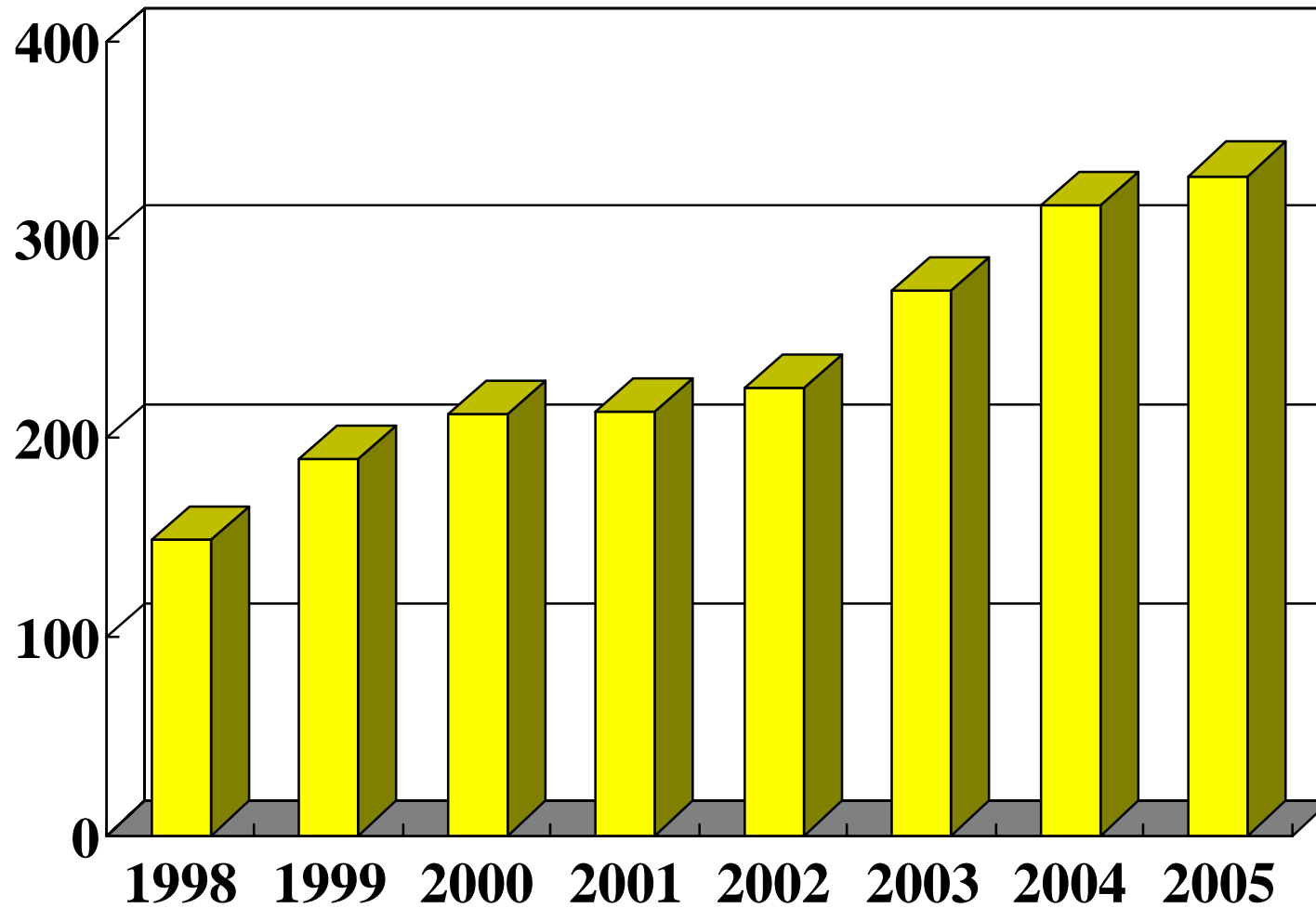


# World Oil Demand (MMT)

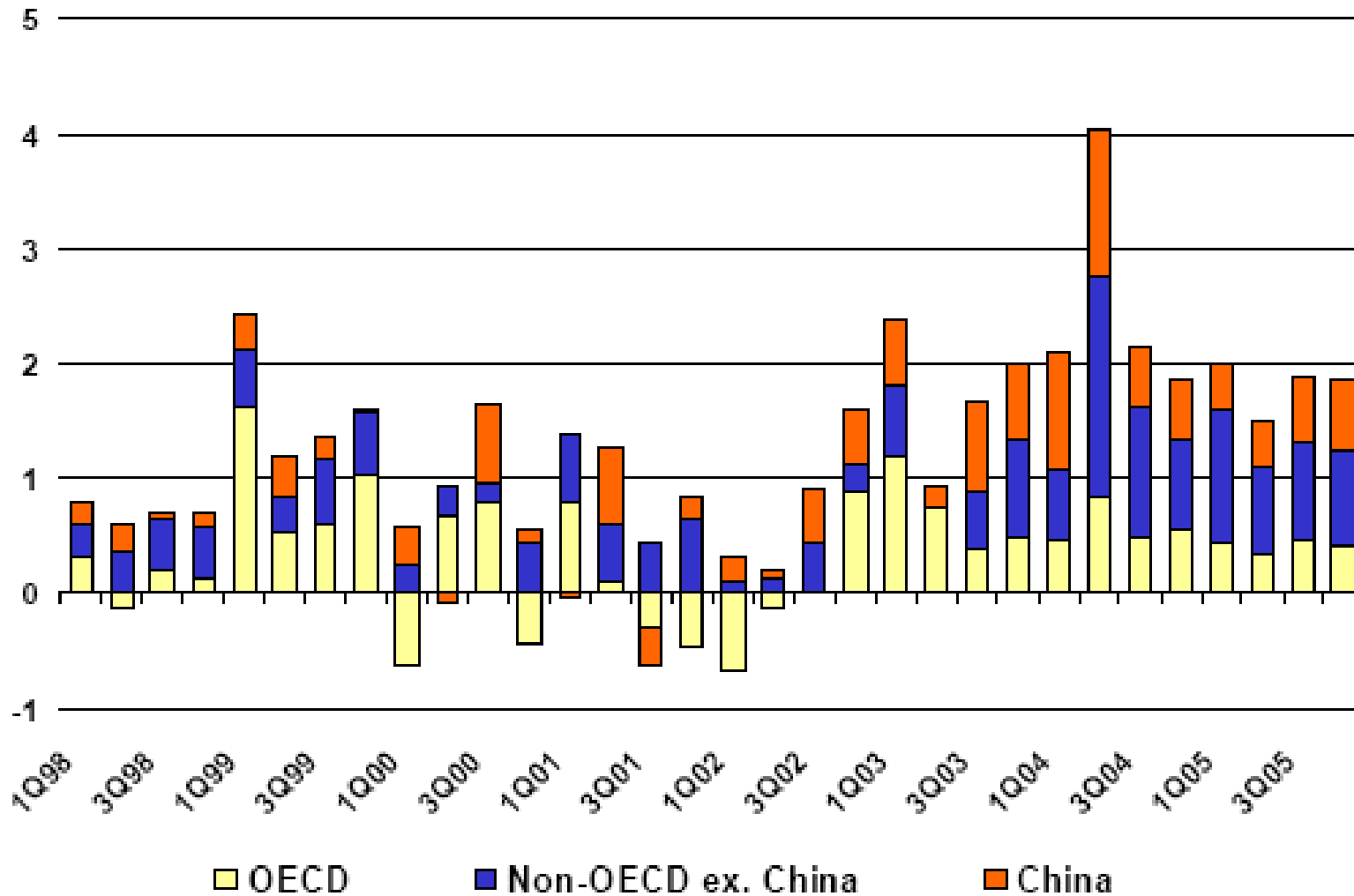


# Chinese Oil Demand (MMT)

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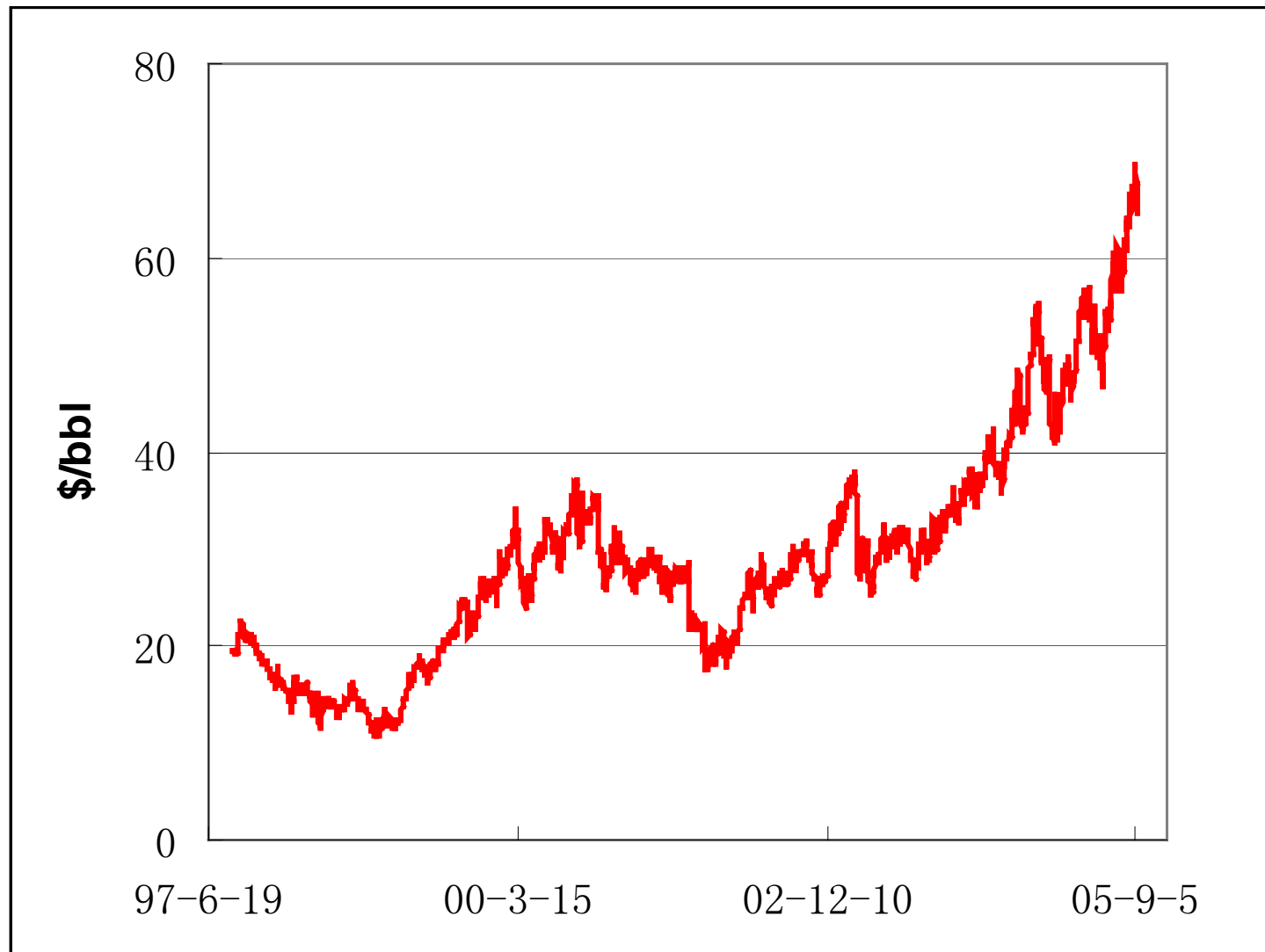


# Quarterly Changes in Oil Demand



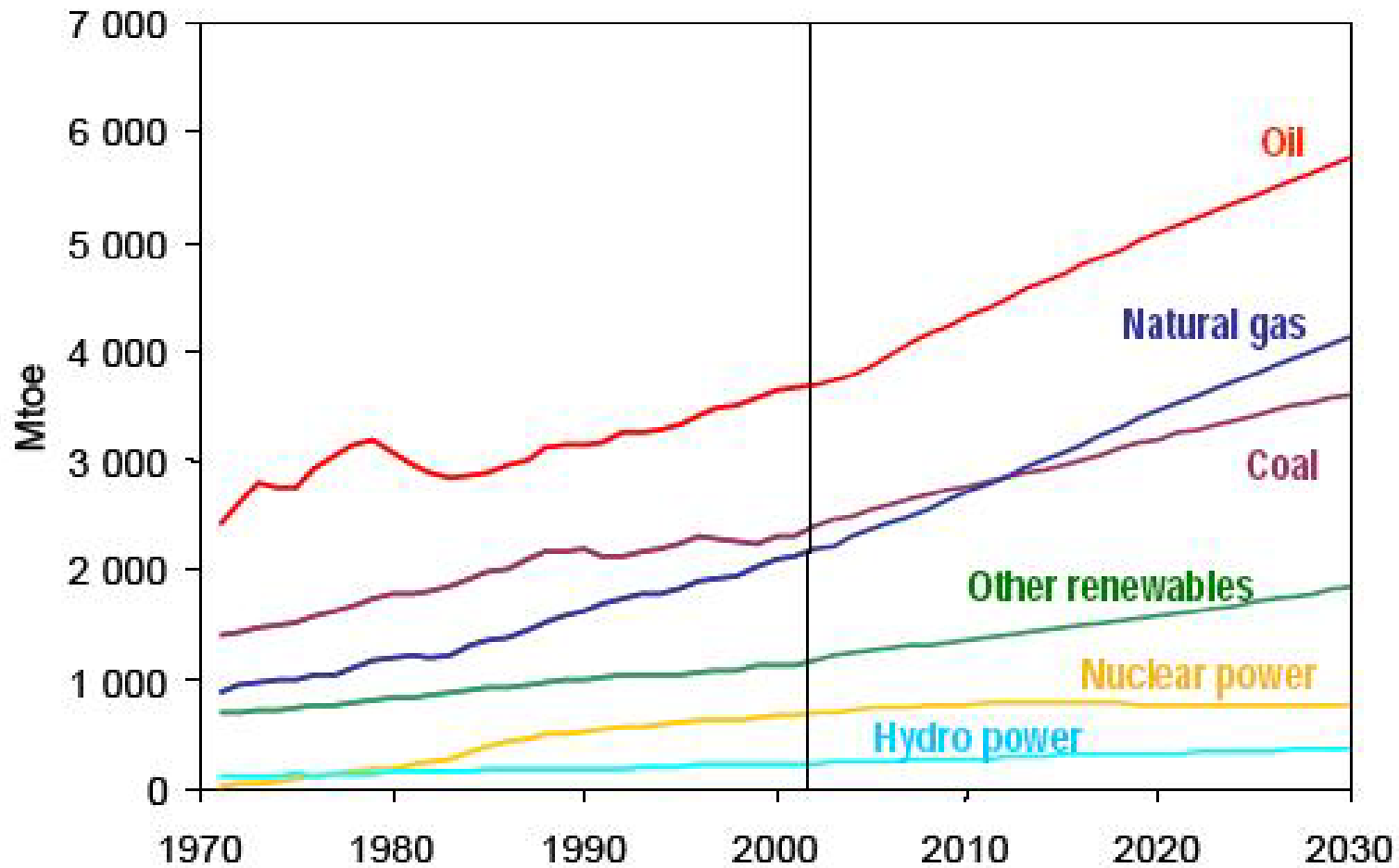
# Crude Oil Price (NYSM)

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# World Energy Demand Forecast

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# Oil Demand Projections for China (MMT)

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	2000	2010	2020
<b>Oil Demand</b>	<b>224</b> <b>(1.79)</b>	<b>335 ~ 357</b> <b>(2.68-2.86)</b>	<b>430 ~ 520</b> <b>(3.44-4.16)</b>
<b>Net Import</b>	<b>69</b> <b>(0.56)</b>	<b>155 ~ 187</b> <b>(1.24-1.50)</b>	<b>240 ~ 295</b> <b>(1.92-2.36)</b>
<b>Percentage of Import</b>	<b>31</b>	<b>46 ~ 52</b>	<b>59 ~ 62</b>

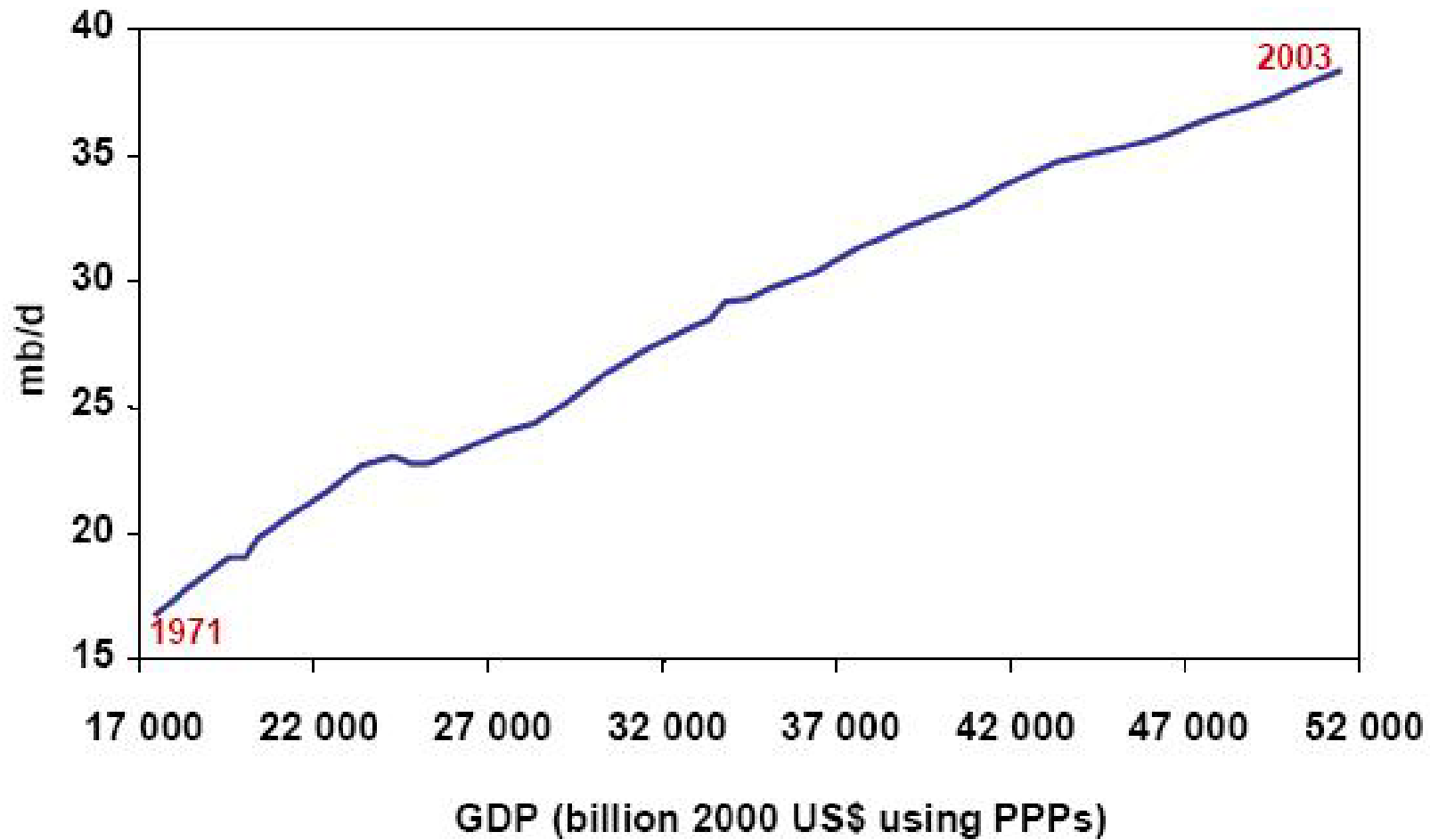
Red numbers are in billion barrels



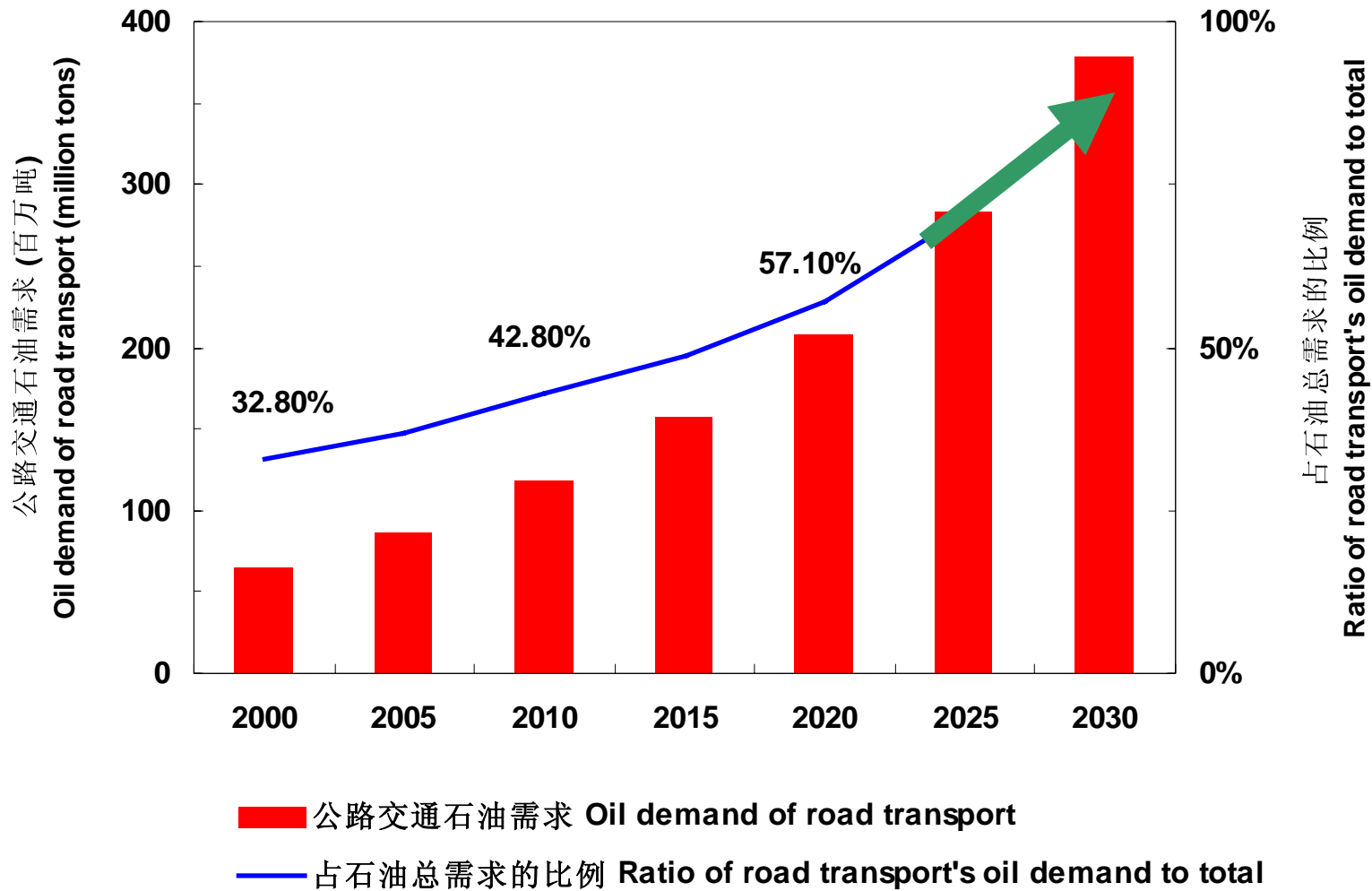


# Oil Demand of World Transport

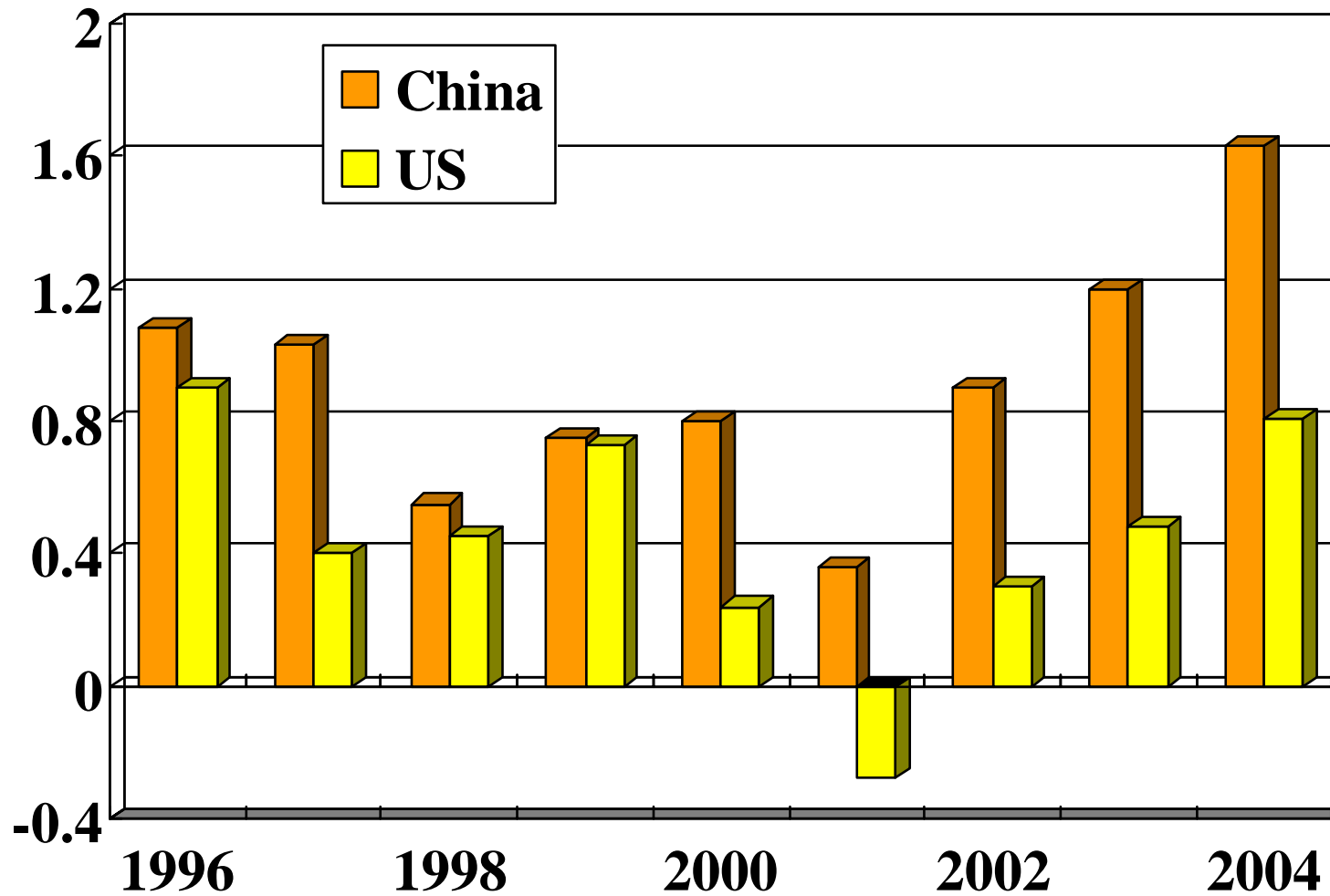
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# China's Vehicle Oil Demand Forecast



# Oil Demand/GDP Growth Elasticity



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1. **World/China Oil Supply Situation**

2. **Responses to Oil Supply Situation**

3. **Implications for Chinese Auto  
Industry Development**



# **Main Concerns about the Oil Supply Situation**

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- **Oil supply shortage/energy security**
- **Price spikes causing economic shock**
- **High prices hurting the economy**



# Responses to Oil Supply Crisis

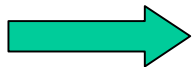
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**Government may take actions:**

**Supply Side**

***Demand Side***

**Customers vehicle selection behavior may change**



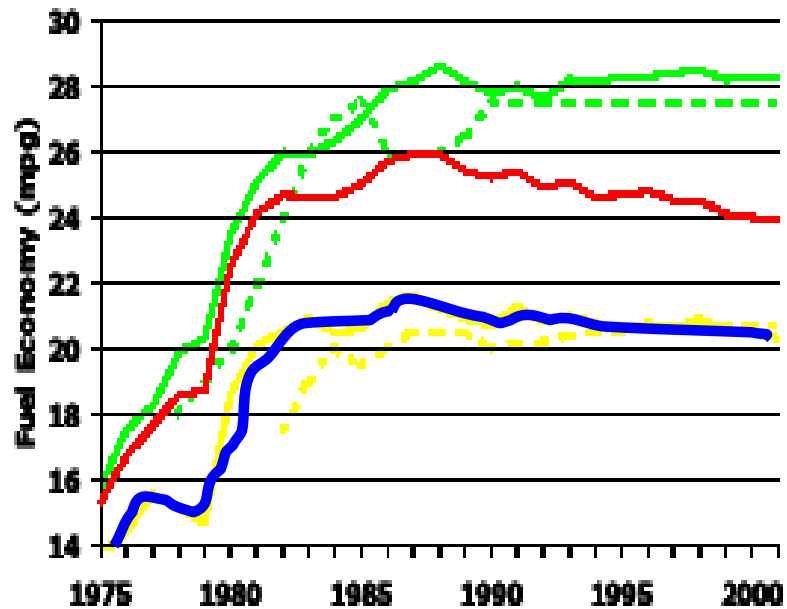
**Manufactures must change their products accordingly**



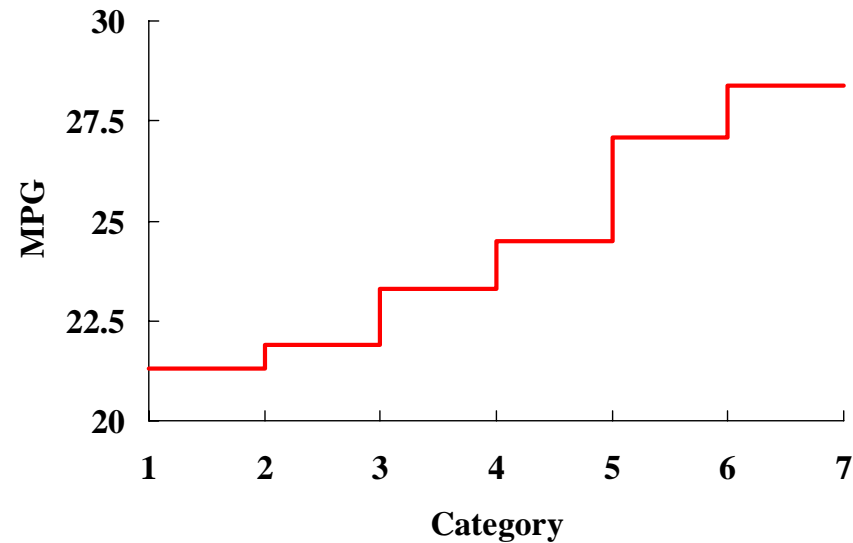
# Government Actions: Fuel Efficiency Regulations

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## US CAFÉ Standard



Current US CAFÉ standard

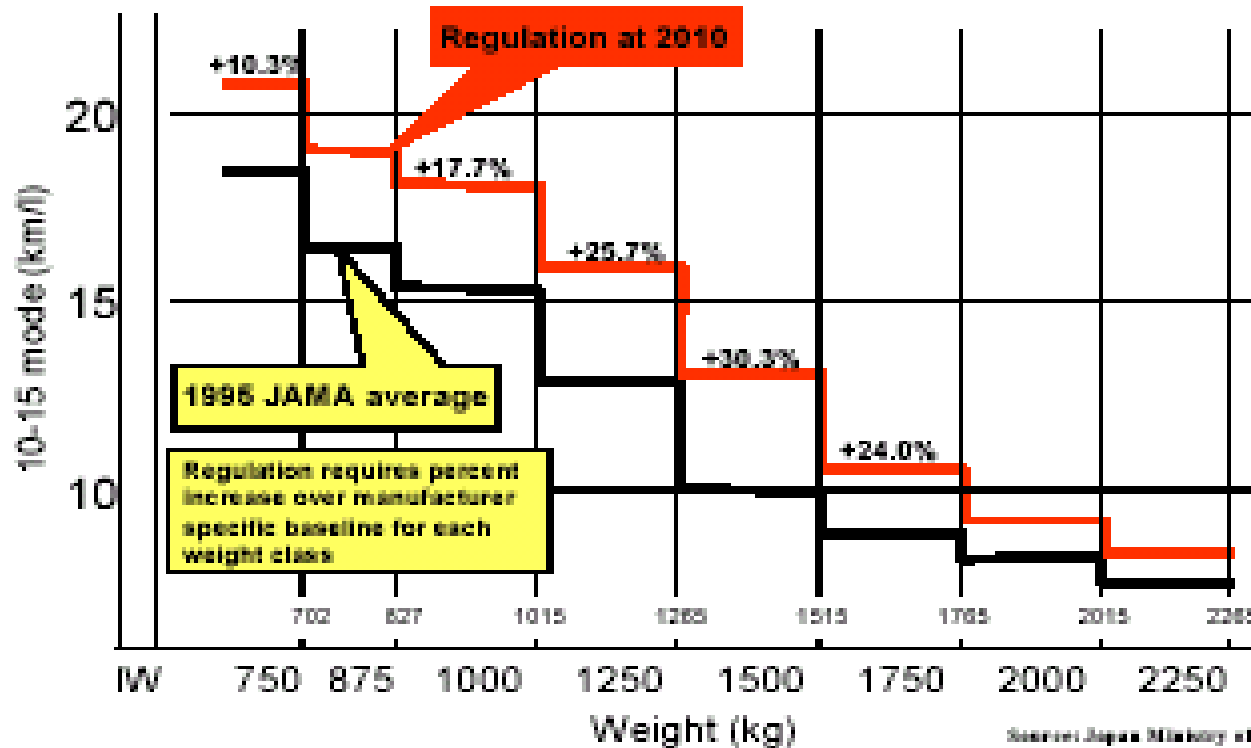


Proposed LDT CAFÉ standard



# Government Actions: Fuel Efficiency Regulations

## Japan Top-runner FE Standard



Source: Japan Ministry of Transport





# Government Actions: Fuel Efficiency Regulations

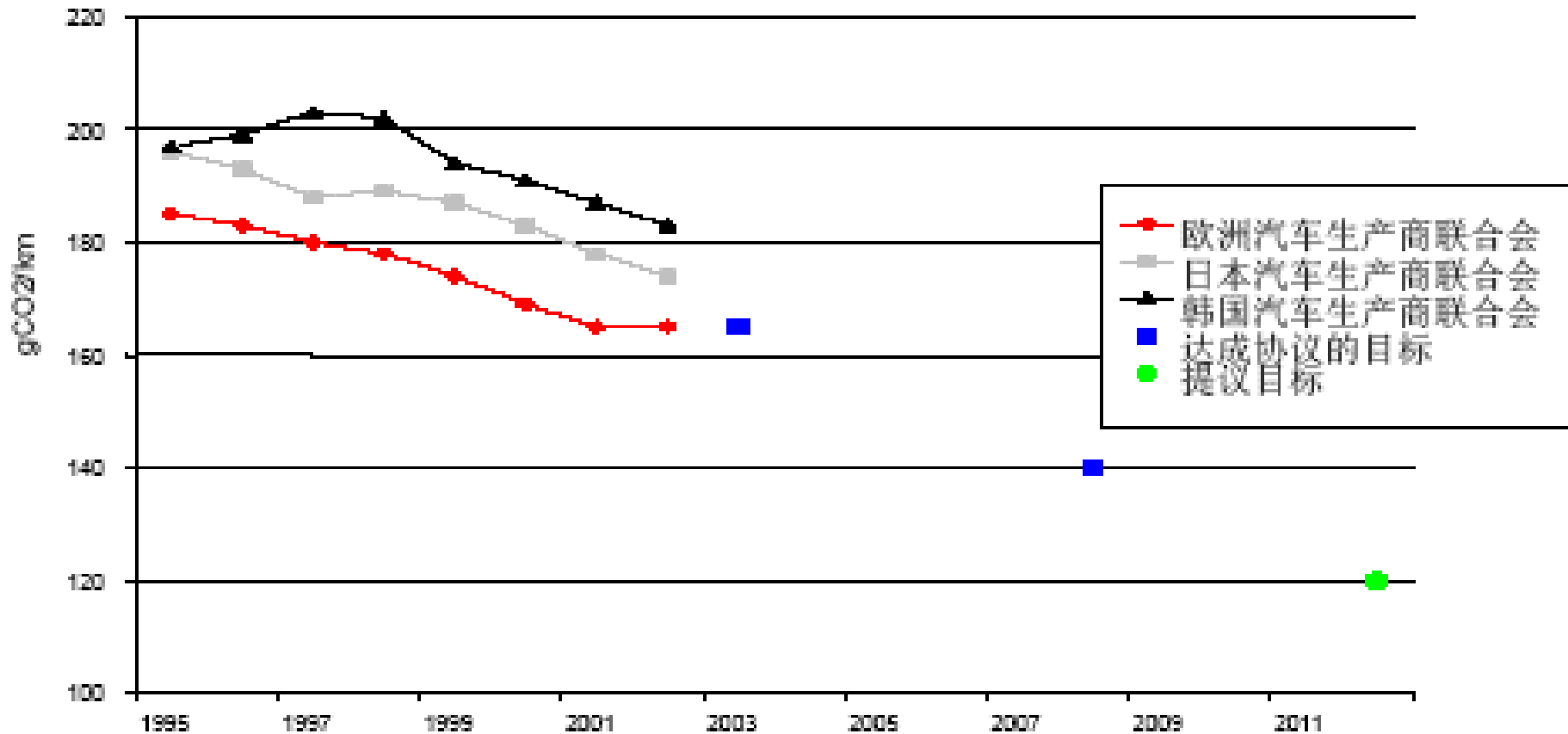
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## CA GHG emission standards

期间	年份	温室气体排放标准 (g/mi)		CAFE 等效标准(mpg)	
		PC/LDT1	LDT2	PC/LDT1	LDT2
短期	2009	323	439	27.6	20.3
	2010	301	420	29.6	21.2
	2011	267	390	33.3	22.8
	2012	233	361	38.2	24.7
中期	2013	227	355	39.2	25.1
	2014	222	350	40.1	25.4
	2015	213	341	41.8	26.1
	2016	205	332	43.4	26.8

# Government Actions: Fuel Efficiency Regulations

## EU voluntary agreement

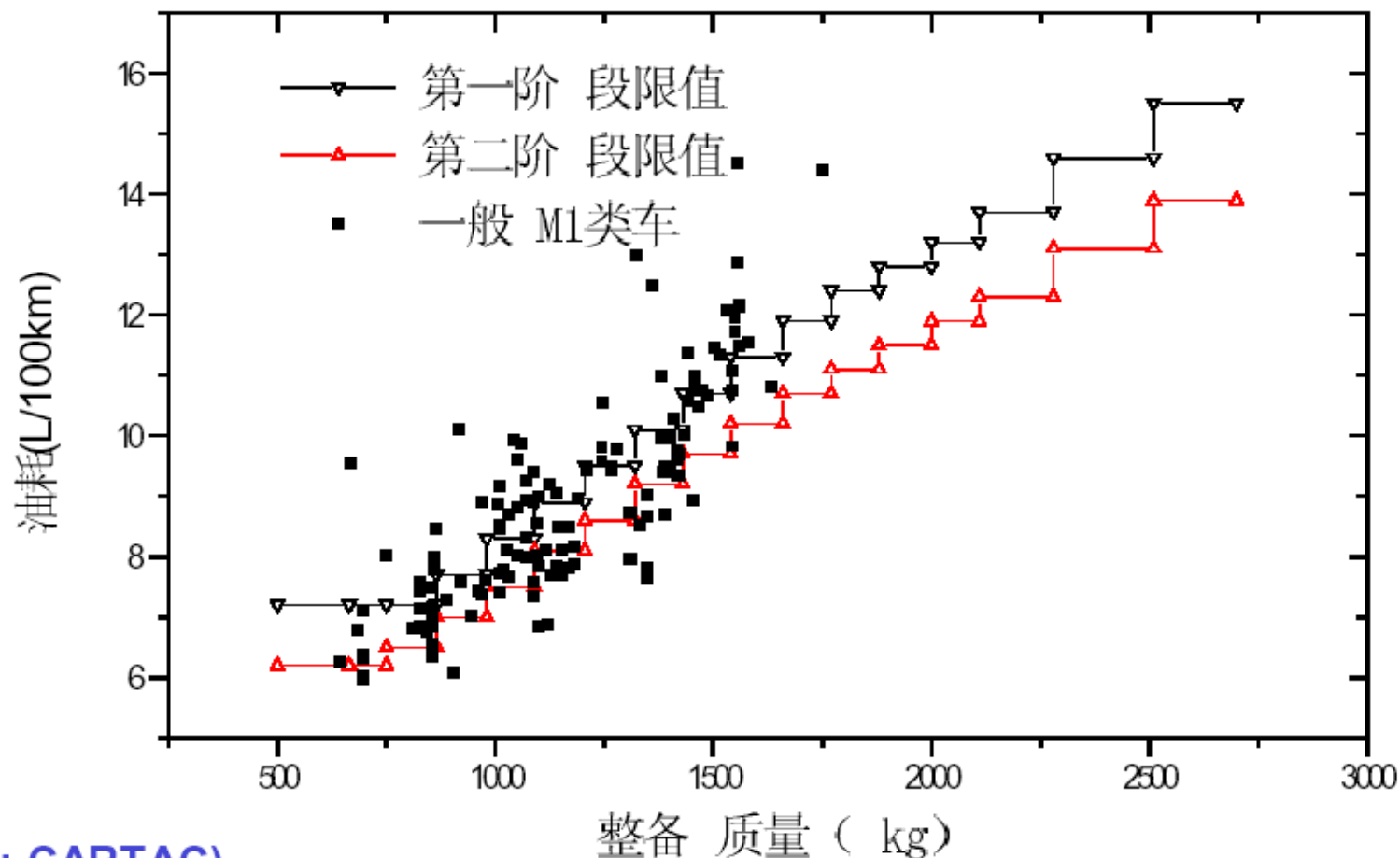


# Chinese Cars with Manual Transmission (Black Dots)

limit Fuel Consumption Values in L/100 km

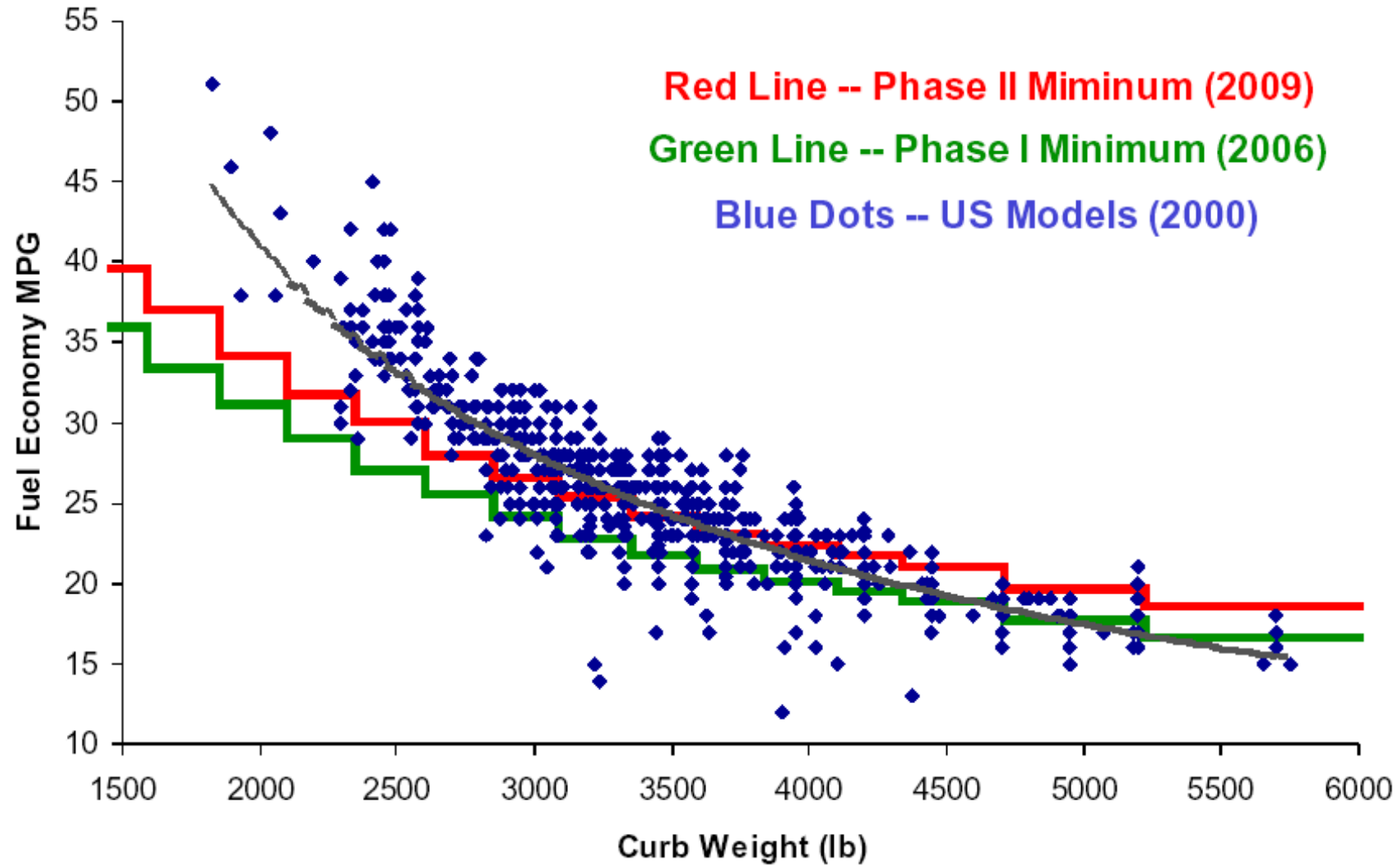
Black line- Phase I, Red line – Phase II

50% fails to meet Phase I, 82% fails to meet Phase II



(Source: CARTAC)

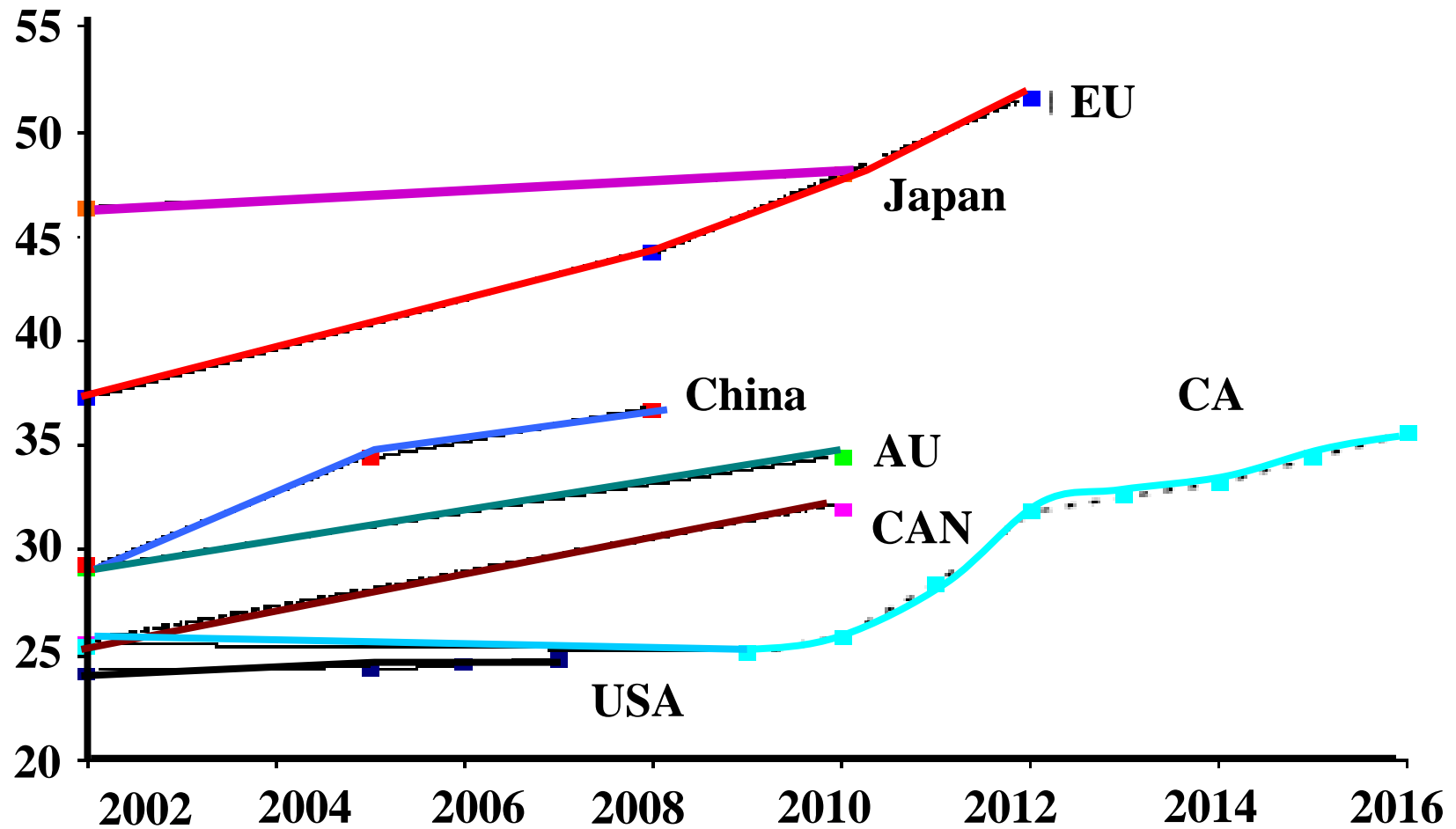
# US Models, Chinese Standards



Source: Feng An, Consultant



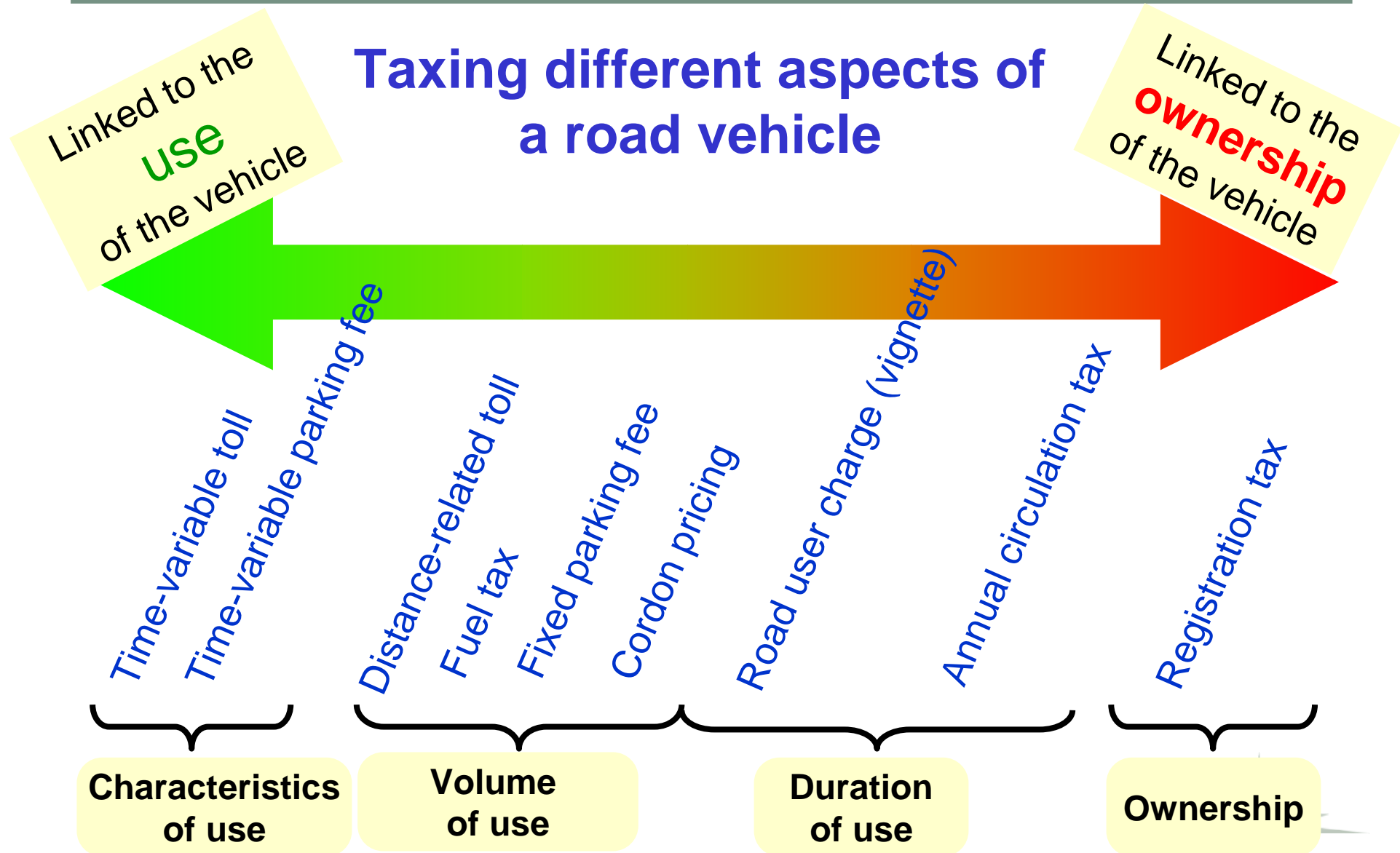
# Standards Comparison



Source: Feng An, Consultant

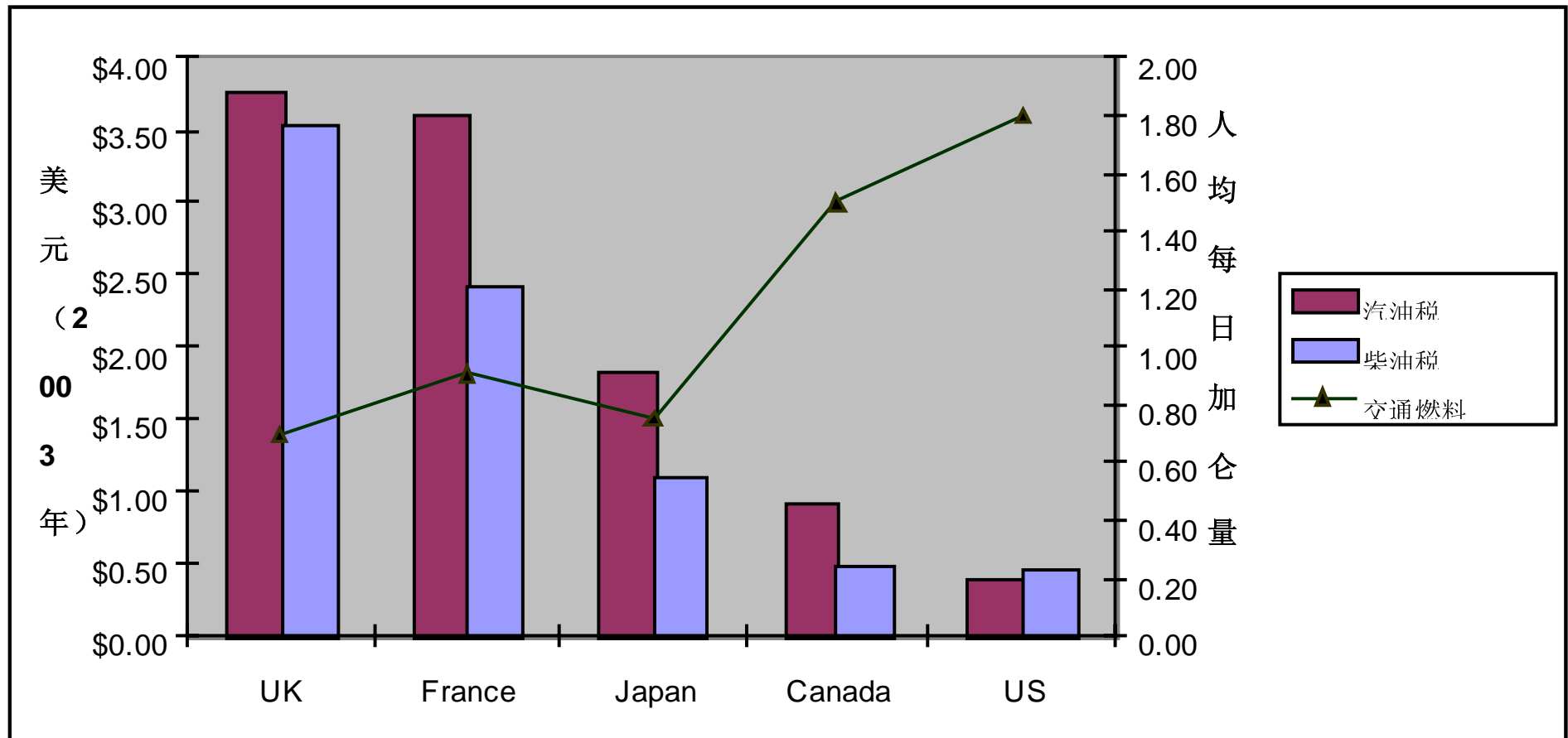


# Government Actions: Fiscal Instruments



# Government Actions: Fiscal Instruments

## Fuel Tax



# Government Actions: Fiscal Instruments

## Vehicle Tax

	流转税的征税依据	每年的大概范围 (使用各国自己的货币)	每年的大概范围 (欧元)
比利时	征税依据为马力 (cm <sup>3</sup> )。 针对柴油汽车的小型增补税	2,284 BEF (HP = 4) 到 58,462 BEF (HP = 20)	EUR 57 (HP = 4) 到 EUR 1,449 (HP = 20)
德国	征税依据为排量cm <sup>3</sup> 。汽油和柴油有差别		
丹麦	征税依据为油耗； 汽油和柴油有差别 每年增加 2% (固定价格)	DKK 460 (>20 km/l) 到 DKK16,920 (« 4.5 km/l)	EUR 62 (>20 km/l) 到 EUR2,272 « 4.5 km/l)
西班牙	征税依据为马力 (cm <sup>3</sup> )	ESP 2,100 (D-8 HP) 到 ESP 18,635 (> 20 HP)	EUR 13 (D-8 HP) 到 EUR 112 (> 20 HP)
希腊	征税依据为马力 (cm <sup>3</sup> )	GDR 25,000 « 9 FHP) GRD 130,000 (> 17 FHP)	EUR 73 « 9 FHP) 到 EUR 382 (> 17 FHP)





# Government Actions: Fiscal Instruments

## Vehicle Tax

	流转税的征税依据	每年的大概范围 (使用各国自己的货币)	每年的大概范围 (欧元)
荷兰	征税依据为重量。汽油和柴油有差别地区之间有差别	例如, 当重 1,100 千克时: NLG 848 (汽油), NLG 1,676 (柴油)	例如, 当重 1,100 千克时: EUR 385 (汽油), EUR 761 (柴油)
葡萄牙	征税依据为 cm <sup>3</sup> 汽油和柴油有差别	PTE 2,700 (« 1,000 cm <sup>3</sup> ) 到 PTE 59,700 (> 3,500 cm <sup>3</sup> )	EUR 14 (« 1,000 cm <sup>3</sup> ) 到 EUR 298 (> 3,500 cm <sup>3</sup> )
英国 (3/01 之后)	征税依据为 CO <sub>2</sub>	对于汽油车, GBP 100 (« 150 g CO <sub>2</sub> ) 和逐渐增加到 GBP 155 (> 185 g CO <sub>2</sub> )。对于柴油车, 该税金要高 GBP 10 左右。	对于汽油车, EUR 159 (« 150 g CO <sub>2</sub> ) 和逐渐增加到 EUR 246 (> 185 g CO <sub>2</sub> )。对于柴油车, 该税金要高 GBP 15 左右。

# Government Actions: Promote Advanced Vehicle Technologies

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- Japanese Subsidies for hybrid vehicles

car names	car price (ten thousand yen)	Tax incentives (ten thousand yen)
Prius	215 ~ 241	21
◆stima Hybrid	335 ~ 338	24
■ivic Hybrid	212	23

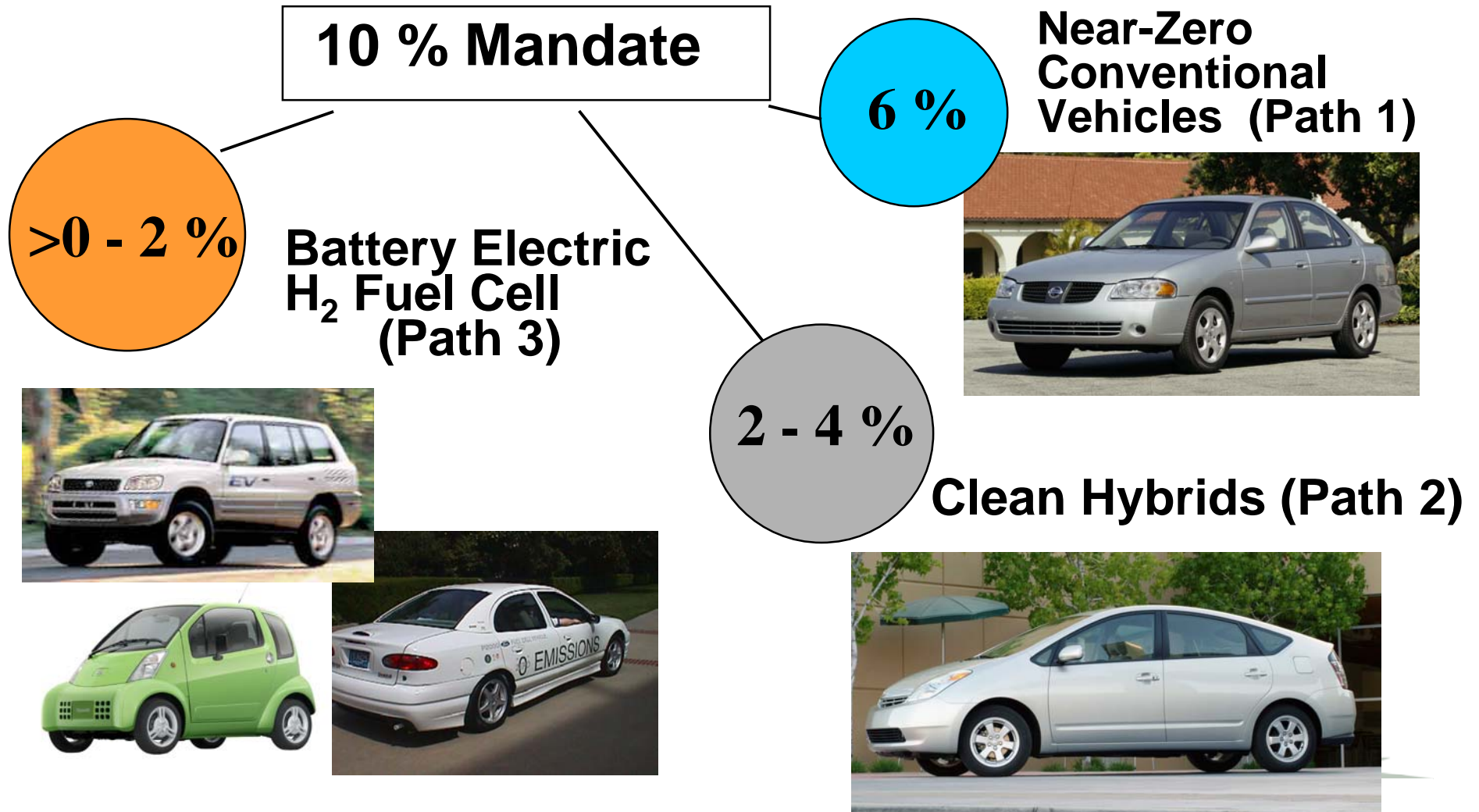
- Low-emission vehicles sold

	1999	2000	2001	2002	2003
◆V	45	150	183	83	44
H◆V	2,600	12,950	25,089	15,514	42,789



# Government Actions Promote Advanced Vehicle Technologies

## California ZEV program



# **Government Actions: Other Policies**

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- **Promoting Public Transit**
- **Traffic Demand Control**
- **Congestion Pricing**
- **Speed Control**
- **Driving Behavior Education**



# Customer response: Desire more efficient vehicles

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Priority of vehicle  
specs for car purchase:

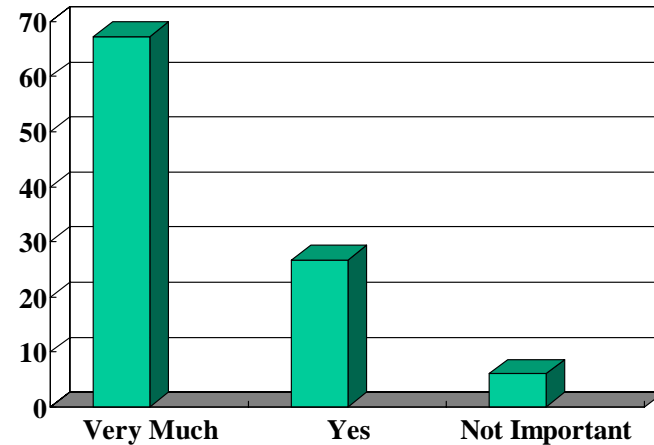
1. Price

2. Brand

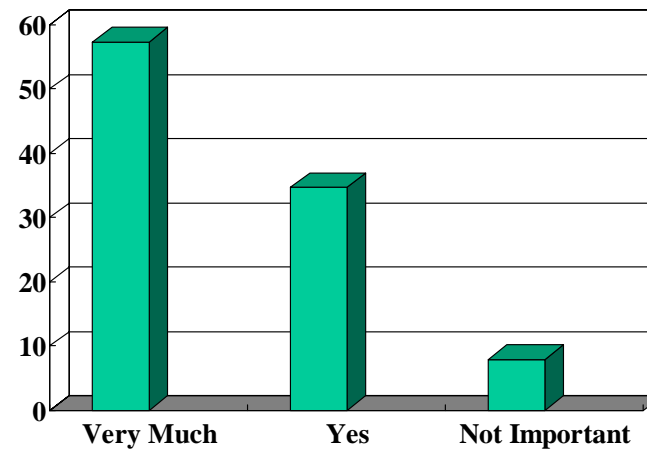
3. Fuel Efficiency

4. Body shape

5. Performance



Attention to Fuel Efficiency



Attention to Fuel Price



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1. *World/China Oil Supply Situation*

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# Both Challenges and Opportunities for the Auto Industry

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- **Market shares will change**
- **Policies prefer compact, cleaner, and more efficient vehicles**
  - **Vehicle Excise Tax**
  - **Vehicle Fuel Efficiency Standard/Slope**
  - **Forthcoming fuel tax**



# Both Challenges and Opportunities for the Auto Industry

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- **Government is likely to punish “bad” and reward “good”, but punishment may come first**
- **Customers prefer more efficient cars**





# How will manufactures respond?

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- **Use innovative technologies to improve fuel efficiency rather than performance**
- **Select vehicles types appropriate to the market (for example: SUV versus Compact Family Cars)**



# How will manufactures respond?

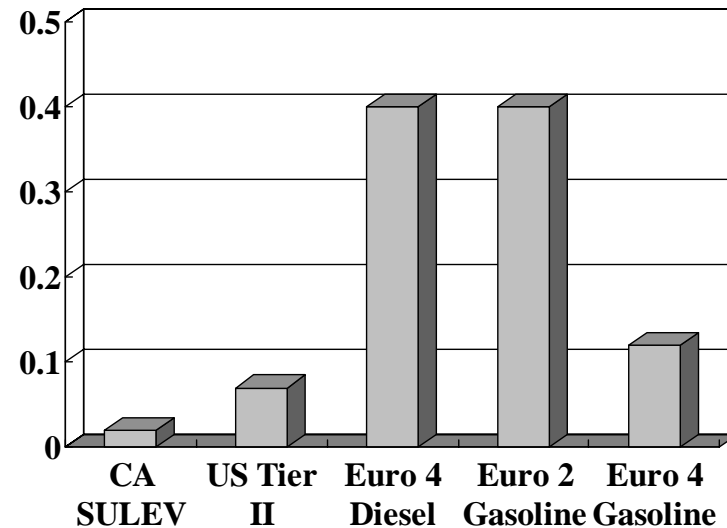
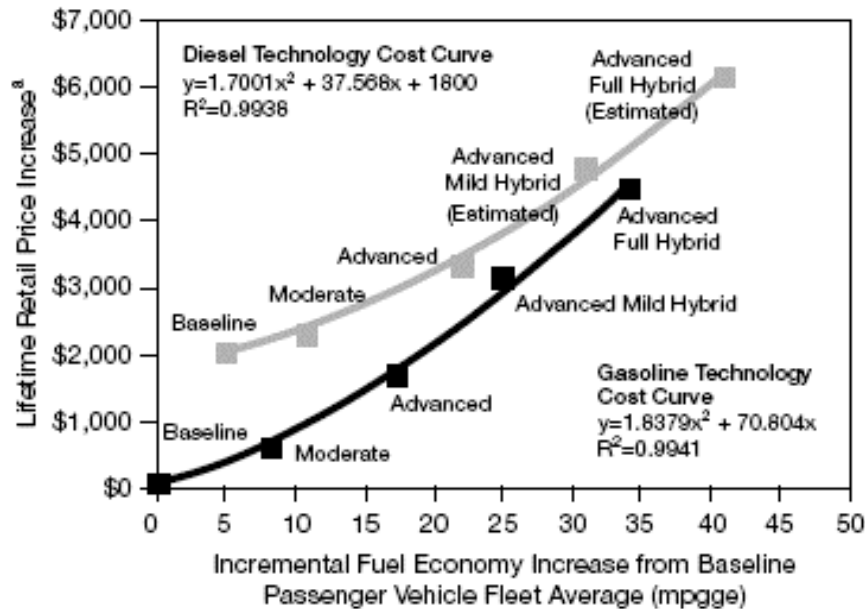
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- **Enhance the market penetration of advanced vehicle technologies, especially hybrid**
  - **Strong central government preference**
  - **Municipal government actions**
- **Carefully select fuels and plan product introduction**
  - [Hybrid versus Diesel](#)



# Diesel versus Hybrid

Environmental concerns need to be taken into account



# **Conclusion**

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## **Challenges and Opportunities**

**Market may prefer compact, cleaner, and more efficient vehicles**

**Bring advanced fuel efficient vehicles to the market ASAP for competition**

**Selecting suitable technology development plan is important to manufactures**

