

Transportation GHG Emissions in Developing Economies



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Transportation Growth

- Developing economies experiencing rapid growth in transportation compared to Japan, Europe and North America
- By 2015, China will have 50% of middle income consumers in the world
 - Transportation needs follow
 - Many will want personal vehicle transport
- India and other markets similarly emerging



Trends in China

- Personal vehicles growing
 - 220,000 sold in 1999; 2 million in 2004
 - Sales may reach US levels (17M) by 2015
 - If trend continues, by 2030 more cars in China than in US
- Oil consumption follows same path
 - China responsible for 40% of world oil demand growth since 2000 (Cambridge Energy Research)
 - By 2030, may import as much oil as US today

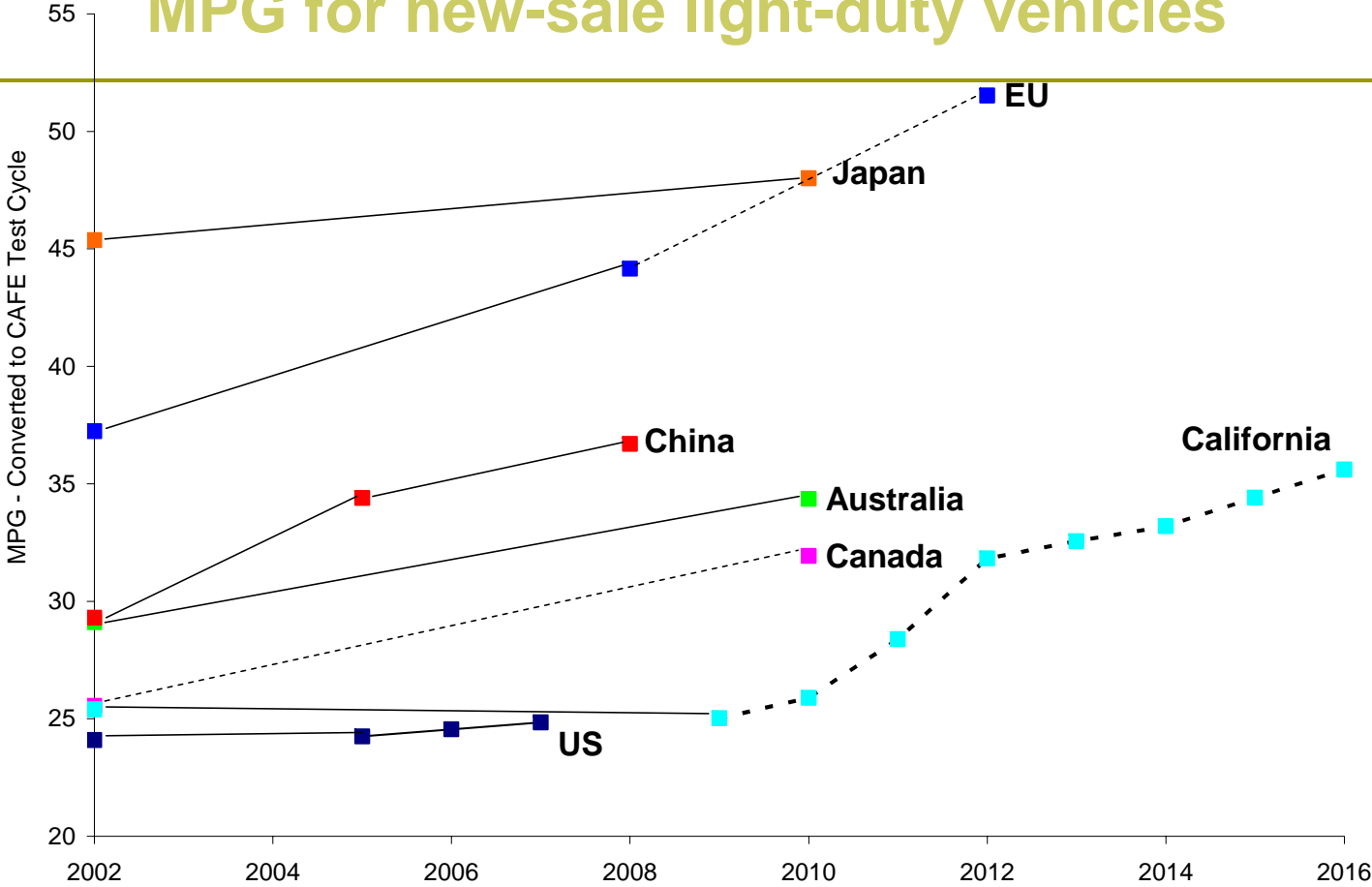


Taking Action

- ❑ China has adopted fuel economy standards
- ❑ Similar to rest of world, these set average per vehicle performance standards
- ❑ Do not cap fuel consumption or GHG emissions
- ❑ As number of vehicles in the fleet and vehicle kilometers traveled increase, so does GHG



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*



Rapid Growth Presents Challenges

- ❑ In today's world, economic growth means transportation growth
- ❑ No reasonable prospect for technology options to keep pace in China
- ❑ But a system of best practices will yield huge benefits compared to unconstrained growth



And Challenges Are Not Just GHG

- ❑ Major health concern with emissions especially in high density urban areas
- ❑ So any program to reduce GHG emissions needs to also consider impacts on other pollutants
- ❑ And energy security is also a major concern of most nations and especially for developing nations a major economic concern



Transfer of Technology

- EPA bus retrofit program in Beijing to reduce criteria pollutants
 - DOC/DPF
 - 50 PPM sulfur fuel
- China can adopt latest technologies
 - US and Japan world leaders in vehicle emission control
- China targeting 15% renewable energy by 2020
 - US a leader in renewable fuel for transportation



Technology Future Is Bright

- Electric Hybrids example of emerging tech
 - Hydraulic hybrids developed by EPA
 - Clean diesel technologies emerging
 - HCCI on horizon
- Opportunity for emerging economies to combine vehicle and fuel technologies into a low carbon emissions transportation fleet



But Will Technology Be Enough?

- Long term transition to H2 fuel from renewable sources (or through carbon sequestration) could remove transportation as a significant source of GHG
- In the nearer term, vehicle and fuel technology may not offset growth
 - Urban design and other measures to reduce the impacts of vehicle kilometers traveled need to play a significant role

