

Chinese Transportation Energy and Emission Policies: A Drive or a Second Thought?

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Chinese Transportation Emission Control and Energy Conservation Policies

- ❑ Fuel quality and vehicle emission control started in mid-1990s
- ❑ Research, development, and deployment of alternative fuel vehicles started in mid-1990s
- ❑ Development of fuel consumption standards started in 2000
- ❑ But, the Good, the Bad, the Ugly?



The Good

- ❑ Increased mobility has been enjoyed across all income groups and geographic regions
- ❑ Vehicle emission standards are at EURO IV level, emission standard gaps between China and Europe/US will probably be closed in 2017-2020
- ❑ Fuel quality standards, especially with S content, are approaching European standards fast
- ❑ LDV Fuel consumption standards were ahead of US before US adopted 54.4 MPG standard
- ❑ HDV fuel consumption standards are based on vehicle chassis testing, not engine testing (though standards are weak)
- ❑ AFVs are wide-spread in selected cities and segments (LPG taxi in Guangzhou, CNG taxi in Chongqing, CNG vehicles in far Northwest)
- ❑ Public transportation still has a large share of urban transportation



The Bad

- ❑ Enforcement of vehicle emission and FC standards is weak; not sure compliance rates
- ❑ Fuel quality standards lags needed improvement for fast adoption of vehicle emission standards; fuel quality adultery is a major issue
- ❑ Passenger vehicle fleet is upsizing from increased personal income
- ❑ New energy vehicles (i.e., electric vehicles) are struggling to keep the enthusiasm and momentum
- ❑ Lack of coordination among agencies (NDRC, MIIT, MEP, MOST, MOF, etc.)
- ❑ Development of the auto industry as a economic pillar sector overshadowed environmental concerns



The Ugly

- ❑ Urban sprawl and forgotten public transportation for more than twenty years resulted in overgrowth of private cars in cities – a deal price to pay for decades
- ❑ Congestion
- ❑ Urban air pollution – PM2.5 is a household name



About the G/B/U List

- ❑ It is definitely subjective
- ❑ It is intended to “throw a brick to get a jade (抛砖引玉)”

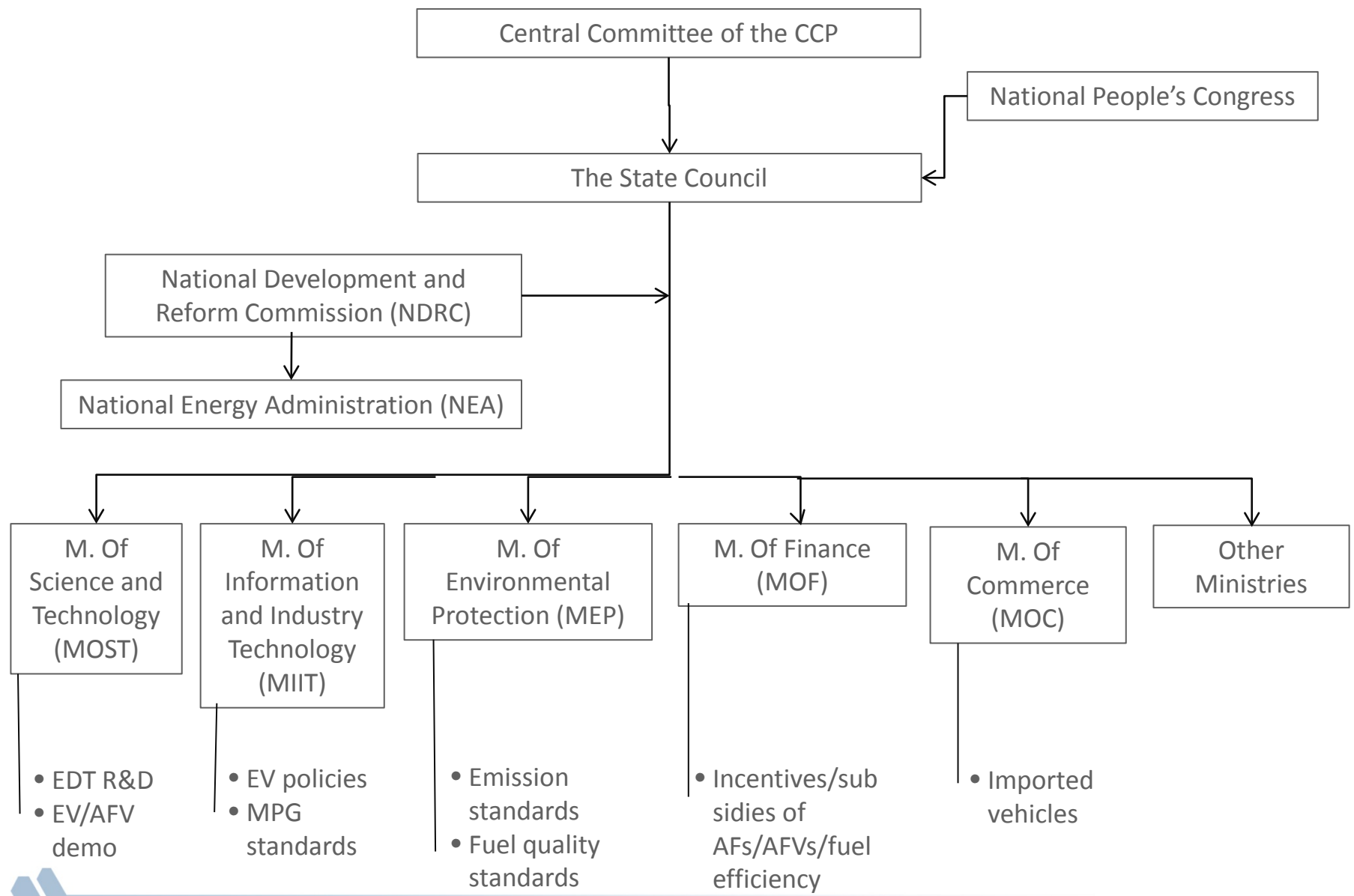


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- ❑ DGP growth vs. environmental protection
- ❑ Regional economic development vs. national energy and environmental goals
- ❑ For example, NEVs and AFVs rarely have emissions and efficiency performance requirements
- ❑ But grass-root environmental concerns are now a major social factor (Not in My Backyard, NIMBY)



Turf Fight and Bureaucracy Among Agencies for Vehicle/Fuel Regulations Are Real

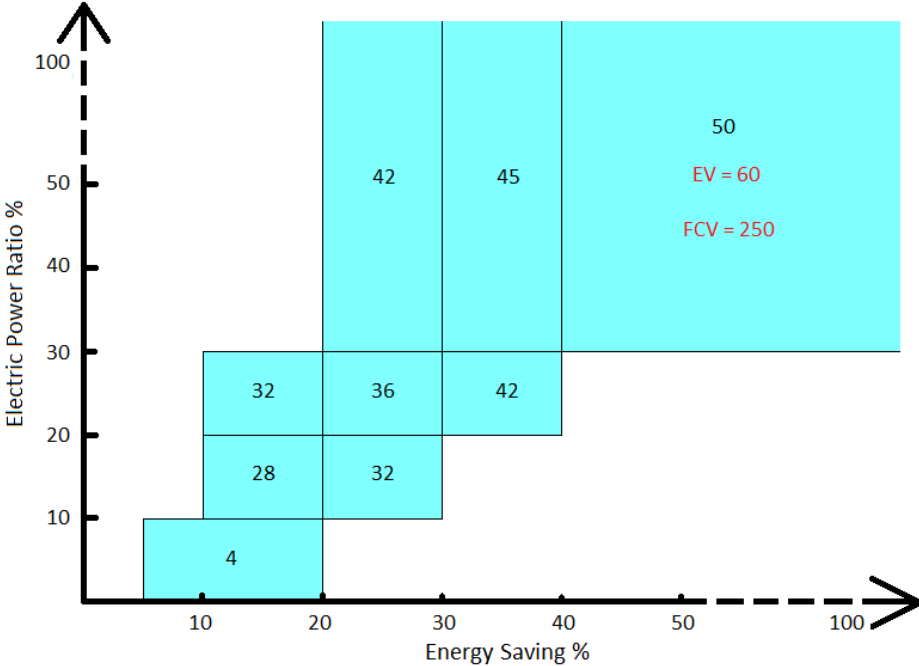


New Energy Vehicles: the Glass Half Full or Half Empty?

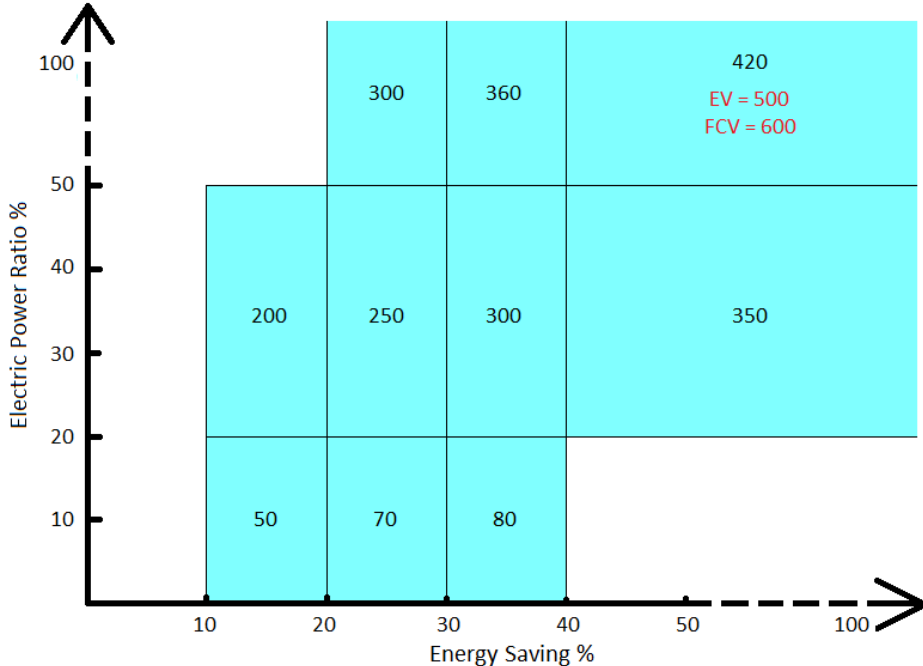


China Provides Significant Subsidies for Electric Drive Technologies (New Energy Vehicles, NEVs)

(1,000 RMB/Vehicle; \$1=6.2 RMB)



Passenger Cars

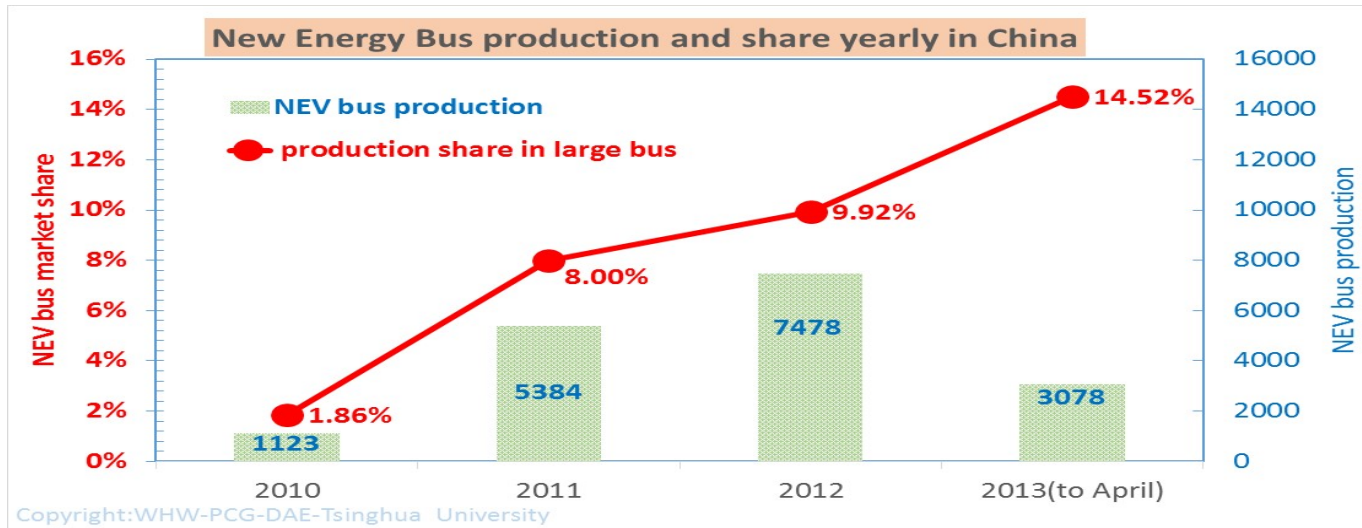


Buses

From Gong et al. (2012)

The Half Full Story

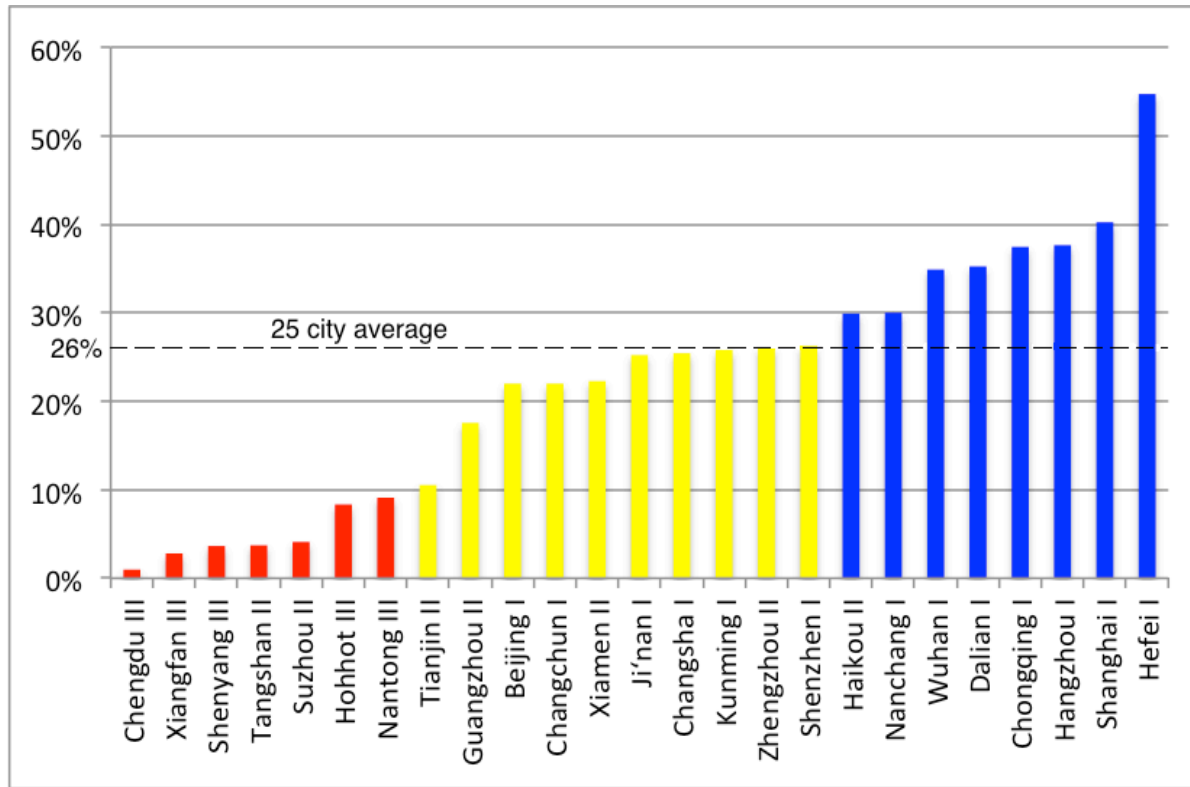
- ❑ Electric buses grow fast



- ❑ Electric bikes: 30 M annual production (with on-road stock of 120-150 M)
- ❑ Low-speed electric vehicles: 64 K annual production in Shangdong Province alone in 2011

The Half Empty Story

- NEV demonstration in 25 cities has been dismal, despite political and financial support

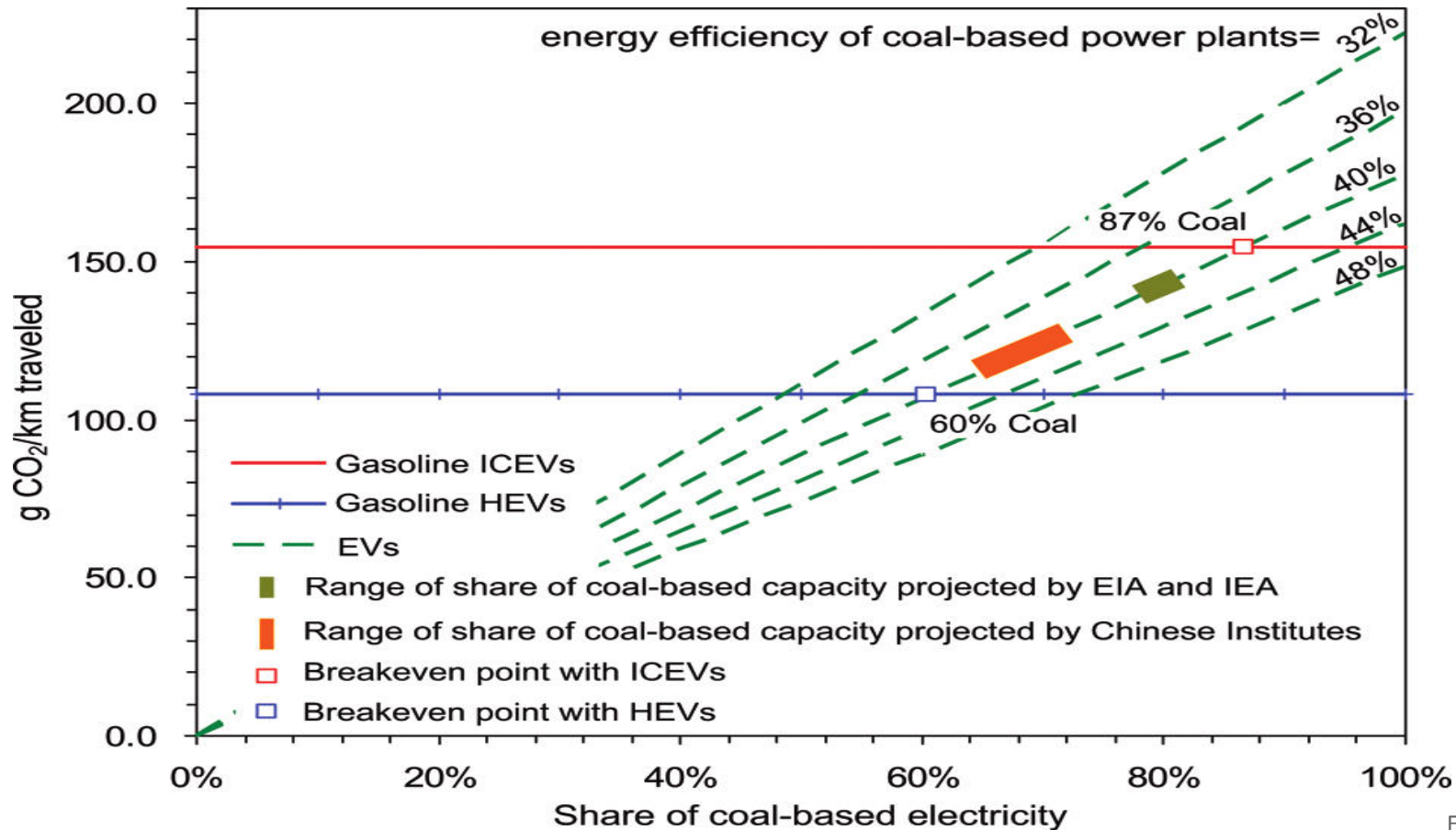


From Gong et al. (2012)

- NEV sales to private car owners does not happen (yet)



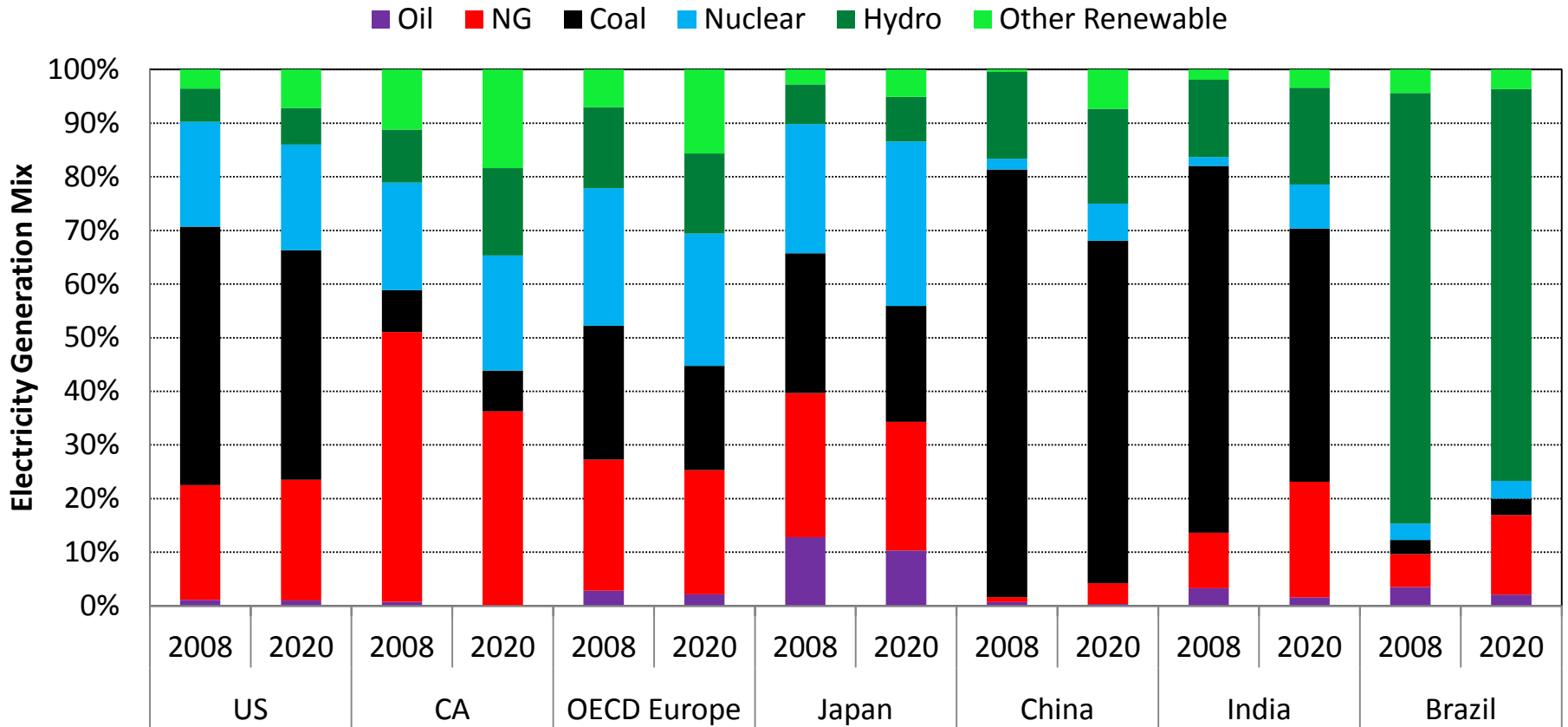
Emission Benefits of NEVs Depend on Cleaning Up the Power Sector



From Huo et al. (2010)

- ❑ The visionary M&M (not your favorable candy bar) renewable power scenarios are needed if NEVs are to contribute to the 2° C scenario
- ❑ Though I have not taken a stab at M&M with LCA, indirect effects, etc.

Electricity Generation Mixes in Different Countries: Implication for Transportation Electrification



From Wang et al. (2011)



Diesel Cars in China?

- ❑ Some auto makers have promoted hard
- ❑ Diesel/gasoline ratio is about 2
- ❑ Diesel shortage is a serious problem
- ❑ Diesel emissions are a concern

New Hopefuls

- ❑ Restriction of new vehicle registration in cities: Shanghai, Beijing, Guangzhou, Guiyang; they are just the starting point
- ❑ Gasoline price is increasing
- ❑ Parking is becoming expensive in downtown areas
- ❑ Public transportation is improving with significant government investments
- ❑ Congestion charges for systematically containing private transportation usage?



Concluding Remarks

- ❑ Personal mobility vs. motorized vehicles
- ❑ Overarching challenges
 - Inter-agency coordination vs. collaboration vs. competition
 - Synchronization of public and industry interests
 - Balance of economic development vs. environmental sustainability throughout government spectrum, especially at provincial and local level
 - Cross-board fiscal policies for environmental and energy policies
- ❑ Fuel economy standards
 - Need to catch up with EU, Japan and the U.S.
 - Implementation policies urgently needed