Air Quality in China: Transportation – Co-Control Challenges and Opportunities

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China's Production and Sales in 2013 ~ 22 Million



Control of regional contribution, Transportation is critical to local attainment

Beijing PM_{2.5} Sources



Shanghai PM_{2.5} Sources



* Based on Beijing & Shanghai EPB data

20~25% from regional transport (green)

20~25% from Motor Vehicles

Bellagio Principles Should Guide Policymakers

- Design Programs & Policies That Reduce Conventional, Toxic, Noise and Greenhouse Emissions in Parallel
- Treat Vehicles and Fuels As A System
- Expect & Require Best Technologies and Fuels Worldwide – in Both Industrialized and Developing Countries

Bellagio Memorandum on Motor Vehicle Policy PRINCIPLES for VEHICLES and FUELS in RESPONSE to GLOBAL ENVIRONMENTAL and HEALTH IMPERATIVES Consensus Document: 19-21 June, 2001 Bellagio, Italy

THE ENERGY FOUNDATION

Emissions standards for mobile sources in China

\smallsetminus	Year	2006	2007	2008	3 2009	2010	2011	2012	2013	2014	2015	2016	2017	2018-2020
Category														
LDV	CI	II		Ι	III				IV					V
	SI	II		I	III		IV							V
	Gas-SI	II		I	III		IV							V
HDV	CI	II		Ш					IV					
	SI	II				III			IV					
	Gas-SI	II		III			IV							
МС	<=50ml	II				III								
	<=50km/h													
	>50ml	II				III								
	>50km/h													
Low speed		N/A	Ι	II									IV	V
Off-road diesel		N/A			I	I	[I	Ι		
Off-road gasoline		N/A						Ι				II		

Actual Implementation Has Been A Serious Challenge Especially For Heavy Duty Vehicles – Fuel Quality & Institutional Challenges

Source: Huiming Gong, CSEP

Transportation measures in Beijing's clean air plan 2013-2017 (Emissions)

Area	Target						
PM 2.5	60 micrograms/cubic meter in 2017						
Vehicle population	≤6 million by 2017 (currently 5 million)						
Travel restriction/VMT	 Higher-emission vehicles not allowed in inner city (6th Ring) Fuel tax Low Emissions Zone Congestion charging Enhance public transport capacity 						
New vehicle emissions	 urban HDD must install DPF; China 6 in 2016; May be replaced by BJ6* separate ORVR standard 						
Fuel quality	China 6 in 2016						
In-use emissions	Strengthen I/M, ≥7 million in-use tests annually						
Scrappage	 Scrap 1 mil. high-polluting and old vehicles by end of 2017; scrap all yellow sticker vehicles in 2015 						

6 Source: Hui He, ICCT

Transportation measures in Beijing's clean air plan 2013-2017 (Energy consumption)

Area	Target
Fuel consumption	Overall, transport fuel consumption reduces by 5%
Vehicle fuel consumption limit	Introduce more stringent standard (than national) for light and heavy-duty vehicles
Promote new energy vehicles	200,000 NEV+HEV in 2017, 70% private
Greener fleet structure	 Replace gasoline and diesel vehicles with new energy vehicles, or energy- saving vehicles Replace 65% of buses Taxi Coaches Civil fleet (sanitation, postal) Green long-haul freight Green urban logistics Pickup or light truck to replace low- speed (ag) vehicles

7 Source: Hui He, ICCT

Road Vehicle Emissions Trends in Jing-Jin-Ji Region Baseline Versus World Class Standards

Oxides of Nitrogen

Black Carbon



Slide 8 Source: Zhenying Shao, ICCT

Specific Policy Challenges in Beijing

- Diesel Cars Good For CO₂ But...
 - Banned in Beijing Due to High PM and NOx
 - Potential CO₂ Benefits Foregone
 - Beijing Now Reconsidering With Ultra Low
 Sulfur Diesel Fuel (10 PPM) and PM Filters
- Gasoline Direct Injection

 Very Good CO₂ Emissions But
 NOx and PM Control requires Ultra Low Sulfur Gasoline (10 PPM)

Major Challenges in Creating and Implementing An Effective Motor Vehicle Pollution Control Program

- Strong Legal Framework
- Institutional Structure and Capacity
- Funding and Resources
- Appropriate Fuel Quality