

# Low-Carbon Fuels and Vehicle Efficiency Policies in World's New No. 1 Auto Market, China



TRB Annual Meeting 2010  
Washington DC  
January, 11<sup>th</sup>, 2010



Feng An  
The Innovation Center for  
Energy and Transportation (*iCET*)



# Outline

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- **Introduction to iCET**
- **Fuel Economy Analysis**
- **Green Car Rating and Insurance Carbon Offsets**
- **Electric Vehicle Research**
- **Low Carbon Fuel Standards and Policies**
- **Conclusion and discussion**



# Introduction to iCET

- iCET is a non-profit, independent policy research organization, founded and registered in Beijing and subsequently registered in California;



- Founder & Executive Director:
  - **Dr. Feng An**
- Registered non-profit in Beijing: **2006**
- Registered 501(c)(3) in California: **2008**
- **Goal: to introduce low carbon best practices from around the world to China and implement them in a locally appropriate fashion**



# Overview of iCET Programs

## ➤ Low Carbon Transportation

- Fuel Economy Standards and Policies for China
- Green Car Online Rating and Insurance Carbon Offsets
- Low Carbon Fuel Standards and Policies
- Electric Vehicle Research



## ➤ Climate Change Program

- Energy and Climate Registry (ECR) in China
- MRV and Carbon Offsets



中国能效与碳注册  
ENERGY AND CLIMATE REGISTRY



## ➤ Energy Efficiency and Clean Energy Programs

- LED lighting standards and related policies
- Jiangsu-US Green Business Partnership

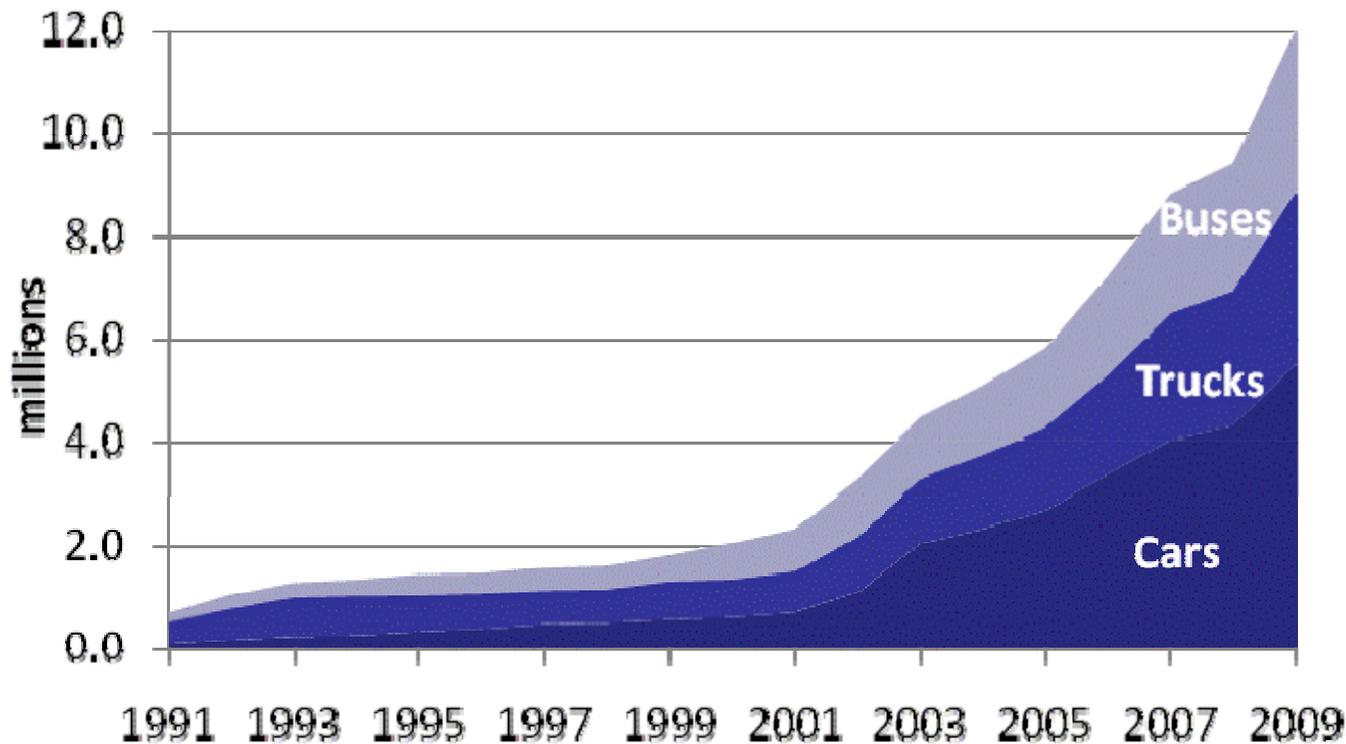


## ➤ Conferences and Outreach



# China's Stunning Path to Claim the Number One Status of the Global Auto Market

Annual Vehicle Sale in China May Have Reached 12 millions in 2009 (US was about 10.5 mil)

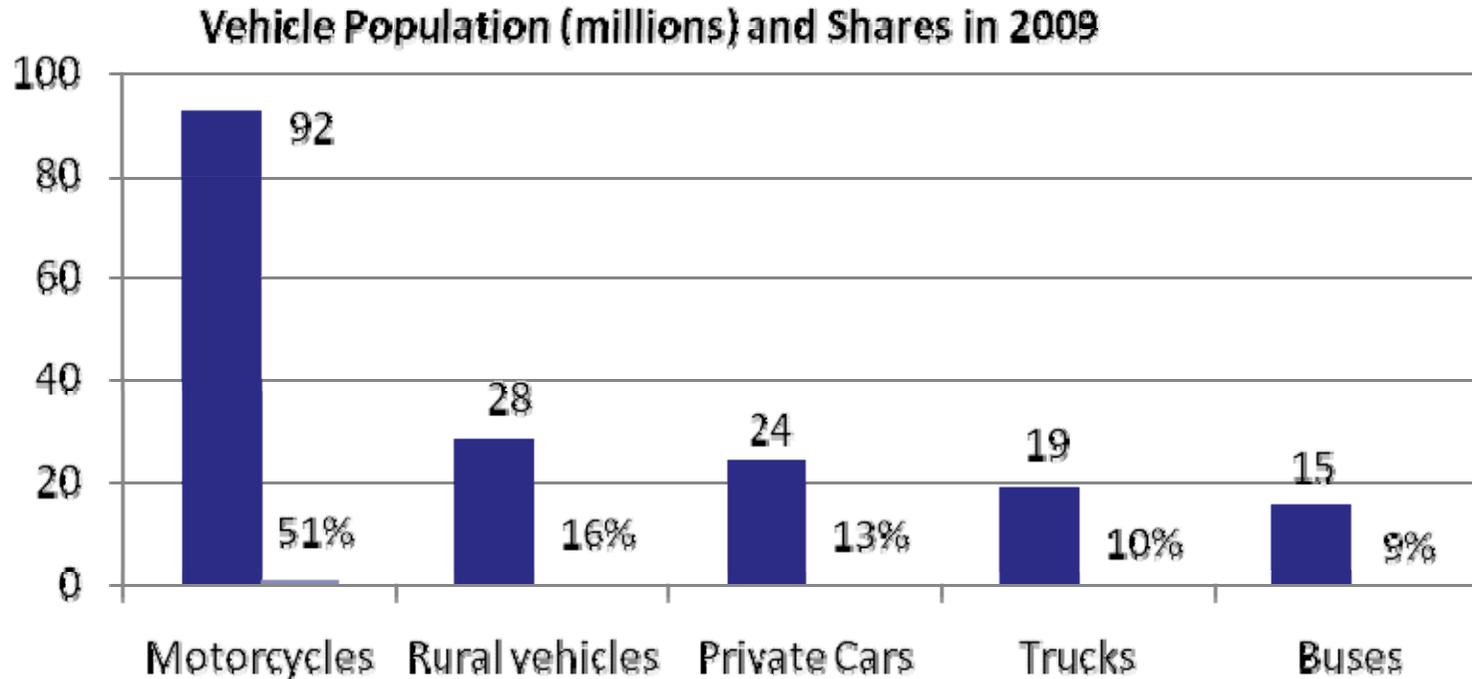


China's vehicle sales grew 28 % in 2009 to surpass the U.S. as the world's largest auto market. Full-year sales was about 12 million, according to NRDC. U.S. sales will likely be around 10.5 million this year

Source: Feng An, iCET, 2010



## China's vehicle population has reached 180 million by the end of August 2009

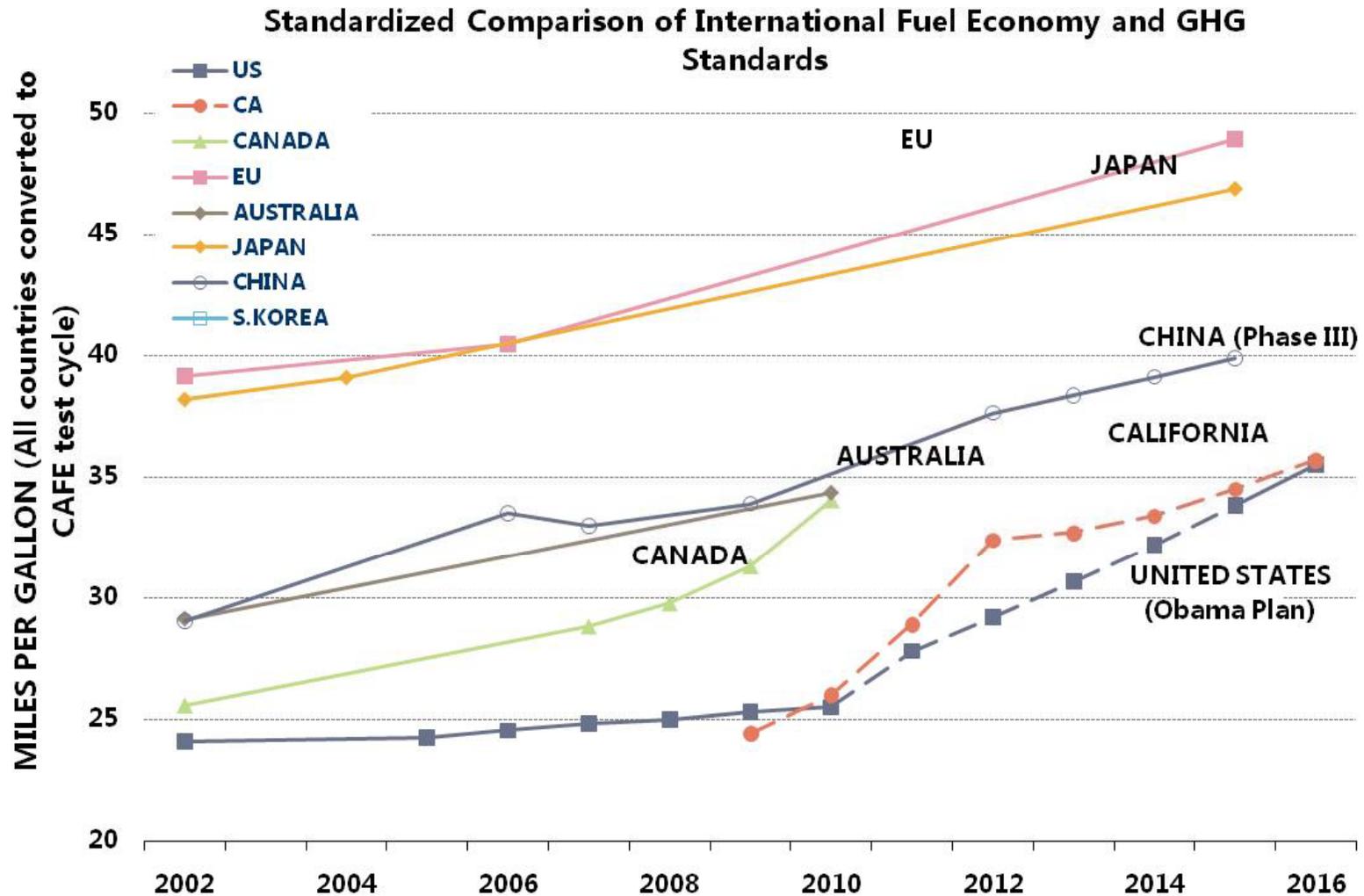


Source: Feng An, iCET, 2010, China Ministry of Public Security, 2009

According to the latest statistics of the Traffic Management Bureau of the Ministry of Public Security (MPS), China's vehicle population has reached 180 million by the end of August 2009. Out of which there are 71,856,993 motor vehicles (including three-wheeled autos and low-speed trucks) and 92,387,571 motorcycles, private cars reached 23,773,791



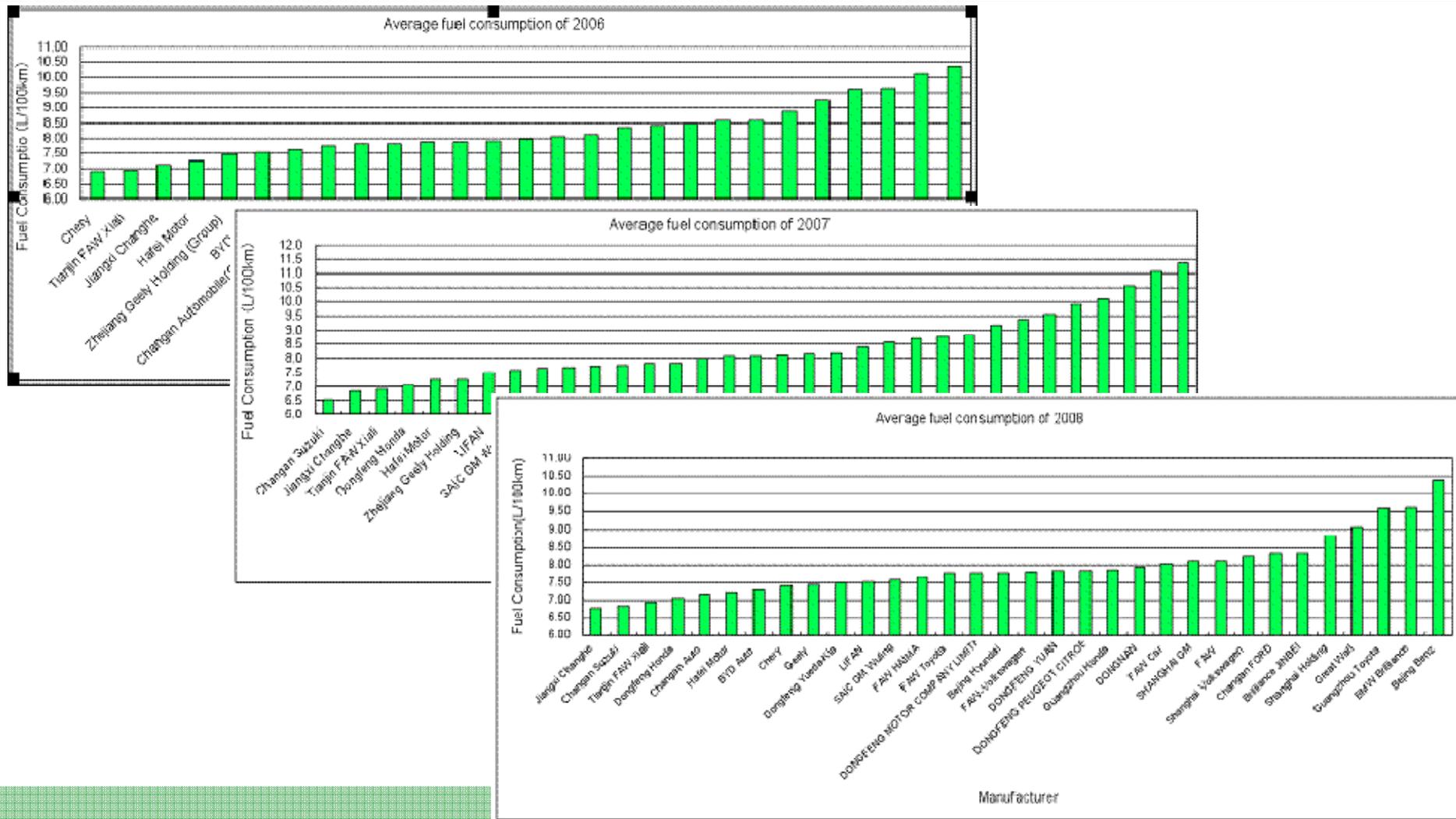
# Comparison of World-wide Fuel Economy Standards



Source: Feng An, iCET, 2009

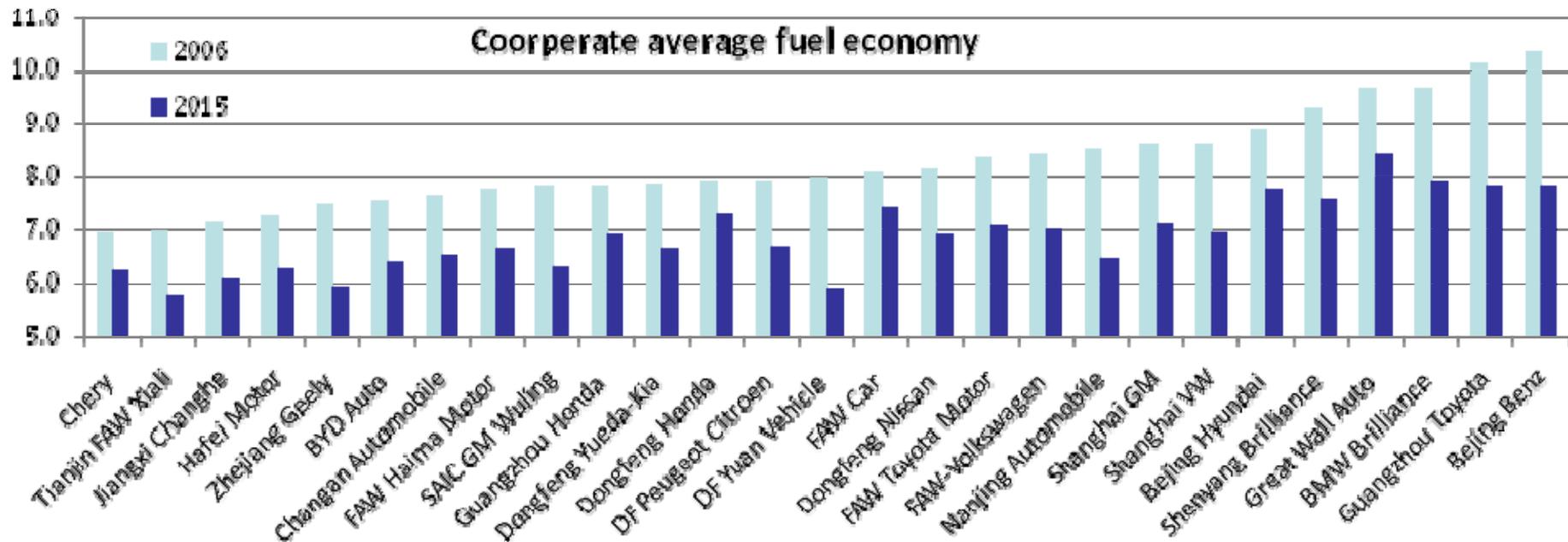


# China Corporate Average Fuel Economy Analysis among 27 Auto groups (2006 – 2008)





## Phase III (2015) Chinese FE Target Analysis – 27 auto groups fleet average targets

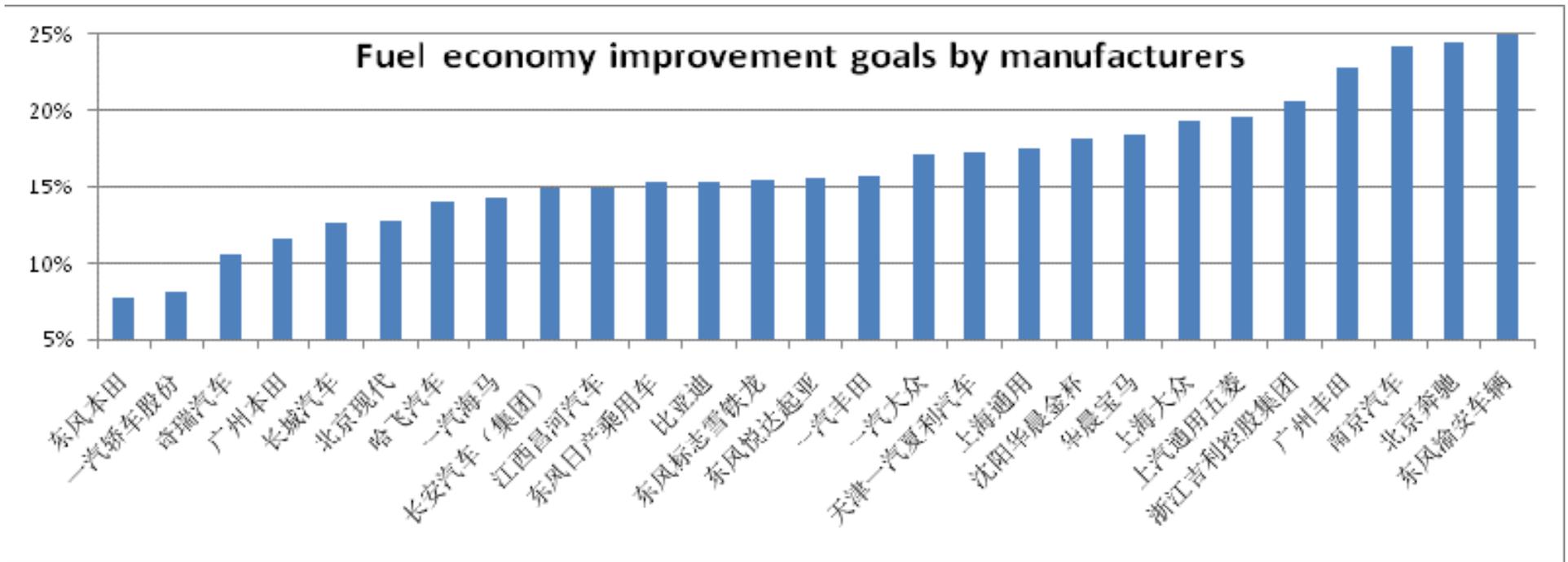


Source: Feng An & Cheng Wang, iCET, 2009



# Phase III (2015) FE Improvement Target Ranges from 8% to 26% among 27 Auto Groups

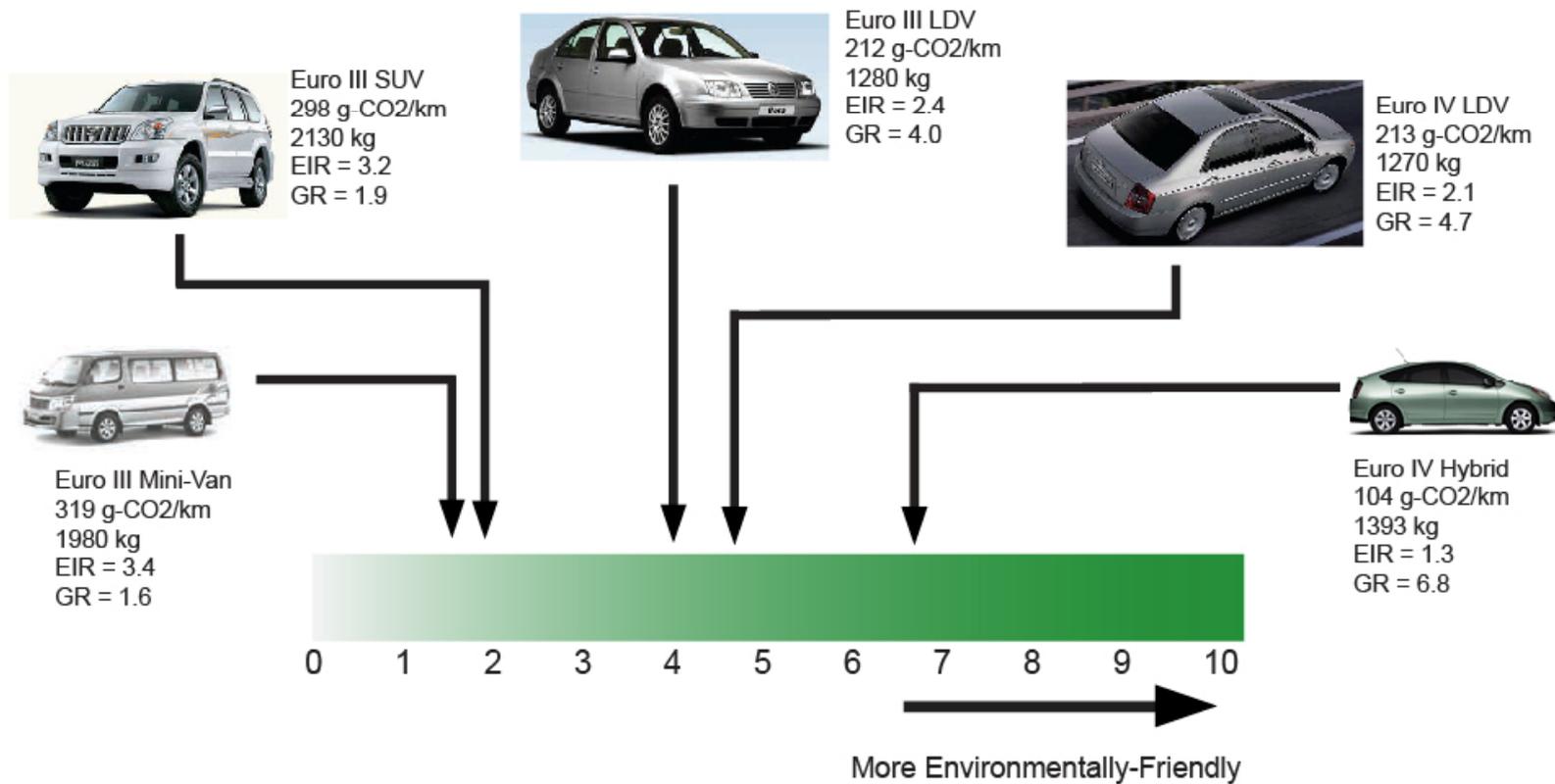
## Common and differentiated Targets



Source: Feng An & Cheng Wang, iCET, 2009

# Green Car Rating System

## Examples





- 首页
- 关于我们
- 推荐车型
- 方法学
- 分析结果
- 报告
- 联系我们

## 得分查询

生产制造商

商标

选择排量

请输入

## 比较查询

生产制造商       生产制造商

商标       商标

选择排量       选择排量

## 销售前十位排行

商标	销量	平均绿色得分
捷达	200077辆	4.7
桑塔纳	197912辆	4.3
凯越	196742辆	4.3
夏利	128509辆	5.2
QQ	129286辆	5.8
凯美瑞	170285辆	3.4
福克斯	125825辆	4.7
骐达	123310辆	4.7
伊兰特	120329辆	4.5
雅阁	118024辆	4.1

## 绿色得分前十位排行

厂商	商标	变速箱	排量型号	星级
比亚迪	F1	手动	1.0L	☆☆☆☆☆
天津夏利	夏利	手动	1.0L	☆☆☆☆☆
一汽丰田	普瑞达	自动	1.5L	☆☆☆☆☆
长安福特	马自达	手动	1.3L	☆☆☆☆☆
奇瑞	QQ	自动	1.1L	☆☆☆☆☆
奇瑞	QQ	手动	0.8L	☆☆☆☆☆
广州本田	飞度	手动	1.5L	☆☆☆☆☆
哈飞	路宝	手动	1.1L	☆☆☆☆☆
合肥昌河	昌河	手动	1.1L	☆☆☆☆☆
哈飞	哈飞	手动	1.0L	☆☆☆☆☆



The Ministry of Science and Technology,  
People's Republic of China

## Summary of the First U.S. - China Electric Vehicle Forum

September 28-29, 2009 – Beijing, China



*Prepared for:* United States Department of Energy  
Office of Policy and International Affairs

*Prepared by:* The Innovation Center for Energy and  
Transportation

# Made in China: Low-speed EVs in China

## The Future of EVs?



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# Transportation fossil fuel and biofuel consumption in China

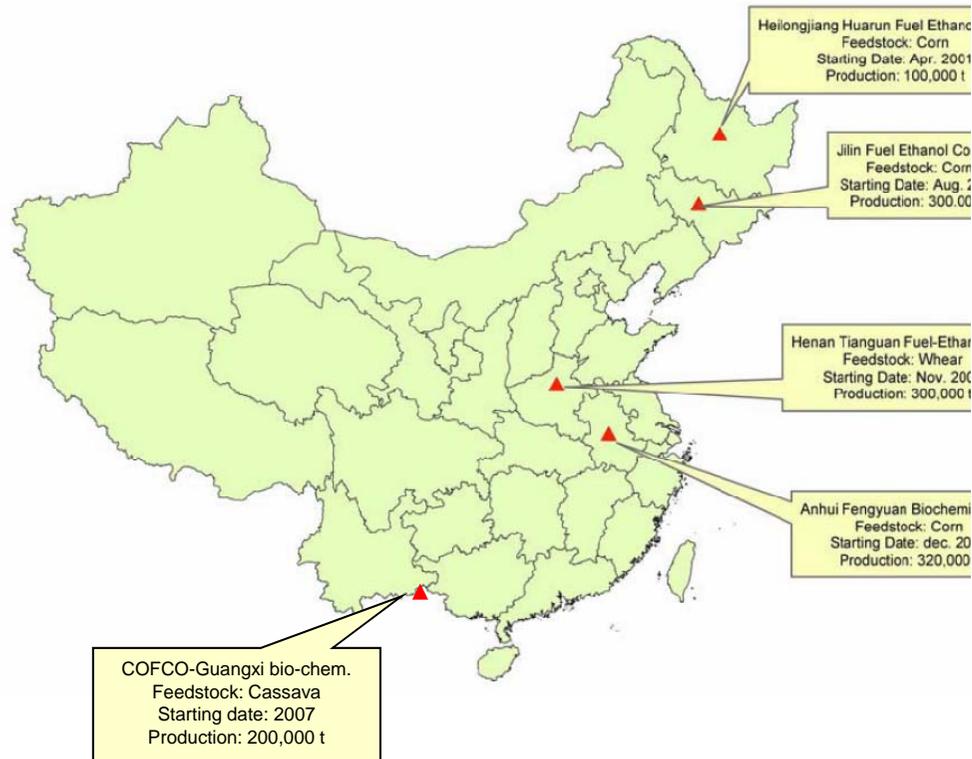
- China's transport fuel consumption(2008): 138.8 Mt fossil diesel, 63.4 Mt gasoline;
- Biofuel production and consumption(2006): about 1.6 Mt, of which about 1.3 million tons are ethanol and 0.3 million tons are biodiesel (unstable); approx. 95% of biodiesel is waste oil biodiesel. Biofuel is less than 1% transportation fuel in China now.
- China's biofuel targets (with no new grain ethanol projects allowed):

	2010 (Mt/year)	2020 (Mt/year)	Potential carbon savings
Bioethanol	2	10	0-40% (cellulosic up to 60%)
Biodiesel	0.2	2	Up to 85%

- Can these fuels help reduce the carbon intensity of China's transport sector sustainably?
- What should the role of Coal to Liquid fuels be? These fuels can emit up to twice the carbon emissions of conventional fossil fuel.



## Ethanol Production and E10 Promotion in China



Four corn-based ethanol plants and one cassava-based, are licensed by government



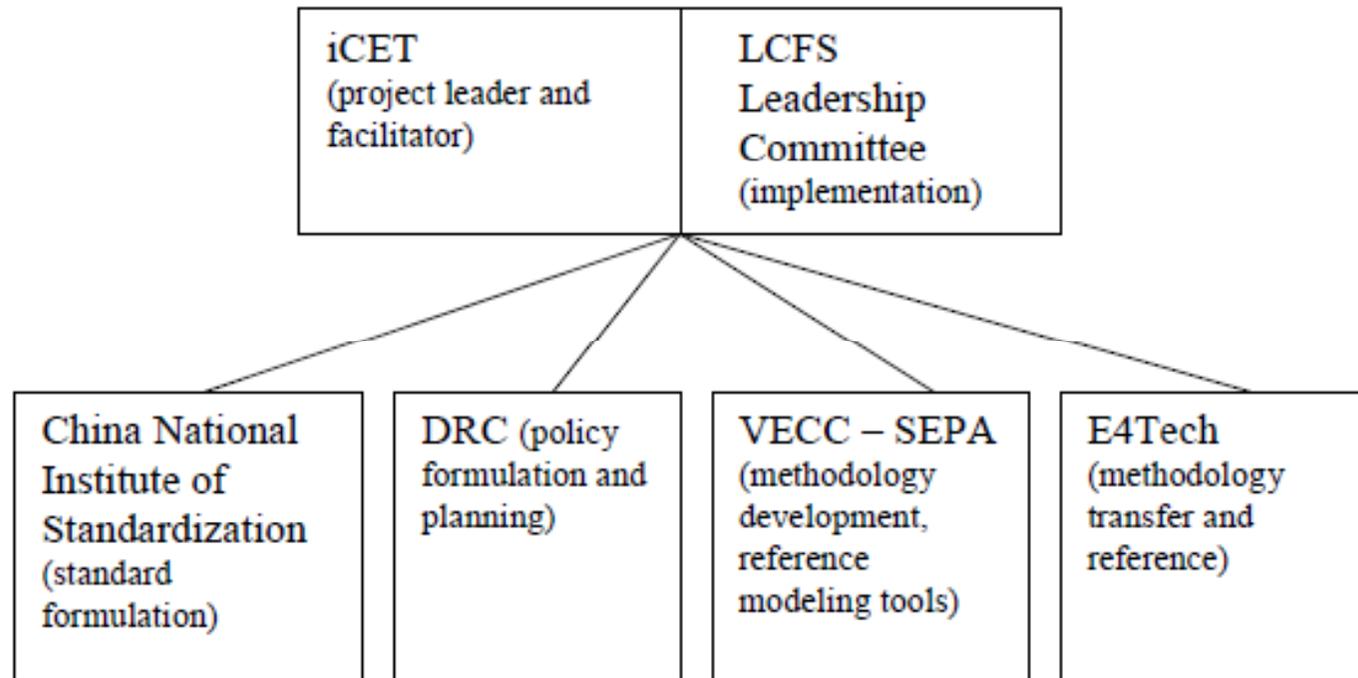
**Extensive Pilot Projects** Bio-ethanol Gasoline for Automobiles in 2004 are five provinces: Heilongjiang, Jilin, Liaoning, Henan, and Anhui; and 27 cities in Hebei, Hubei, Jiangsu, Shandong; Guangxi province started at 2008

Source: update based on Fengxia Dong, 2007.10

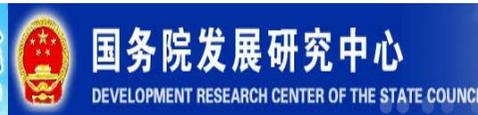


# iCET Initiated Low Carbon Fuel Project in 2007, with initial financial support from UK

## Project Implementation Team



## Project Partners





# Government and International Support

国务院发展研究中心产业经济研究部  
The Industrial Economics Research Department  
Development Research Center  
The State Council of China  
2007年5月11日 (May 11, 2007)



Daniel Sperling  
Professor and Director, UC Davis  
and  
Member, California Air Resources Board

attention to the development of the project.

国家标准化管理委员会 工业标准一部  
Standardization Administration of the People's Republic of China  
May 22, 2007

Drew Kodjak  
Executive Director

Alexander E. Farrell

Vehicle Emission Control Center  
State Environmental Protection Administration of  
2007年5月17日 (May 17)



## Air Resources Board



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Secretary for  
Environmental Protection

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Arnold Schwarzenegger  
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## Low Carbon Fuel Standards and Policy Project Objectives

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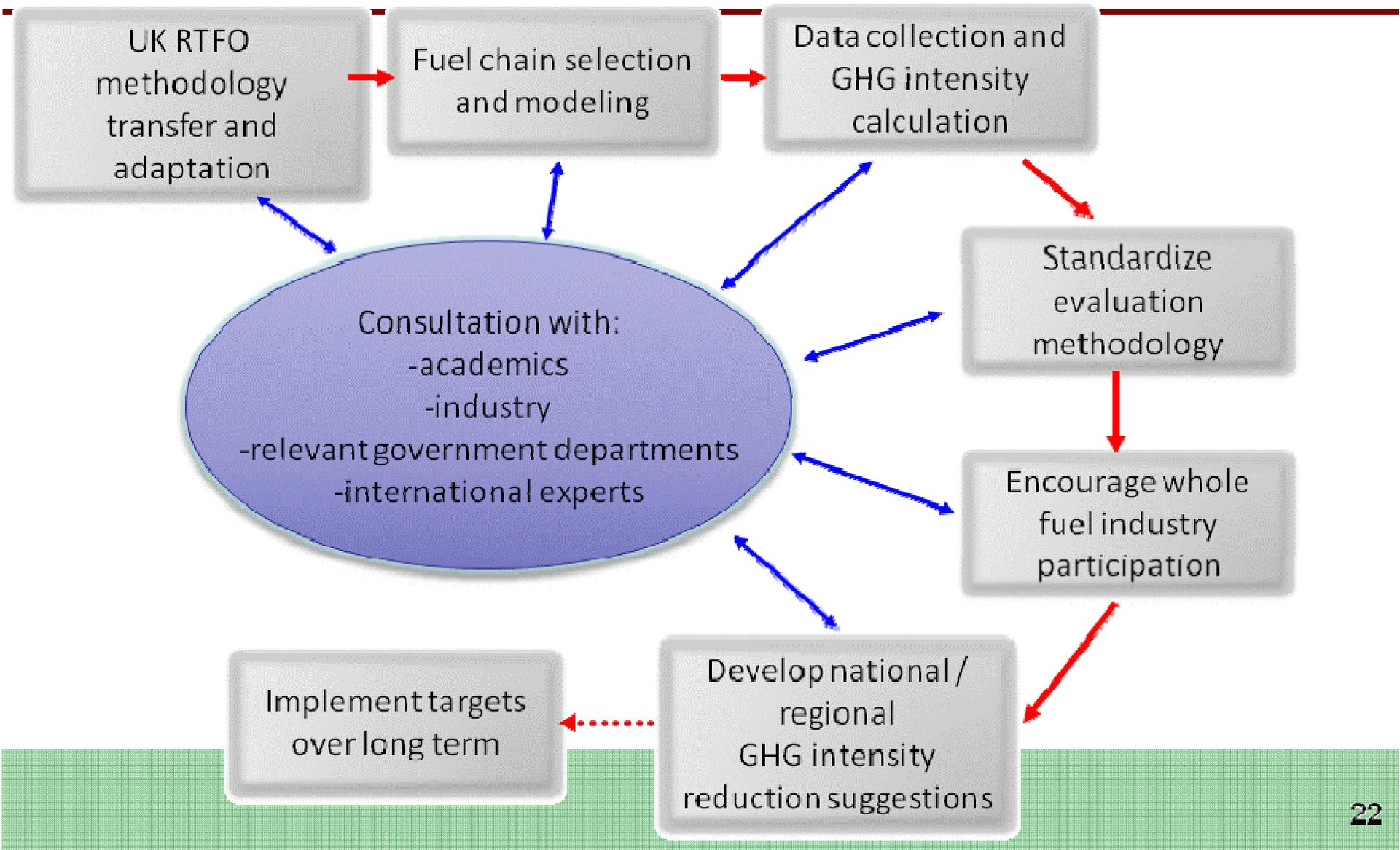
- The first stage of the China Low Carbon Fuel Standards and Policy project began in September, 2007. It is expected to finish around June 2010
- Research and provide Well-to-Tank (WTT) methodology for measuring lifecycle GHG emissions of transportation fuels in China
- Explore policy options for promoting a lower carbon transportation fuel system in China based on international experience; use GHG measurement as an incentive to reduce emissions from all fuel chains and save energy
- Future: cooperate with industry and government to promote low carbon and environmentally sustainable fuels, inform government about international activities on fuel sustainability policy, and encourage government to cooperate internationally



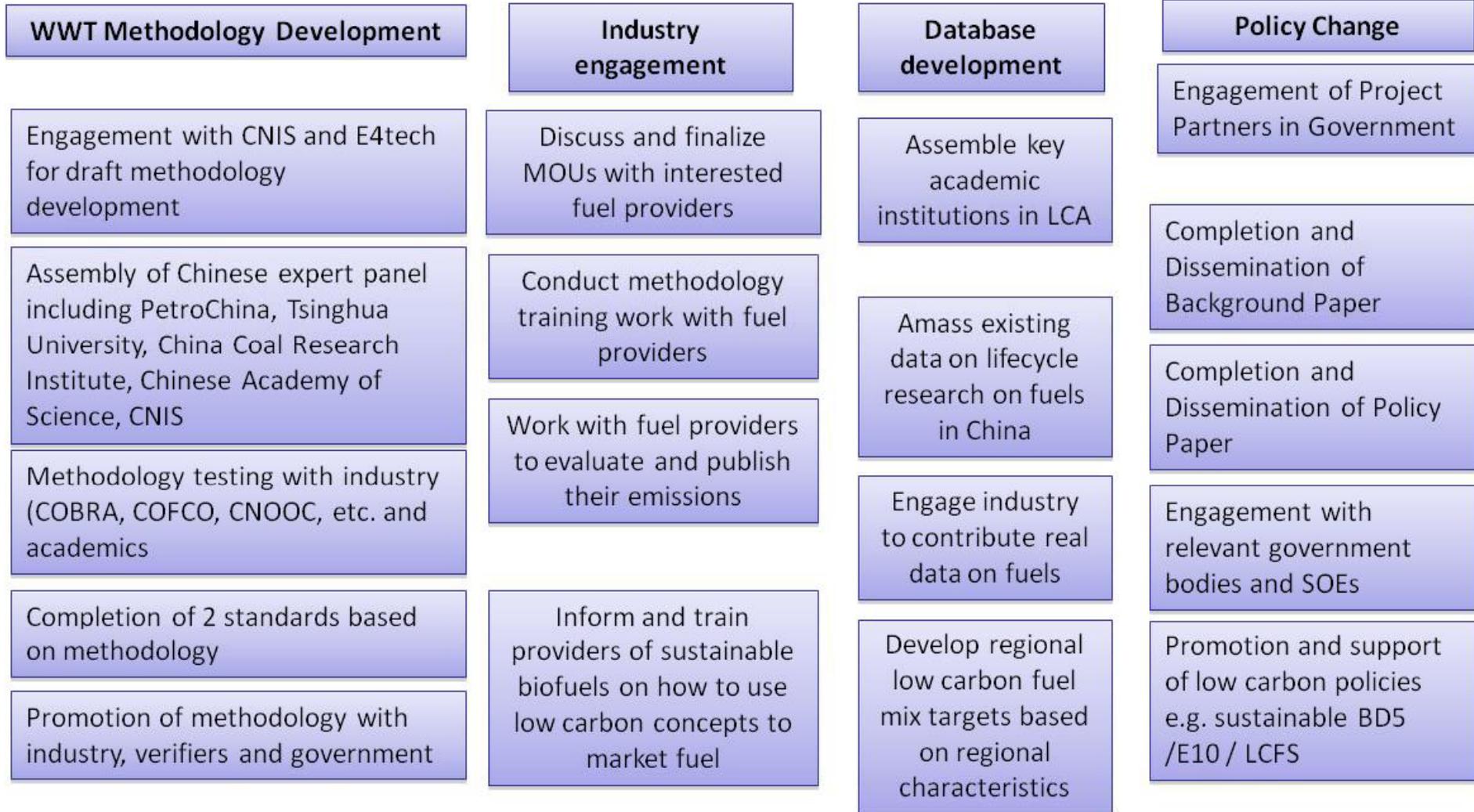
# Transportation Fuel LCA Standards Development

- **Our standards developing partner: China National Institute of Standardization (CNIS)**
- **The two standards for transportation LCA for GHGs emission:**
  - *Principles and Requirements of LCA for Transportation Fuel Greenhouse Gas Emission*  
draft standard for public review has been finished (December, 2009), now undertaking public review from December 2009 to March, 2010 – English summary available soon.
  - *Transportation Fuel Greenhouse Gas Emission Reporting and Audit Guide*  
still under development  
The two standards have been listed on the 2008/2010 National Standard Development Plan;  
the Standard Planning Number: 20091267-T-469
- **Standard Technical Advisory Group:**  
iCET, Tsinghua University, Sinopec, COFCO, China National Institute of Standardization (CNIS), China Academic of Science (CAS), China Coal Science Research Institute
- **To finish the two standards draft for Standard Administration Committee (SAC) approval by June, 2010.**

# Methodology and Policy Development



# LCFS Project Channels





# Project Update

## Completed Tasks

- ✓ Establish national and international support through conferences (two major conferences: Sept, 2007 and April, 2008)
- ✓ Complete background report (available at [www.icet.org.cn](http://www.icet.org.cn))
- ✓ Adapted UK Renewable Transport Fuel Obligation methodology for assessing WTT lifecycle GHG emissions
- ✓ Study trip to UK completed – policy and methodology development of the Renewable Transport Fuel Obligation
- ✓ 5 Sample fuel chains selected mapped out, three fuel chains researched in detail and LCA GHG emissions calculated
- ✓ Established the national standard technical committee to develop the “*Principles and Requirements of Life Cycle Assessment on Fuel Carbon Emission*” With meetings held in June and November 2009.
- ✓ Completed in-depth case study of waste oil biodiesel facility in Fujian
- ✓ Signed MOU with COFCO (December 2009)



# Project Update

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- Future work:
  - Solicit broad public input on draft standards (Dec. 2009)
  - Conduct scenario analysis and write a policy recommendation paper about how to reduce GHG emission intensity of transport fuel used in China, and how to implement a fuel LCA GHG intensity reporting system in China;
  - Engage regionally on developing low carbon fuel-friendly policies, etc. e.g. Hainan / Jiangsu BD5 standards
  - Conduct training with fuel producers on fuel LCA, and promote the benefits of LCA analysis and GHG emission reduction
  - Engage internationally on biofuel sustainability standards

# Collaborative Partners on Low Carbon Fuel Policy and Methodology Development in China





# Sponsors

- iCET is grateful for the support of the following major sponsors for this project that make our work possible:
  - *Hewlett Foundation*
  - *Energy Foundation, China Sustainable Energy Program*
  - *Rockefeller Brothers Fund*
  - *UK Foreign and Commonwealth Office – Strategic Programme Fund (UK)*

