

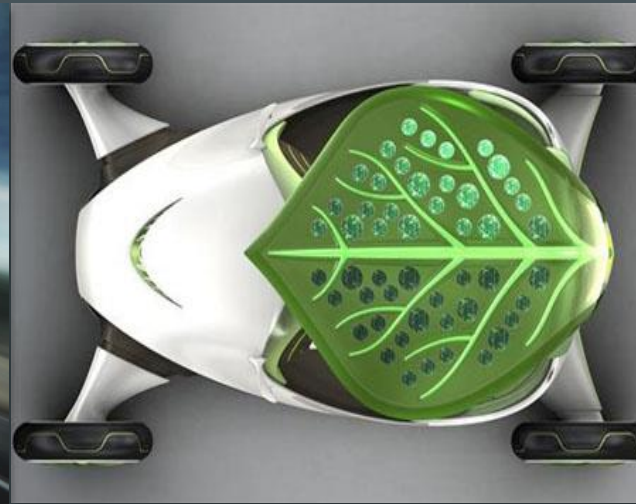


China's NEV Policies and Market Development

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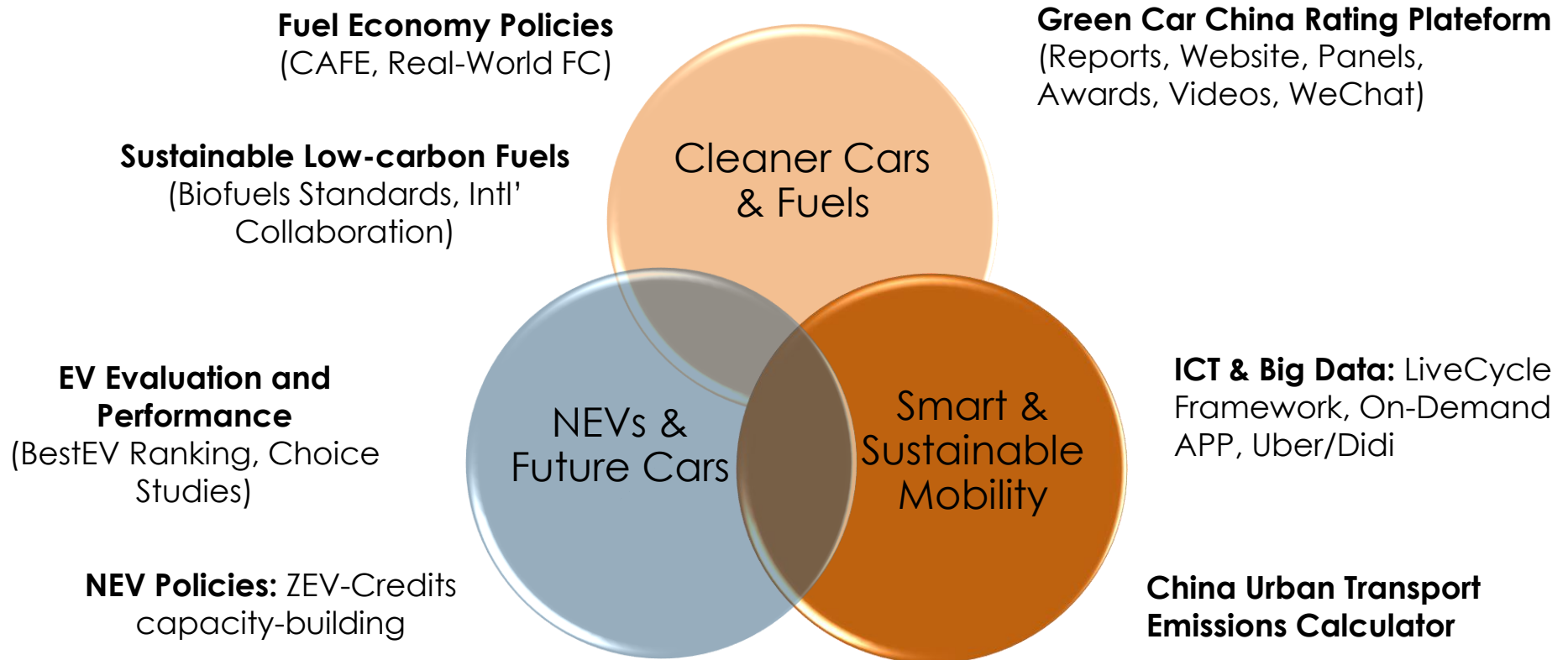
**Industrial Upgrading and Economic Growth in China Conference,
Ann Arbor, Michigan, Oct. 21st, 2016**



About Innovation Center for Energy and Transportation (iCET)

- iCET is a professional think-tank in the areas of clean transportation, climate and carbon management, and cleantech innovation. iCET registered in Los Angeles, California and Beijing, China in 2006.
- Current Focuses:
 - Clean Transportation Transformation (CTTP)
 - Climate and Carbon Management
 - Clean Technology Collaboration and Innovation (US-China Clean Tech Center)
- Major achievements - helped China to establish:
 - The National Fuel Economy Standards for Cars and Trucks
 - The Online China Carbon Registry for Enterprises to Calculate & Report Carbon Footprint
 - The Sustainable Low Carbon Fuel Evaluation Standards
 - The US-China Clean Tech Center

CLEAN TRANSPORTATION PROGRAM FOCUS



NEV DEVELOPMENT IN CHINA

- **NEV Policy Framework Development**
- Financial Context
- NEV Market Snapshot
- NEVs and Fuel Economy
- Outlooks

CHINA NEW ENERGY VEHICLES (NEV) POLICY

Year	NEV policy framework development	Reference
2009-2012	China started its “10 cities, 1000 vehicles” program. The program quickly expanded to include 39 cities, and arguably laid the foundation for the initial development of the industry.	http://www.evtimes.cn/html/201104/19543.html
6/2012	The State Council of China issued “Energy saving and new energy vehicles industry development planning (2012-2020)” targeting 500k PHEVs and PEVs by 2015 and 5 million by 2020	http://www.gov.cn/zwgg/2012-07/09/content_2179032.htm
2013-2014	The years 2013 and 2014 saw a sharp increase in the number of national and local policies that encouraged the development of the NEV industry	
5/2015	The “Made in China 2025 plan” (中国制造2025) anchored energy saving and NEVs as one of China's 10 key sectors that should be at the forefront of development for the coming 10 years.	http://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm
10/2015	China issued the “Electric vehicle charging infrastructure development guide (2015-2020)” targeting > 12,000 new centralized charging and switch station and >4.8 million charging spots (accommodating for needs of 5M NEVs)	http://www.chinaev.org/DisplayView/Normal/News/Detail.aspx?id=21458
11/2015	Recent “NEV industry 10 year development roadmap” projects that sales volume of NEVs will reach 5% of the total vehicle market demand by 2020, and 20% by 2025.	

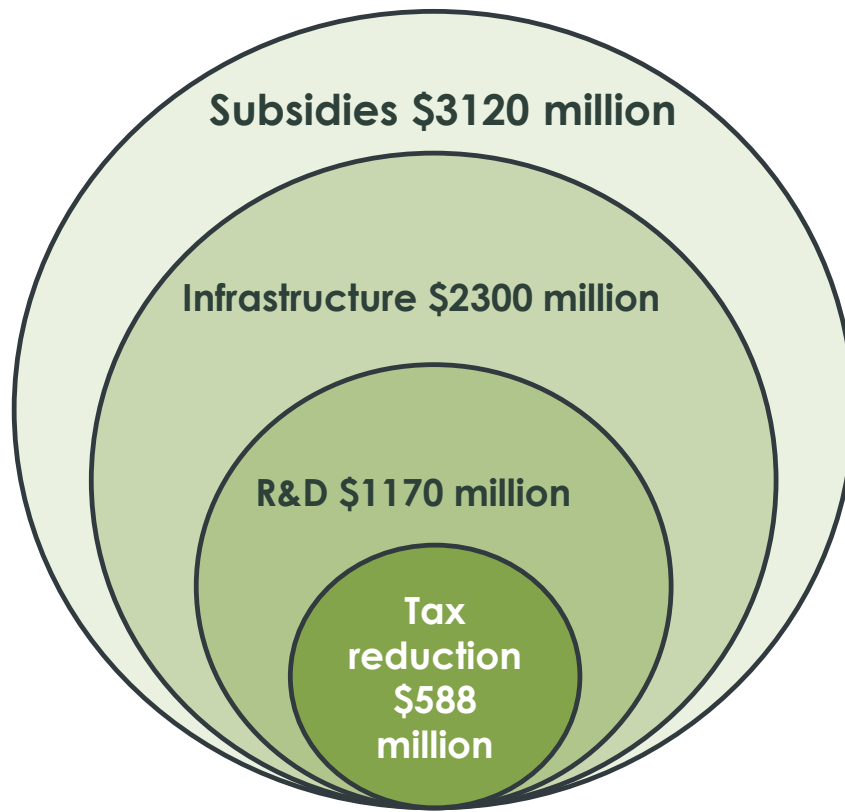
NEV TARGETS AND PLANS

Country	CHINA	GERMANY	U.S.
2015 target	500,000 BEVs& PHEVs	N/A	1 million BEVs by 2015, However backed off later...
2020 target	5 Million NEVs	1 million BEVs	N/A
>2020 target	20% by 2025	5 million BEVs by 2030	N/A
Industry development plan	<ul style="list-style-type: none"> • 12th FYP -> NEV tech plan • Energy Saving and NEV Industry Development Plan 2011-2020 • Pilots since 2009 	<ul style="list-style-type: none"> • National Electro-mobility Development Plan. • Battery, Electric drive, Smart Grid • showcase projects & flagship projects 	<ul style="list-style-type: none"> • Batteries—American Recovery and Reinvestment Act (ARRA '09). • Smart-grid technology—American Clean Energy and Security Act (ACES '09). • Charging stations—EV Everywhere & Working Place Charging Challenges.
Incentive mechanisms	<ul style="list-style-type: none"> • Purchase subsidies • Free electricity • No sales “quota” in mega cities • Free installation of charging spots • No traffic restriction 	<ul style="list-style-type: none"> • Motor vehicle tax exemption • Low purchase tax • Dedicated parking • Dedicated/public lanes 	<ul style="list-style-type: none"> • Tax credit for cars and charging stations • Free parking • Free registration • Access to HOV lanes
Other measures	Public procurement of Taxi and bus fleets	Public procurement plan; Low-interest bank credit	Car shares, Insurance

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NATIONAL INVESTMENT ON NEV INDUSTRY (UP TO NOW)



- In China, the government put large investment on NEV industry: tax reduction, research & development, infrastructure building, and supplying subsidies.
- Up to now, the total investment reached about \$7.2 billion.

NATIONAL FINANCE POLICIES

- ✓ **Tax relief:** consumption tax, vehicle and vessel tax, and purchase tax for EV passenger vehicle.
- ✓ **Subsidies,** as follows:

Type	Driving Range (km)	Allowance (RMB/car)				
		2013	2014	2015	2016**	2017-2020**
EV passenger car	[80 -150)*	35,000	cut down by 5% of 2013 standard	cut down by 10% of 2013 standard	25,000	In 2017~2018, cut down by 20% of 2016 standard; in 2019~2020, cut down by 40% of 2016 standard
	[150 -250)	50,000			45,000	
	R≥250	60,000 (~\$10k)			55,000	
PHEV passenger car	R≥50	35,000	30,000			
Special purpose EV	1800 rmb/kwh, no more than 135,000/car					
Fuel Cell passenger car		200,000	190,000	180,000	200,000	
FC commercial vehicle		450,000				

* Since 2016, the driving range interval will be [100,150)

** http://jjs.mof.gov.cn/zhengwuxinxi/zhengcefagui/201504/t20150429_1224515.html

LOCAL FINANCE POLICY

Local matching subsidies:

Type	Driving Mileage/R (km)	Allowance (RMB/car)				
		Beijing	Tianjin	Shanghai	Shenzhen & Guangzhou	Others
EV passenger car	[80 - 150)	1:1*	1:1	40,000	35,000	Shanxi Province, Changzhou, Chongqing ... About 39 cities support EV progress via favorable policies.
	[150 - 250)	1:1	1:1		50,000	
	R≥250	1:1	1:1		60,000 (~\$10k usd)	
PHEV passenger car	R≥50	N/A	1:1	30,000	35,000	
Special purpose EV		1:1	1:1	2000/kwh, <150,000/car	2000/kwh, <150,000/car	
FC passenger car		1:1	N/A	200,000	200,000	
FC commercial vehicle		N/A	N/A	500,000	500,000	

*1:1 means BJ government will provide subsidies the same level as national standard.

NATIONAL + LOCAL FINANCE INCENTIVES

Total subsidy value* reaches (\$) (in 2015)

Type	Driving Mileage/R (km)	Allowance(\$/car)				
		Beijing	Tianjin	Shanghai	Shenzhen & Guangzhou	Others
EV passenger car	[80 -0150)	9,807	9,807	11,130	~\$10,000	Shanxi Province, Changzhou, Chongqing ... About 39 cities support EV progress via favorable policies.
	[150 - 250)	14,010	14,010	13,232	~\$15,000	
	R≥250	16,812	16,812	14,633	~\$18,000	
PHEV passenger car	R≥50	5,448	9,807	9,574	~\$10,000	
Special purpose EV		560/kwh	560/kwh	592/kwh	592/kwh	
FC passenger car		56,042	28,021	112,083	112,083	
FC commercial vehicle		224,166	224,166	448,333	448,333	

* Total subsidies should not be more than **60%** of MSRP.

MAJOR NEV MODELS PRICE BEFORE SUBSIDY



BYD-Qin plug-in
Range: 750km
MSRP: \$30~33k



DENZA-BEV
Total Driving Mileage: 300km
MSRP: \$57~62k



CHERY-eQ-BEV
Total Driving Mileage: 200km
MSRP: \$25k



BAIC-EV200
Total Driving Mileage: 245km
MSRP: \$32~38k



JAC-iEV5
Total Driving Mileage: 200km
MSRP: \$28k



ZOTYE-YUN 100
Total Driving Mileage: 150km
MSRP: \$24.7k



ZD-D1
Total Driving Mileage: 120km
MSRP: \$17k



BYD-e6
Total Driving Mileage: 400km
MSRP: \$48~57.5k



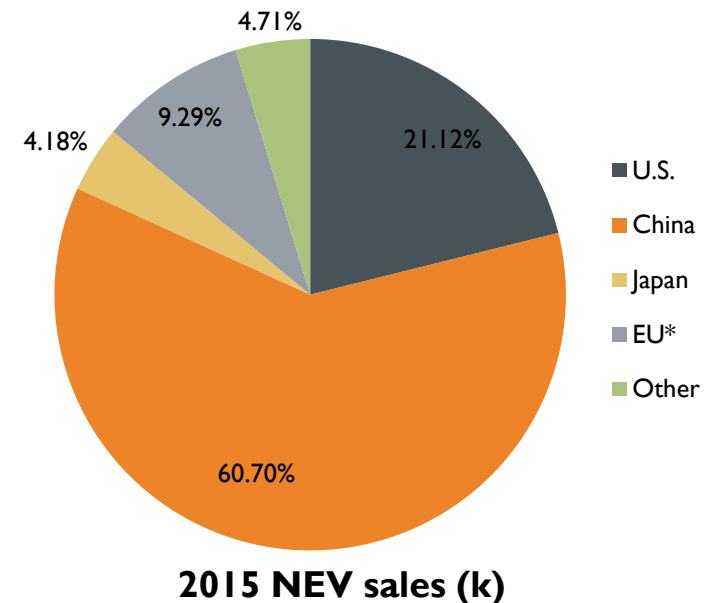
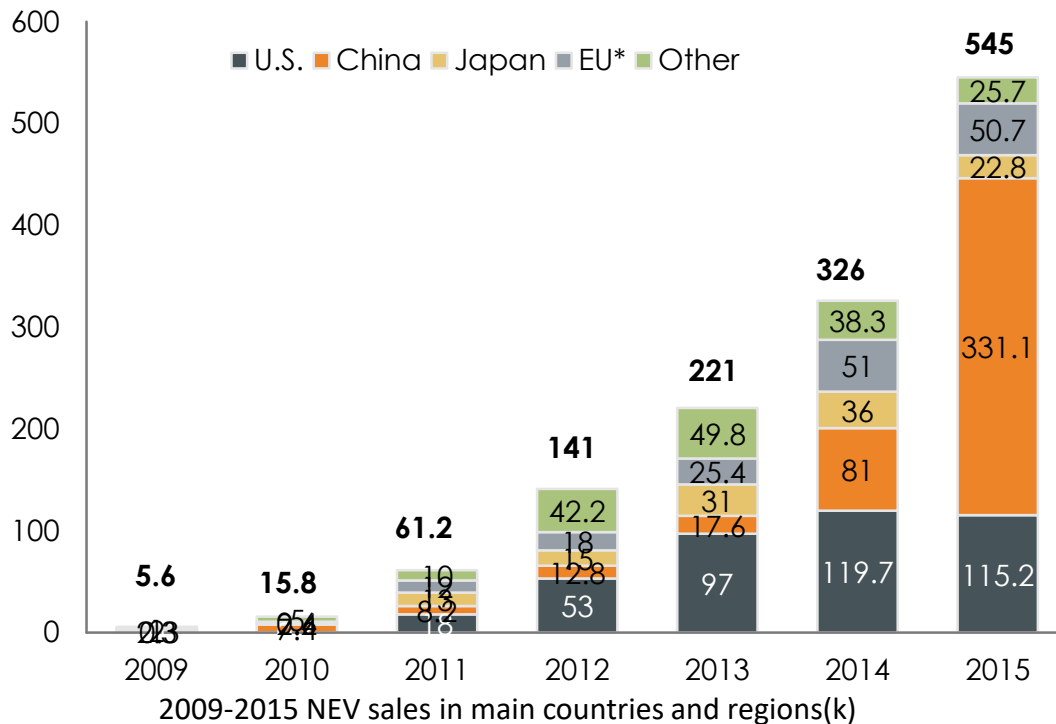
Rowe-550 plug-in
Total Driving Mileage: 600km
MSRP: \$38.7~40k

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COMPARATIVE NEV SALES DEVELOPMENT

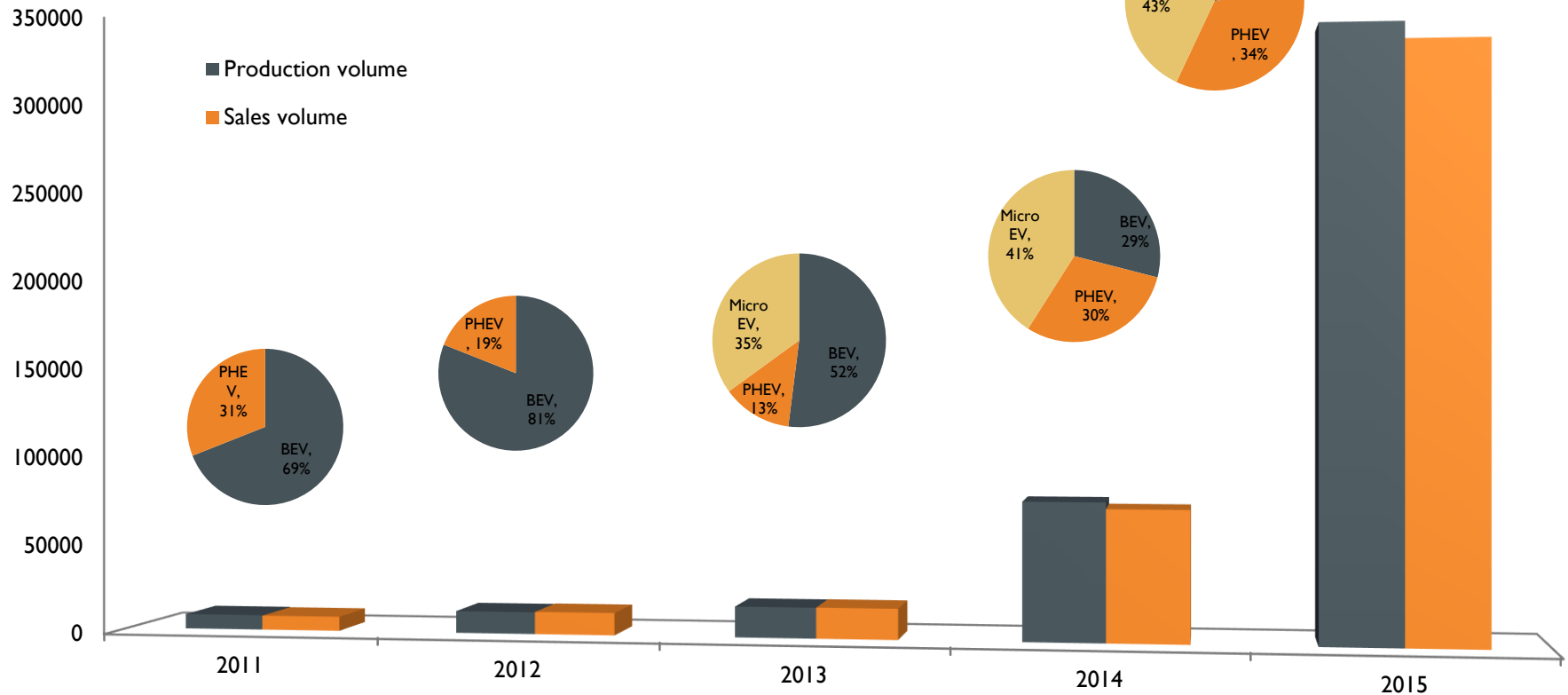
- Global NEV sales increased from 5,600 in 2009 to 545,000 in 2015, 125% average annual growth rate.
- The U.S., China, Japan & Europe account for 88% of global NEV sales.
- In 2015 China's NEV market became world's 1st, sales reaching 331k.
- In 2016 1-9: sales reaching 290K, increasing 101% over the same period in 2015



*EU: the statistic date including France, Netherlands, UK, Germany, Norway, Sweden.

2015 NEV SALES VOLUME IN CHINA

- Production = 345k | Sales = 331k
- EV sales = 247k (449% increase) | PHEV = 83k (181% increase)
- Passenger EVs is accounting for 63% of total EVs
- Micro EVs refer to A0/A00 type

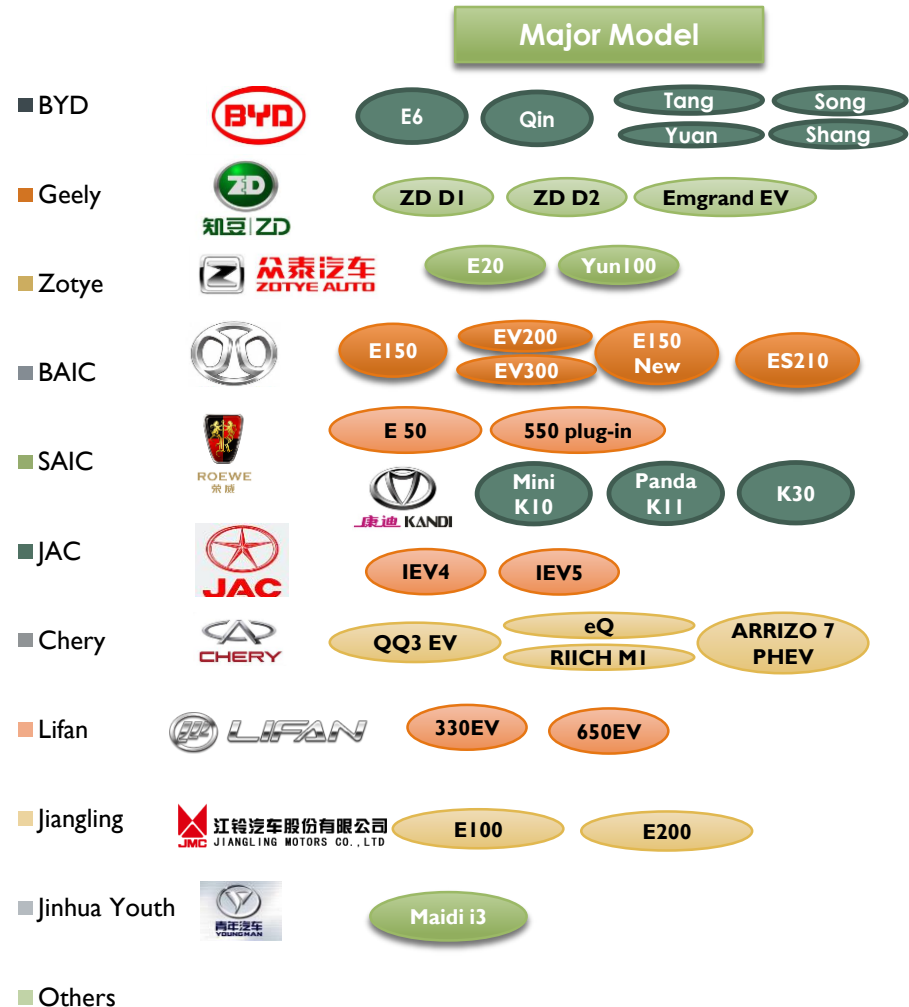
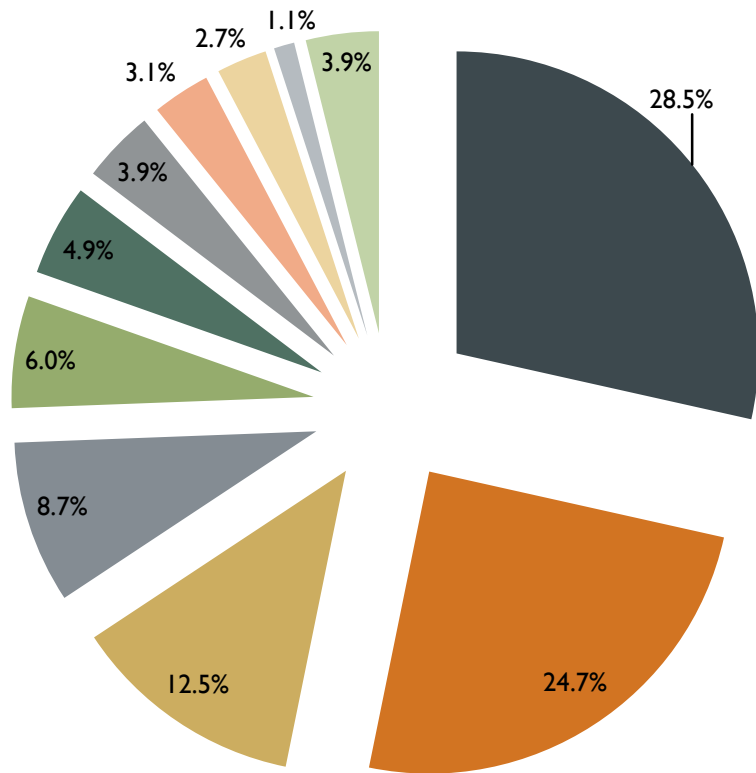


GLOBAL NEV BRAND SALES VOLUME IN 2015

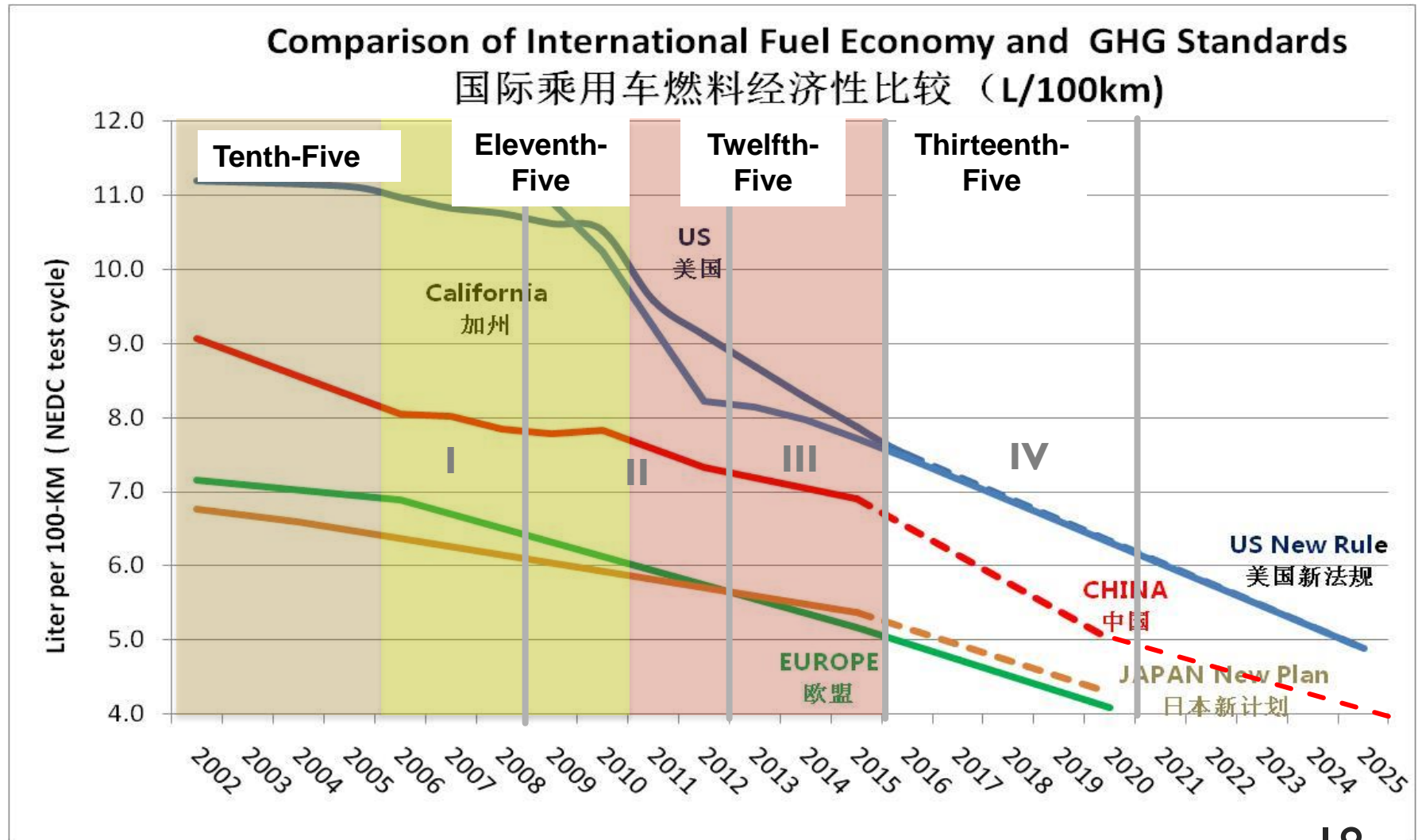
Ranking	Company	Sales Volume	Market share (%)
1*	BYD	58,978	10.81%
2	Renault-Nissan	58,642	10.75%
3*	Geely	52,030	9.54%
4	Tesla	43,840	8.04%
5	BMW	29,183	5.35%
6*	Zotye	25,928	4.75%
7	GM	21,260	3.90%
8	Ford	18,926	3.47%
9*	BAIC	18,105	3.32%
10	Mitsubishi	16,107	2.95%
11*	SAIC	12,359	2.27%
12*	JAC	10,225	1.87%
13*	Chery	8,126	1.49%
14	VW	7,377	1.35%
15*	Lifan	6,470	1.19%
16	Toyota	5,955	1.09%

* China Domestic manufacturer

CHINA'S NEV BRAND MARKET SHARE IN 2015

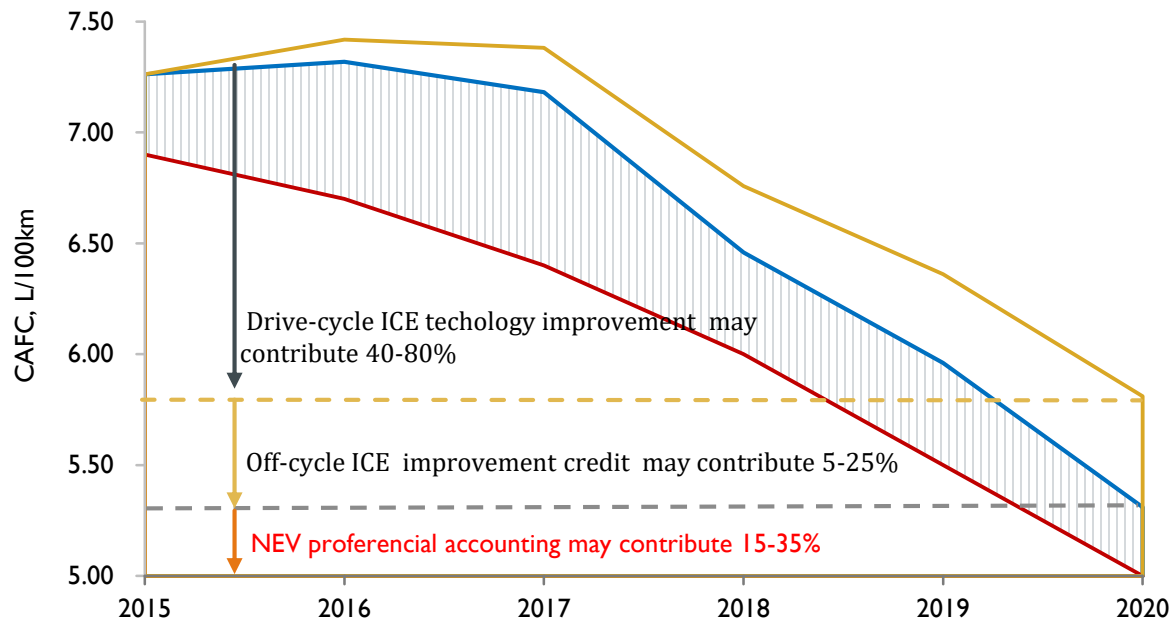


Chinese Fuel Economy Phase IV target will be very challenging!



CAFE SUPER-CREDITS REWARDING NEV

- ✓ NEVs as well as energy-saving tech and credits system → instrumental for achieving Phase IV 2020 5.0L/100km target
- ✓ New policy proposal(not final approved yet): ZEV credits and CAFC credits trade and co-management, it does harmful for fuel efficiency improvement.



Year	NEV accounting multiplier	Fuel Consumption rate
2016	5	0.0
2017	5	0.0
2018	3	0.0
2019	3	0.0
2020	2	0.0

Technologies with a fuel saving credits of up to 0.5 L/100km from their Test-Approval FC value

Kinetic Energy Recovery Systems (KERS)

Efficient air conditioning

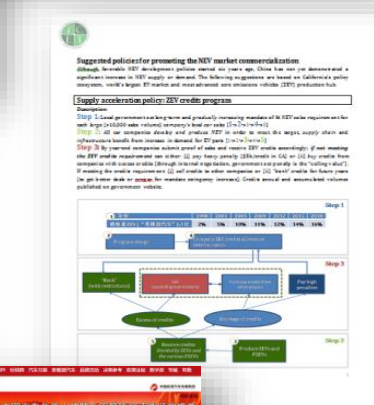
Idle start-stop system

Shift reminder

Introducing ZEV Credits Trading Mechanism

Study Reports, Professional Articles,
and Promotional Hand-outs

Workshops and Stakeholder Discussions
(Shenzhen, Beijing, Chongqing, Shanghai, Hefei)



Outlooks

- ✓ NEV market is surging in China
- ✓ Largely driven by government policies and subsidies
- ✓ Over hundreds EV makers in China, local brands supplying over 90% NEVs.
- ✓ However, many “cheating” problems...
- ✓ Government intents to only permit 10 NEV makers
- ✓ and subsidies are receding
- ✓ ZEV trading mechanism is coming ...
- ✓ will link to CAFE standards to help domestic automakers
- ✓ Foreign brands are entering
- ✓ Next 5 years will witness a lot of changes and consolidations



THANK YOU!

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