中国电动汽车发展进程及展望

The Status and Future of Electric Vehicles in China

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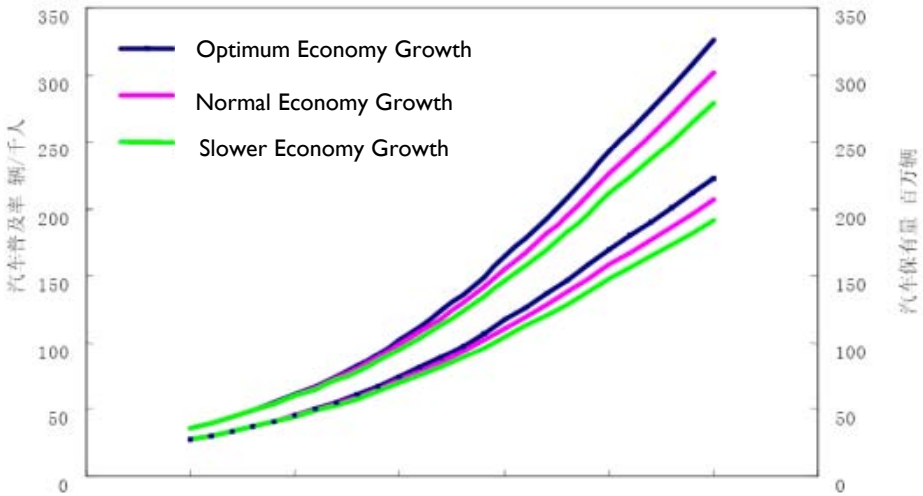
The Urgency to Save Energy and Reduce Emission

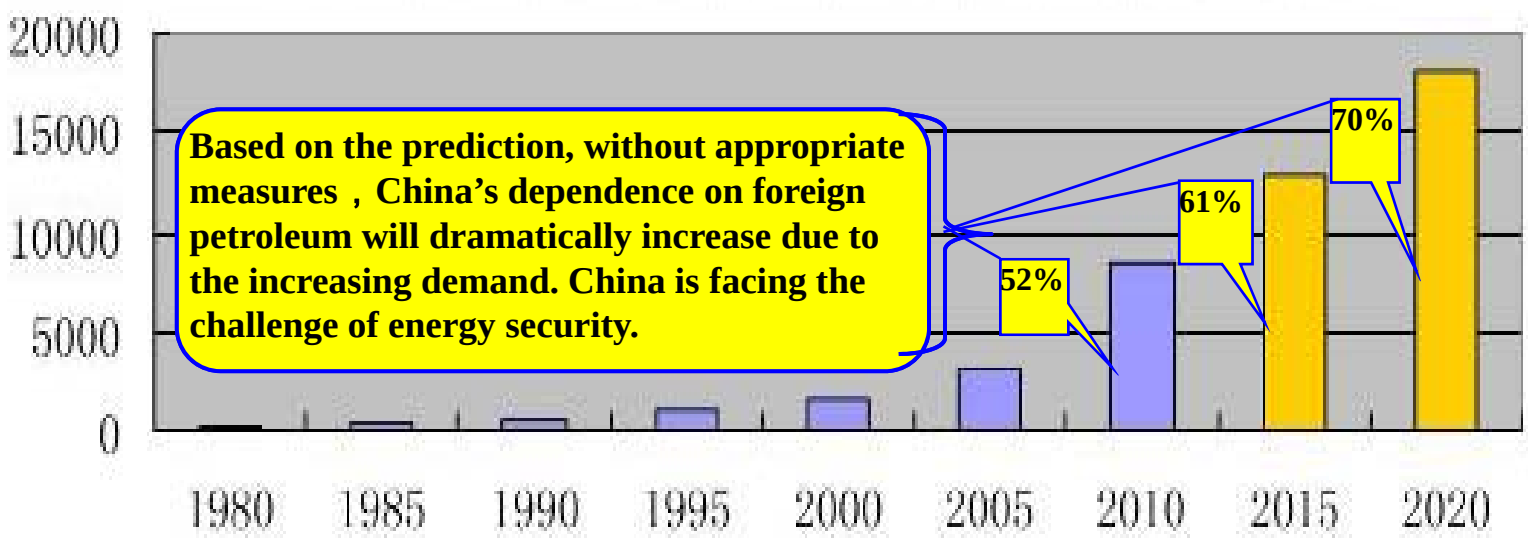


In 2009, the total vehicle production reaches 13.79M. The total vehicle stock reaches 76.19M.

Vehicle Stock Prediction

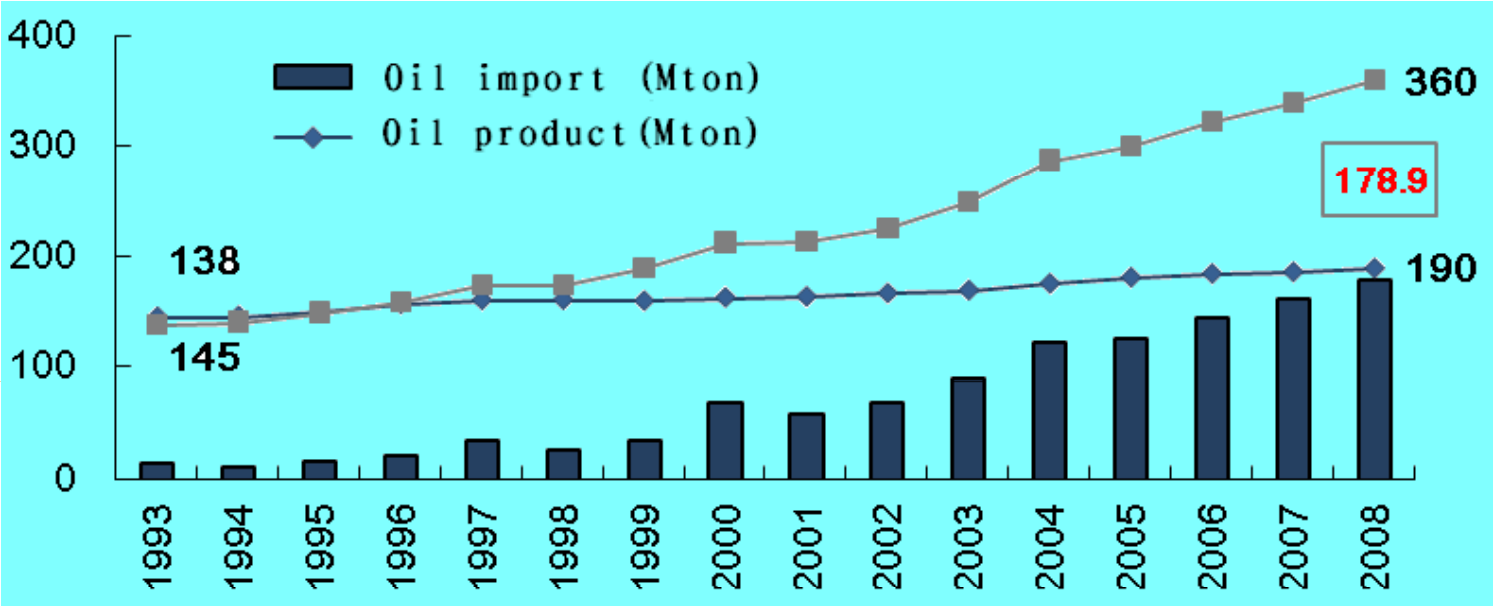
120M to 160M by 2020

Number of Civilian Used Vehicles (10K)



Based on the prediction, without appropriate measures，China's dependence on foreign petroleum will dramatically increase due to the increasing demand. China is facing the challenge of energy security.

The Urgency to Save Energy and Reduce Emissions



- China's petroleum consumption will reaches 393M Tons，import dependency is as high as 52%.
- Increasing conventional gasoline vehicles raise the greenhouse gases emission.
- China government promised on the 2009 United Nations Climate Change Summit that by 2020：
  - CO2 per GDP decreases 40%-45%, compared to 2005
  - Non-fossil energy counts for 15% of the total energy consumption

中国电动汽车发展政策环境

●中国政府通过颁布实施《国家中长期科学和技术发展规划纲要》、《中国应对气候变化国家方案》《汽车产业调整和振兴规划》等一系列战略规划和发展政策，大力推动节能减排，积极探索能源和交通可持续发展的技术路线

●Through enacting and executing strategic plan and development policies such as 'National Outlines for Medium and Long-term Planning for Scientific and Technological Development', 'Reply to Climate Change in China', 'Adjustment and Vitalization Plan for Auto Industry' etc., china further promote energy saving and emission decreasing, exploring technical solutions for transportation that are sustainable to energy and environment.

●把发展非化石能源能作为推进能源结构多元化的重要手段；

No- fossil energy development as an important avenue for energy diversity

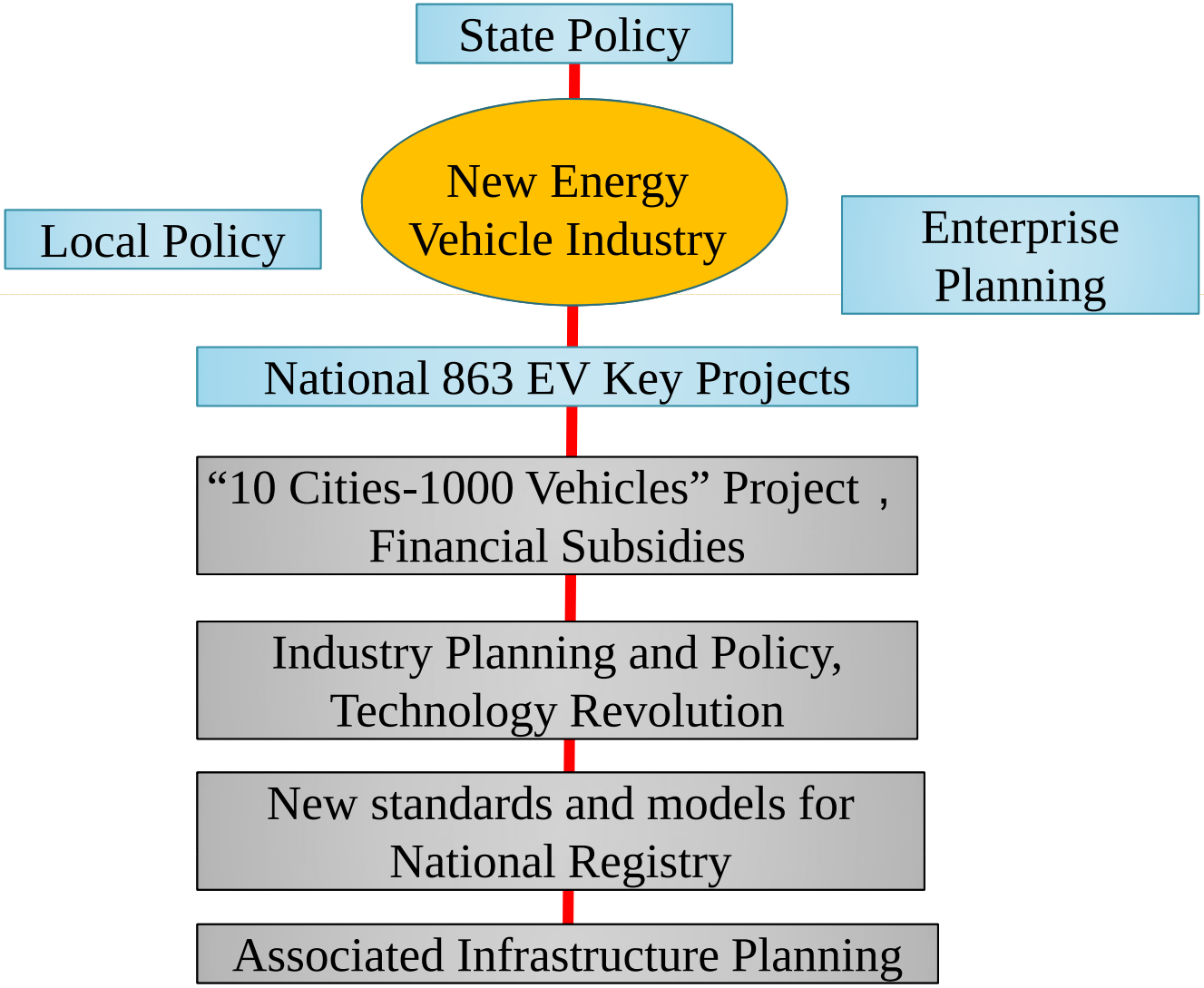
● 把氢和电作为带来能源清洁利用重大变革的重要载体；

Hydrogen and electricity as the major means of clean energy for economic transformation

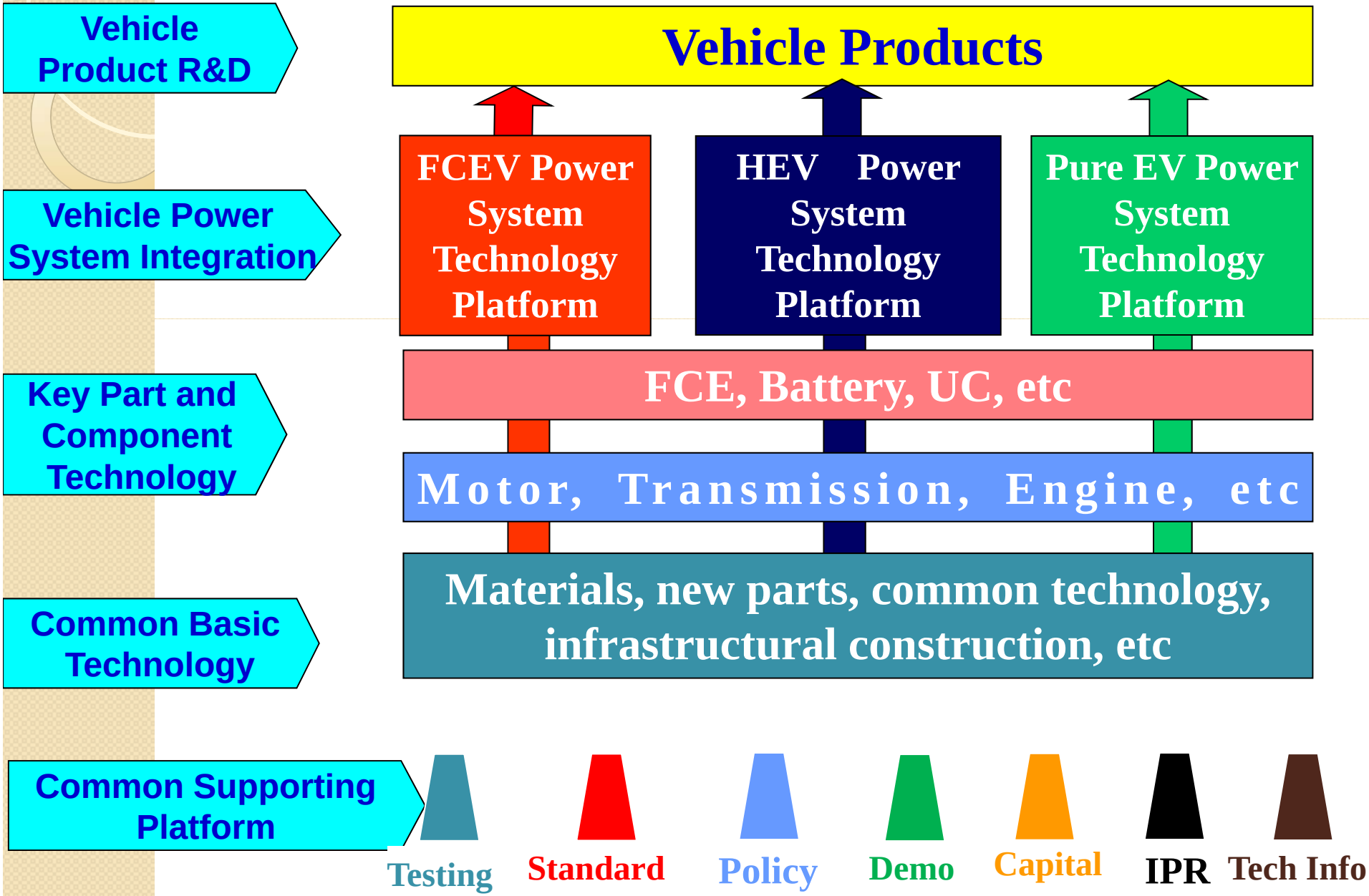
● 把新能源汽车作为重要节能减排技术和战略性新兴产业。

Clean energy vehicles development as key technology focus, and clean energy vehicle industry as the strategic industry of development for an energy efficient and environmentally friendly auto industry ..

Development Policy for EVs

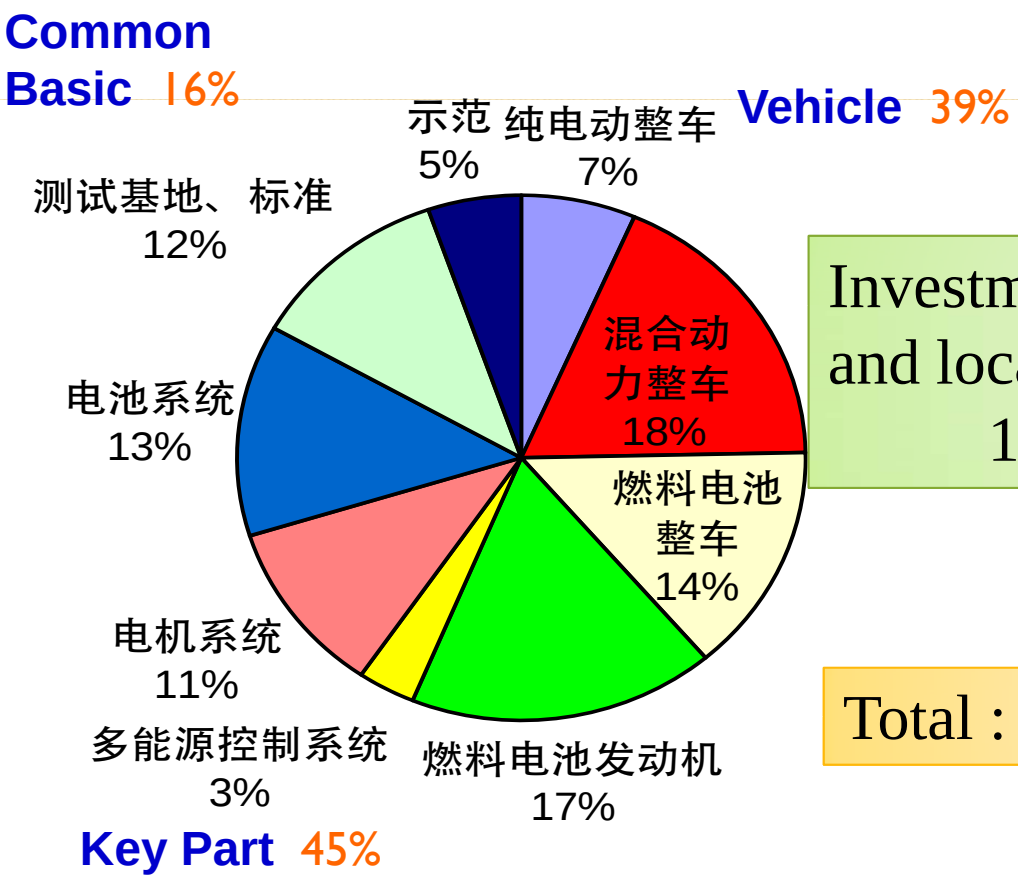


EV Development Targets



Chinese EV Development History: 2001-2005

The EV project of the national high-Tech R&D program ：
880 million RMB



Investment from enterprises and local governments：
1,300 million RMB

Total： 2,180 million RMB

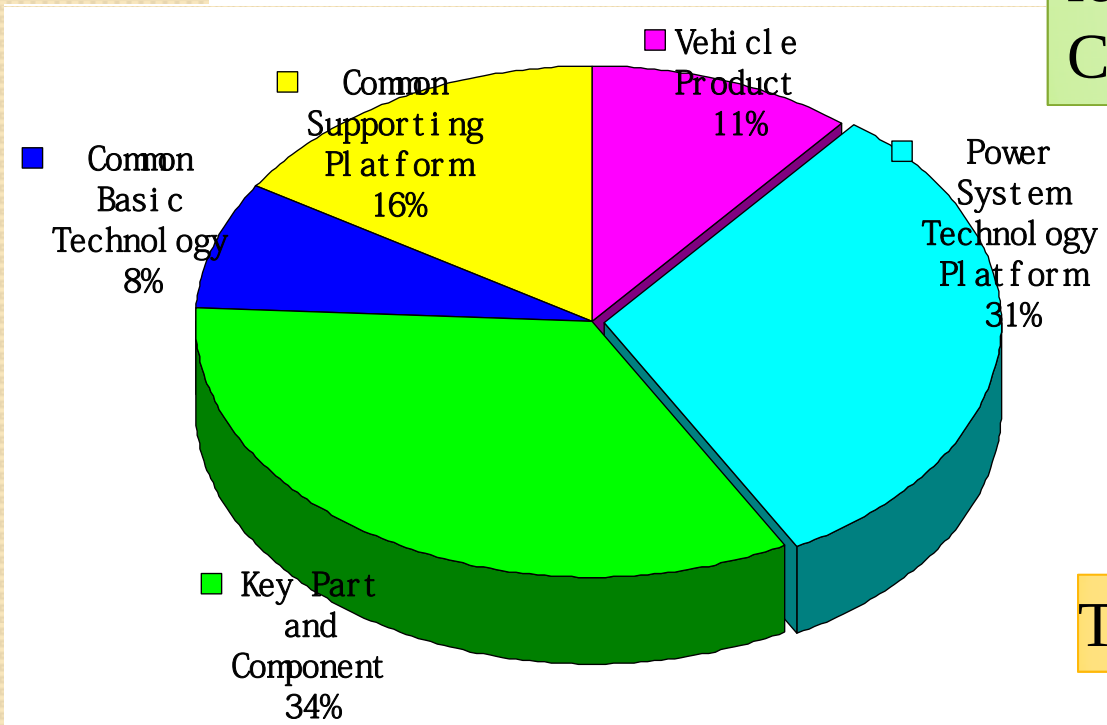
Chinese EV Development History: 2006 -2010

The EV project of the national high-Tech R&D program : 1,100 million RMB

Investment from enterprises & local governments & Venture Capital : 10B RMB

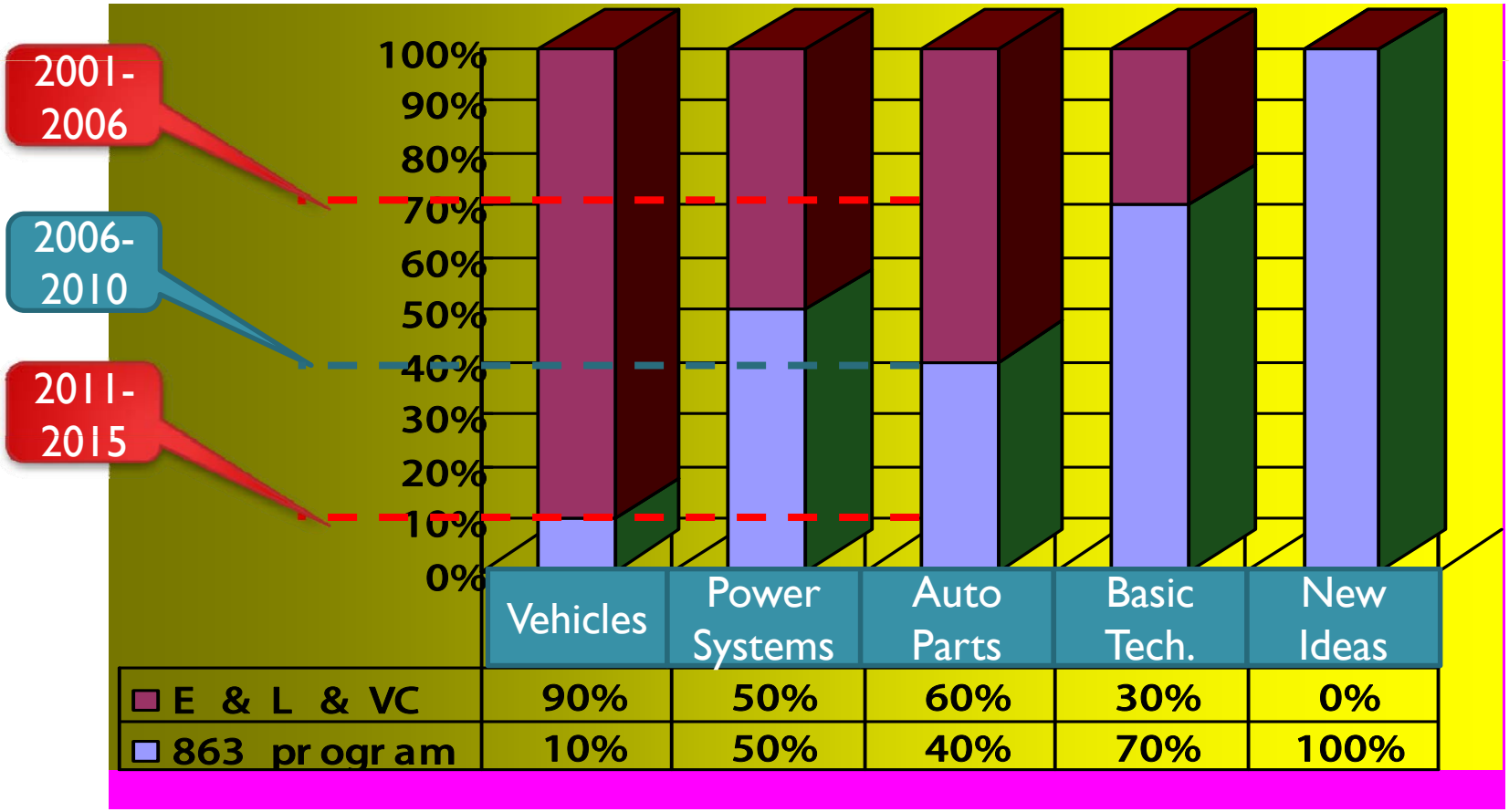
2009-2010 Power Battery : 6200 million RMB

Total : 11,100 million RMB



R&D Investment Areas by the 863 Program

- Investment to different types of R&D project is not the same
- Focus on the development of key technologies and platform technologies



	Vehicles	Power Systems	Auto Parts	Basic Tech.	New Ideas
E & L & VC	90%	50%	60%	30%	0%
863 program	10%	50%	40%	70%	100%

2001---2006---2010

2003---2007

- Demonstration vehicles: 500
- Mileage: 15000,000 km

2008

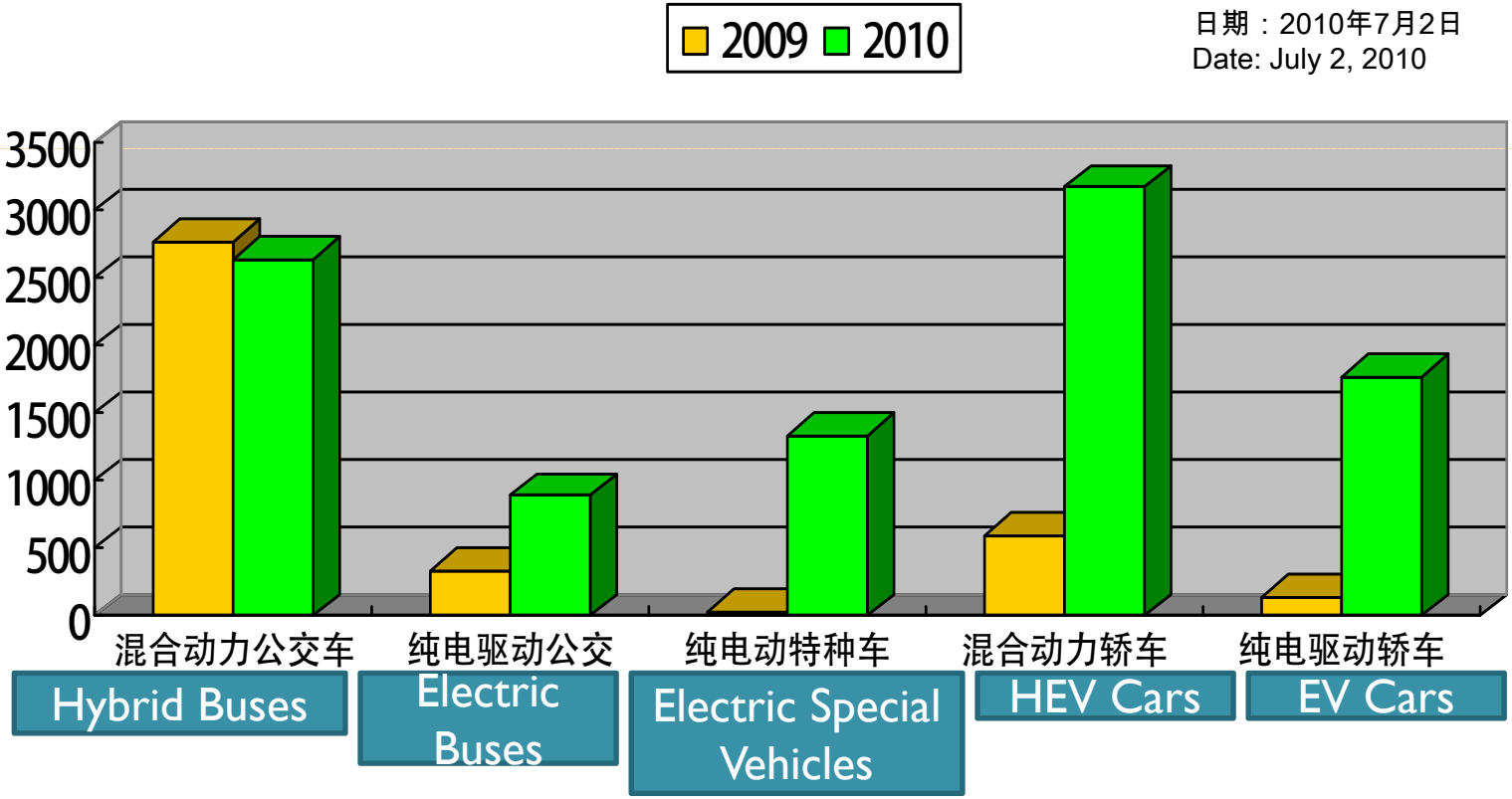
- Beijing Olympic Games
- Demonstration vehicles: 595
- Mileage: 3700,000 km
- transporting passengers : 4400,000 person-time

2009—2010

- National 'Tens Cities-Thousands Vehicles' demonstration project
- Demonstration vehicles: 5000
- Mileage: 81,462,555 km

2010 Shanghai World EXPO : 1024 Vehicles

中国电动汽车研发进程
R&D Status of Electric Vehicles

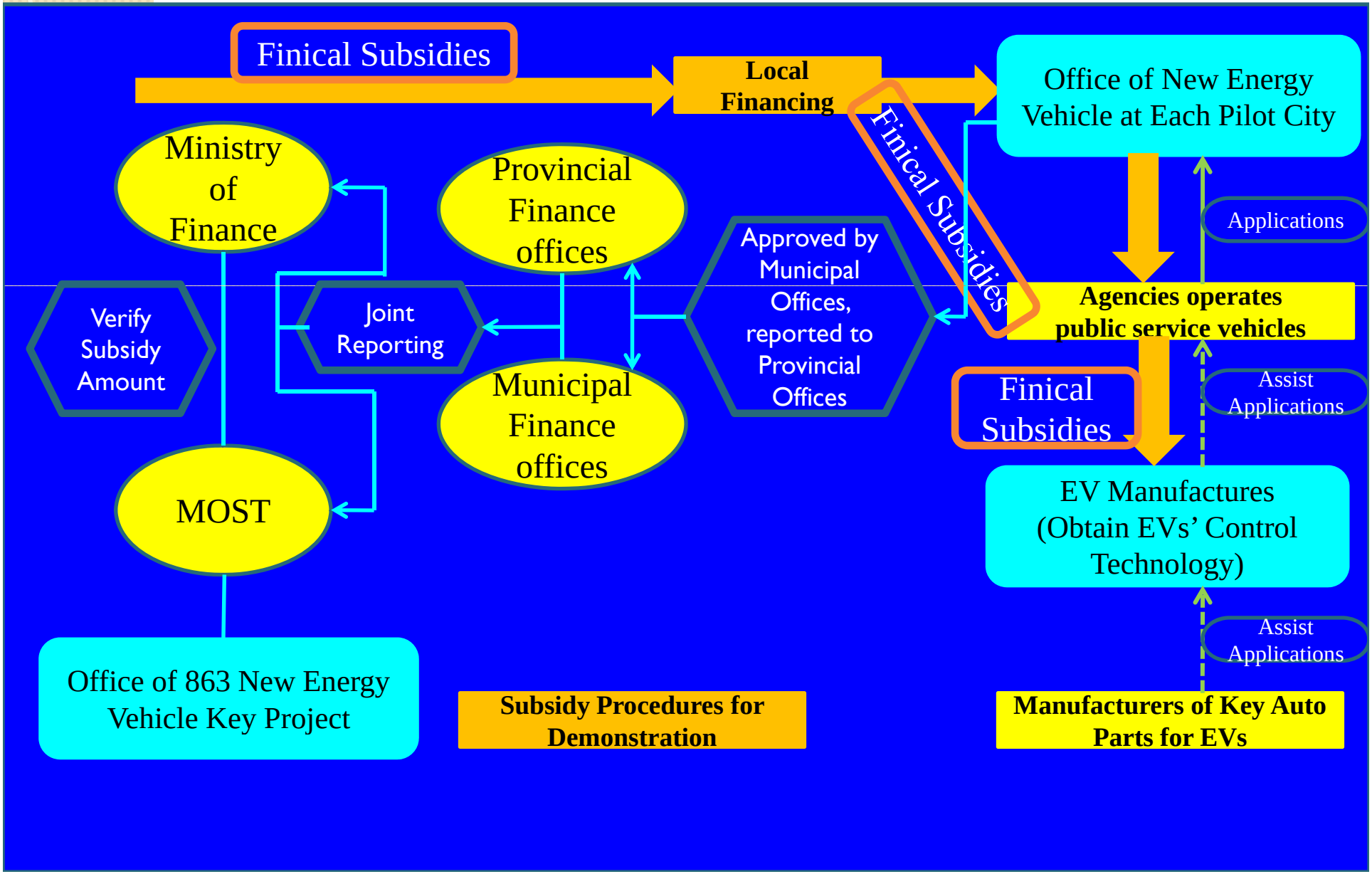


日期：2010年7月2日
Date: July 2, 2010

数据： 国家863计划节能与新能源汽车重大项目办公室

Source: Office of National 863 New Energy Vehicle Project

Finance Policy for EVs



2010年上海世博会，中国利用新一轮改进技术实现了千辆级电动汽车更大规模的示范应用与考核改进。

2010Shanghai World Expo.: China utilized improved technologies to achieve larger scale operation and evaluation of thousands electric vehicles.

Bus in Expo Site	Puming Line: 36 Super-capacitor Buses + **6 Fuel Cell Buses**; Yuejiang Line: 120 Electric Buses
Bus & Taxi around Expo Site	150 Hybrid Buses, 350 Hybrid Taxis
VIP passenger car and Sight-seeing car (small car)	**90 Fuel Cell passenger cars, 100 Fuel Cell sight-seeing cars**
Service vehicle in Expo site	150 Electric vehicles (Security, transport, etc.)

R&D of Automotive Battery

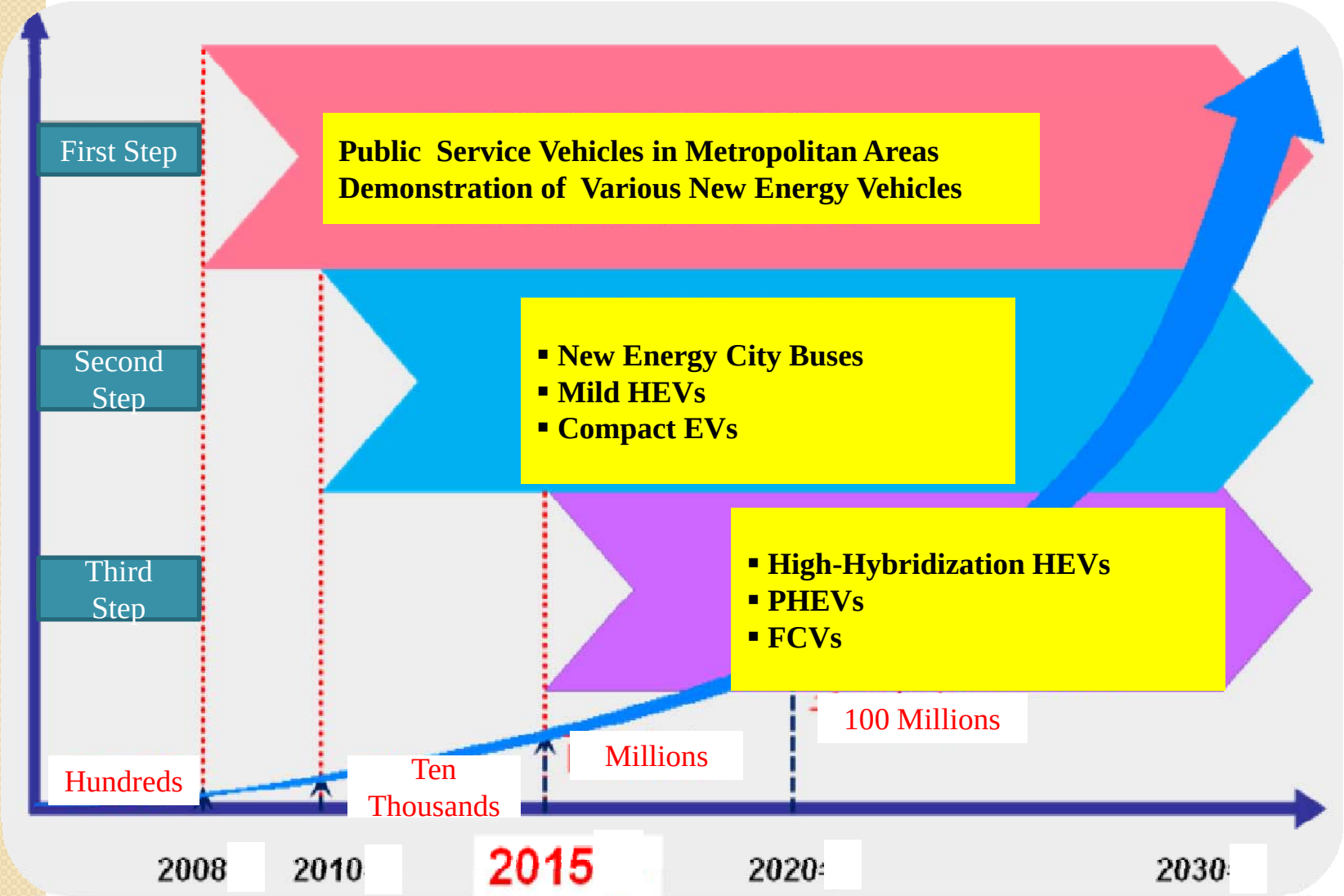
- The total investment achieves 6B RMB in last two years. The production capability of Ni-MH battery and Li-ion battery will be over 360M watt hour and 4B watt hour, respectively.

Assume every vehicle equips 30kwh (Level A vehicle: 200k mileage range) battery, we can satisfy the demand of 150K electric vehicles.

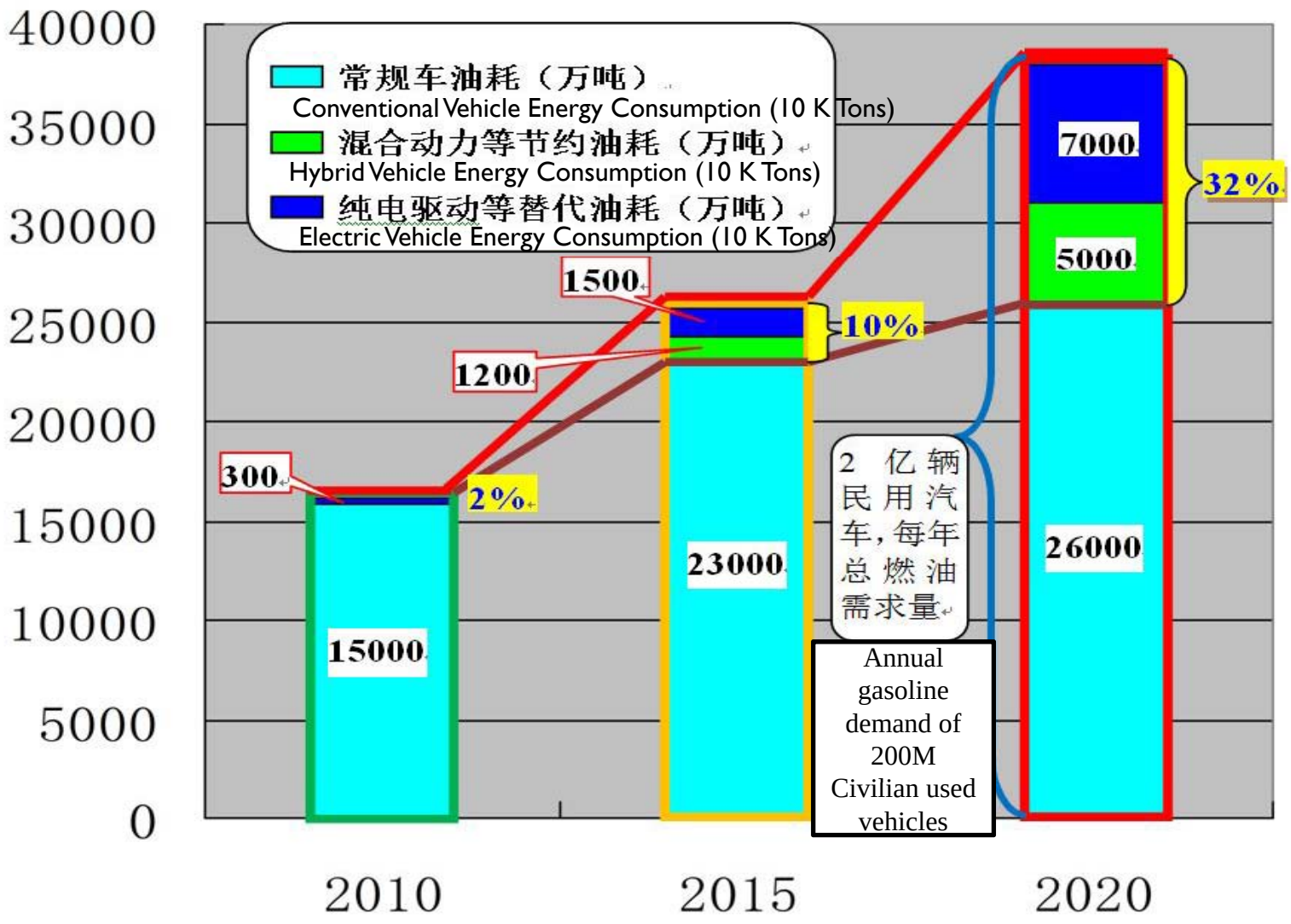
The EV Demonstration Project will be Expanded

- December 2009, The Standing Committee of the State Council decided to increase the number of pilot city from 13 to 20, and selected 5 cities as the experimental locations to implement financial subsidy policy for private purchase of new energy vehicles.

Future of New Energy Vehicles in China



新能源汽车节能和替代作用展望
Energy Saving of New Energy Vehicles

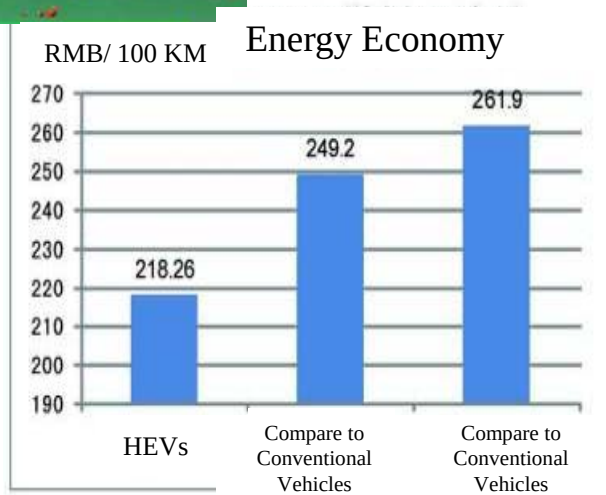


Thank You !

Backup Slides

Demonstration in Shenzhen

- Collaborated with Shenzhen Bus Group Co., etc, new energy vehicles becomes the joint of “Public Transit Priority”, “Clean Transportation” and “Intelligent Transportation”.



故障比较表

故障部位	Hybrid Transit Veh.		Compared to Conventional Veh.		故障率比较（与宇通车比较）（倍）
	故障率（台次/千公里）	所占比例（%）	故障率（台次/千公里）	所占比例（%）	
发动机	0.107	20.88	0.004	12.5	26.75
传动系	0.093	18.13	0.013	37.5	7.15
制动系	0.006	1.1	0.007	20	0.86
转向系	0.006	1.1	0	0	—
行驶系	0.003	0.55	0.001	2.5	3
电器	0.202	39.56	0.008	22.5	25.25
空调	0.008	1.65	0.001	2.5	8
车身	0.017	3.3	0.001	2.5	17
电动系统	0.07	13.74	—	—	—
合计	0.51	100	0.034	100	15

Demonstration in Dalian

257 new energy vehicles have been used in Dalian, not only enhance the public awareness of new energy vehicles, but also demonstrate China's determination to save energy and reduce emission.

Prime Minister WEN visits the new energy vehicles

Battery Manufacturers

Product	Company	2009 Production (100M wh)	2010 Production (100M wh)	Investment (RMB)
锂离子动力电池 Li Battery	比亚迪	1.12	10	10亿
	天津力神	0.7	10	17亿
	深圳比克	0.6	3	8亿
	哈尔滨光宇	0.2	4	5.6亿
	万向电动汽车	1.28	1.28	4亿
	北京盟固利	3.33	3.33	5亿
	苏州星恒	1.33	3.7	2.5亿
	洛阳天空	0.96	1.9	1.5亿
镍氢蓄电池 Li Battery	湖南科力远公司	0.12	0.12	1.4亿
	中炬森莱	0.24	1.2	3.38亿
	湖南神舟	0.18	0.6	1亿
	江苏春兰	0.57	1	0.6亿
	内蒙古稀奥科	0.24	0.78	0.2亿
合计		10.87	40.91	60.18亿

Electric Motor Manufacturers

Company	2009		2010	
	Production	Investment (10K)	Production	Investment (10K)
比亚迪	2000	1600	24000	----
中山大洋电机	500	12600	5000	11000
湖南南车时代	1000 （客车）	2100	5000 （客车）	4000
上海电驱动	12000	3000	50000	6000
天津清源	30000	3000	50000	5500
湘潭电机	10000	1200	10000	4000
浙江尤奈特	12290	4000	100000	5000
襄樊特种电机	电机 3000 控制器1000	896	10000	7800
江苏微特利	300	1400	15000	8100
北京中纺锐力	2000	320	3000	400
合计	7.3万套	3亿元	27.2万套	5.2亿元