

# China Electric Vehicle Market Overview

**Frost & Sullivan China**



**2013**

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# China will remain to be a strong vehicle market based on the huge growing population, stable economic growth, blooming infrastructure and limited vehicle population per 1,000 people

## Population (China), 2009-2020

**Total Population (2009): 1.33 BILLION**

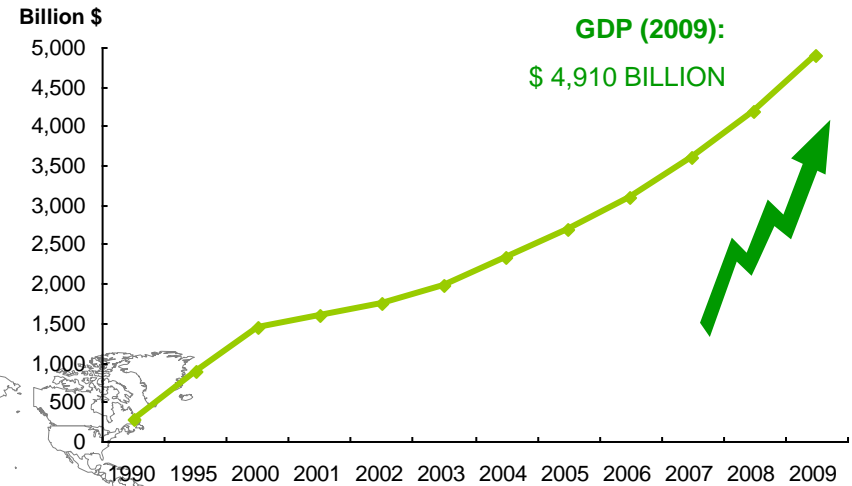
Rank	Mega City	Population (2009)
1	Chongqing	28,590,000
2	Shanghai	19,210,000
3	Beijing	17,550,000
4	Guangzhou	10,330,000

### TOP 4 Mega Cities in China (2020)

Rank	Mega City	Population (2020)
1	Chongqing	31,000,000
2	Beijing	25,000,000
3	Shanghai	21,000,000
4	Guangzhou	13,000,000

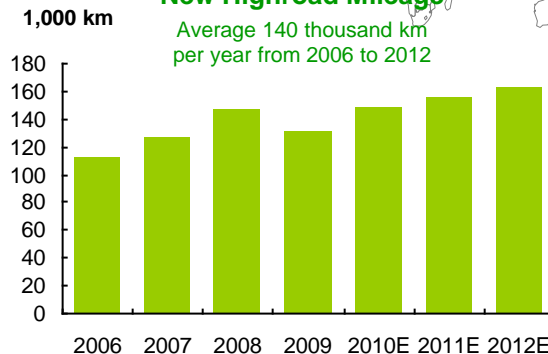


## Gross Domestic Product (China), 1990-2009

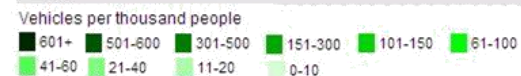
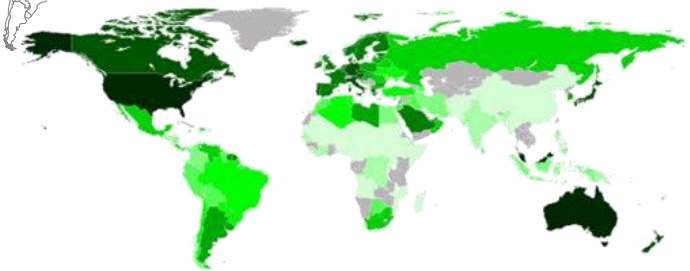


### New Highroad Mileage

Average 140 thousand km per year from 2006 to 2012



## New Highroad Mileage (China), 2006-2012

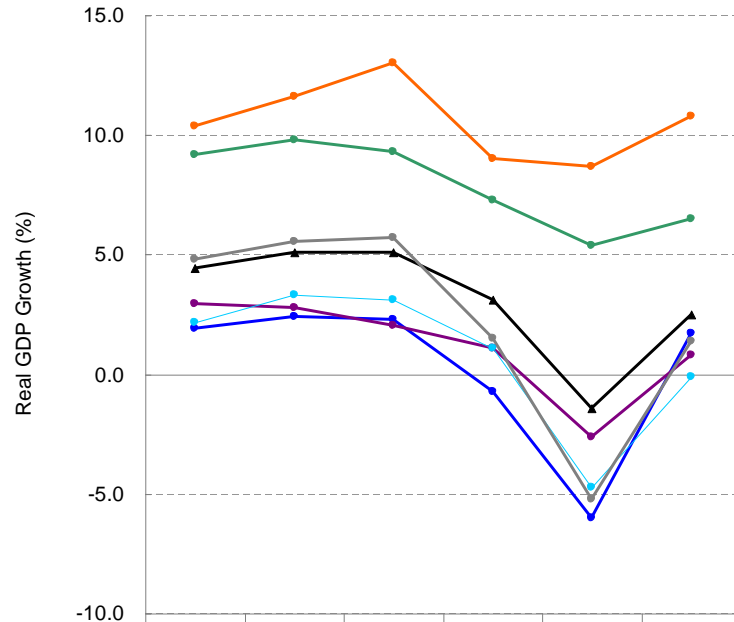


## Passenger Cars per 1,000 People (Global), 2009

Source: Frost & Sullivan

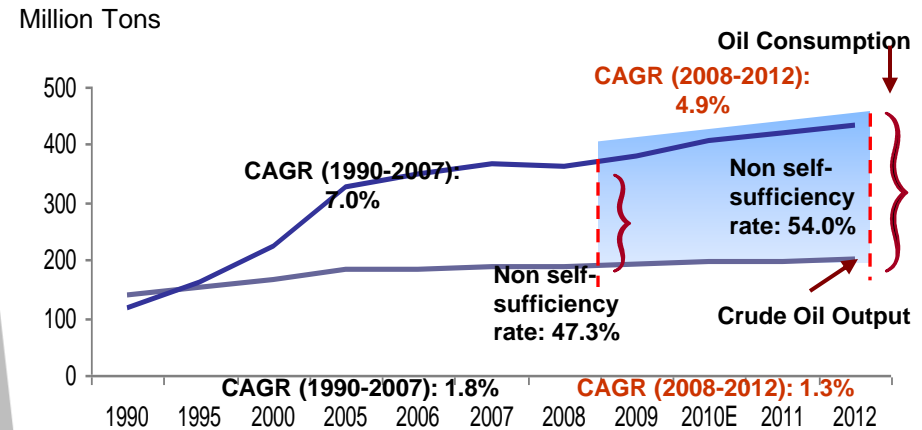
# In response to the alleviation of oil dependence and ever-increasing emission problem, the exploration on 'green' cars is considered as the long-term strategy for sustainable mobility

## Real GDP Growth Rate (World), 2005-2010



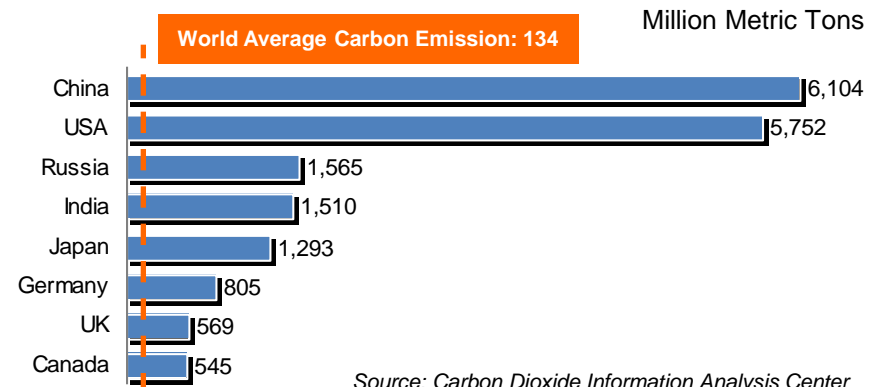
Source: International Monetary Fund, Frost & Sullivan

## Petroleum Balance Sheet (China), 1990-2012



Source: Frost & Sullivan

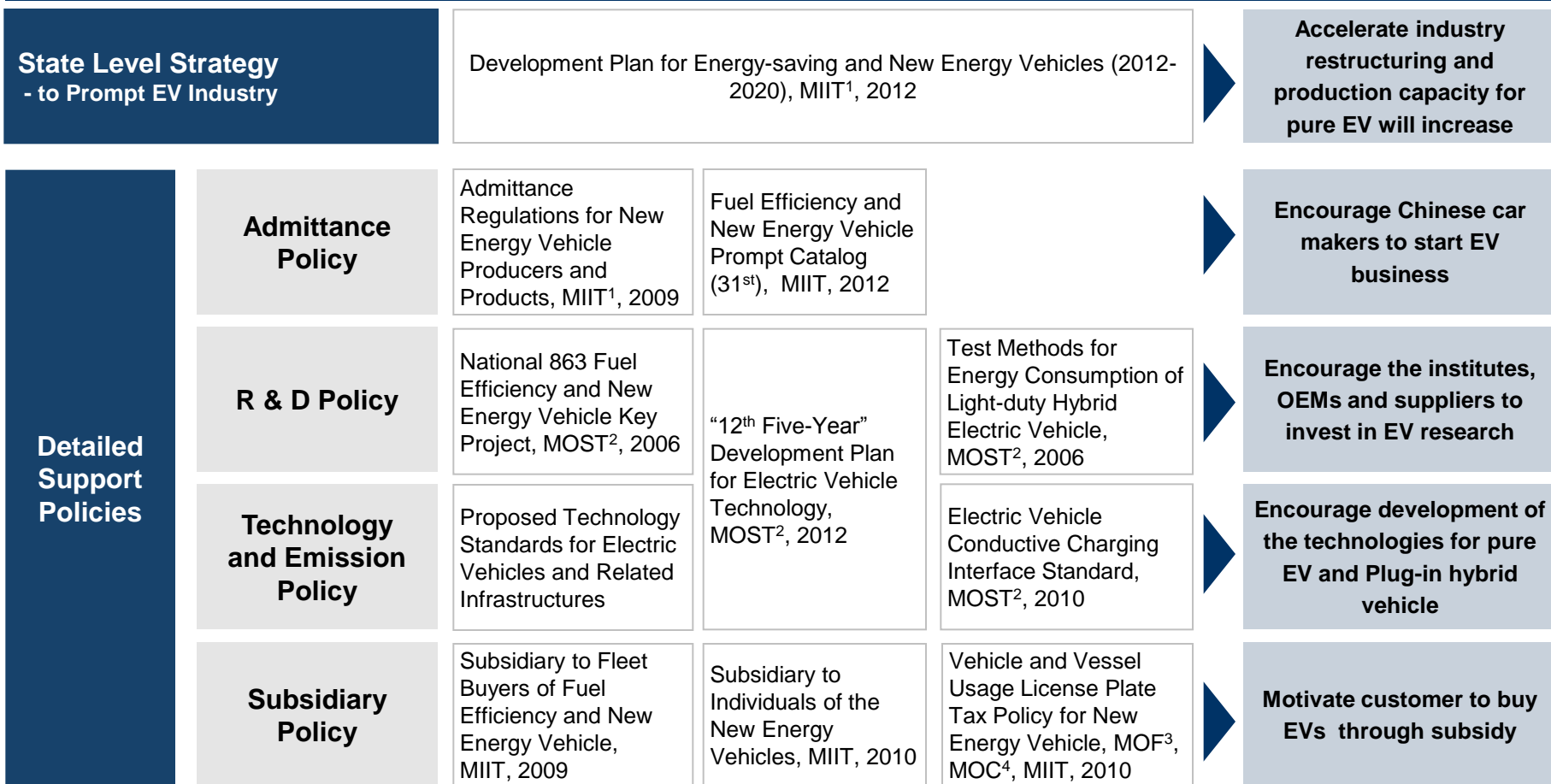
## Carbon Emissions Analysis by Countries, 2006



Source: Carbon Dioxide Information Analysis Center

# The policies released from ministries of the Chinese government indicates that China EV market will experience tremendous growth

## Electric Vehicle Market: Government Policy (China), 2011-



1. MIIT Ministry of Industry and Information Technology of the People's Republic of China
2. MOST Ministry of Science and Technology of the People's Republic of China
3. MOF Ministry of Finance of the People's Republic of China
4. MOC Ministry of Commerce of the People's Republic of China

Source: Frost & Sullivan

# Market Drivers: Both Central and Local Governments Initiated Stimulus Plans

## Electric Vehicle Market: Local Government Stimulus Plan (China), 2011

- **Tax Exemption**
  - ✓ Electric vehicles qualify for road tax exemption in all 25 pilot cities.
- **Set up industry fund**
  - ✓ Local governments in Shanghai and Chongqing establish industry funds to support the development of electric vehicles
- **Cash incentives for customers**
  - ✓ Local governments in Wuhan and Shenzhen offer additional cash incentives to customers, beyond the amount offered by central government
- **Subsidies for OEMs**
  - ✓ Local governments offer subsidies to OEMs developing electric vehicles
- **Subsidies for infrastructure developers**
  - ✓ The Shanghai government grants subsidies to infrastructure builders up to 20% of the total cost

### Chongqing

- Dedicated industry fund to promote EVs

### Wuhan

- Exemption from road tax for EVs
- Cash incentives to fleet buyers

### Beijing

- Exemption from road tax
- Investment of about 2 billion RMB in the new energy vehicle industry

### Shanghai

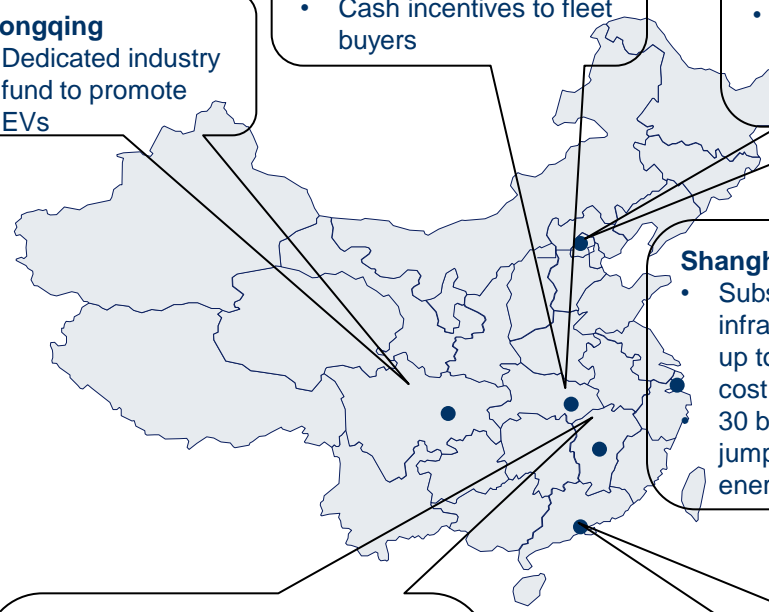
- Subsidies to charging infrastructure builders - up to 20% of the total cost
- 30 billion RMB fund to jump-start the new energy vehicle industry

### Nanchang

- Proposed 28 million RMB subsidy to support new energy vehicle industry
- Subsidies for the national R&D center for new energy vehicles built in Nanchang
- Subsidies for fleet buyers and individual buyers; exemption from road tax

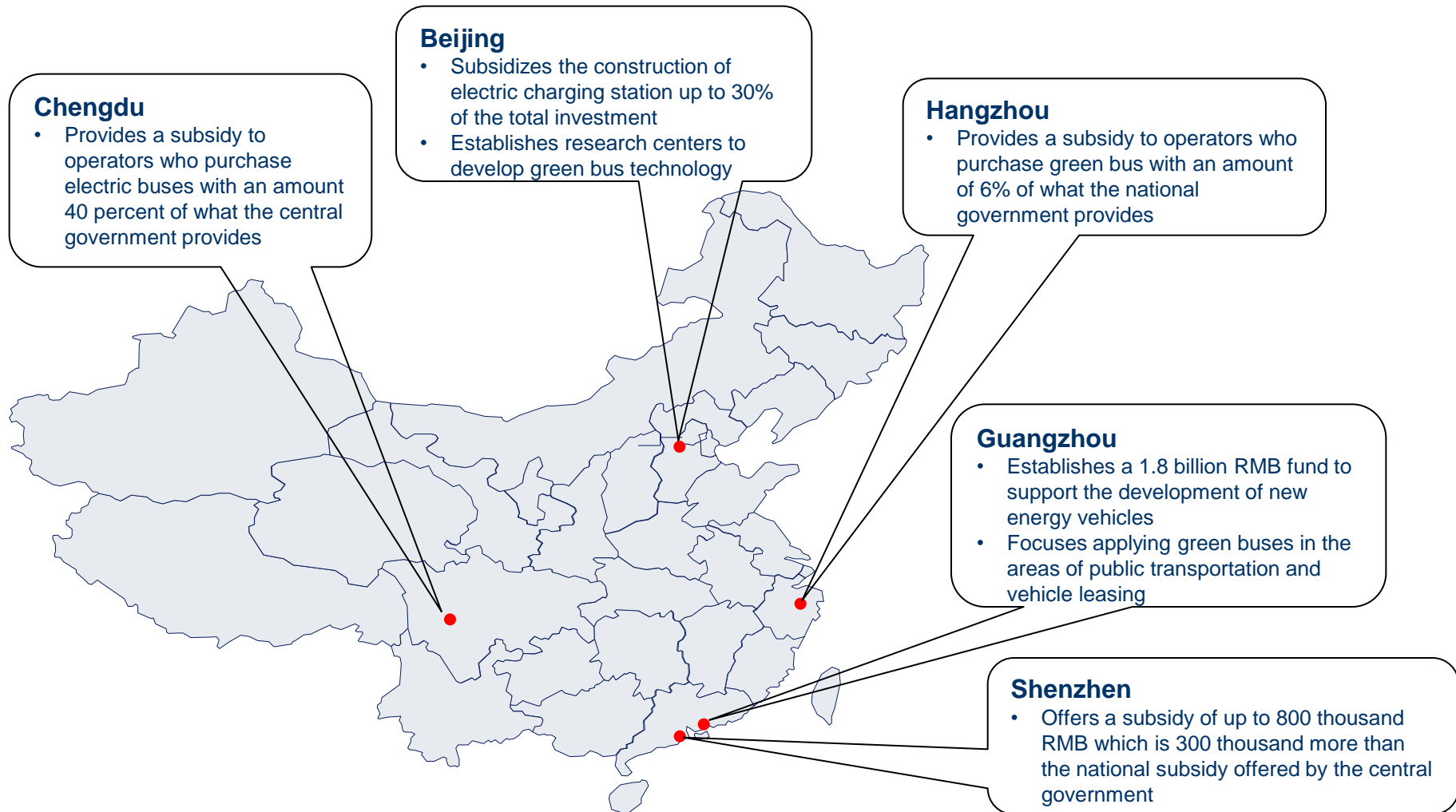
### Shenzhen

- 2.1 billion RMB investment in R&D and cash incentives of new energy vehicle industry in the next five years



Source: Frost & Sullivan

# Government Projects – Local Policy Key Takeaways



Source: The Government of Chengdu; Beijing; Hangzhou; Guangzhou; Shenzhen



# Market Drivers: Both Central and Local Governments Initiated Stimulus Plans

- The Ministry of Industry and Information Technology (MIIT) will offer tax breaks and R&D support to OEMs developing new energy cars, including electric vehicles. They will force the local governments to purchasing electric vehicles and the proportion of electric vehicles will be more than 10%.
- The Ministry of Science and Technology (MST) has invested about 1.5 billion USD in the R&D activities of local OEMs in designing and manufacturing new energy vehicles.

## Electric Vehicle Market: Pilot Cities Developing EVs (China), 2011



Source: Ministry of Finance People's Republic of China

- 18 of the 25 cities are provincial capitals. The rest of cities, like Shenzhen and Suzhou, are the fast developing cities as well.

## Electric Vehicle Market: Financial Subsidies to Customers (China), 2011

Type	Battery Capacity	Cash Incentive(up to)
eREV	Over 10KWH	\$4,300
CEV	Over 20KWH	\$9,500

### Incentives to Fleet Buyers and Individual Customers

- ✓ Government offers specific fund to develop Electrical Vehicles. And five cities, Shanghai, Changchun, Shenzhen, Hangzhou, Hefei, are the pilot cities who have provided their own incentive subsidies to individual customers.
- ✓ 2011-2020, all electric vehicles will enjoy the vehicle purchasing tax exemption.
- ✓ The cash incentives make customers save up to \$9,500 per CEV and \$8,000 per eREV in the selected 13 cities. And the number has been extended to 25 cities since 2011.
- ✓ Local governments also provide free charging service for the electric vehicles in their first 3 years or when they run less than 60 thousand km

Source: Ministry of Finance People's Republic of China



# Substantial purchase subsidies are offered for both of fleet and individual buyers

## Electric Vehicle Market: Cash Subsidies (China), 2010

### Phase I: Started from 2009 Subsidies to Fleet Buyers

#### Subsidy Per Vehicle

From \$6,618 to \$8,824 per vehicle

Type	Fuel Saving	Purchase Subsidy
eREV *	30%-40%	\$6,618
	Over 40%	\$7,353
CEV *	/	\$8,824

#### Subsidy Beneficiary

To local authorities and state-owned enterprises in the selected 20 cities



- 13 cities were approved in 2009
- Additional 7 cities were approved in 2010



### Phase II: Started from 2010 Subsidies Extended to Individual Buyers

#### Subsidy Per Vehicle

Based on the capability of advanced batteries

Type	Purchase Subsidy
eREV	\$441 per kWh, Max- \$7,353
CEV	\$441 per kWh, Max- \$8,824

#### Subsidy Beneficiary

Extended to individual buyers in the selected 5 cities



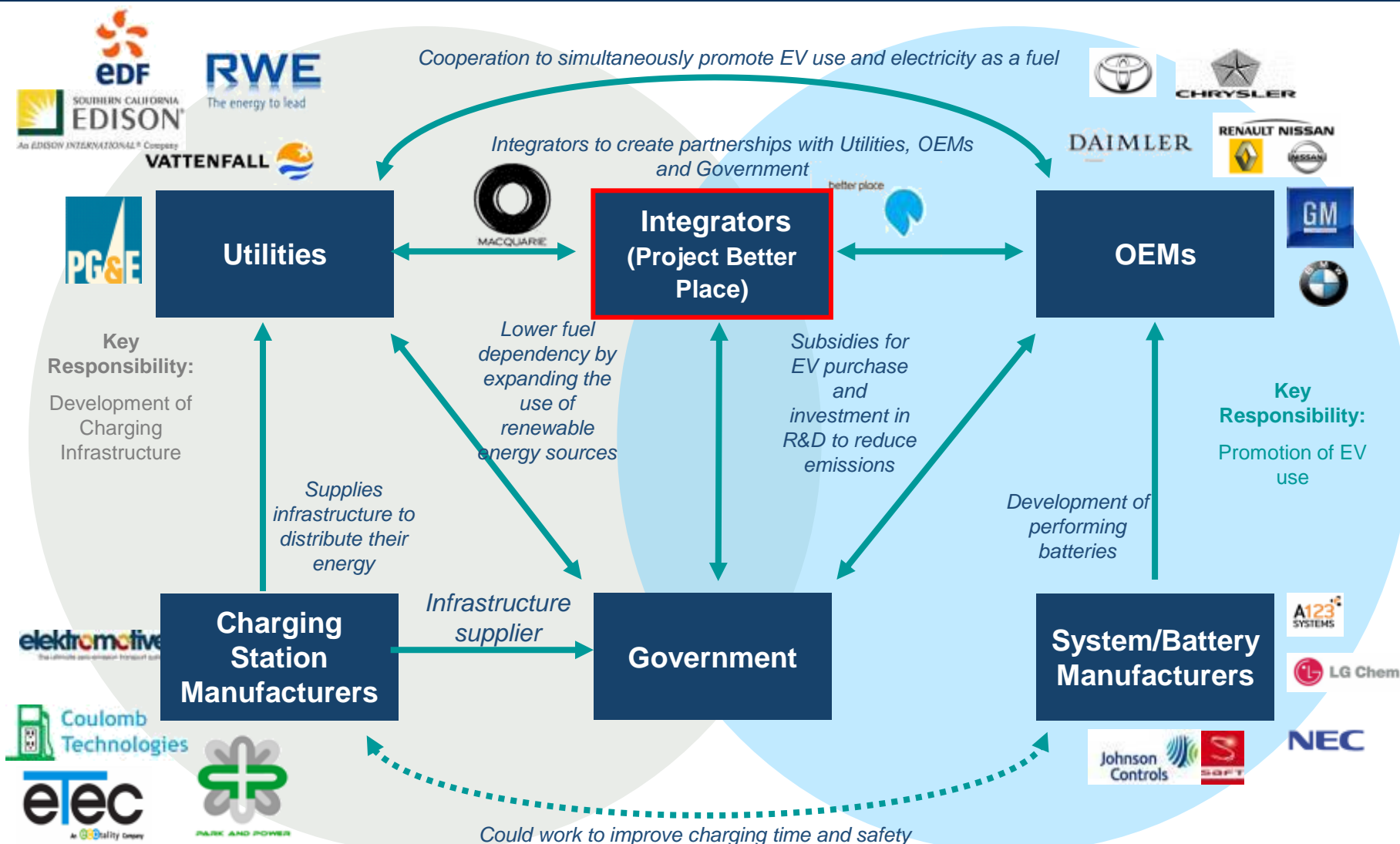
- The level of handouts would be reduced after carmakers sold 50,000 green cars before the end of 2012



\* eREV: Extended-Range Electric Vehicle    CEV: City Electric Vehicle

Source: Frost & Sullivan

# Unlike traditional automotive business, the electric vehicle business will only move forward if there is supporting in the infrastructure



# Market Drivers: Numerous Public Charging Infrastructure Programs being Developed

## Electric Vehicle Market: EV Charging Stations Overview (China), 2011

### Combined Charging and Gas stations

- Participants:



Current mature network of gas stations



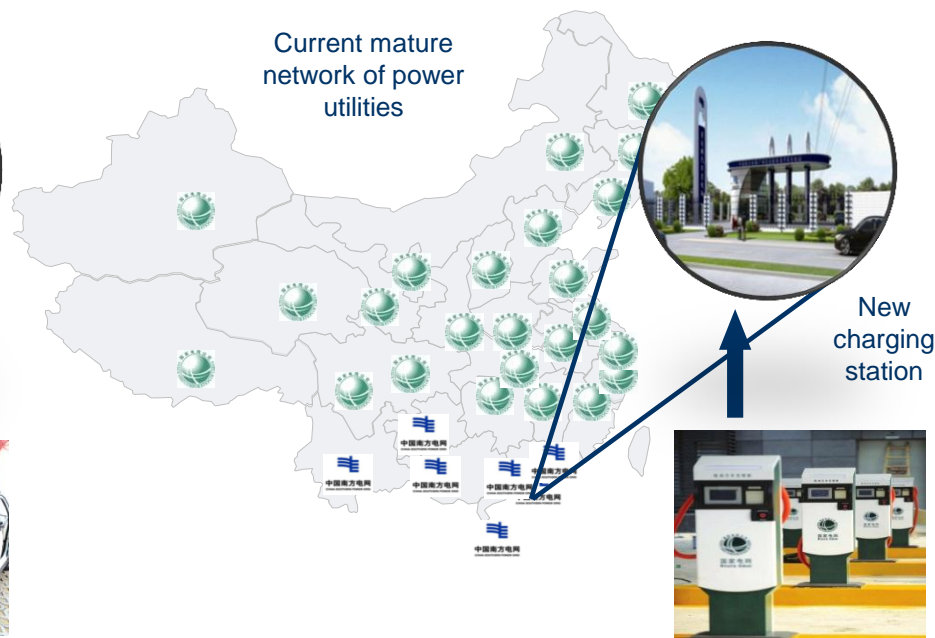
SINOPEC has planned to set 275 charging stations by 2015. CNOOC has invested heavily in new energy industry including battery manufacture and charging stations..

### Dedicated Charging Station

- Participants:



Current mature network of power utilities

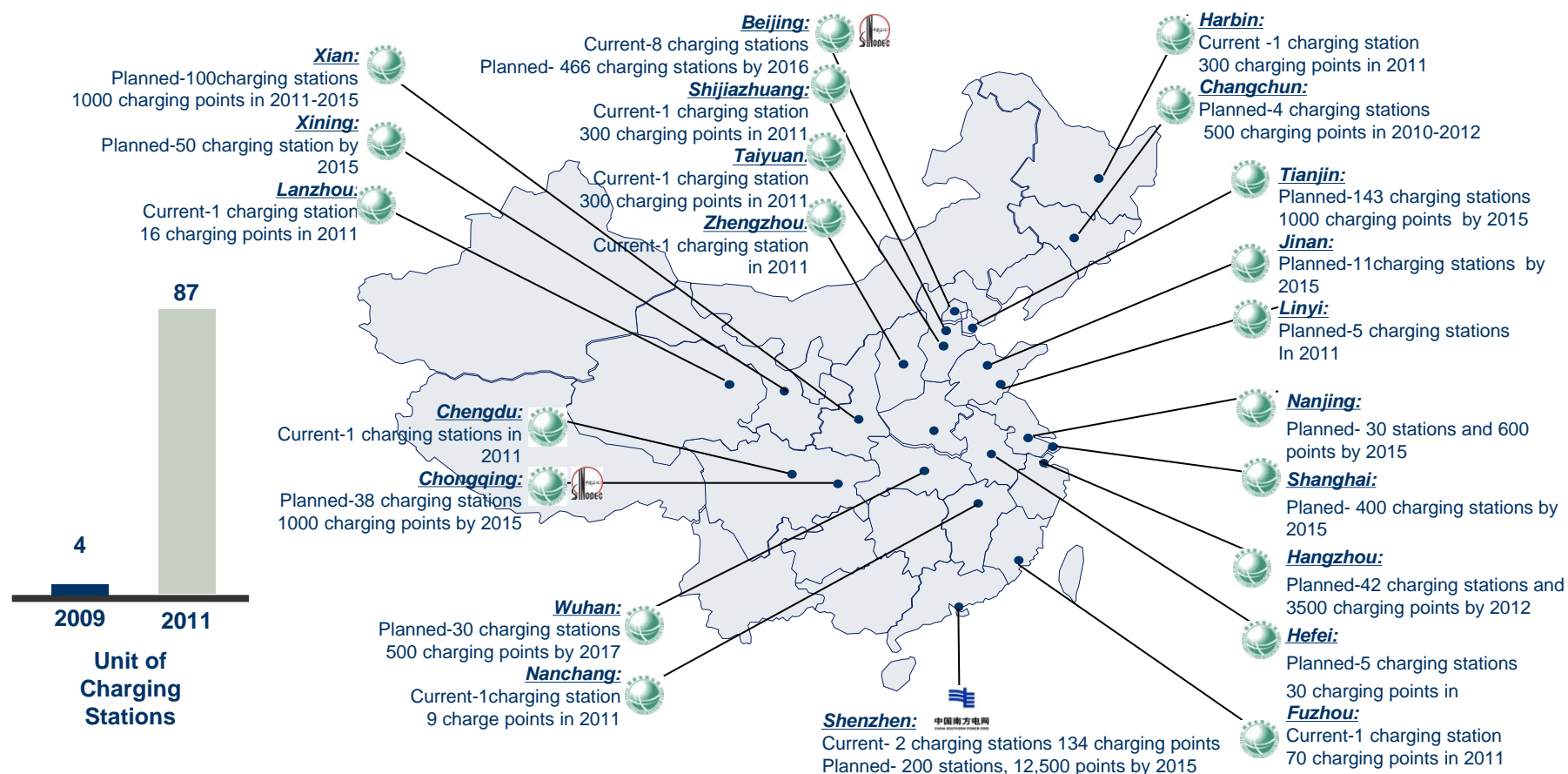


CSG has planned to set 1700 charging stations by 2015. SGCC has established 14 charging stations and planed to set 250 stations by 2015.

Source: Frost & Sullivan

# Market Drivers: Numerous Public Charging Infrastructure Programs being Developed

## Electric Vehicle Market: Charging Infrastructure Plans (China), 2011



SGCC and CSG are the dominant groups in running charging stations. CNOOC has begun the construction of charging stations in 2 major cities since 2011



China Petroleum & Chemical Corporation



China National Offshore Oil Corporation



State Grid Corporation of China

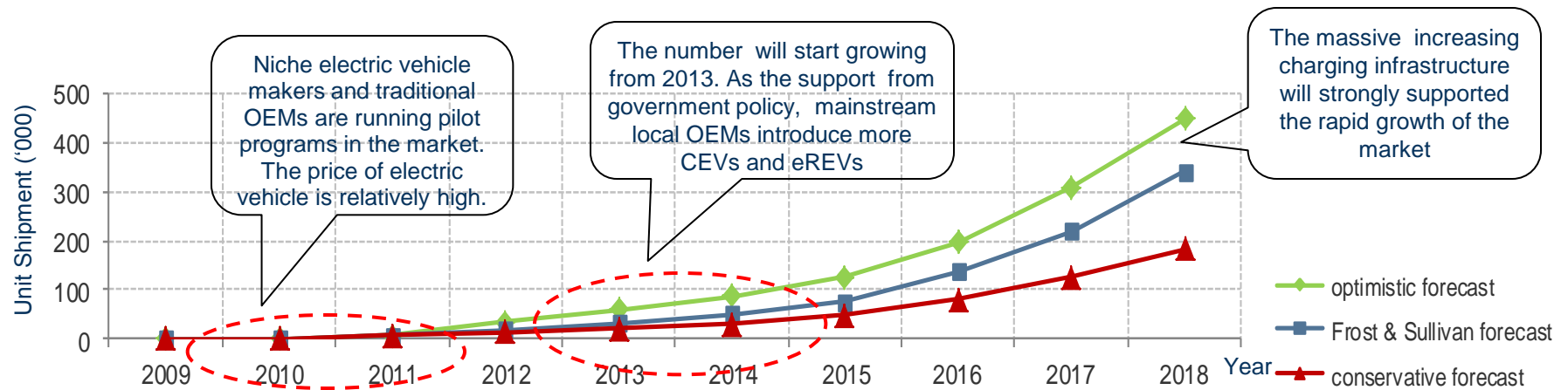


China Southern Power Grid

Source: Frost & Sullivan

# Frost & Sullivan Expects the EV Market in China to Start Growing by 2012 to Hit 342,500 units by 2018

## Electric Vehicle Market: EV Sales Scenario Analysis (China), 2009-2018



*Note: All figures are rounded; the base year is 2011. Source: Frost & Sullivan*

## Electric Vehicle Market: Annual Sales of EVs (China), 2009-2018

Scenario	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Optimistic	485	840	8,159	34,872	59,949	86,541	125,530	196,800	309,000	451,000
Frost & Sullivan	485	840	8,159	18,610	32,860	51,280	76,170	137,000	221,500	342,500
Conservative	485	840	8,159	12,827	20,843	30,992	48,147	80,500	127,000	184,000

*Note: All figures are rounded; the base year is 2011. Source: Frost & Sullivan*

# By 2015, Frost & Sullivan Expects EV Models to be Available in All Segments, Especially the Small and Compact Segments in China

Electric Vehicle Market: Current and Expected Electric Vehicle Models (China), 2009-2013

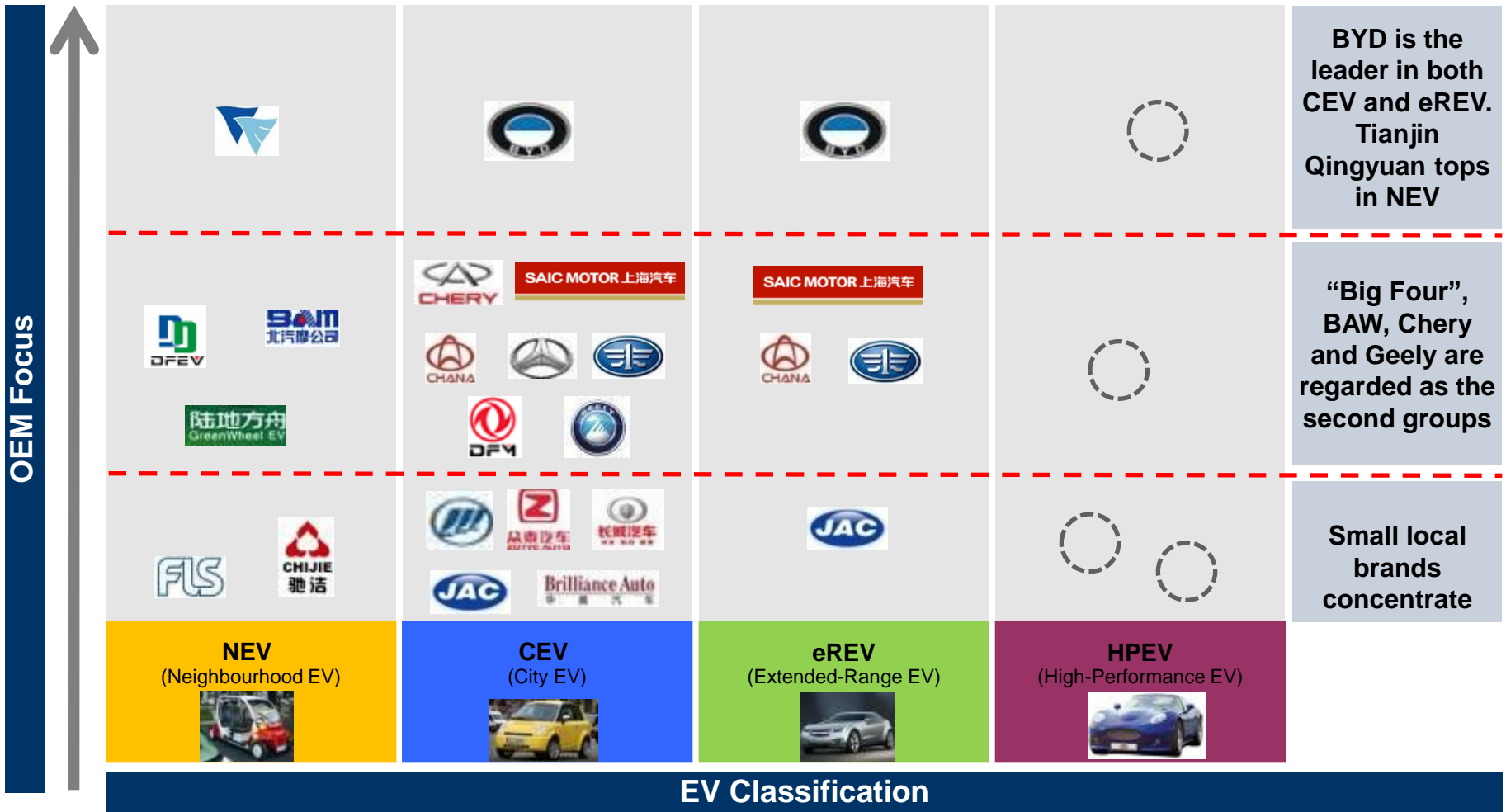
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Source: Frost & Sullivan



# The EV market is populated by many local Chinese OEMs while focus may vary from OEMs to OEMs

## Electric Vehicle Market: Chinese OEMs' EV Strategy in Native Market (China), 2010



Source: Frost & Sullivan



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# The Frost & Sullivan Story



## Pioneered Emerging Market & Technology Research

- Global Footprint Begins
- Country Economic Research
- Market & Technical Research
- Best Practice Career Training
- MindXChange Events

## Partnership Relationship with Clients

- Growth Partnership Services
- GIL Global Events
- GIL University
- Growth Team Membership™
- Growth Consulting

## Visionary Innovation

- Mega Trends Research
- CEO 360 Visionary Perspective
- GIL Think Tanks
- GIL Global Community
- Communities of Practice

# What Makes Us Unique

## Focused on Growth

All services aligned on growth to help clients *develop and implement innovative growth strategies*

## Industry Coverage

*Continuous monitoring of industries and their convergence, giving clients first mover advantage in emerging opportunities*

## Global Footprint

*More than 40 global offices ensure that clients gain global perspective to mitigate risk and sustain long term growth*

## 360 Degree Perspective

*Proprietary Team Methodology integrates 7 critical research perspectives to optimize growth investments*

## Career Best Practices

*Career research and case studies for the CEOs' Growth Team to ensure growth strategy implementation at best practice levels*

## Visionary Innovation Partner

*Close collaboration with clients in developing their research based visionary perspective to drive GIL*

# Our Industry Coverage



**Aerospace & Defense**



**Measurement &  
Instrumentation**



**Consumer  
Technologies**



**Information &  
Communication Technologies**



**Transportation & Logistics  
Automotive**



**Energy & Power  
Systems**



**Environment & Building  
Technologies**



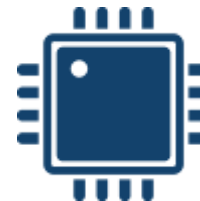
**Healthcare**



**Minerals & Mining**



**Chemicals, Materials  
& Food**



**Electronics &  
Security**



**Industrial Automation  
& Process Control**

# Our Research Methodology

Integration of Research Methodologies Provide 360 Degree Perspective



Idea Generation for Growth Pipeline

Comprehensive Evaluation of Opportunities

Reduced Risk and Enhanced Accuracy

Best Practices in Strategy Implementation

Foundation for Visionary Perspective

Innovative Growth Strategies

# Our Service

## GIL Global Community



**Growth Partnership  
Services**



**Growth Consulting**



**GIL University**



**Events**



# Our Global Footprint 40+ Offices

Scanning the Globe for Opportunities and Innovation





# Thank You

## Partner with You on the Road to Growth

F R O S T   &   S U L L I V A N

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***Your Strategic Growth  
Partner***

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