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Mega Trends

Defining Our Future:
Are You Ready?

New Mega Trends in China

Macro-to-micro Implications of Mega Trends to 2025 on Business, Society, and Personal Lives

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Contents

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Contents (continued)

Executive Summary

Definition of Mega Trends

What is a Mega Trend?

Mega Trends are **transformative, global** forces that define the future world with their far reaching impacts on **businesses, societies, economies, cultures, and personal lives**.

Why do Mega Trends matter?

- Mega Trends have diverse meanings and impacts for different industries, companies, and individuals. An analysis of these Mega Trends and their implications forms an important component of a company's future strategy, development, and innovation process, and impacts product and technology planning.
- The following research service sets the stage for visionary thinking by identifying the most important global Mega Trends in China, potential scenarios for specific trends in 2025, and the implications of these Mega Trends for transforming society, markets, and cultures.

Trends Covered In This Report

Source: Frost & Sullivan analysis.

Executive Summary—Top 10 Future Facts About China

Mega Trends: Key Findings, China, 2011

1. By 2025, approximately 65.6% of the total population in China or 921.0 million people will live in Mega Cities. This will be 1.2 times the size of the total European population and 2.6 times the size of the total US population.

2. Rapid urbanization will result in the creation of 13 Mega Cities, 4 Mega Regions, and 6 Mega Corridors by 2025. Mega Regions alone will be inhabited by 211.7 million people, accounting for over one-fourth of the total urban population in 2025.

3. By 2025, China will have the world's largest working population, with 965.9 million 15- to 64-year-olds. China and India together will account for 37% of the global Gen Y population (15- to 34-year-olds), and China will have 308.2 million people in its aging population (60-year-olds and over).

4. By 2025, China will have the world's largest middle-class population, with annual disposable incomes of $7,500 to $60,000. By 2020, 949.0 million individuals will fall into this category.

5. In China, social networking users will reach 488.0 million by 2015. Around 70% of Chinese "netizens" will be involved in social networking services.

Source: Frost & Sullivan analysis.

Executive Summary—Top 10 Future Facts About China (continued)

6. By 2020, China, surpassing the United States, will have the largest economy in the world. By 2025, China's nominal GDP* will hit $38.563 trillion. This economy will be characterized by high consumption spending, strong currency rates, and favorable trade ties.

7. Inland and western regions of China will see faster growth rates than the well-established east coast areas. This growth will be supported by a shift in manufacturing focus, leniency in the Hukou system, and the Great Western Development Plan.

8. China will strengthen its transportation infrastructure between 2010 and 2020 by building 28,000 km of railways, 700,000 km of highways, and 97 civil airports during this period. By 2016, its logistics industry will be the largest in the world.

9. China's business-to-consumer online retail sales will reach $1.298 trillion in 2025. Over 58.4% of these retail sales will be generated by the top 4 retail participants in China.

10. The construction, retail, and logistics industries will see rapid and aggressive growth in China. In fact, the Chinese market will become the largest in the world for each of these industries by 2012, 2015, and 2016, respectively.

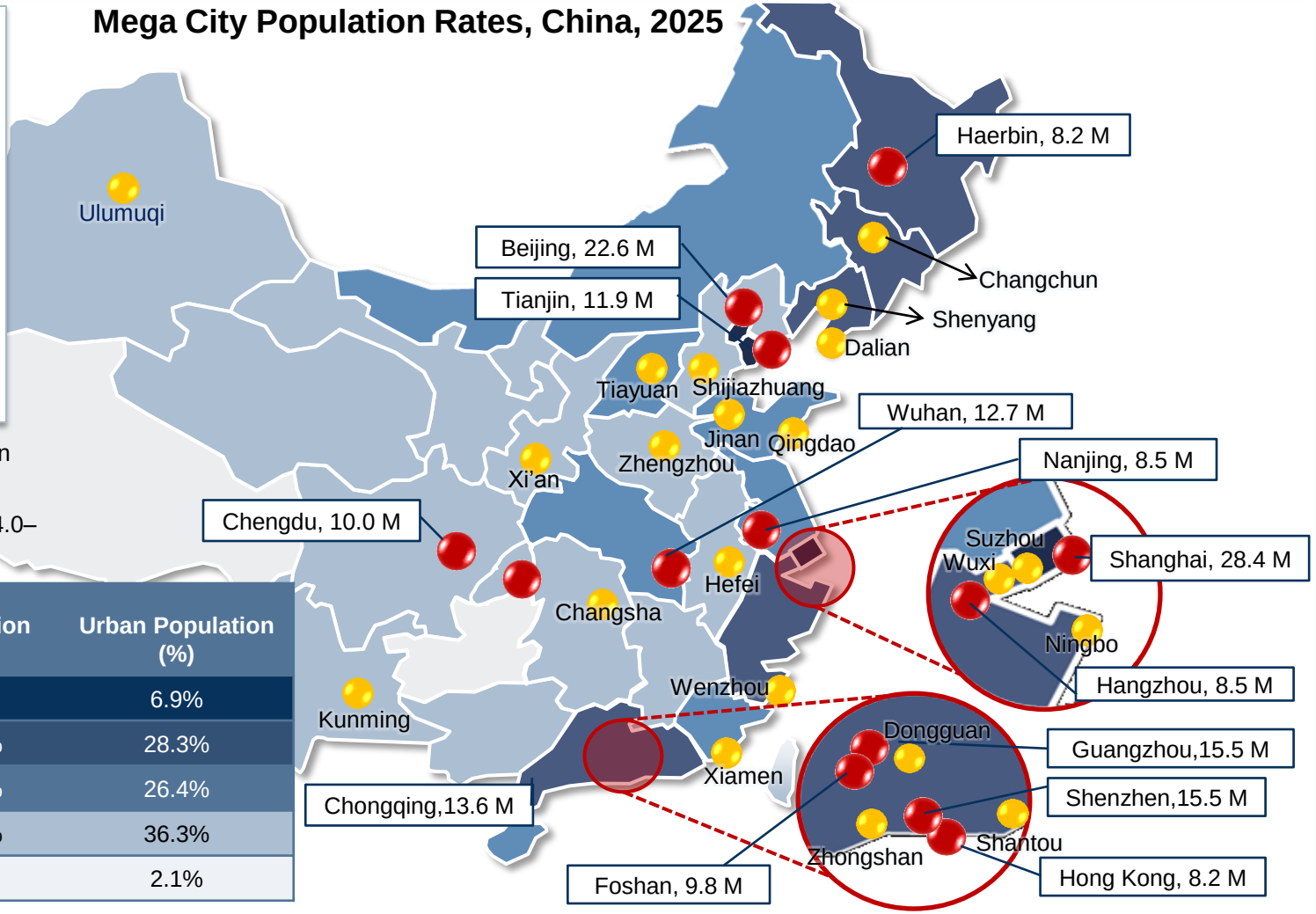
*Note: GDP: Gross domestic product. Source: Frost & Sullivan analysis.

Executive Summary—Urbanization Trends

In 2025, China is to have 13 Mega Cities* that will contribute $6.24 trillion to the total nominal GDP; 921.0 million people, 2.6 times the total US population, will be living in cities.

- China is to have more than 134 cities that will house over 1.0 million people in 2025.
- For each year between 2012 and 2030, 8.0 to 9.0 million Chinese who live in rural habitats are expected to move into cities.

Mega City Population Rates, China, 2025



Mega Cities, greater than 8.0 M inahbitants

Emerging Mega Cities, 4.0–8.0 M inhabitants

Number of Provinces**	Urbanization Rate	Urban Population (%)
3	> 80%	6.9%
5	70–79%	28.3%
7	60–69%	26.4%
16	50–59%	36.3%
2	< 50%	2.1%

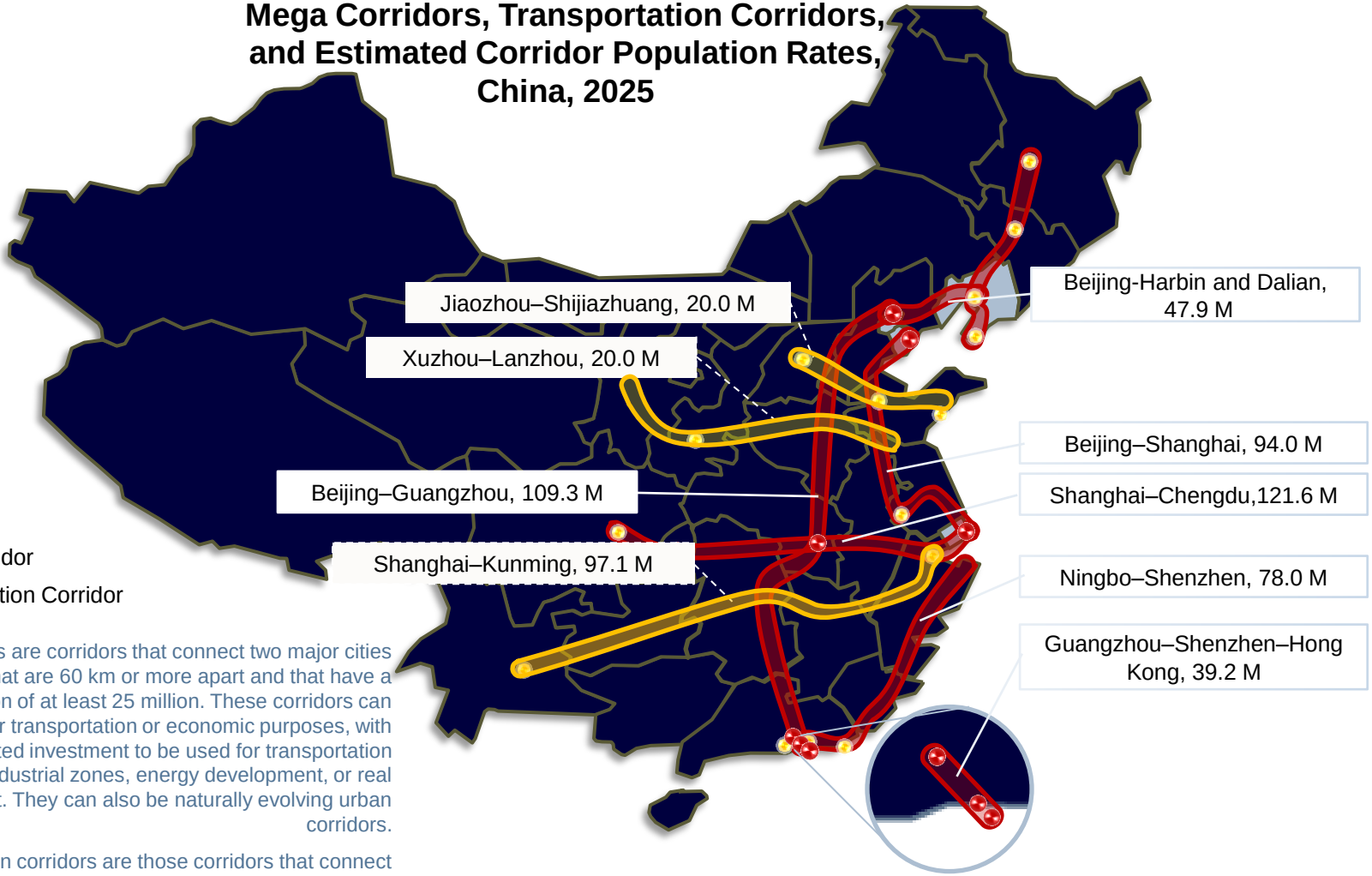
*Note: A Mega City is defined as a city with population of more than 8.0 million and a nominal GDP of $250.00 billion or more. **Note: Provinces include administrative regions.

Source: Department of Economics and Social Affairs, United Nations; International Institute of Applied System Analysis; Frost & Sullivan analysis.

Executive Summary—Urbanization Trends (continued)

China is set to have 6 Mega Corridors* and 3 transportation corridors** in 2025.

Mega Corridors, Transportation Corridors, and Estimated Corridor Population Rates, China, 2025



*Note: Mega Corridors are corridors that connect two major cities or Mega Regions that are 60 km or more apart and that have a combined population of at least 25 million. These corridors can be planned for transportation or economic purposes, with anticipated investment to be used for transportation infrastructure, industrial zones, energy development, or real estate development. They can also be naturally evolving urban corridors.

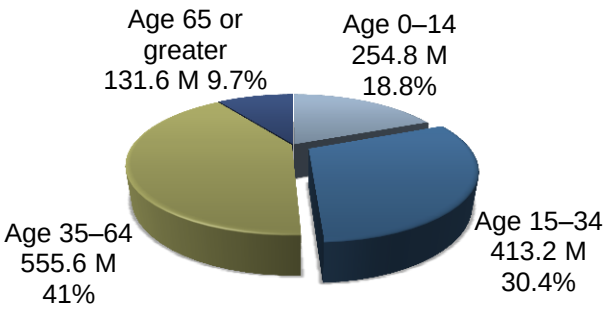
**Note: Transportation corridors are those corridors that connect Mega Cities or Mega Regions with transportation links (e.g., by highways or railways).

Source: National Development and Reform Commission of China; Population Division, United Nations; Frost & Sullivan analysis.

Executive Summary—Social Trends

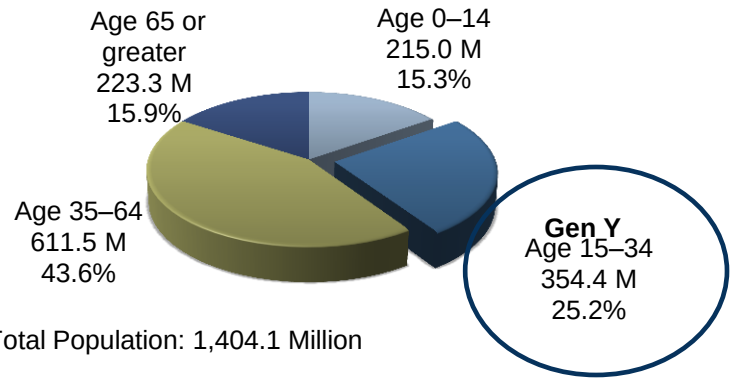
China will have a 354.4 million in the Gen Y population (15- to 34-year-olds) and 965.9 million of working age (15- to 64-year-olds) in 2025.

Population Rates, China, 2011



Total Population: 1,355.2 Million

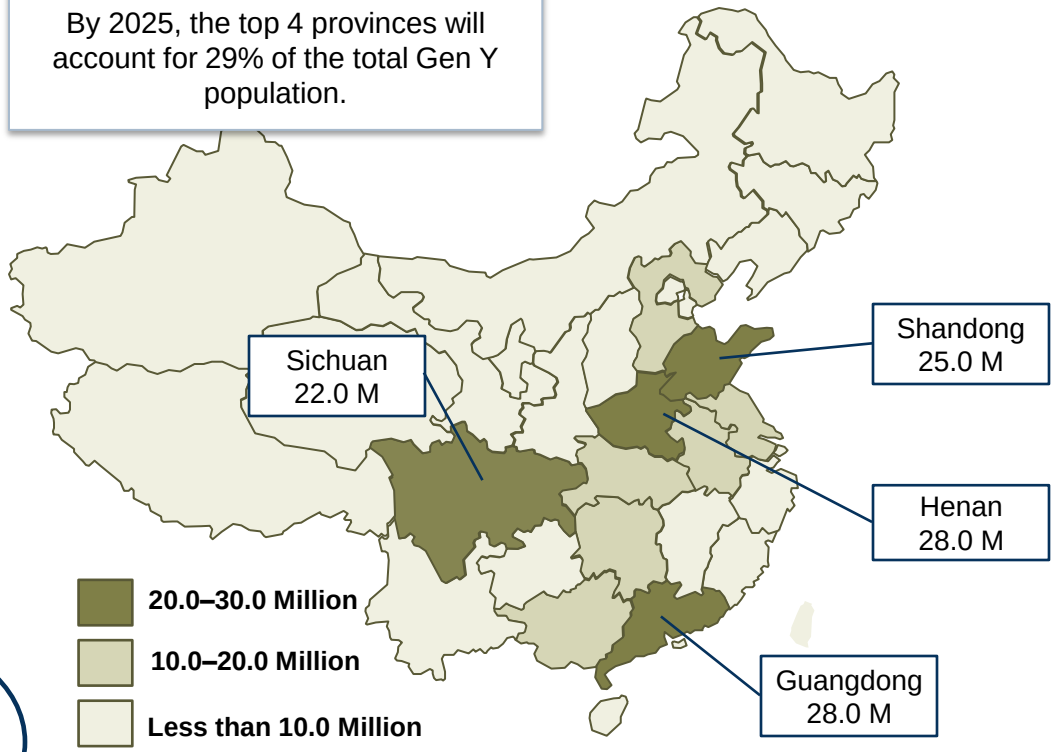
Population Rates, China, 2025



Total Population: 1,404.1 Million

Gen Y Population by Province, China, 2025

By 2025, the top 4 provinces will account for 29% of the total Gen Y population.



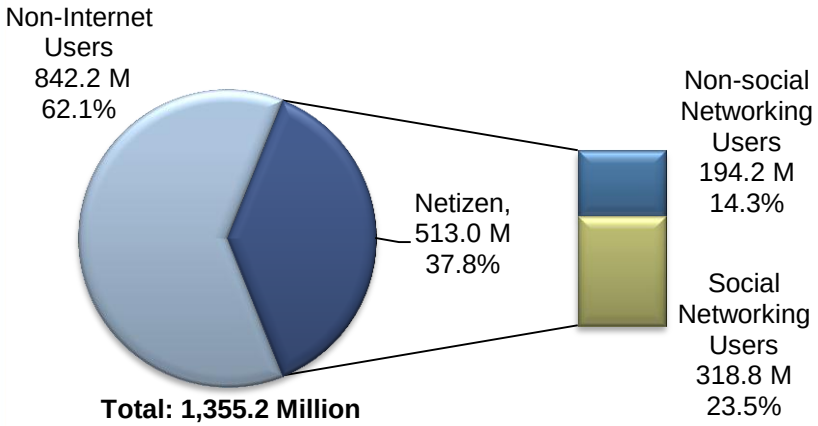
Note: Some numbers do not add up because of rounding.

Source: Population Division, United Nations, National Bureau of Statistics of China; Frost & Sullivan analysis.

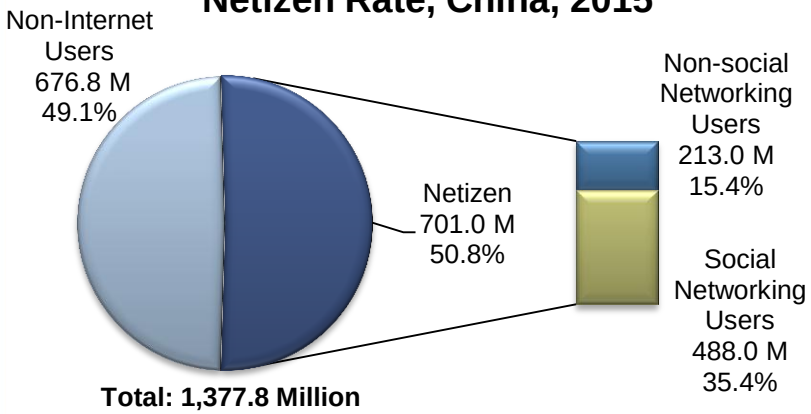
Executive Summary—Social Trends (continued)

Social Networking Users are to reach 488 million in China in 2015. Around 70% of Chinese netizens will be involved in social networking services

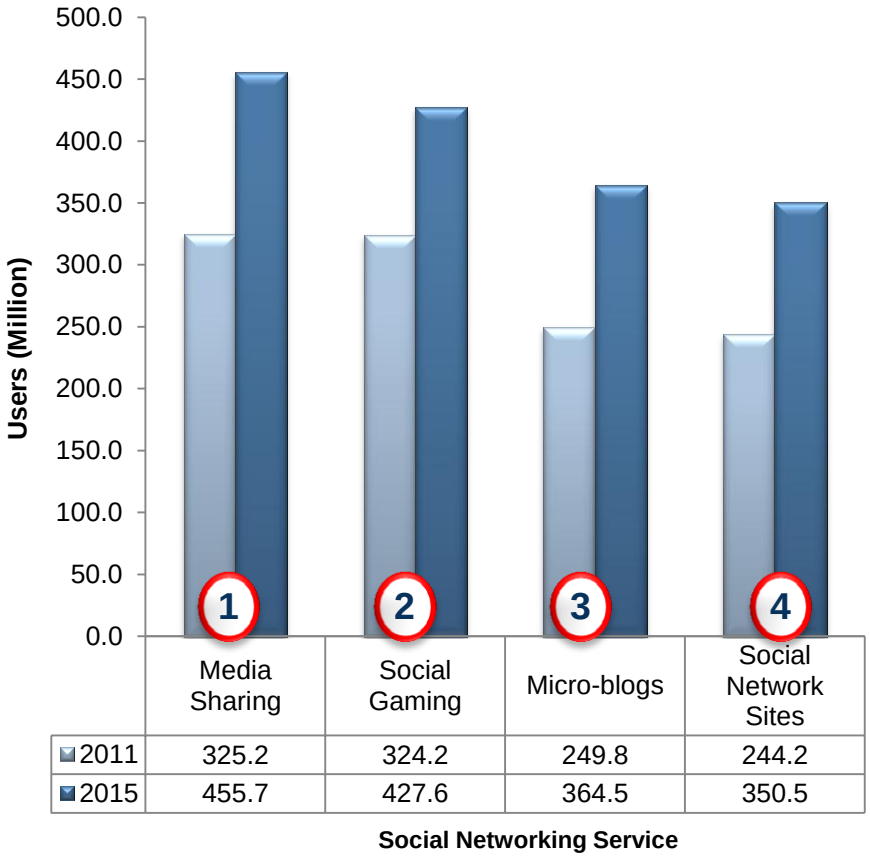
Netizen Rate, China, 2011



Netizen Rate, China, 2015



Users* of Top Social Networking Services, China, 2011 and 2015



Note: Some numbers do not add up because of rounding.

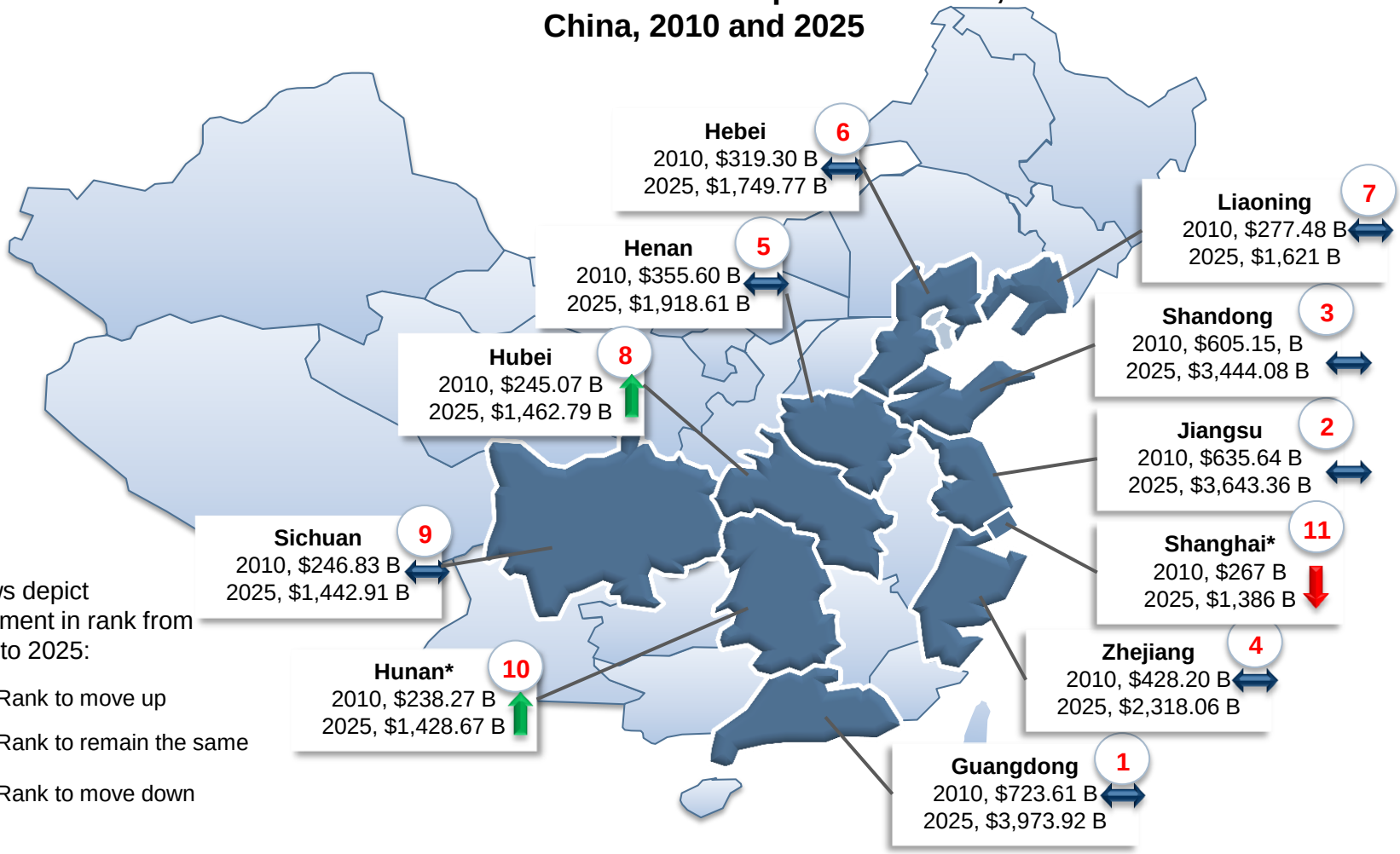
*Note: Predictions for user numbers are based on current growth rates and market shares.

Source: World Bank 2011; China Internet Network Information Center, PRC; Frost & Sullivan analysis.

Executive Summary—Economic Trends

The top 10 provinces are to contribute 59.6% of China's GDP in 2025; Hubei is to be one of the fastest-growing provinces of this decade.

GDP Contributions of Top 10 Provinces, China, 2010 and 2025



*Note: Shanghai drops out from the top 10 and Hunan enters the top 10 in 2025 because of western development by the PRC government.
Source: National Development & Reform Commission of China; National Bureau of Statistics of China; International Monetary Fund; World Bank; Frost & Sullivan analysis..

Executive Summary—Connectivity and Convergence Trends

China is expected to have 5.1 billion connected devices* in 2025.

Mobile Subscribers

2012: 1,010 Million
2025: 1,734 Million

Digital TV Subscribers

2012: 100 Million
2025: 695 Million

Mobile Internet Users

2012: 356 Million
2025: 830 Million

Internet Users

2012: 513 Million
2025: 877 Million

3G Subscribers

2012: 145 Million
2025: 830 Million

Broadband Users

2012: 392 Million
2025: 877 Million

2012: 4G-LTE implemented in Hong Kong
2020: 60% coverage by 2020

Connected Cars

2025: 145 million connected cars on the road

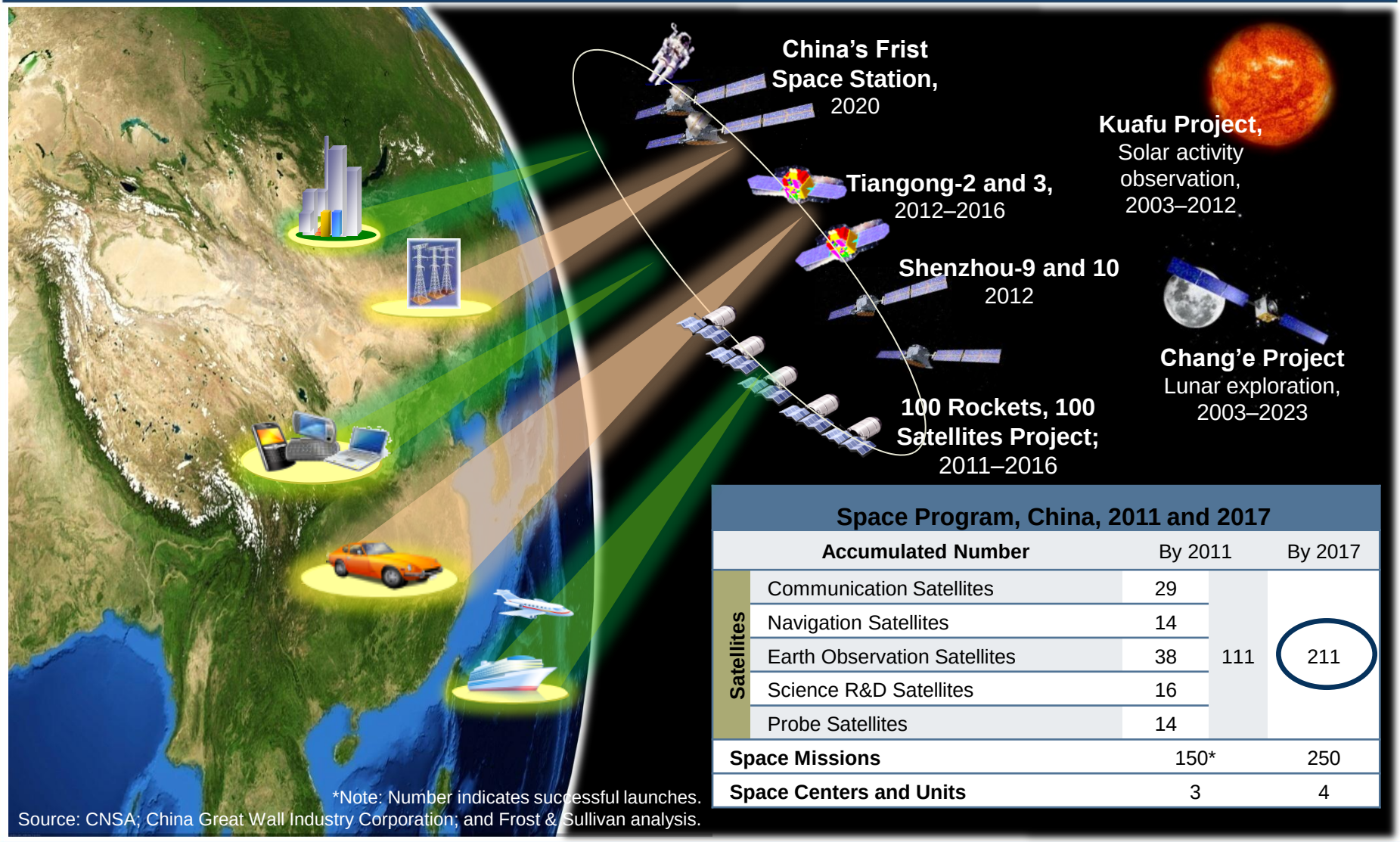
Image Source: Dreamstime.

*Note: Number has been calculated by taking an average of 4.6 connected devices per user for urban areas and 1 device per user for rural areas. This number, however, does not include machine-to-machine (M2M) connections.

Source: China Internet Network Information Center, 2011; Ministry of Internet & Information Technology, PRC; Digitimes Research; Research In China, 2011; GSMA, 2012; Frost & Sullivan analysis.

Executive Summary—Connectivity and Convergence (continued)

China is to launch 211 satellites before 2017 and is set to finish its own space station in 2020.



Space Program, China, 2011 and 2017

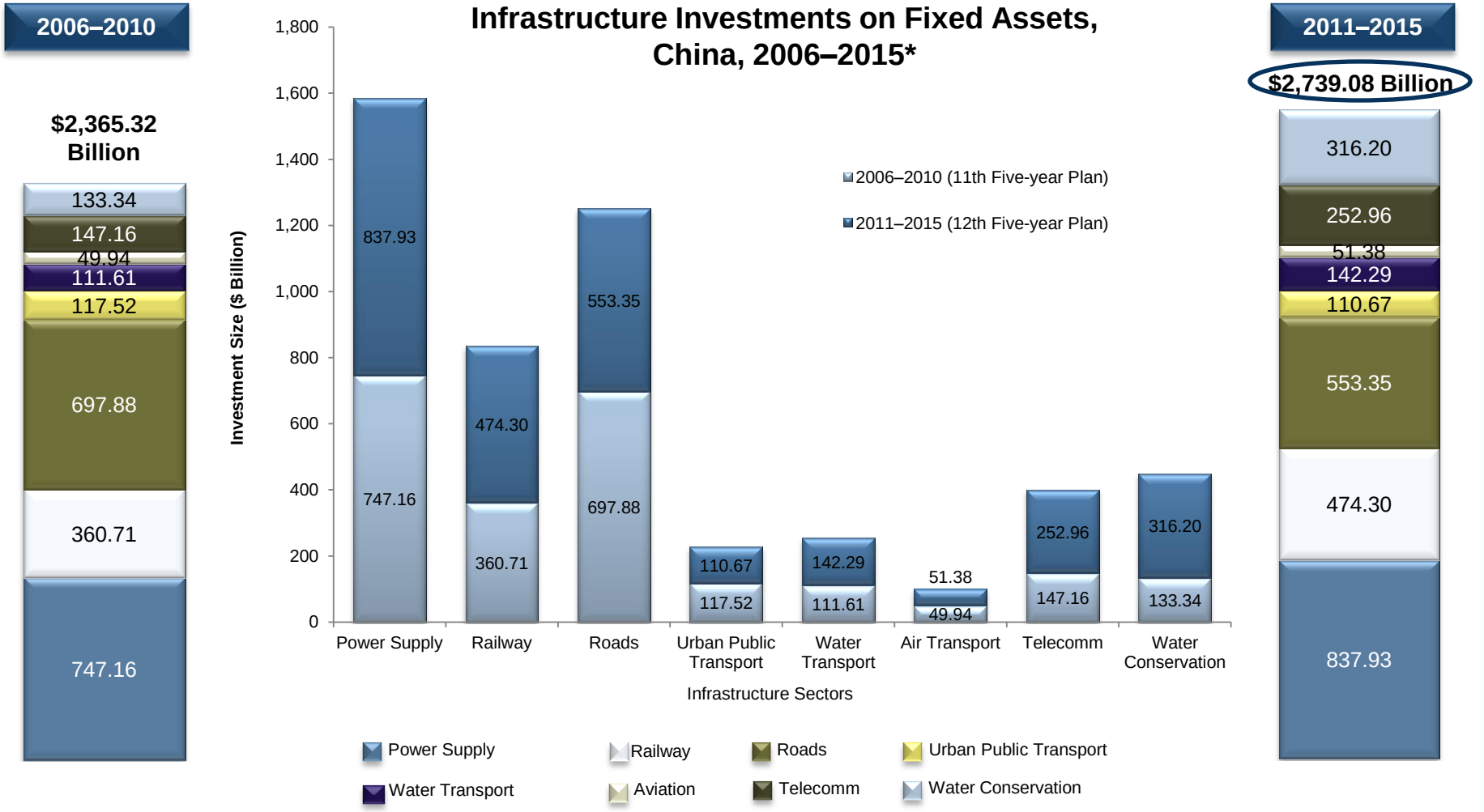
Accumulated Number		By 2011		By 2017
Satellites	Communication Satellites	29	111	211
	Navigation Satellites	14		
	Earth Observation Satellites	38		
	Science R&D Satellites	16		
	Probe Satellites	14		
Space Missions		150*		250
Space Centers and Units		3		4

*Note: Number indicates successful launches.

Source: CNSA; China Great Wall Industry Corporation; and Frost & Sullivan analysis.

Executive Summary—Future Infrastructure Development Trends

Between 2011 and 2015, China's infrastructure spending is to grow to $2,739.08 billion.



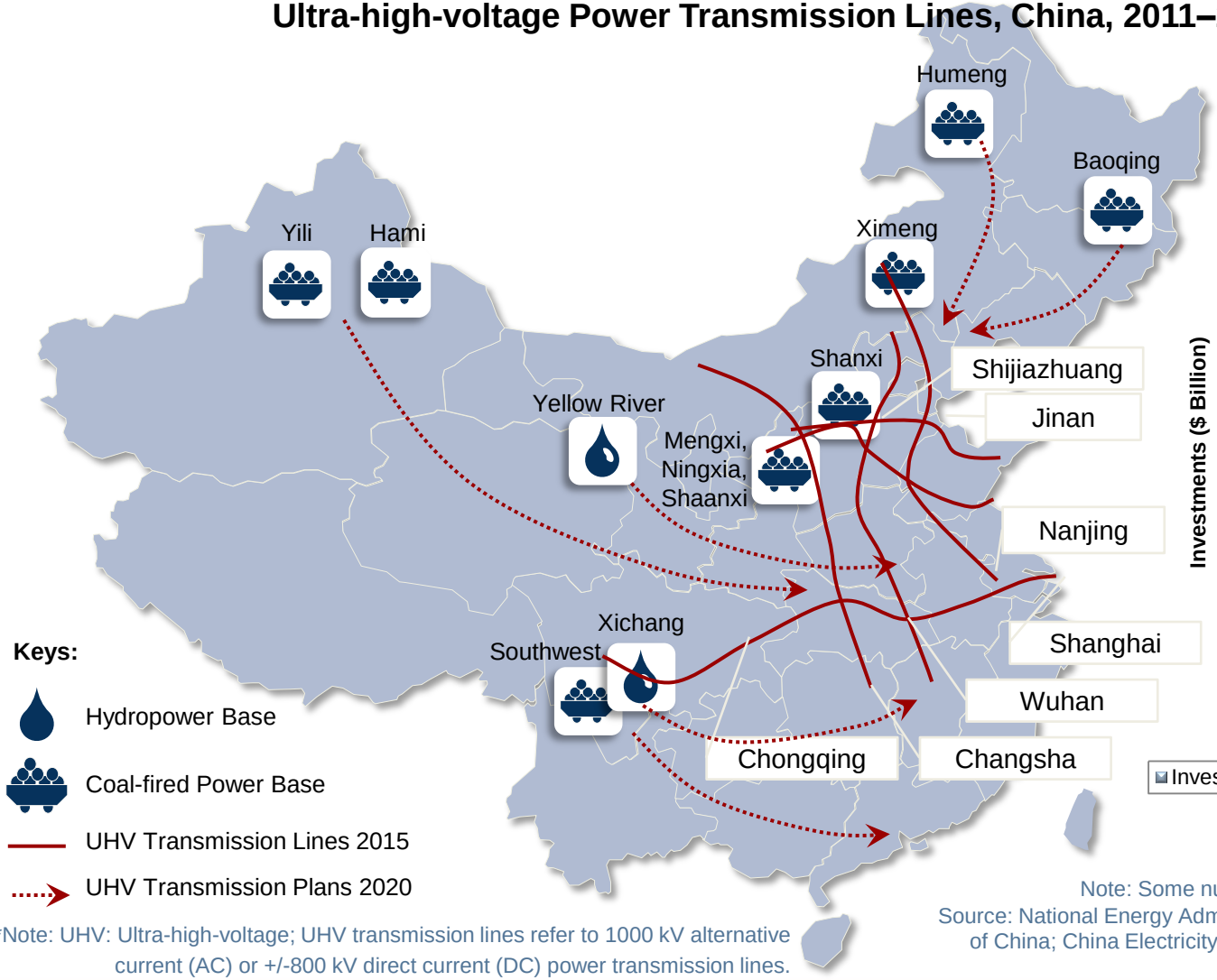
Note: Some numbers do not add up because of rounding. Note: RMB:USD=0.1581:1 as nominal value by April 2012.

Source: National Development and Reform Commission, PRC; National Bureau of Statistics, PRC; Ministry of Housing and Rural-Urban Development, PRC; Asian Logistics and Maritime Conference, 2011; KPMG, 2011; Ministry of Transport, PRC; Ministry of Railways, PRC; Credit Suisse; Frost & Sullivan analysis.

Executive Summary—Power Generation Trends

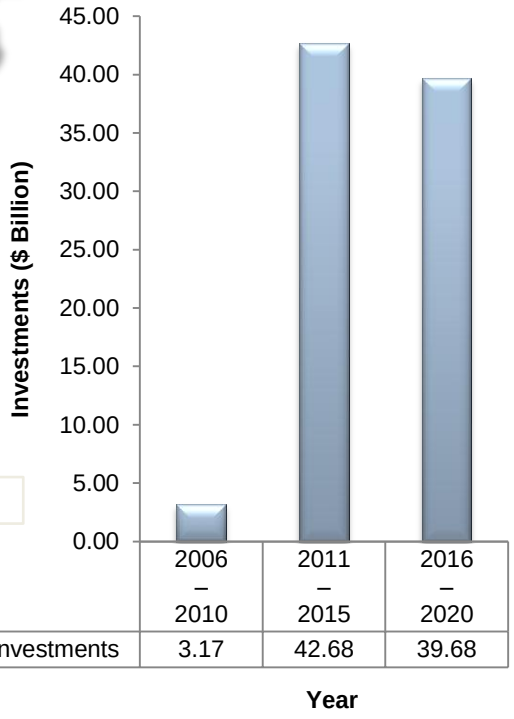
China is to invest $42.68 billion from 2011 to 2015 to develop a national UHV* power transmission network; investments will be nearly 14 times greater than those in the Five-year Plan for 2006 to 2010.

Ultra-high-voltage Power Transmission Lines, China, 2011–2020



*Note: UHV: Ultra-high-voltage; UHV transmission lines refer to 1000 kV alternative current (AC) or +/-800 kV direct current (DC) power transmission lines.

UHV Investment, China, 2006–2020



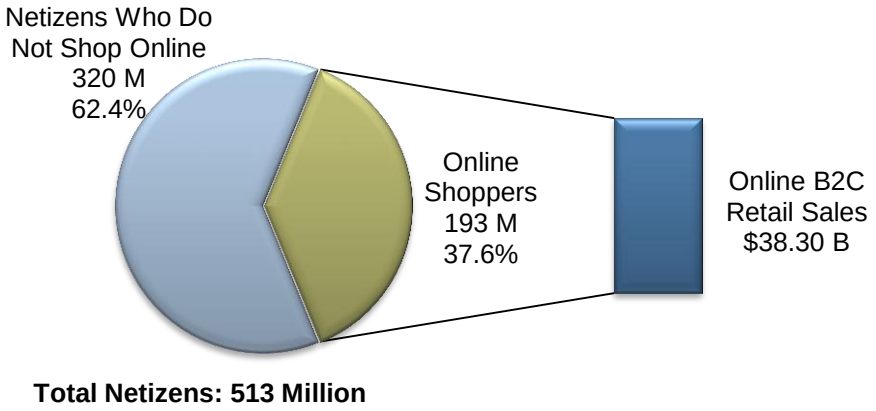
Note: Some numbers do not add up because of rounding.

Source: National Energy Administration of China; State Grid Corporation of China; China Electricity Council; State Power Information Network; and Frost & Sullivan analysis.

Executive Summary—New Business Model Trends

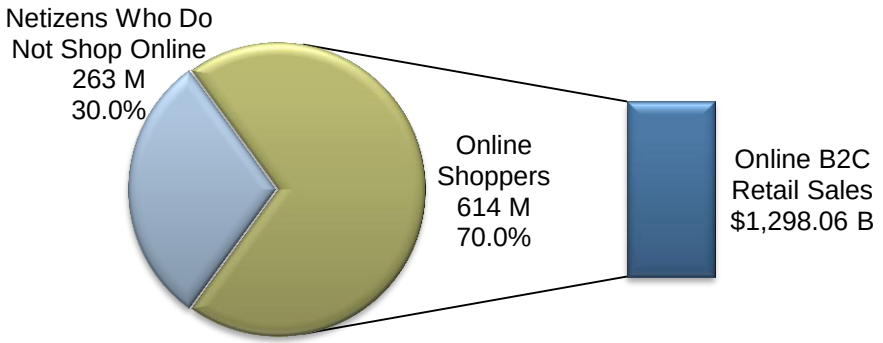
China's B2C* online retail sales are to reach $1.298 trillion in 2025. The top 4 retail participants will contribute 58.4% to the online retail market.

Online Shopping Trends, China, 2011



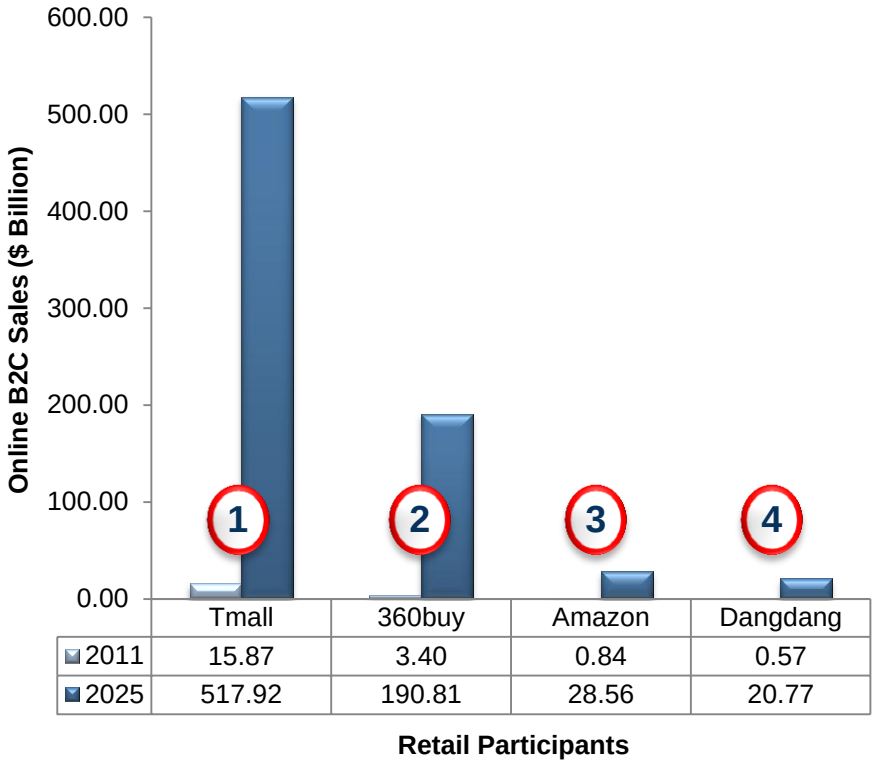
Total Netizens: 513 Million

Online Shopping Trends, China, 2025



Total Netizens: 877 Million

Sales of Top Online B2C Retail Participants, China, 2011 and 2025



	Tmall	360buy	Amazon	Dangdang
2011	15.87	3.40	0.84	0.57
2025	517.92	190.81	28.56	20.77

Note: Some numbers do not add up because of rounding.

*Note: B2C: Business-to-consumer transactions; This study has excluded online consumer-to-consumer (C2C) transactions, which accounted for 70% of online retail sales in 2011. However, the B2C sector is expected to take over 50% of online retail sales after 2015.

Source: China Internet Network Information Center; McKinsey & Company; iResearch China, Frost & Sullivan analysis.

Executive Summary—Macro-to-micro Analysis of Key Mega Trends

Macro-to-micro Analysis of Key Mega Trends, China, 2025

Mega Trends	City	Businesses	Personal Lives
Urbanization—City as a Customer	E.g., integrated infrastructure (city) solutions	E.g., new mobility solutions (park and ride)	E.g., seamless mobility (multi-modal public transportation)
Social Trends	E.g., urban migration to accelerate economic growth of cities	E.g., demand for smart products with real-time functionality	E.g., high per capita spending on mobility solutions
Economic Trends	E.g., development of industrial zones and economic corridors	E.g., shift in focus to skilled services from OEM activities	E.g., high per capita disposable income
Connectivity and Convergence Trends	E.g., digital mapping and networking facilities	E.g., cloud computing and cloud storage	E.g., mobile shoppers and bankers
Future Infrastructure Development	E.g., integrated multi-modal transportation systems	E.g., high-speed logistics	E.g., demand for real-time travel update systems
Power Generation	E.g., smart energy infrastructure	E.g., investment in alternative energy and power saving plans	E.g., 100.0% deployment of smart meters

Degree of Impact* Low Medium High

*Note: Degree of impact is based on quantitative and qualitative reasoning as well as the relative importance of each trend. For example, Gen Y might have less of an impact on a city than urbanization.

Source: Frost & Sullivan analysis.

Executive Summary—Macro-to-micro Analysis of Key Mega Trends (continued)

Mega Trends	City	Businesses	Personal Lives
Health, Wellness, and Well Being	E.g., medi-cities	E.g., “mobile vans” and eHealthcare	E.g., telemedicine, healthcare apps
New Business Models	E.g., rural areas to become more commercial	E.g., national brands to gain access to rural markets	E.g., access to innovative solutions for the rural poor
Future Top Industries	E.g., high-end city logistics service	E.g., retail and finance industries to improve and become more organized	E.g., increased use of LBS** app
Future of Mobility	E.g., intelligent public transportation systems	E.g., increase in ownership of private vehicles	E.g., car sharing, car pooling, and park and ride
Food Security and Safety	E.g., Food delivery to leverage urban logistics model	E.g., Development of organic food and licensed food	E.g., Door-to-door food service
Innovating to Zero	E.g., green and smart infrastructure	E.g., use of recyclable materials and reusable packaging	E.g., use of eco-friendly products and services

Degree of Impact* Low Medium High

*Note: Degree of impact is based on quantitative and qualitative reasoning as well as the relative importance of each trend. For example, Gen Y might have less of an impact on a city than urbanization.

**Note: LBS: Location-based service

Source: Frost & Sullivan analysis.

Executive Summary—Associated Multimedia

Link to recent media releases on Frost & Sullivan's Mega Trends:

- The New Mega Trends—Industries Collide at Growth, Innovation and Leadership 2012
- Evolving Mega Trends to Transform Turkey into a Developed Economy
- Mega Trends Underlying India's Emerging Dominance—Macro-to-micro Implications
- Frost & Sullivan's Mega Trends Projections for the Country at GIL 2011: India, the Global Community of Growth, Innovation and Leadership
- Reverse Brain Drain to Rule Global Trends:
- New Mega Trends—Implications of Mega Trends to Businesses, Cultures, Society and Careers

Link to information about Frost & Sullivan and Mega Trends:

- Mega Trends Strategic Approach

Link to analyst briefings by Frost & Sullivan on Mega Trends:

- Emerging Markets and Mega Trends—Frost & Sullivan Analyst Briefing Series

Source: Frost & Sullivan research.

Research Scope, Objectives, and Methodology

Research Scope

Base Year	2011
Study Period	2009–2025
Forecast Period	2012–2025 (2012–2014 short term, 2015–2017 mid term, 2018–2025 long term)
Geographical Scope	People's Republic of China (PRC), which geographically includes mainland China, Hong Kong Special Administrative Region, and Macao Special Administrative Region.
Industries Covered	Manufacturing, retail, logistics, banking, ICT, energy, automotive, healthcare, construction

Source: Frost & Sullivan analysis.

Research Aims and Objectives

Aims

The objective of the study is to identify and understand the key Mega Trends in China that will impact and shape the country's economy, society, and culture. For the purpose of this study, Mega Trends are categorized as having to do with urbanization, society, the economy, technology, energy, e-mobility, infrastructure, business, health and wellness, political shifts, e-governance, sports, and industry-specific trends.

Objectives

- Identify Mega Trends in China that will influence a wide range of activities, processes, and perceptions, for both governments and businesses.
- Define each Mega Trend and understand its impact from both a quantitative and qualitative perspective and offer futuristic predictions on key economic, spatial, and social trends.
- Analyze and identify the relevant sub-trends within each Mega Trend.
- Identify the key industries that will be impacted and influenced by Mega Trends.
- Assess impacts of key Mega Trends and sub-trends based on their degrees of importance and the certainty of their implementations during the next decade.
- Carry out a macro-to-micro analysis to understand the unmet needs or inherent business opportunities of relevant industries.

Source: Frost & Sullivan analysis.

Research Background

This research study, in addition to China-specific trends, also contains and captures content from various other regional and global studies on Mega Trends:

- M65B-18, World's Top Global Mega Trends to 2020 and Implications to Business, Society, and Cultures—**Completed (December 2010)**
- P5DB-MT, Mega Trends in India: Macro-to-micro Implications of Mega Trends to 2020—**Completed (February 2012)**
- M818-39, African Mega Trends: A Bright Vision for the “Growing” Continent—**Completed (May 2012)**
- NAFD-MT, Mega Trends in Latin America: A Future Outlook for the "Next-generation" Continent—**Upcoming**
- M847-MT, Evolving Mega Trends To Transform Turkey into a Developed Economy—**Upcoming**
- P6E3-MT, Mega Trends in Indonesia: Macro-to-micro Implications of Mega Trends to 2025—**Upcoming**
- M82C-MT, World’s Top Global Mega Trends To 2020 and Implications to Business, Society, and Cultures (2012 Edition)—**Upcoming**
- NA99-13, Strategic Analysis of the Developments of Urban Logistics—**Upcoming**

This study is also supplemented by our continual interactions with industry experts, industry participants, partners, and in-house industry analysts.

Source: Frost & Sullivan research.

Research Methodology—From Macro to Micro

Macro

1

Identify the Mega Trend through brainstorming sessions

The unique Mega Trends for China were selected through macro-economic analysis, interviews, and 10 brainstorming sessions with analysts globally.

2

Identify the Sub-trend through scenario-building exercises

Through a collective 200-day scenario-building exercise in which a global team used data extracted from secondary and primary sources, unique sub-trends were identified with implications for society, the market, and other key sectors in China.

Image Source: Dreamstime. Source: Frost & Sullivan analysis.

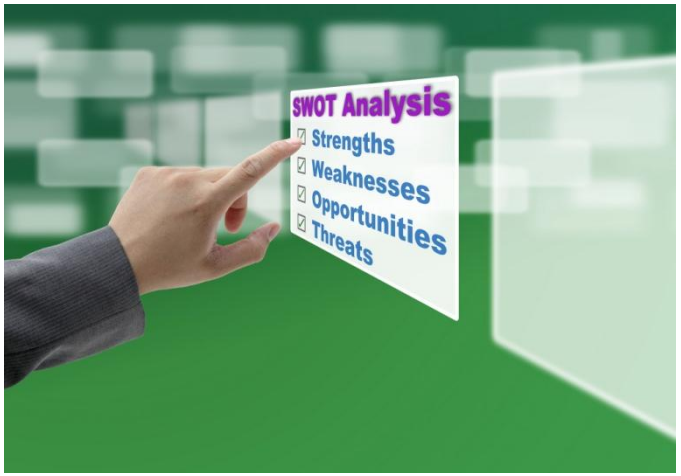
Research Methodology—From Macro to Micro (continued)

3

Assess the impact of the Mega Trend on a micro level
Each Mega Trend was analyzed to determine how it will influence industries, businesses, and people through scenario-building exercises with industry experts and secondary research inputs.

4

Opportunities analysis
Opportunities in key industries were analyzed, and suggestions for products and solutions were generated.



Micro

Image Source: Dreamstime. Source: Frost & Sullivan analysis.

Definitions Used in the Service

Definitions Used

Term	Definition
China	The People's Republic of China (PRC) geographically includes mainland China, the Hong Kong Special Administrative Region, and the Macao Special Administrative Region.
Mega City	City with a population of over 8.0 million and a nominal GDP of $250.00 billion or more.
Mega Regions	Cities grow and merge to become Mega Regions, which have populations of over 15.0 million.
Mega Corridors	Mega Corridors connect two Mega Cities or Mega Regions.
Transportation Corridors	Transportation corridors connect Mega Cities or Mega Regions by transportation linkages.
Smart Cities	Smart cities are cities built on "smart" or "intelligent" solutions and technology that will lead to the adoption of at least 5 out of the 8 following smart parameters: smart energy, smart building, smart mobility, smart healthcare, smart infrastructure, smart technology, smart governance, and smart citizens.
Sustainable Cities	Sustainable cities are cities built to be eco-friendly. These cities may not necessarily include "intelligent" systems. Instead, they are built to be energy-efficient and environmentally friendly. Sustainable cities have 1 or more of the following parameters: green energy, green buildings, green mobility, green healthcare, green infrastructure, green technology, green governance, and green citizens.
High-rise Building	A multi-story structure between 35 and 100 meters tall is considered a high-rise building.
Skyscraper	A multi-story building that has an architectural height of 100 meters or more is considered a skyscraper.

Source: Emporis GmbH and Frost & Sullivan analysis.

Definitions Used (continued)

Term	Definition
Middle Class	Households that have annual disposal income of between $7,500 and $60,000 are considered middle class.
Poverty	Households that have annual disposal income less than $1,000 are considered to be living in poverty.
Great Firewall of China (GFW)	The GFW is an extensive Internet censorship system in China implemented by the Chinese government.
Netizen	A netizen is an Internet user.
Hukou System	The Hukou System is a household registration system in China that restricts the access of a rural resident to urban areas. This system ensures that cities do not become overly congested.
Light Vehicle	A light vehicle refers to passenger cars and light commercial vehicles with a gross vehicle weight of less than 3.5 tons.

Source: Frost & Sullivan analysis.

Abbreviations and Acronyms Used

Abbreviation/Acronyms	
A&D	Aerospace and defense industry
B2C	Business to customer
BIPV	Building-integrated Photovoltaic
C2C	Consumer to consumer
CEV	City electric vehicle
DWT	Deadweight tonnage
EDGE	Enhanced data rates for global evolution
EMU	Electric multiple unit
EV	Electric vehicles
GDP	Gross domestic product
GFW	Great firewall of China
GPS	Global positioning system
GWh	Gigawatt hour
IPO	Initial public offers
IT	Information technology
LBS	Location-based service
MPV	Multi-purpose vehicle
M2M	Machine to machine
NFC	Near-field communication

Source: Frost & Sullivan analysis.

Abbreviations and Acronyms Used (continued)

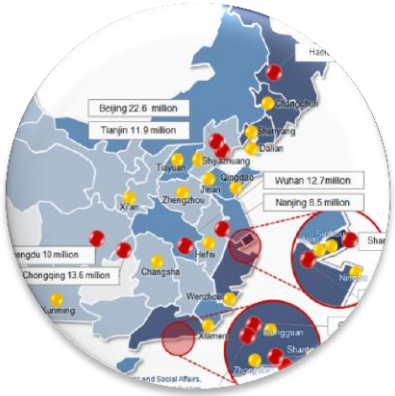
Abbreviation/Acronyms	
OEM	Original equipment manufacturer
OOH	Out-of-home advertising
PHEV	Plug-in hybrid electric vehicles.
PPP	Public-private partnership
PRC	People's Republic of China
RFID	Radio frequency identification
R&D	Research and development
SAR	Special administrative region
SCM	Supply chain management
SMEs	Small and medium enterprises
SNS	Social network services
SOE	State-owned enterprise
SUV	Sport utility vehicle
TEU	20-foot equivalent unit
UHV	Ultra-high voltage

Source: Frost & Sullivan analysis.

Urbanization Trends—Mega Cities, Mega Regions, Mega Corridors, Smart Cities

Urbanization Trends

Four main trends in urbanization will be the development of Mega Cities, Mega Regions, Mega Corridors, and smart and sustainable cities.

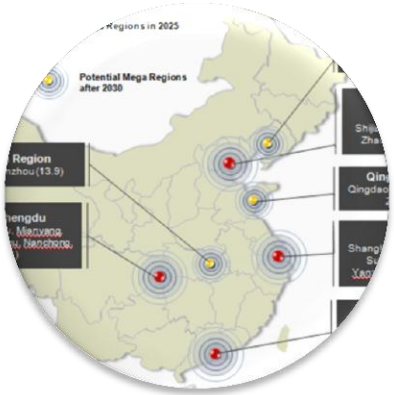


Mega Cities

City with a minimum population of 8.0 million and GDP of $250 billion in 2025

2012: 1 Mega Cities (China)
2025:13 Mega Cities (China)

Examples:
Shanghai, Beijing, Tianjin, Guangzhou, Hong Kong

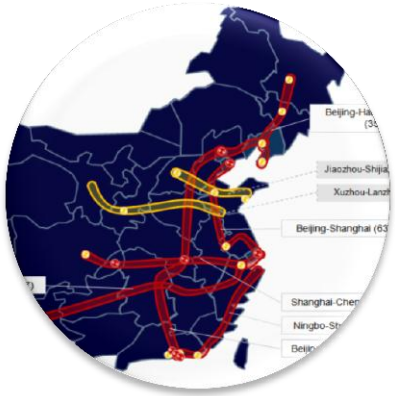


Mega Regions

Cities that combine with their suburbs to form regions with a population of over 15.0 million

2025: 4 Mega Regions (China)

Example:
Shanghai Region, with a population of 67.9 million in 2025



Mega Corridors

Corridors connecting two major cities or Mega Regions that are 60 km or more apart and that have a combined population of over 25.0 million

2025: 6 Mega Corridors (China)

Examples:
Hong Kong–Shenzhen–Guangzhou Mega Corridor, with a population of 39.2 million in 2025

Smart and Sustainable Cities

Cities built with “smart” or “sustainable" parameters for energy, building, mobility, infrastructure, technology, healthcare, citizens, and governance

Examples:
Smart City—Wuhan
Sustainable City—Wuxi

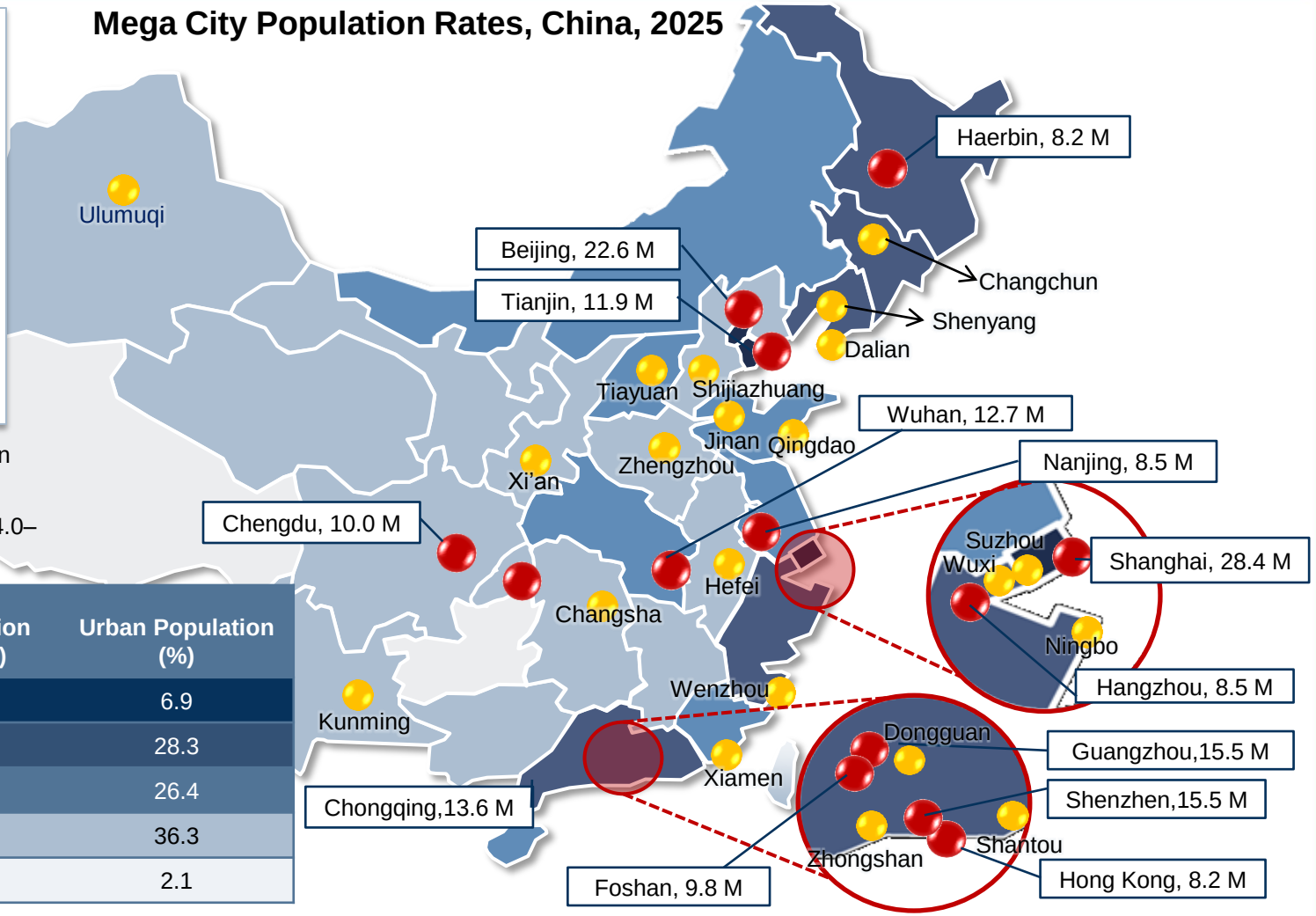
Source: Frost & Sullivan analysis.

Urbanization Trends—Mega Cities

In 2025, China is to have 13 Mega Cities* that will contribute $6.24 trillion to the total GDP, and 921.0 million people will be living in cities. This figure will be equal to 2.6 times the total US population.

- China is to have more than 134 cities that will house over 1.0 million people in 2025.
- For each year between 2012 and 2030, 8.0 to 9.0 million Chinese who live in rural habitats are expected to move into cities.

Mega City Population Rates, China, 2025



Mega Cities, greater than 8.0 M inahbitants

Emerging Mega Cities, 4.0–8.0 M inhabitants

Number of Provinces**	Urbanization Rate (%)	Urban Population (%)
3	> 80	6.9
5	70–79	28.3
7	60–69	26.4
16	50–59	36.3
2	< 50	2.1

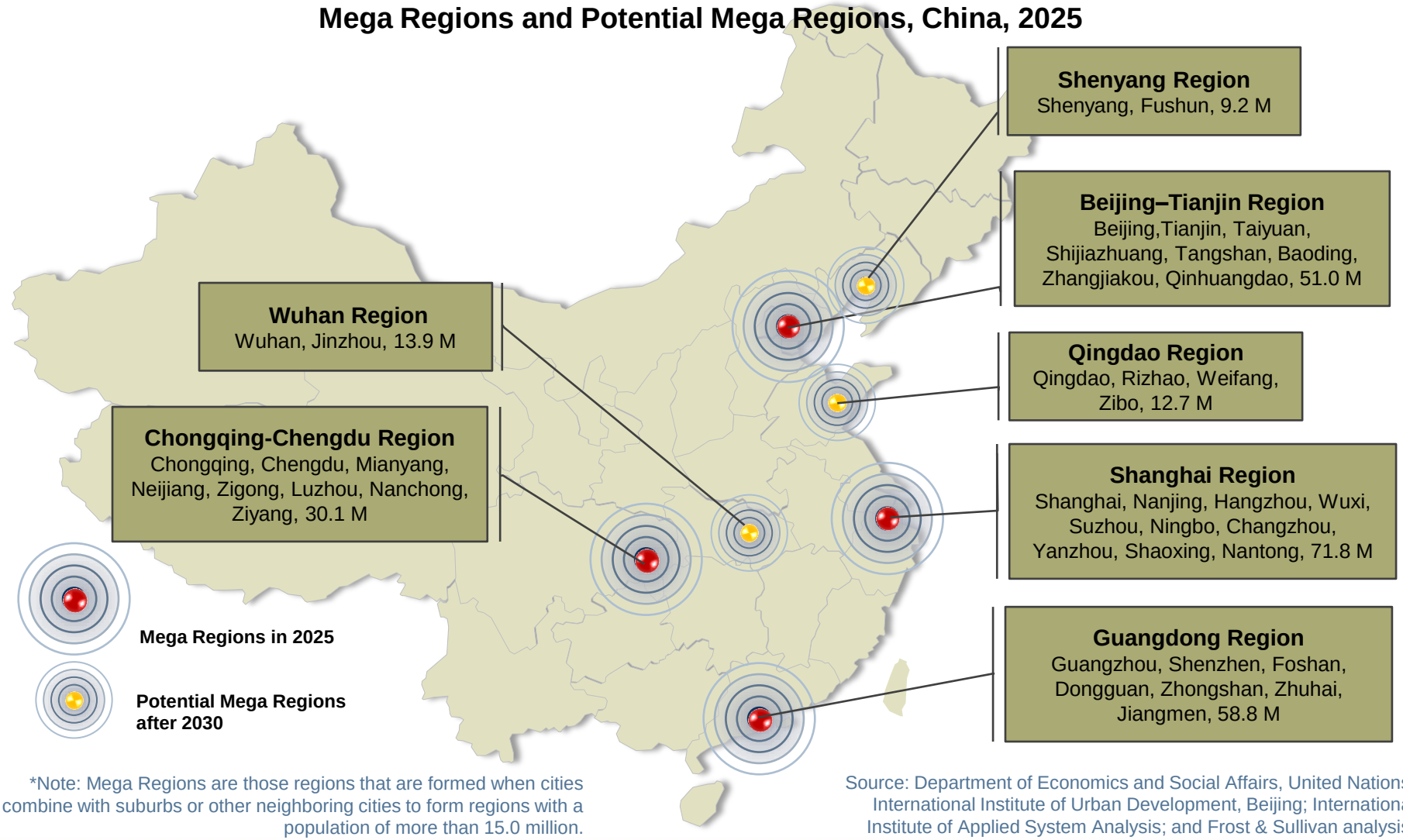
*Note: A Mega City is defined as a city with population of more than 8.0 million and a nominal GDP of $250.00 billion or more. **Note: Provinces include administrative regions.

Source: Department of Economics and Social Affairs, United Nations; International Institute of Applied System Analysis; Frost & Sullivan analysis.

Urbanization Trends—Mega Regions*

China is to see 4 Mega Regions in 2025; these will accounting for about 15% of the total population, or 211.7 million.

Mega Regions and Potential Mega Regions, China, 2025



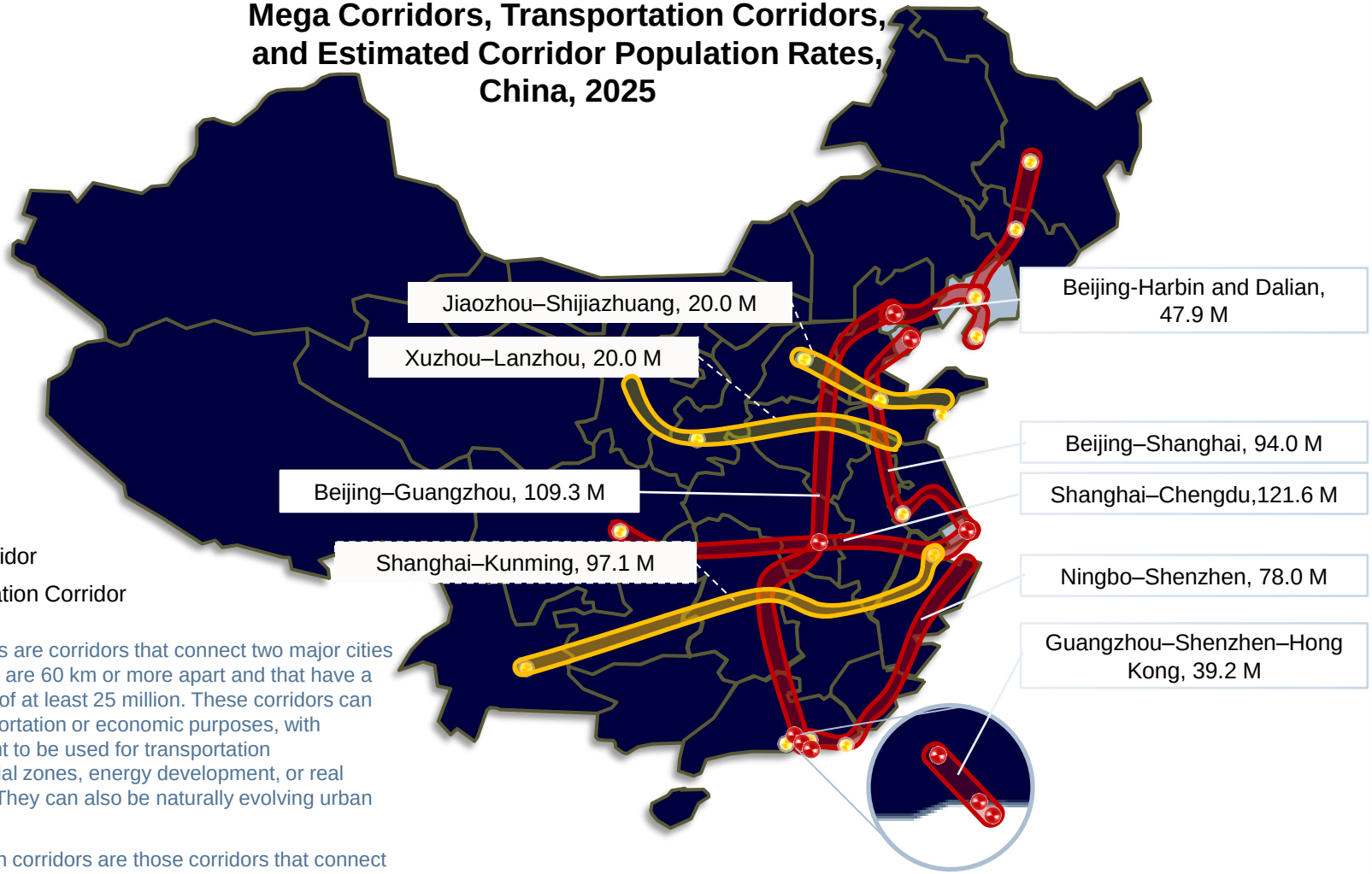
*Note: Mega Regions are those regions that are formed when cities combine with suburbs or other neighboring cities to form regions with a population of more than 15.0 million.

Source: Department of Economics and Social Affairs, United Nations; International Institute of Urban Development, Beijing; International Institute of Applied System Analysis; and Frost & Sullivan analysis.

Urbanization Trends—Mega Corridors

China is set to have 6 Mega Corridors* and 3 transportation corridors** in 2025.

Mega Corridors, Transportation Corridors, and Estimated Corridor Population Rates, China, 2025



*Note: Mega Corridors are corridors that connect two major cities or Mega Regions that are 60 km or more apart and that have a combined population of at least 25 million. These corridors can be planned for transportation or economic purposes, with anticipated investment to be used for transportation infrastructure, industrial zones, energy development, or real estate development. They can also be naturally evolving urban corridors.

**Note: Transportation corridors are those corridors that connect Mega Cities or Mega Regions with transportation links (e.g., by highways or railways).

Source: National Development and Reform Commission of China; Population Division, United Nations; Frost & Sullivan analysis.

Urbanization Trends—Mega Corridors

The world's most densely populated corridor will be the Hong Kong–Shenzhen–Guangzhou Mega Corridor; it generated 8.4%, or $613.1 million, of China's GDP in 2011 and will be completed by 2016.

Hong Kong–Shenzhen–Guangzhou Mega Corridor, China, 2011–2016

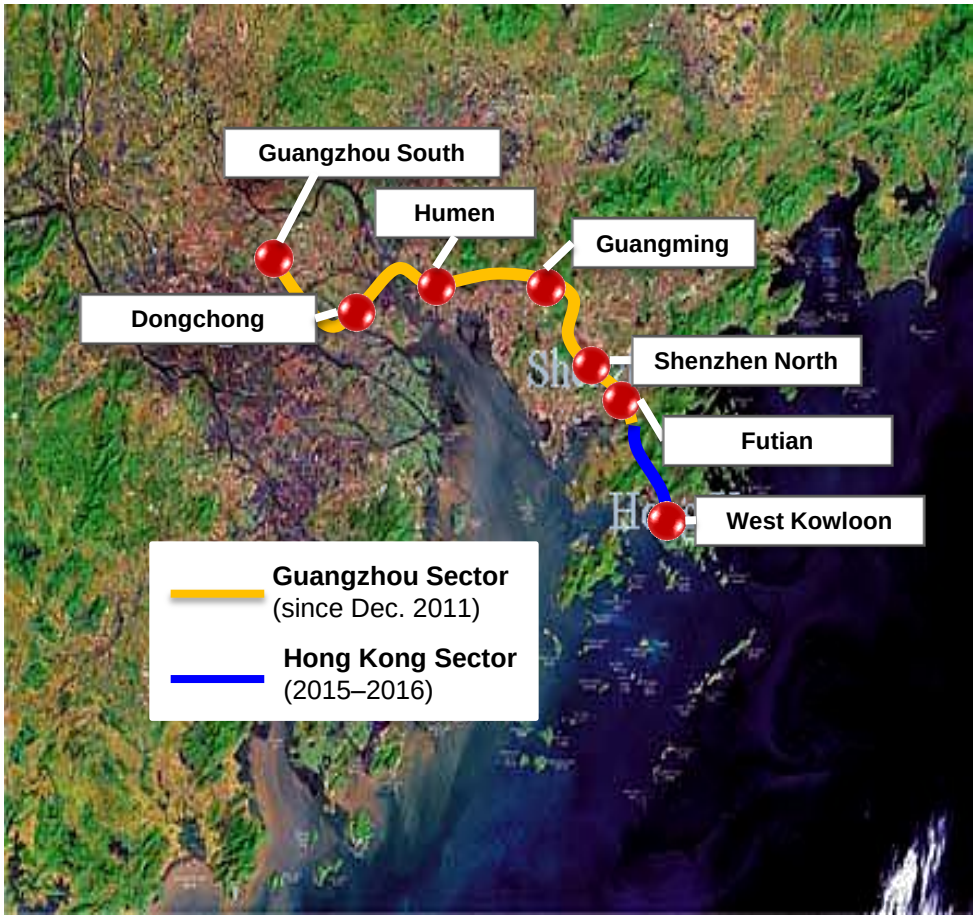


Image source: Chinapage.com

$11.2 B

Investments of $11.2 billion will include the construction of 49 bridges and 26 tunnels

$1.220 T

GDP of $1.220 trillion is to be generated by these 3 Mega Cities in 2025.

8.4%

Eight percent of China's GDP in 2011 was contributed by this region, which has 0.1% of China's land and 2.2% of its population.

19,000

passengers traveling per hour on the corridor's high-speed rail system, saving 42.0 million hours each year.

8 Hours

To travel from Shanghai to Beijing, it will take 8 hours and, from Hong Kong to Beijing, 10 hours.

51 Minutes

To travel from Hong Kong through Shenzhen to Guangzhou, it will take 51 minutes on a total rail length of 142 km.

Source: UN Habitat; International Institute of Urban Development, Beijing; China's Ministry of Railway; Guangshen Railway Co., Ltd; MTR Corporation; Hong Kong Legislative Council; Frost & Sullivan analysis.

Urbanization Trends—Smart Cities

China is to have 4 smart cities and 8 sustainable cities by 2025.

Smart and Sustainable Cities, China, 2025

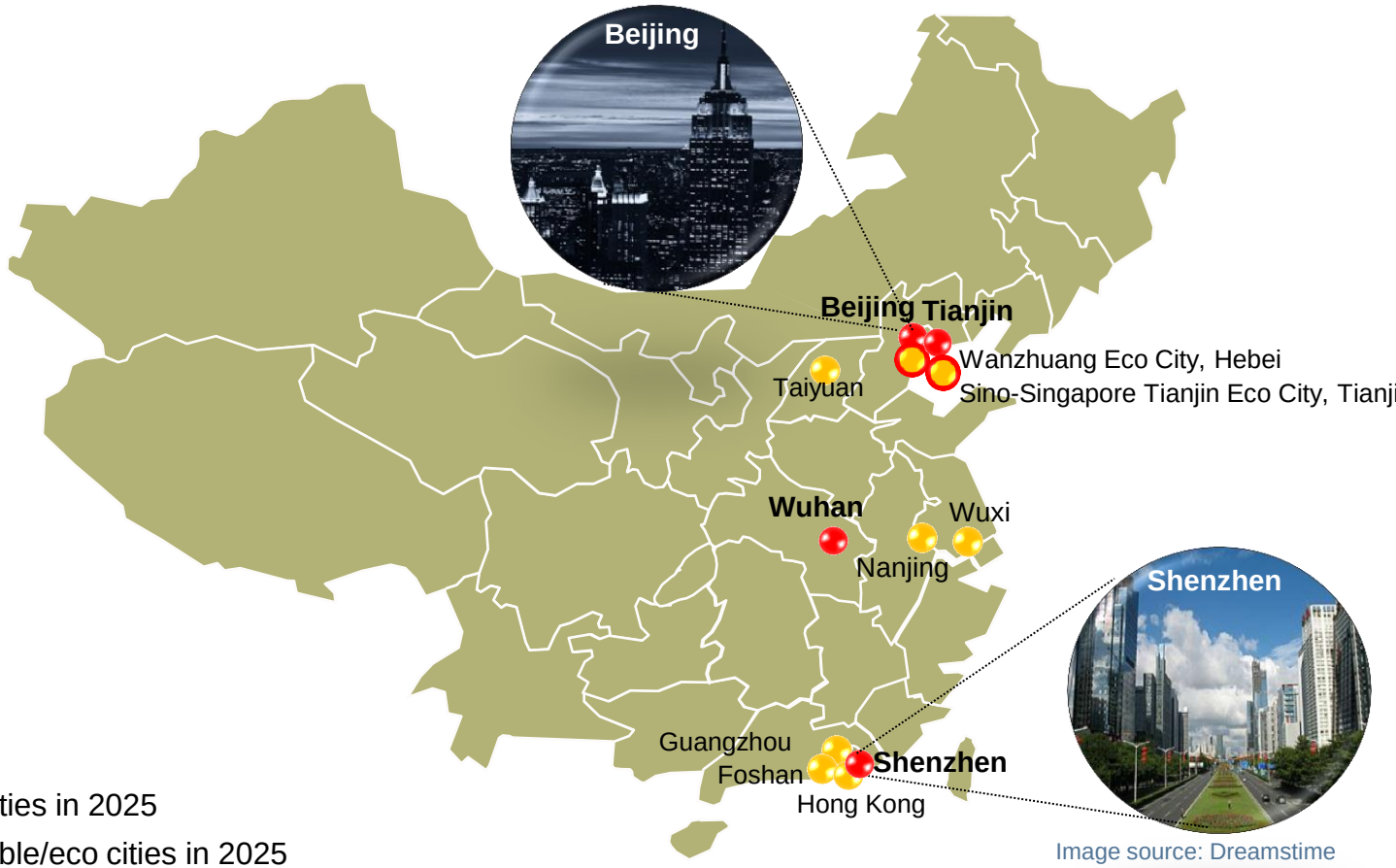


Image source: Dreamstime

Source: State Grid Corporation of China, Metering China; Harvard Business School, 2011; International Energy Agency; Siemens; and Frost & Sullivan analysis.

Urbanization Trends—Smart Cities (continued)

Started in 2008 and with a projected completion date of 2020, the Sino-Singapore Tianjin eco-city will cost $1.9 billion; its mobility is to be 90% green by 2020.

The main partners of the project include Philips, Hitachi, ST Engineering, and Keppel

Features

- First 10,000 residents of Sino-Singapore Tianjin eco-city moved in during March of 2012
- Covers an area of 30 sq km and is 40 km from Tianjin
- Capacity to hold 350,000 residents after completion

- **Smart Energy**
  - Has a 100% smart grid
  - Has renewable energy that accounts for more than 20% of consumption

- **Smart Mobility**
  - Uses electric vehicles
  - Has life facilities, e.g., schools, stores, and offices, that are all in walkable distance
  - Aims for 90% green mobility by 2020

- **Smart Infrastructure**
  - Has 60% waste recycling
  - Draws 50% of water from non-conventional resources

- **Smart Technology**
  - Has high-speed broadband
  - Has integration of the Internet, telecomm, and TV facilities

- **Smart Buildings**
  - Has a pneumatic waste collection system and a district cooling system in each household

Source: SSTEC, 2012; Singapore's Ministry of National Development; Singapore Manufacturer's Federation; and Frost & Sullivan analysis.

Urbanization Trends—Case Study, Hong Kong

Hong Kong, the vertical city, is set to have 1,308 skyscrapers* and 6,588 high-rise buildings* by 2025. Among them, 240 will be newly built.

6,540

On average, there was a population density of 6,540 people per square kilometer in 2010.

$224.6 B

The GDP of Hong Kong in 2010 was $224.6 B.

1,800%

The gross floor area ratio in Hong Kong was 1,800% in 2011. Over 200 buildings have more than 35 floors.

30 Floors

Buildings with 30 floors or more have separate mid-level elevators for lower and higher stories; multi-function buildings have commercial sites, shops, and residential units all in the same high-rise building.

Vertical City Demands

- **Clean Energy—**The government will develop wind power and natural gas sources to replace 40% of the energy generated by coal.
- **Infrastructure—**Ventilation infrastructure will relieve the city's air pollution problems.
- **Marketing—**Hong Kong holds great potential for advanced forms of out-of-home, interactive, and LBS advertising.
- **Building materials—**Building-integrated photovoltaics (BIPVs) will be used for energy solutions, and fireproof materials will be used as well.

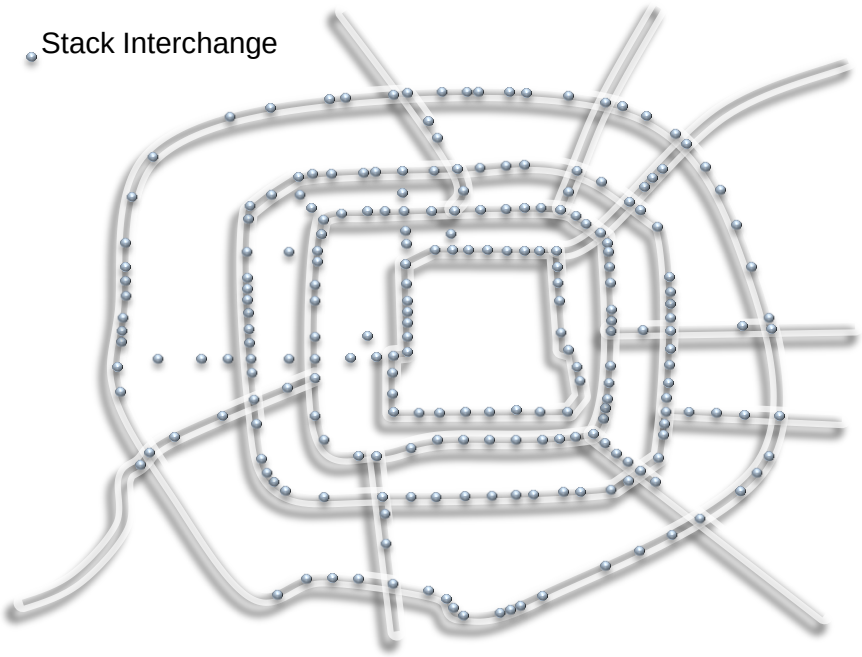
*Note: A high-rise building is defined as between 35 and 100 meters in height, and a skyscraper is defined as a having an architectural height of at least 100 meters.

Source: Electrical and Mechanical Services Department, Hong Kong; Planning Department, Hong Kong; Renewable Energy Department; Emporis GmbH; World Skyscraper Page Database; International Monetary Fund; and Frost & Sullivan analysis.

Urbanization Trends—Case Study, Beijing

Beijing is a multi-level city* that has 273 stack interchanges, creating new mobility solutions; there is a stack interchange every 2 square km in the city center.

Sketch Map of Stack Interchanges in Beijing's City Center, China, 2012



In Beijing, there are 273 stack interchanges distributed throughout an area of **600 square** kilometers to link three road systems.

*Note: A multi-level city is a city with a large amount of multi-level stack interchanges.

Opportunities in New Mobility Solutions

New Business Models
New mobility business models such as car-sharing and car-pooling are emerging.

Smart Mobility
Telematics, global positioning systems (GPSs), and real-time traffic information for mobile users are developing.

Mobility Integrators
Technology and infrastructure are integrating. For example, smart card payments can be used for all transportation tools.

Public Transportation
Public transportation use has increased by 66% Traffic congestion is accelerating mass transportation development.

Image Source: Dreamstime.

Source: Beijing Traffic management Bureau, Shanghai Urban Construction and Communication Commission, International Union of Railways, Frost & Sullivan analysis.

Macro-to-micro Implications of Urbanization Trends in China

Macro-to-micro Implications of Urbanization Trends, China, 2011 and 2025

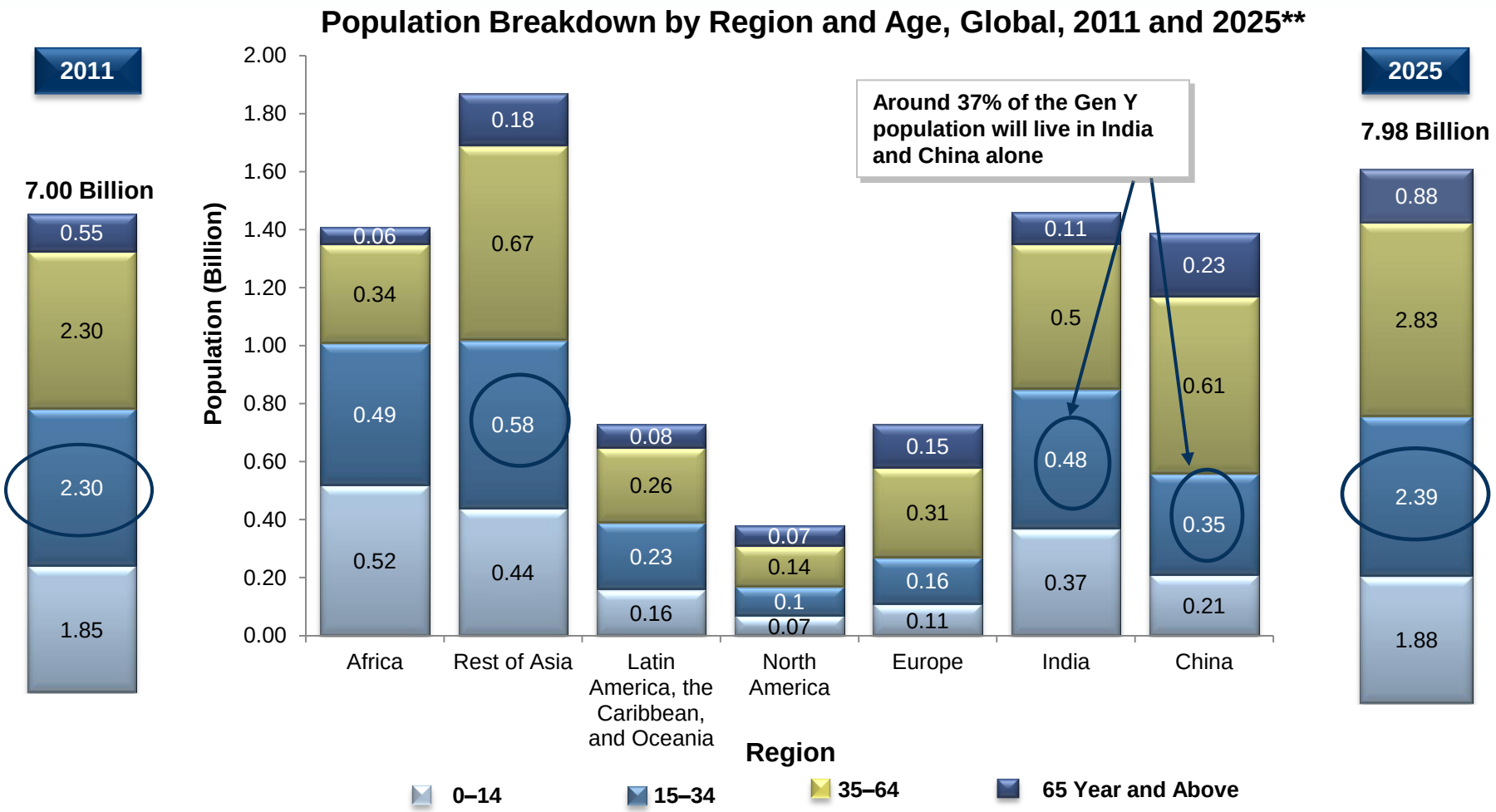
	2011	2025	Macro-to-micro Implications
Mega Cities	In 2011, China had 1 Mega Cities and 10 Emerging Mega Cities.	In 2025, China will have 13 Mega Cities and 21 emerging Mega Cities.	• City infrastructure is to become integrated, green, and intelligent. • Infrastructure projects will see PPP* synergies for deployment of customized "city solutions." • Slums will form in Mega Cities; these will create demand for solutions such as cheap housing and a clean water supply.
	The urbanization rate of China was almost at 50%.	Of the total Chinese population, 65.6% will live in cities.	
Mega Regions	China had 4 Mega Regions.	China will have 4 Mega Regions and 3 emerging Mega Regions.	• Over 20 Tier II cities will see rapid urbanization at around the same rate as Tier I Mega Cities. • Opportunities in security, healthcare, food, logistics, entertainment, and mobility will exponentially increase with the rise of Mega Regions. • Urban congestion policies will increase.
	High concentrations of urban populations in first-tier big cities (with 21% of total population) resulted in the formation of 4 Mega Regions.	These 3 emerging Mega Regions will evolve by 2025 as smaller city clusters that will form around the Mega Cities. They will account for around 12% of the urban population.	
Mega Corridors	China had 6 Mega Corridors.	China will have 6 Mega Corridors and 3 transportation corridors.	• Mobility solutions for intercity transportation will be implemented. • Opportunities in the suburban real estate market—demand for 'township-style' apartments and gated communities—will open up. • Logistical costs and delivery time lengths will be considerably reduced by the development of freight corridors and inland high-speed cargo railroads.
	As better transportation infrastructure emerge, Mega Cities conjoined to form Mega Corridors. In 2011, China had 6 such corridors, the largest of which was inhabited by 73 million people.	Further development in transportation infrastructure, such as high-speed rail networks, will result in the creation of 2 emerging Mega Corridors. The largest Mega Corridor will grow to be inhabited by more than 100 million people.	

Note: Numbers are provided according to the timeframe of available data.
*Note: PPP: Public Private Partnership.
Source: Frost & Sullivan analysis.

Social Trends—Labor Pool, Aging China, Income Pyramid, Digital Dependency, Women Empowerment,

Social Trends

China will have around 14.6% of world's Gen Y* population in 2025. Combined, China and India will have around 37% the total Gen Y population.



Note: Some numbers do not add up because of rounding.

*Note: Gen Y is defined as the population between 15 and 34 years of age.

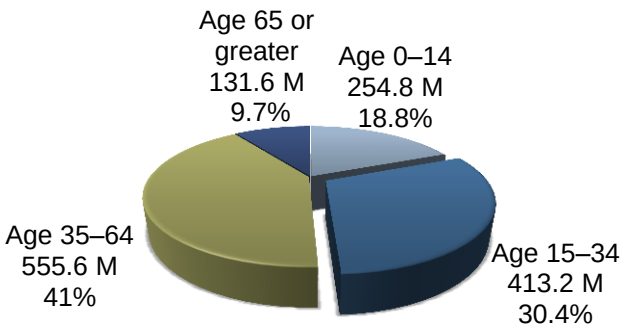
**Note: Data for regions in middle chart is for 2025.

Source: US Census Bureau; Department of Economic and Social Affairs of the United Nations; and Frost & Sullivan analysis.

Social Trends (continued)

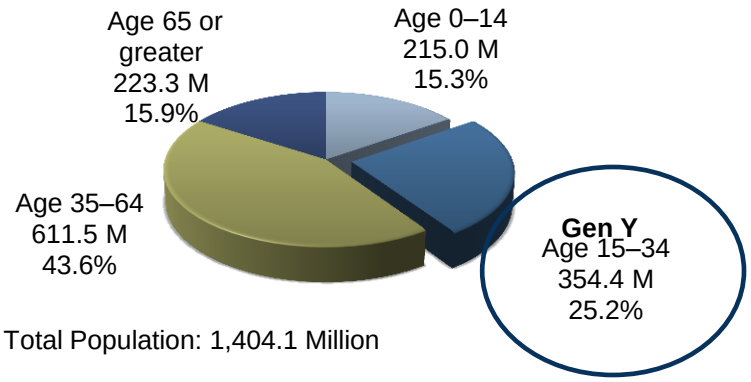
China will have a 354.4 million in the Gen Y population (15- to 34-year-olds) and 965.9 million of working age (15- to 64-year-olds) in 2025.

Population Rates, China, 2011



Total Population: 1,355.2 Million

Population Rates, China, 2025



Total Population: 1,404.1 Million

Gen Y Population by Province, China, 2025

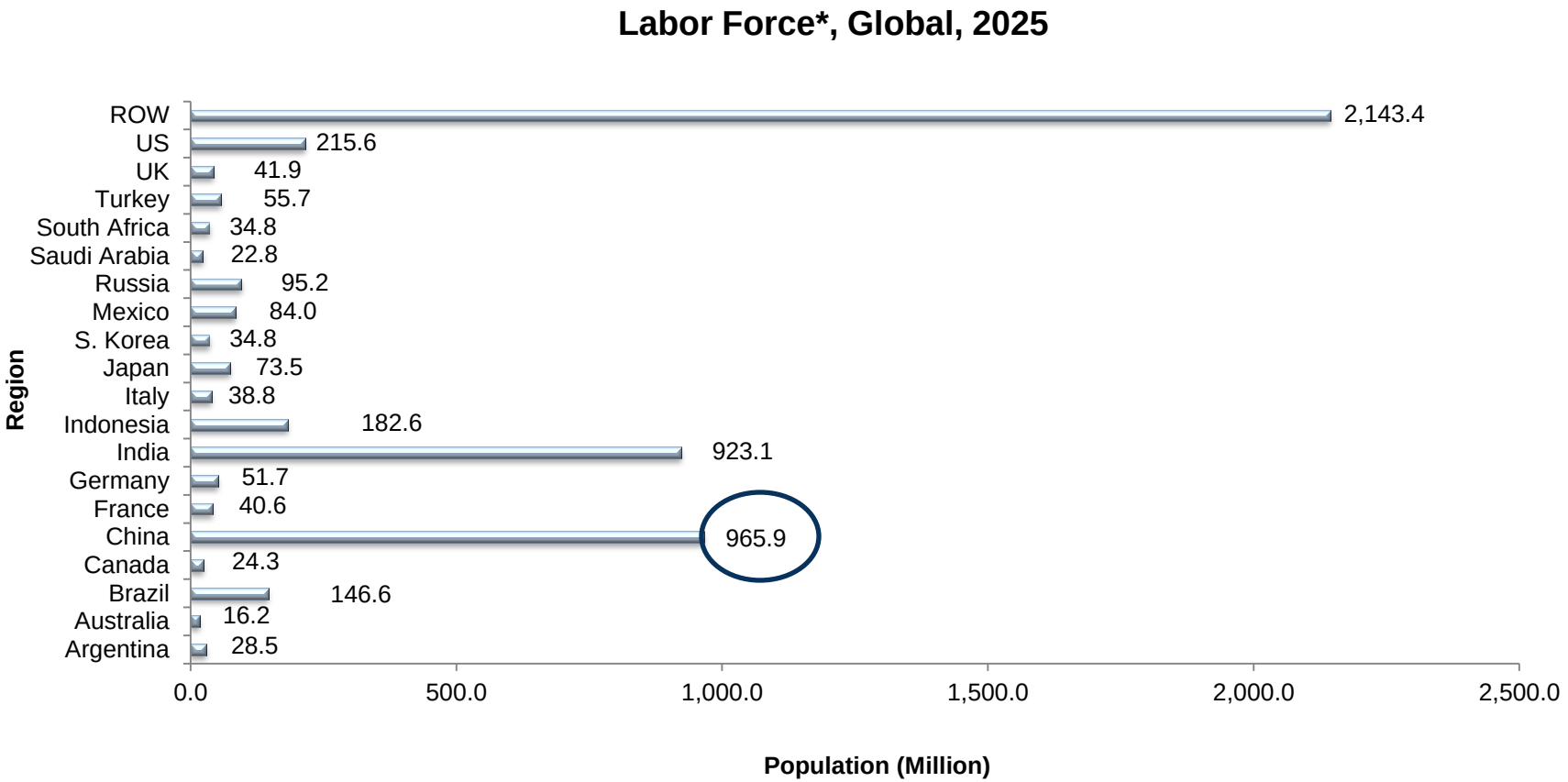
By 2025, the top 4 provinces will account for 29% of the total Gen Y population.

Note: Some numbers do not add up because of rounding.

Source: Population Division, United Nations, National Bureau of Statistics of China; Frost & Sullivan analysis.

Social Trends—Labor Pool

China is to have largest working-age population—965.9 million—by 2025. Moreover, by 2025, 22% of the global labor force will be from China.



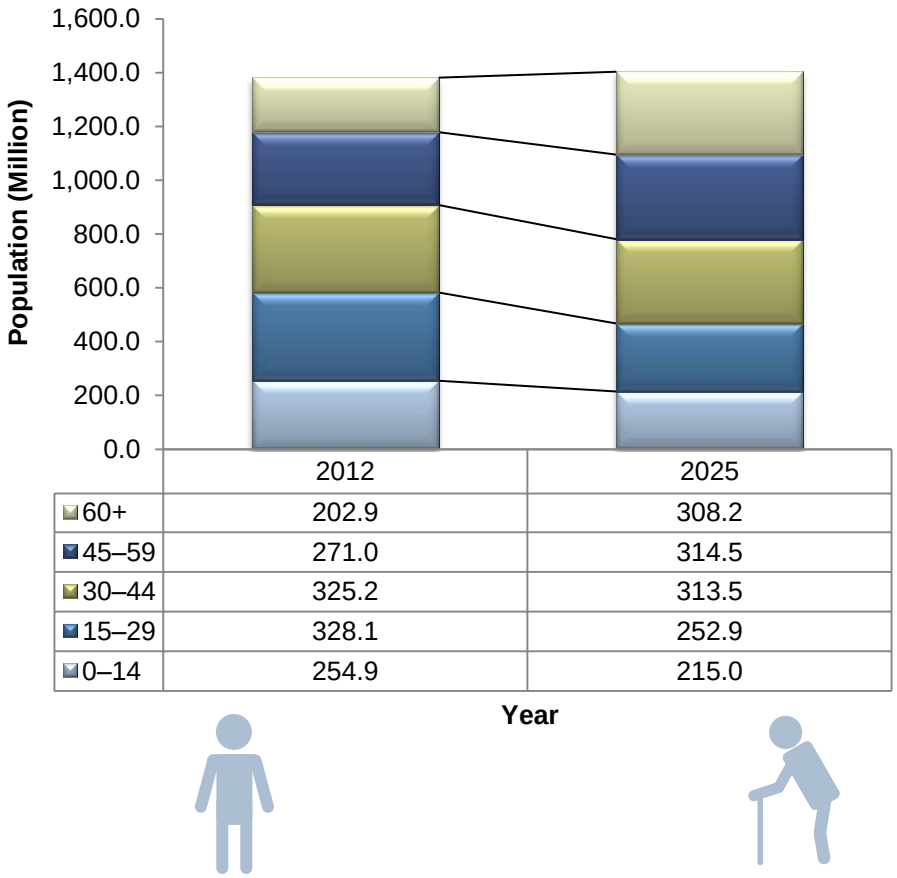
*Note: Labor force refers to the population between 15 and 64 years old.

Source: Population Division, United Nations; Frost & Sullivan analysis.

Social Trends—Aging China

China is to have 308.2 million people over the age of 60 by 2025. The aging population will boost the healthcare, leisure, and insurance industries.

Population Pyramid*, China, 2012 and 2025



	2012	2025
60+	202.9	308.2
45–59	271.0	314.5
30–44	325.2	313.5
15–29	328.1	252.9
0–14	254.9	215.0

Note: Some numbers do not add up because of rounding.

*Note: The population pyramid is based on the assumption that China will continue its current one-child-per-family birth control policies.

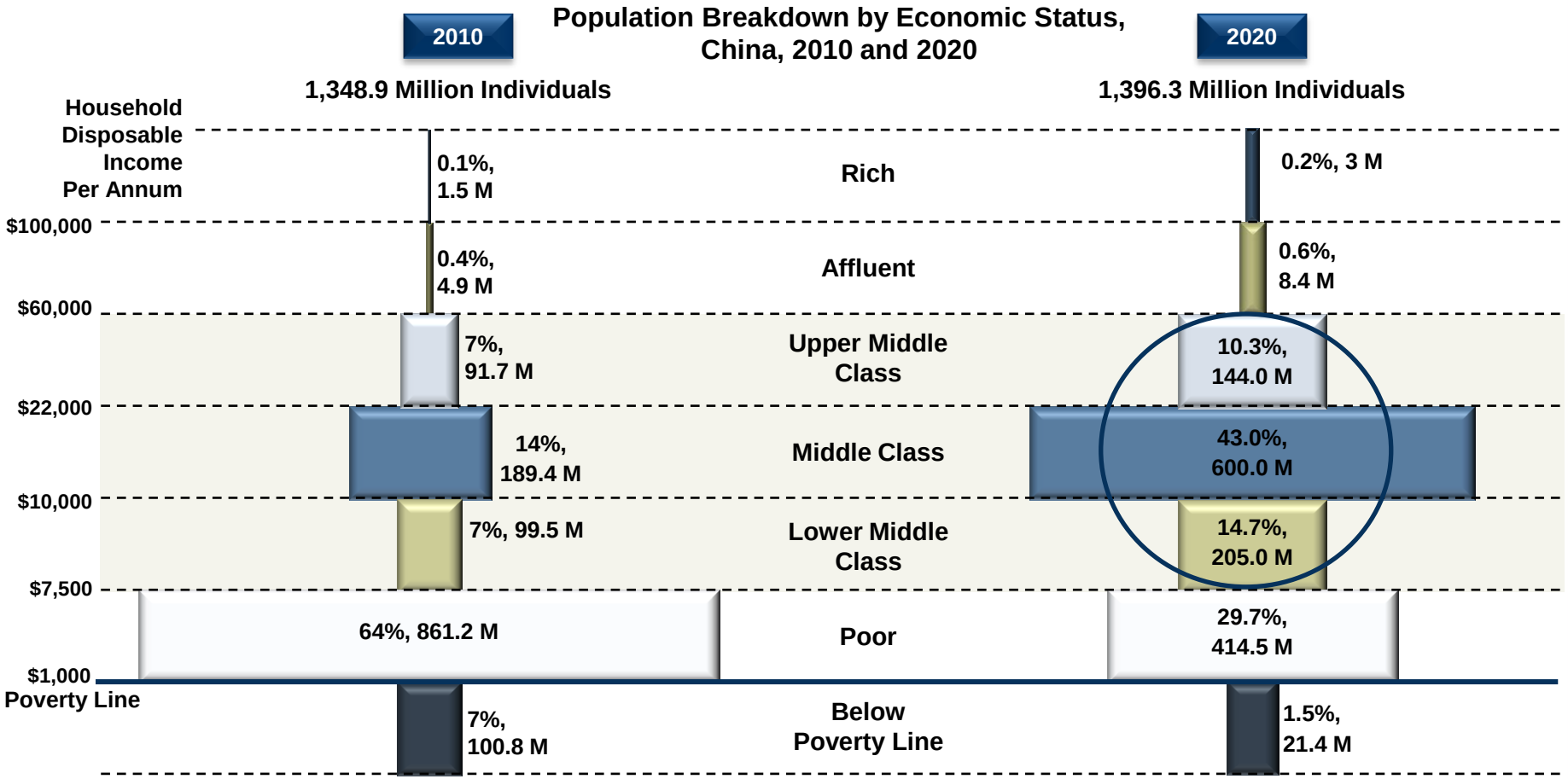
Aging China Demands

Pharmaceuticals and health supplements	Healthcare
Elderly care	
E-health	
Senior tourism	Leisure
Senior social services	
Elderly education	
Life insurance	Products
Healthcare equipment for the elderly	

Source: Ministry of Civil Affairs, PRC; National Population and Family Planning Commission, PRC; Population Division, United Nation; and Frost & Sullivan analysis.

Social Trends—Income Pyramid

The Middle Bulge will include 949 million middle-class individuals who will account for 68% of China's total population in 2020.



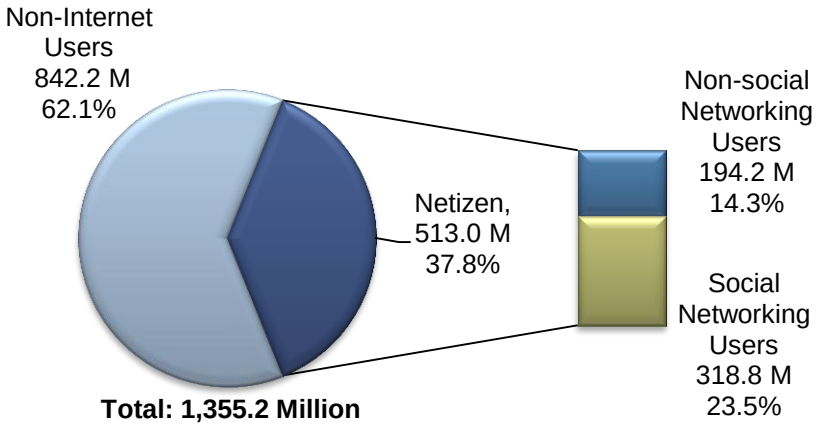
Note: The average household size in China is approximately 3. Percentage and populations numbers do not add up exactly to 100% or total because of rounding. Disposable income is defined as actual income that can be used for final consumptive and non-compulsory expenditures as well as for savings.

Source: Statistic Bureau of China, 2010; Euromonitor; Population Division, United Nations; Frost & Sullivan analysis.

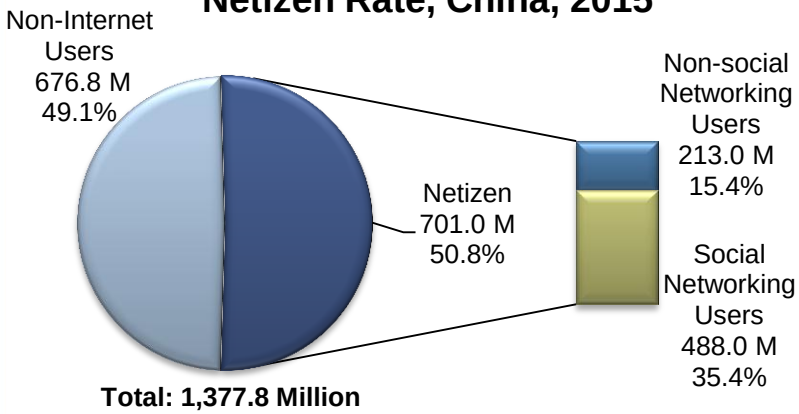
Social Trends—Digital Dependency

Social Networking Users are to reach 488 million in China in 2015. Around 70% of Chinese netizens will be involved in social networking services

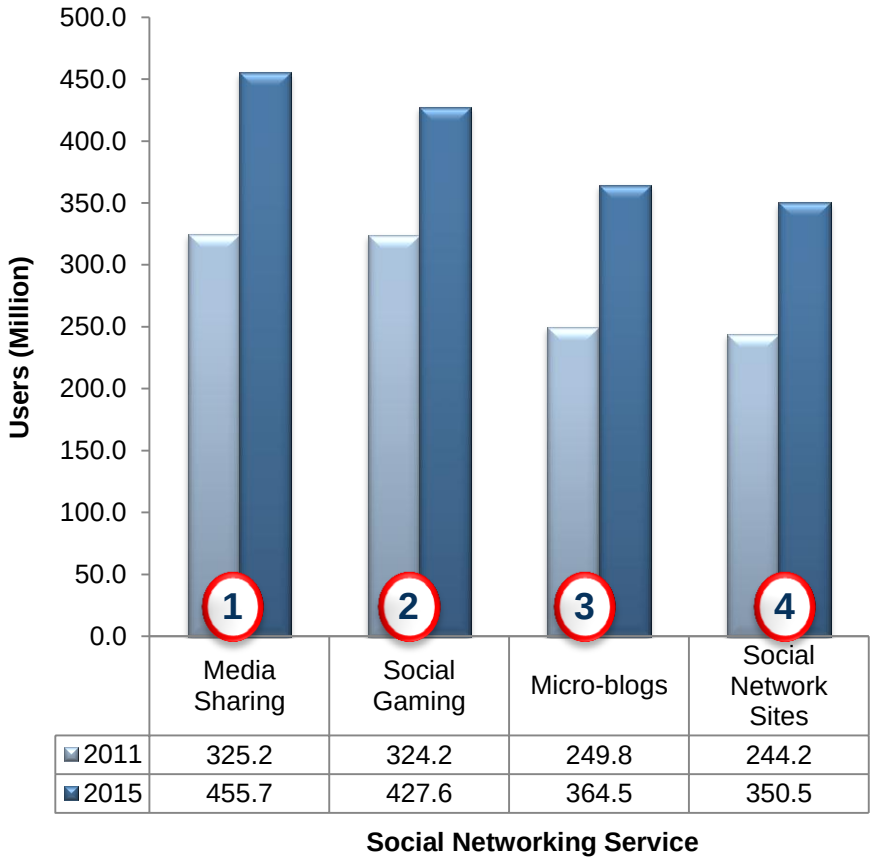
Netizen Rate, China, 2011



Netizen Rate, China, 2015



Users* of Top Social Networking Services, China, 2011 and 2015



Note: Some numbers do not add up because of rounding.

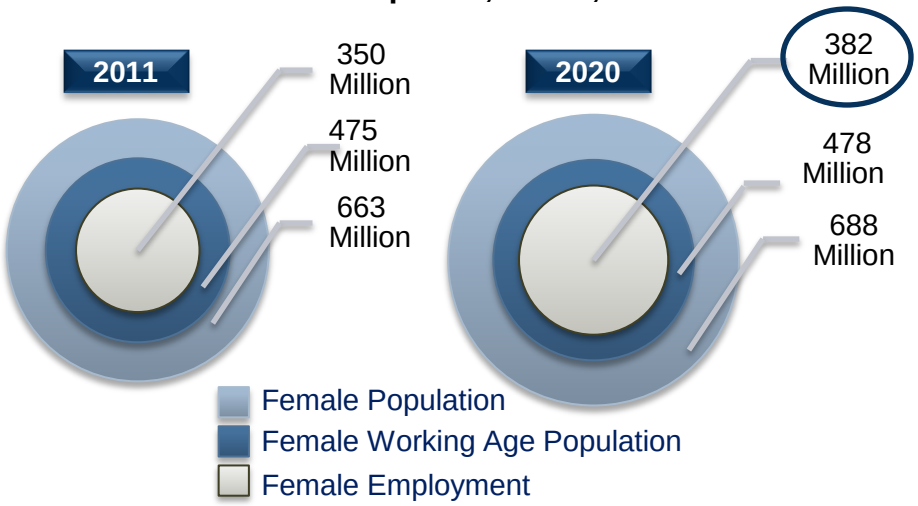
*Note: Predictions for user numbers are based on current growth rates and market shares.

Source: World Bank 2011; China Internet Network Information Center, PRC; Frost & Sullivan analysis.

Social Trends—Women Empowerment

Around 382 million Chinese women will be employed in 2020; Chinese women are expected to account for 38% of directorship roles by 2020.

Female Work Participation, China, 2011–2020



Women's Empowerment, China, 2010–2020	2010 (%)	2020 (%)
Females in higher education	51	55
Females in professional/technical job	52	58
Gender wage gap—% of female pay to 100% male pay	70	98
Senior manager roles held by women	25	38
Women in Parliament	21	30

Emerging Social Trends, 2020

- **Highly positioned, well-educated single women—**Nearly 50% of working women will not give up their careers for marriage.
- **Booming daycare and nanny industry—**Private day-care will be expensive. Double-income families will hire females from rural areas for babysitting.
- **Late marriages—**The number of late marriages after age 30 will increase, especially in urban areas.
- **Increase in 'house husbands'—**Gender roles in families will shift. With women gaining financial independence, more and more men will play the role of homemaker for their families.

Note: This part of study covers mainland China. Hong Kong and Macao are excluded.

Source: World Bank, 2011; Population Division UN, 2010; WEF, 2011; Catalyst, 2011; ILO, 2012; PU; CEIBS, 2012; Statistic Bureau China, 2011; Ernest & Yong, 2010; and Frost & Sullivan analysis.

Macro-to-micro Implications of Social Trends in China

Macro-to-micro Implications of Social Trends, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Labor Pool	In 2011, China had the world's largest working-age population. The average worker was relatively young.	In 2025, China will have the world's largest working-age population, but the average worker will be relatively mature in age.	• Opportunity will exist for professional education and skill training. • China will have the largest population of skilled labor, which will increase the quality of the industrial and services sectors.
	There were around 968.8 million working-age individuals; about 57.3% of these workers were older than 34.	There will be around 965.9 million working-age individuals and 63.3% of them will be 34 or older.	
Aging China	China was considered an aging society.	China will be considered an aged society.	• Robotic care will exist for the elderly. • Opportunities will arise for health insurance. • Solutions for post-retirement asset and pension management will develop. • Post-retirement education and entertainment, such as universities for the elderly and tourism for the elderly, will emerge.
	In 2012, less than 20% of the population were 60 years of age or older.	By 2025, over 20% of the population will be above the age of 60, making China an aged society with a higher old-to-young dependency ratio.	
Income Pyramid	Many in China were considered poor or extremely poor.	In 2025, most will be in the middle class.	• Parks, shopping centers, and entertainment hubs will see increased revenue with increases in middle-class spending. • The consumption of household durable goods will have a growth rate of 275% between 2012 and 2025.
	In 2010, over 60% of the population was considered poor, and nearly 7% were living below the poverty line.	Poor people will climb up the social ladder to join the middle class. In 2020, Over 68% of the population will be in the middle class; the poor population will account for only 31.2%.	

Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

Macro-to-micro Implications of Social Trends in China (continued)

	2011	2025	Macro-to-micro Implications
Digital Dependency*	The population would be described as digitally inclined.	The population will be digitally empowered.	• Use of email will decline as social media attracts the majority of Internet users. • Internet speed will become faster, and multimedia content will grow.
	Non-Internet users numbered more than Internet users, of whom, less than half are using social media.	Internet users will outnumber non-Internet users, and around 70% of netizens will use social media networks.	
Women's Empowerment	More women will stay home.	More women will work.	• Female-oriented consumer products (e.g., personal care products and cosmetics) will see strong growth in profitability because women will have greater purchasing power. • Domestic services (e.g., household cleaning and baby-sitting) will be in high demand. • China's large enterprises will have more flexible working conditions and office hours as more women will enter the boardroom or hold senior positions. • Given that more women in the workforce would likely mean that these women will prefer independent commuting, automobiles and auto accessory companies will be able leverage this trend.
	Traditionally, Chinese married women are expected to take care of all household chores.	After 2020, the female Chinese population is projected to occupy 55% of higher education positions and have 38% of directorship roles at work.	

Note: Numbers are provided according to the timeframe of available data.

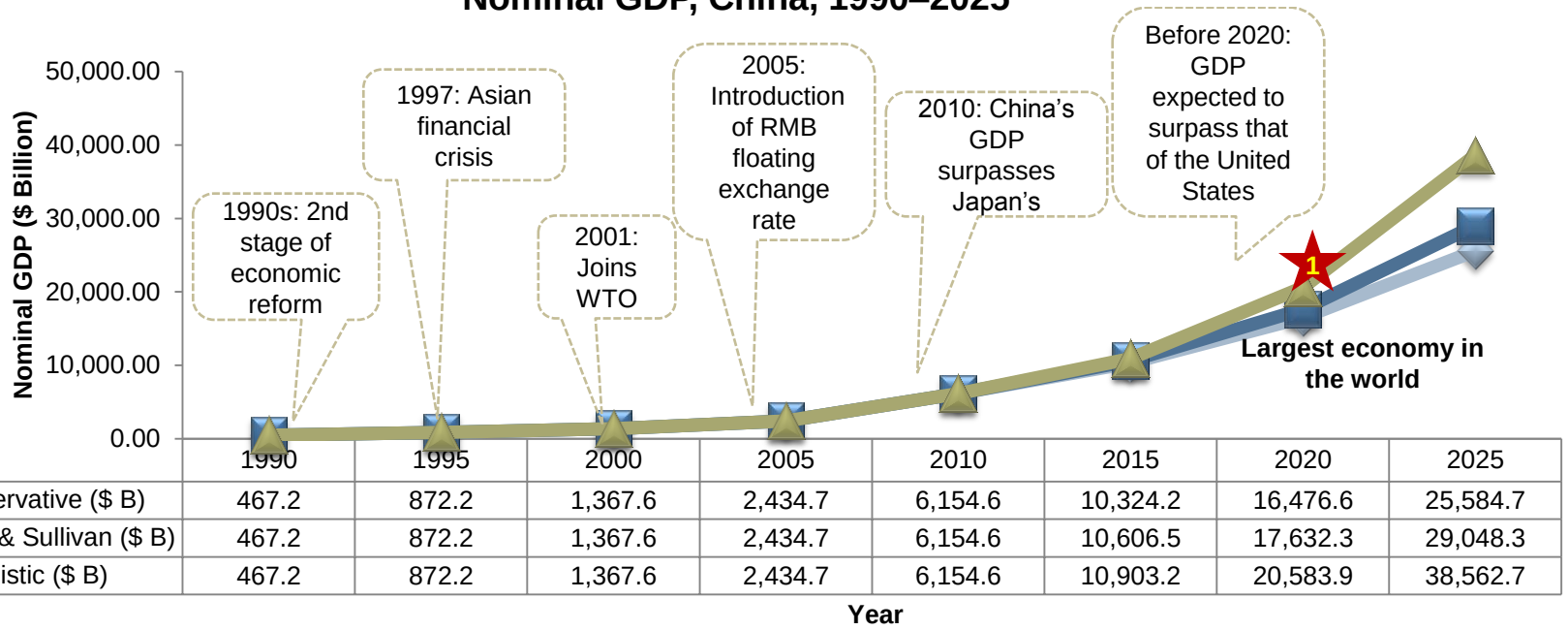
Source: Frost & Sullivan analysis.

Economic Trends—Economic Growth, Agrarian-to-industrial Economy, Regional Development, Outsourcing Hotspots, Manufacturing Hotspots and Globalization

Economic Trends—Economic Growth

The GDP of China is to reach $38.563 trillion by 2025, making China the largest economy in the world.

Nominal GDP, China, 1990–2025



	1990	1995	2000	2005	2010	2015	2020	2025
Conservative ($ B)	467.2	872.2	1,367.6	2,434.7	6,154.6	10,324.2	16,476.6	25,584.7
Frost & Sullivan ($ B)	467.2	872.2	1,367.6	2,434.7	6,154.6	10,606.5	17,632.3	29,048.3
Optimistic ($ B)	467.2	872.2	1,367.6	2,434.7	6,154.6	10,903.2	20,583.9	38,562.7

Nominal GDP Growth Rate, China, 1990–2025*

	1990	1995	2000	2005	2010	2015	2020	2025
Conservative (%)	(10.2)	25.5	9.7	16.1	18.4	10.9	9.8	9.2
Frost & Sullivan (%)	(10.2)	25.5	9.7	16.1	18.4	11.5	10.7	10.5
Optimistic (%)	(10.2)	25.5	9.7	16.1	18.4	12.3	13.6	13.4

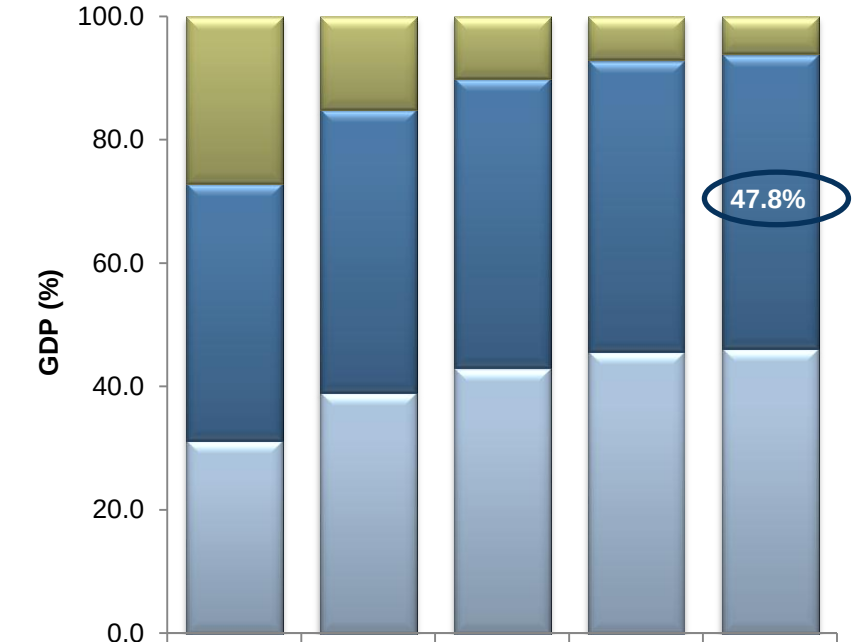
Note: The values shown for GDP and population are for the People's Republic of China, including Hong Kong SAR and Macao SAR. GDP is at current prices, assuming 3% RMB annual appreciation against USD.
*Note: Growth rate is calculated from year listed in relation to year prior.

Source: International Monetary Fund; World Bank 2012; Prudential Real Estate Investors; The Economist 2011; National Development & Reform Commission of China; and Frost & Sullivan analysis.

Economic Trends—Agrarian-to-industrial Economy

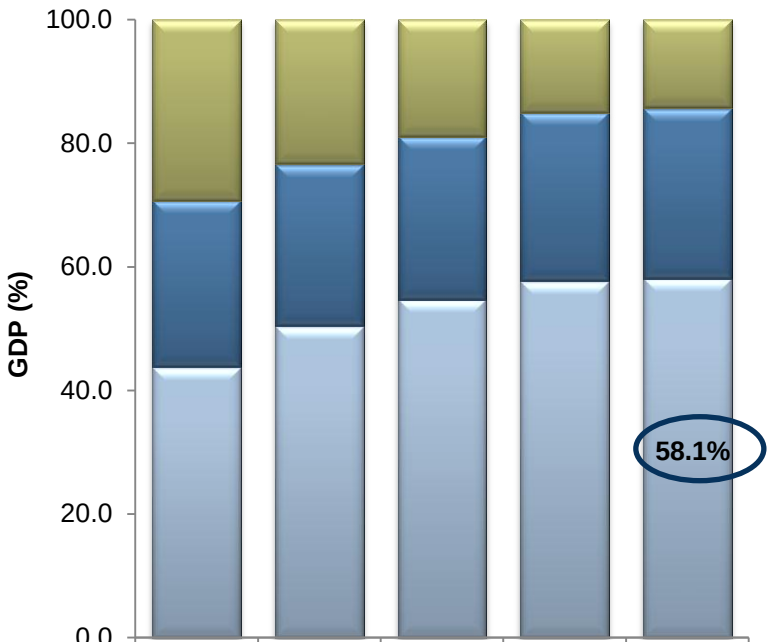
The industry sector* is to account for 47.8% of China's GDP in 2025. The same sector will only account for 27.6% of India's GDP.

Breakdown of GDP by Sector, China, 1990–2025



	1990	2000	2010	2020	2025
Agriculture	27.1	15.1	10.1	7.1	6.1
Industry	41.6	45.9	46.9	47.2	47.8
Services	31.3	39	43	45.7	46.1

Breakdown of GDP by Sector, India, 1990–2025



	1990	2000	2010	2020	2025
Agriculture	29.3	23.4	18.9	15	14.3
Industry	26.9	26.2	26.4	27.3	27.6
Services	43.8	50.4	54.7	57.7	58.1

Note: Some numbers do not add up because of rounding.

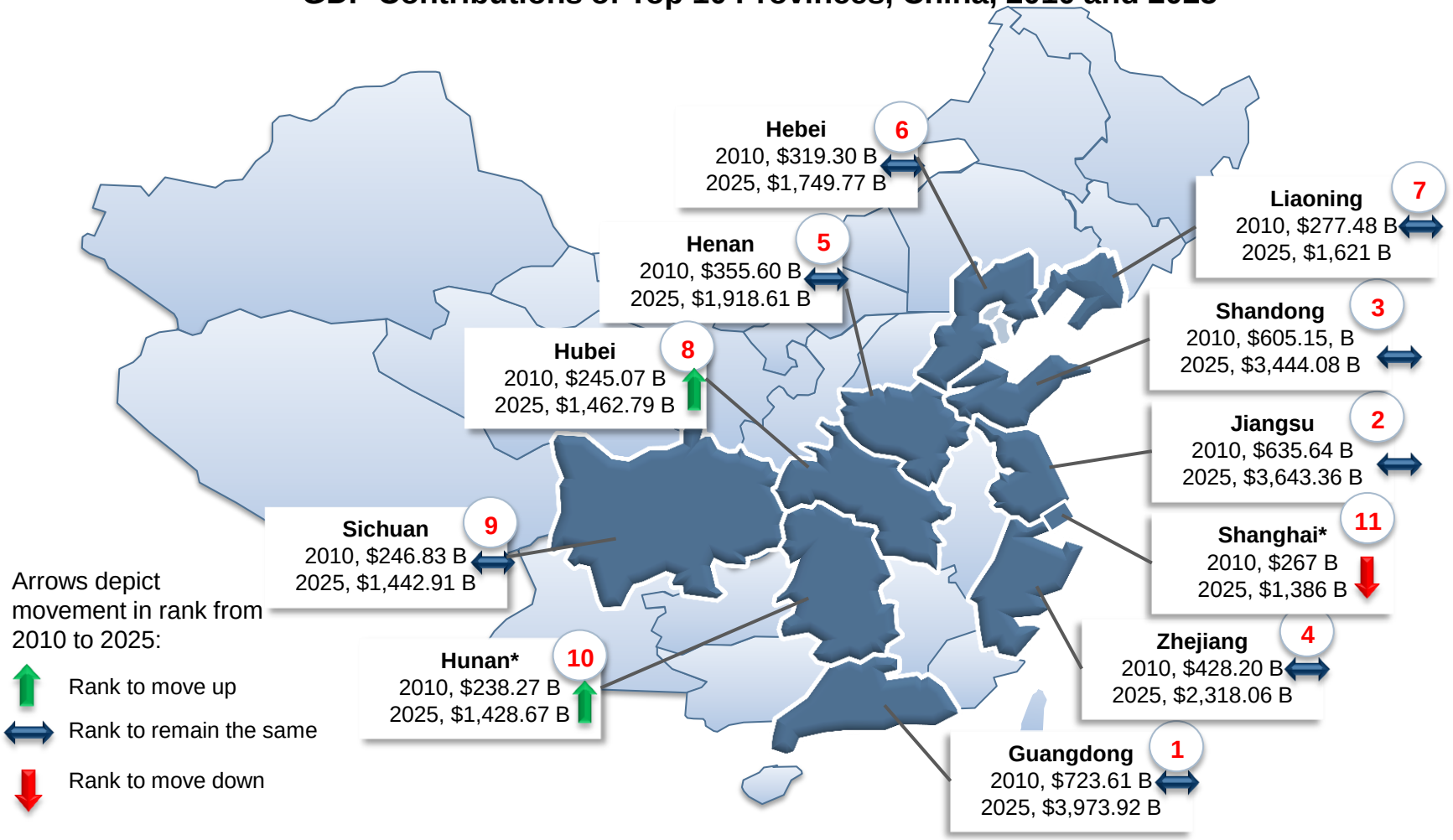
*Note: Industry includes mining and quarrying, manufacturing, electricity, gas and water supply, and construction. Services include trade, hotel, transportation and communication, financing, insurance, real estate and business, community, and social and personal services.

Source: IMF; Central Intelligence Agency, United States; National Bureau of Statistics, China; Frost & Sullivan analysis.

Economic Trends—Regional Development

The top 10 provinces are to contribute 59.6% of China's GDP in 2025; Hubei is to be one of the fastest-growing provinces of this decade.

GDP Contributions of Top 10 Provinces, China, 2010 and 2025



*Note: Shanghai drops out from the top 10 and Hunan enters the top 10 in 2025 because of western development by the PRC government.

Source: National Development & Reform Commission of China; National Bureau of Statistics of China; International Monetary Fund; World Bank; Frost & Sullivan analysis..

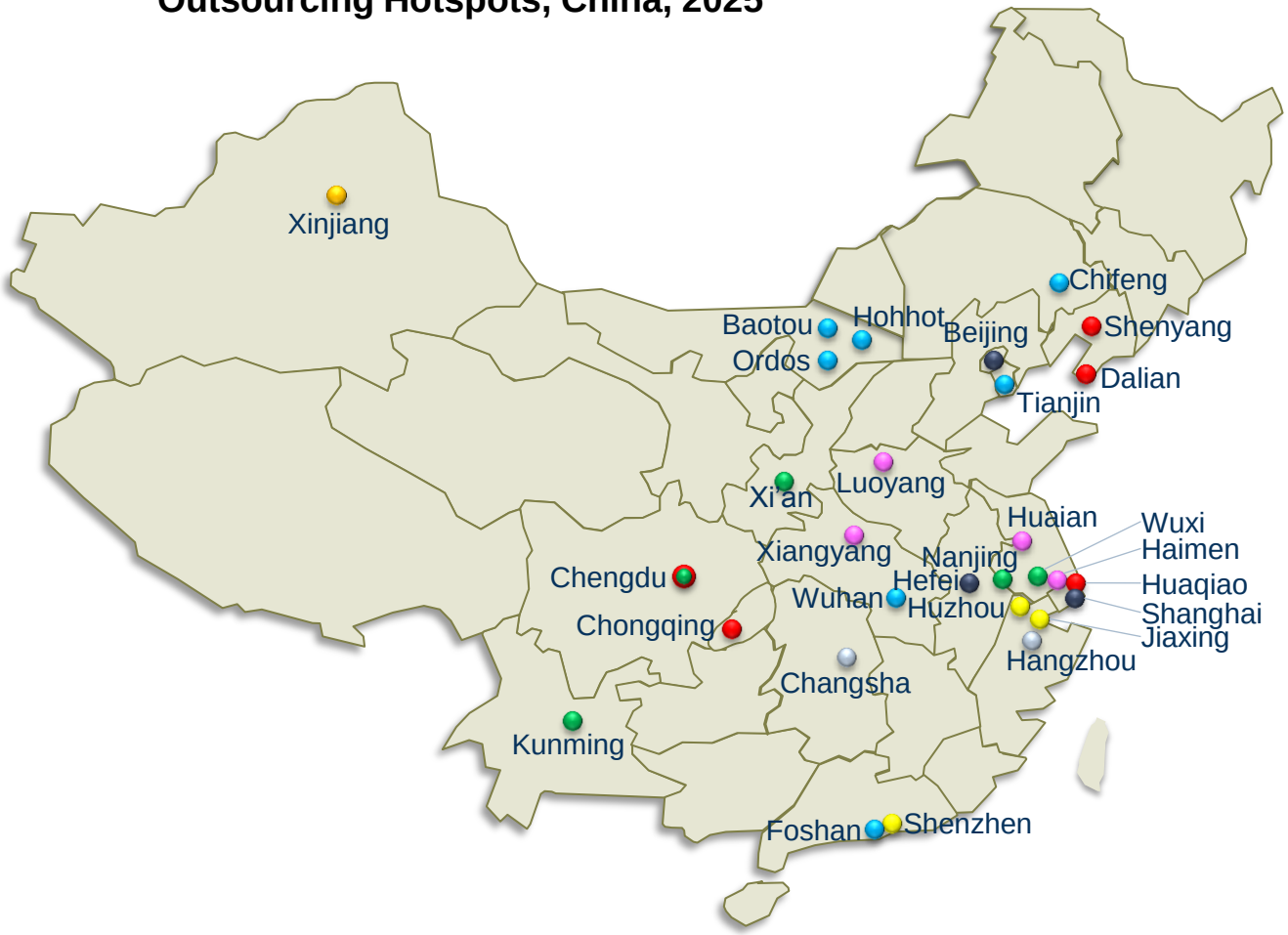
Economic Trends—Outsourcing Hotspots

China is to have 29 outsourcing hotspots by 2025.

Outsourcing Hotspots, China, 2025

Major Outsourcing Industries in China

- **Call Center**
- **Financial and Insurance Service**
- **E-commerce**
- **SCM (Supply chain management)**
- **Bio-Medical Research and Development**
- **Cloud Computing/Data Center**
- **Information Technology/IT Service**



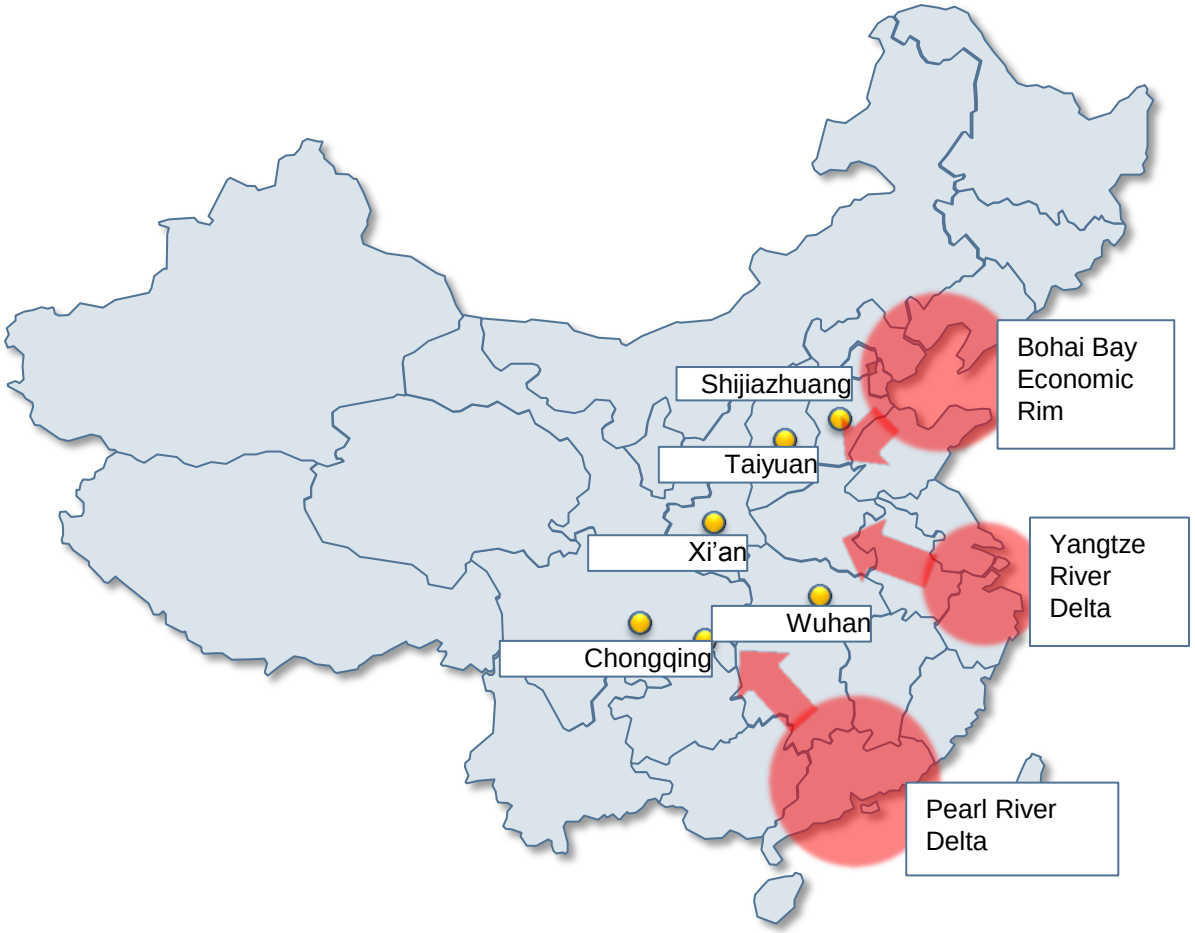
Source: Devott Co., Ltd.; National Development & Reform Commission of China; and Frost & Sullivan analysis.

Economic Trends—Manufacturing Hotspots and Globalization

China is to see more than six manufacturing hotspots between 2015 and 2025.

- The advantages of cheap labor and cheap land in coastal areas have vanished because of development.
- Factories in China will move to the mid-western region of the country to reduce manufacturing costs.

Manufacturing Center Shift, China, 2012 and 2015–2020



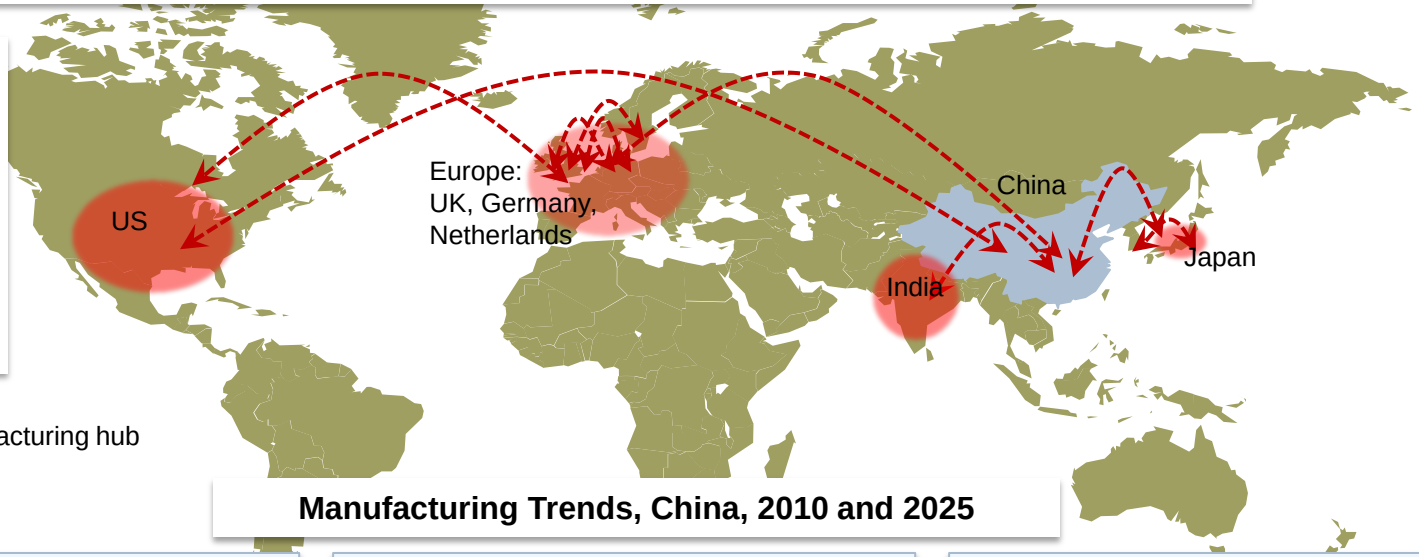
Source: US Bureau of Labor Statistics; National Development and Reform Commission; PRC; The Economist; Frost & Sullivan analysis.

Economic Trends—Manufacturing Hotspots and Globalization (continued)

The Chinese manufacturing industry will be globalized and digitized by 2025.

The Globalization of the Manufacturing Industry, Global, 2025

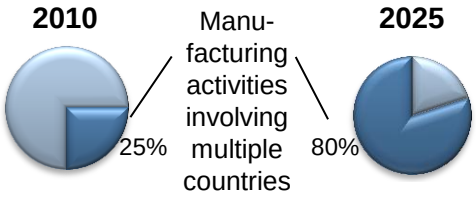
In China, 80% of manufacturers are set to collaborate with foreign firms.



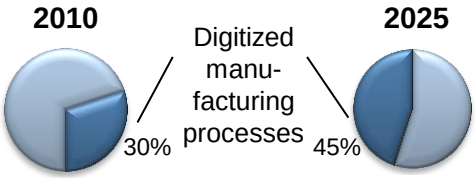
Indicates manufacturing hub

Manufacturing Trends, China, 2010 and 2025

Globalization—Collaborative manufacturing with firms in other countries



Digitization—Digitized manufacturing processes and management



Highest Manufacturing Capacity— Highest manufacturing capacity supporting China to double its uniform export products

Source: US Bureau of Labor Statistics; National Development and Reform Commission, PRC; Capgemini; and Frost & Sullivan analysis.

Macro-to-micro Implications of Economic Trends on China

Macro-to-micro Implications of Economic Trends, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Economic Growth	In 2010, China surpassed Japan's GDP and became the second-largest economy in the world.	Before 2020, China will surpass the US's GDP to become the largest economy in the world.	• Economic growth will mean higher standards of living and higher employment rates; people will climb up from poverty to higher income groups. By 2020, only 1.5% of the Chinese population will live below the poverty line. • Rising production output and growth will encourage investments in infrastructure.
	There was over 17% nominal GDP growth and a GDP size of over $6.000 trillion.	There will be up to 13.4% nominal GDP growth and a GDP size of over $38.563 trillion.	
Industrial Growth	China was considered an industrial hub.	China will grow from an industrial base to an industrial hub.	• The focus of outsourcing will transfer from manufacturing (e.g., outsourcing by OEMs) to more skilled services (e.g., outsourcing of IT* design, creative services, and business services). • Industrial growth will be supported by tax subsidies; offshore service deals are estimated to reach $410 billion by 2020.
	The industrial sector and outsourcing services sector accounted for nearly 90% of the GDP.	Growth in the services sector will create 29 outsourcing hotspots by 2025.	
Regional Growth	Regional disparities abounded.	Regional development will be balanced.	• Increases in commercial and industrial zones will occur in midland and western China, particularly in the Pearl River, Yangtze River, and Bohai Rim regions. • Manufacturing centers will move to inland cities as costs in developed coastal areas rise.
	There were huge disparities in GDP, standard of living, and infrastructure development between the developed east coastal region and the midland region.	Regional disparities will be improved through greater leniency in the Hukou System and flows in the labor force.	

Note: Numbers are provided according to the timeframe of available data.
*Note: IT: Information technology.
Source: Frost & Sullivan analysis.

Connectivity and Convergence Trends—Connected China, Space Jam, From 1G to 4G Roadmap

Connectivity and Convergence Trends—Connected China

China is expected to have 5.1 billion connected devices* in 2025.

Mobile Subscribers

2012: 1,010 Million
2025: 1,734 Million

Digital TV Subscribers

2012: 100 Million
2025: 695 Million

Mobile Internet Users

2012: 356 Million
2025: 830 Million

Internet Users

2012: 513 Million
2025: 877 Million

3G Subscribers

2012: 145 Million
2025: 830 Million

Broadband Users

2012: 392 Million
2025: 877 Million

2012: 4G-LTE implemented in Hong Kong
2020: 60% coverage by 2020

Connected Cars

2025: 145 million connected cars on the road

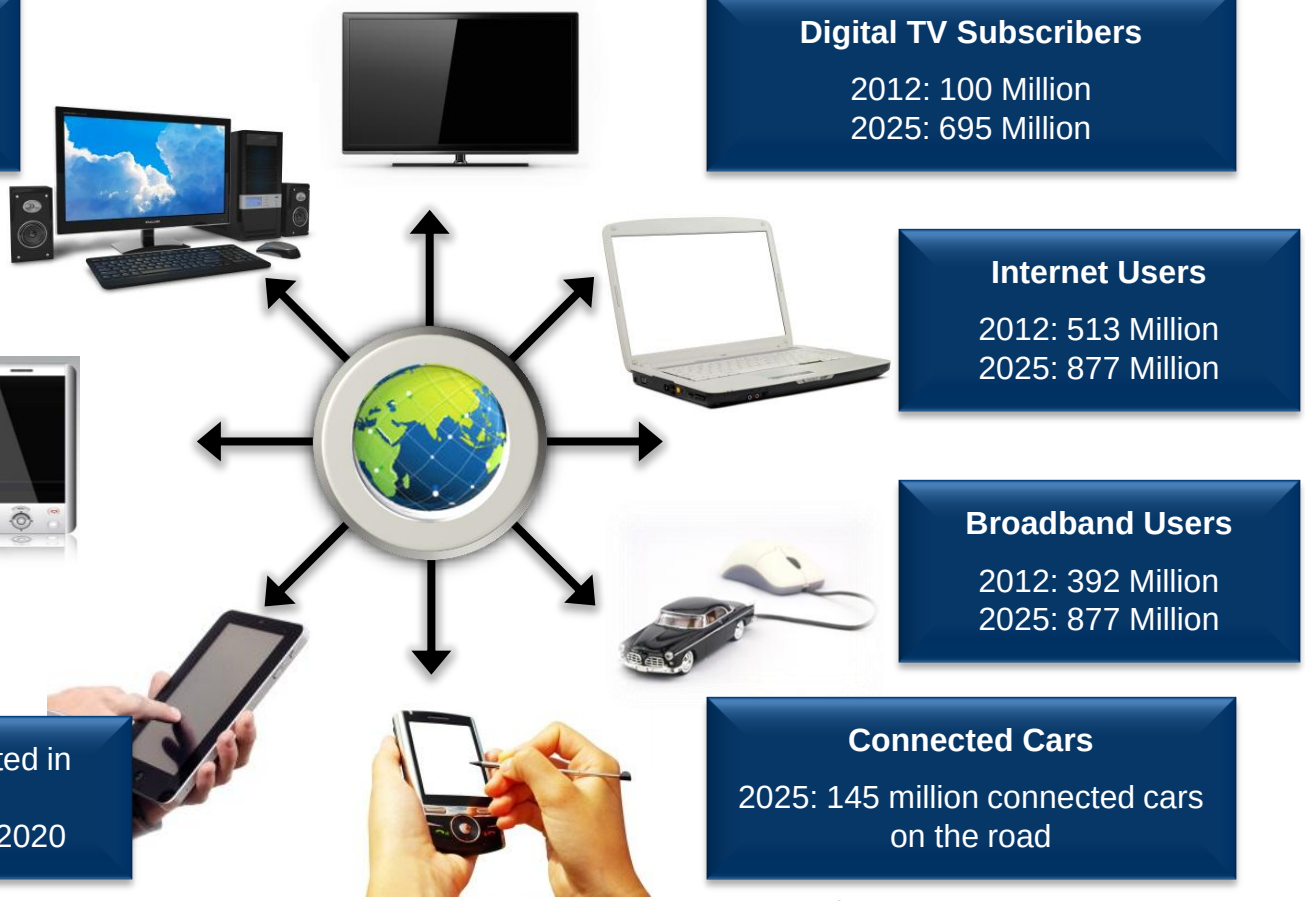


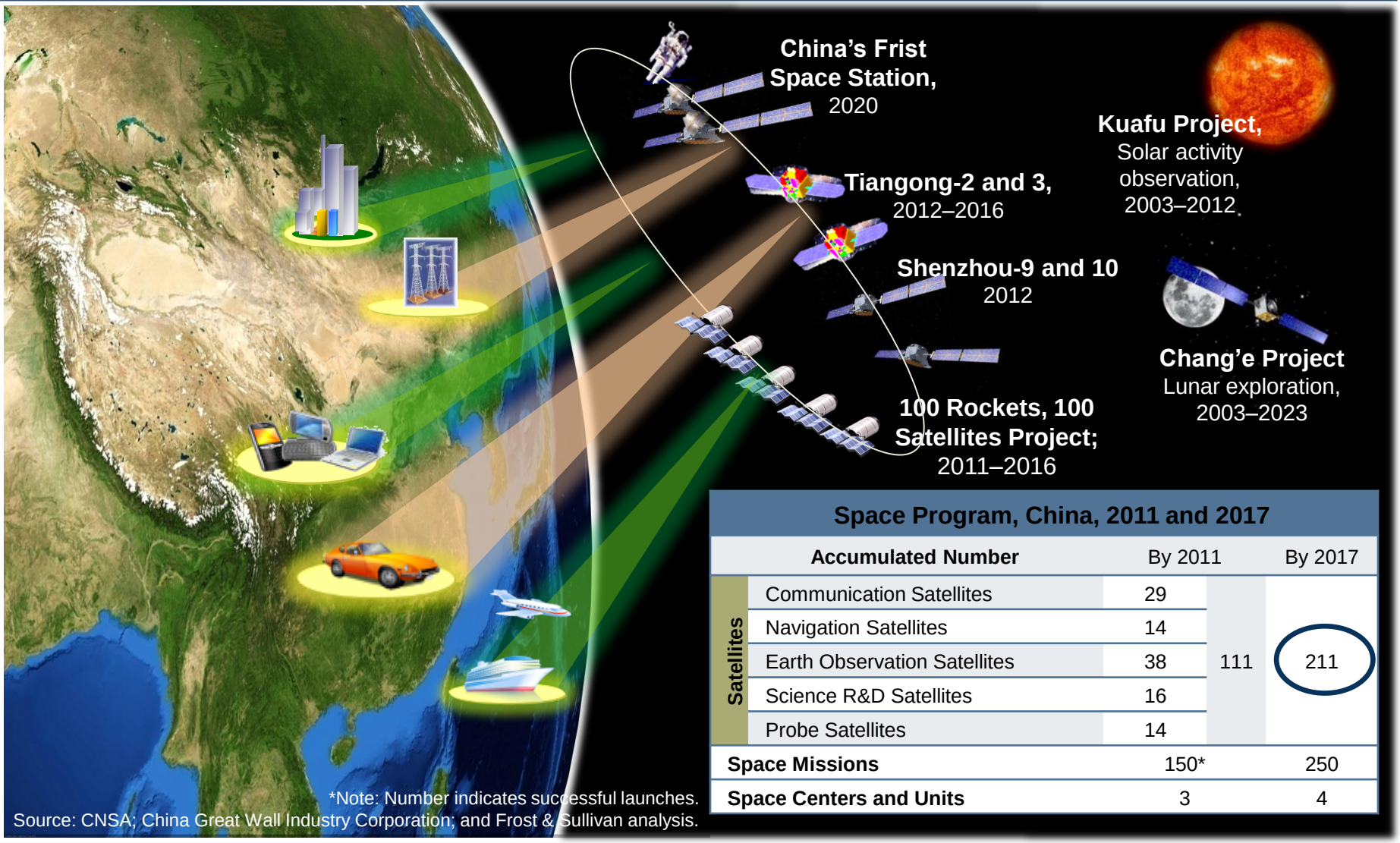
Image Source: Dreamstime.

*Note: Number has been calculated by taking an average of 4.6 connected devices per user for urban areas and 1 device per user for rural areas. This number, however, does not include machine-to-machine (M2M) connections.

Source: China Internet Network Information Center, 2011; Ministry of Internet & Information Technology, PRC; Digitimes Research; Research In China, 2011; GSMA, 2012; Frost & Sullivan analysis.

Connectivity and Convergence Trends—Space Jam

China is to launch 211 satellites before 2017 and is set to finish its own space station in 2020.



Space Program, China, 2011 and 2017

Accumulated Number		By 2011		By 2017
Satellites	Communication Satellites	29	111	211
	Navigation Satellites	14		
	Earth Observation Satellites	38		
	Science R&D Satellites	16		
	Probe Satellites	14		
Space Missions		150*		250
Space Centers and Units		3		4

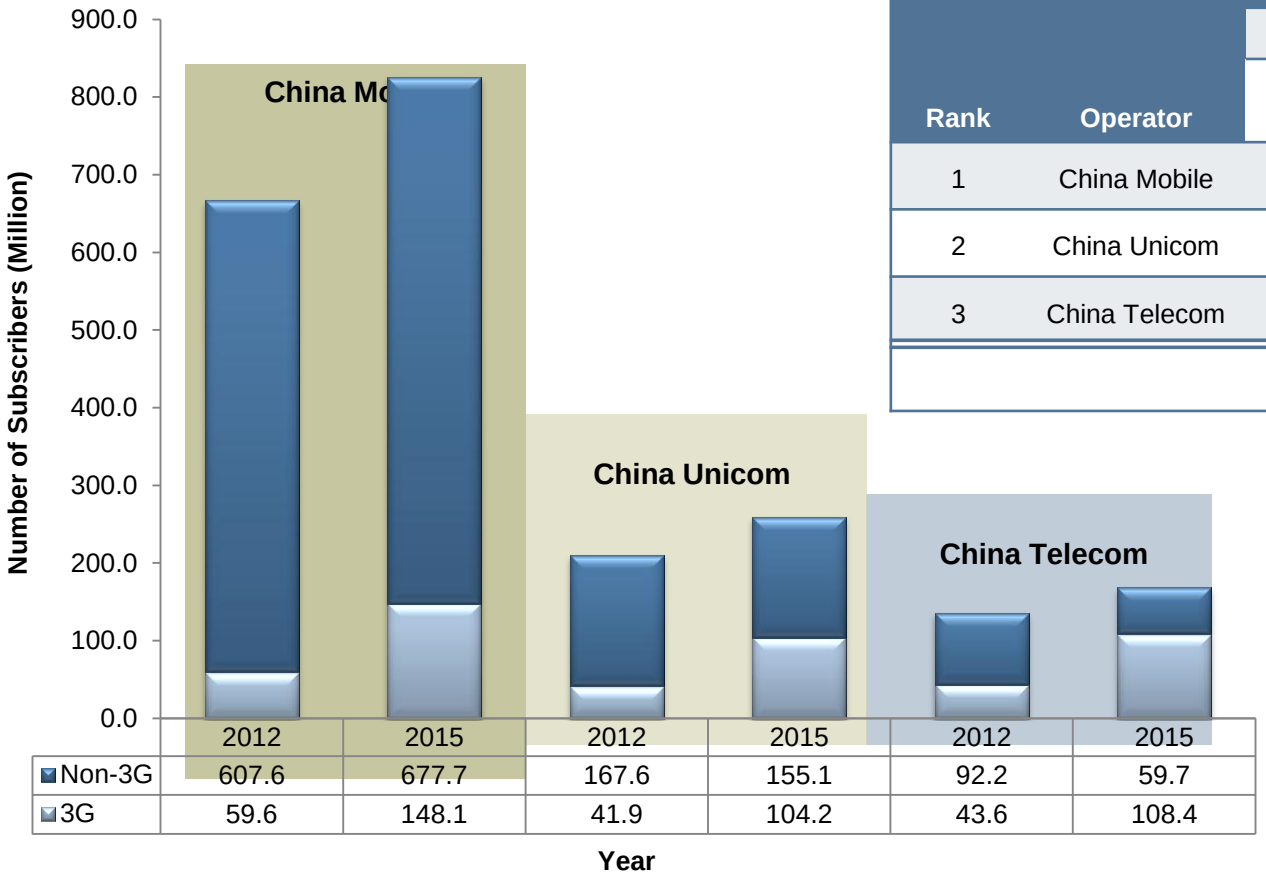
*Note: Number indicates successful launches.

Source: CNSA; China Great Wall Industry Corporation; and Frost & Sullivan analysis.

Connectivity and Convergence Trends—From 1G to 4G Roadmap

China is to see 1,253.2 million mobile phone subscribers in 2015; 28.8% of subscribers will have 3G service.

Subscribers by Mobile Operators*, China, 2012 and 2015



Rank	Operator	Subscribers (Million)			
		2012		2015	
		Total Mobile	3G	Total Mobile	3G
1	China Mobile	667.2	59.6	825.8	148.1
2	China Unicom	209.5	41.9	259.3	104.2
3	China Telecom	135.8	43.6	168.1	108.4
		1,012.5	**145.1**	**1,253.2**	**360.6**

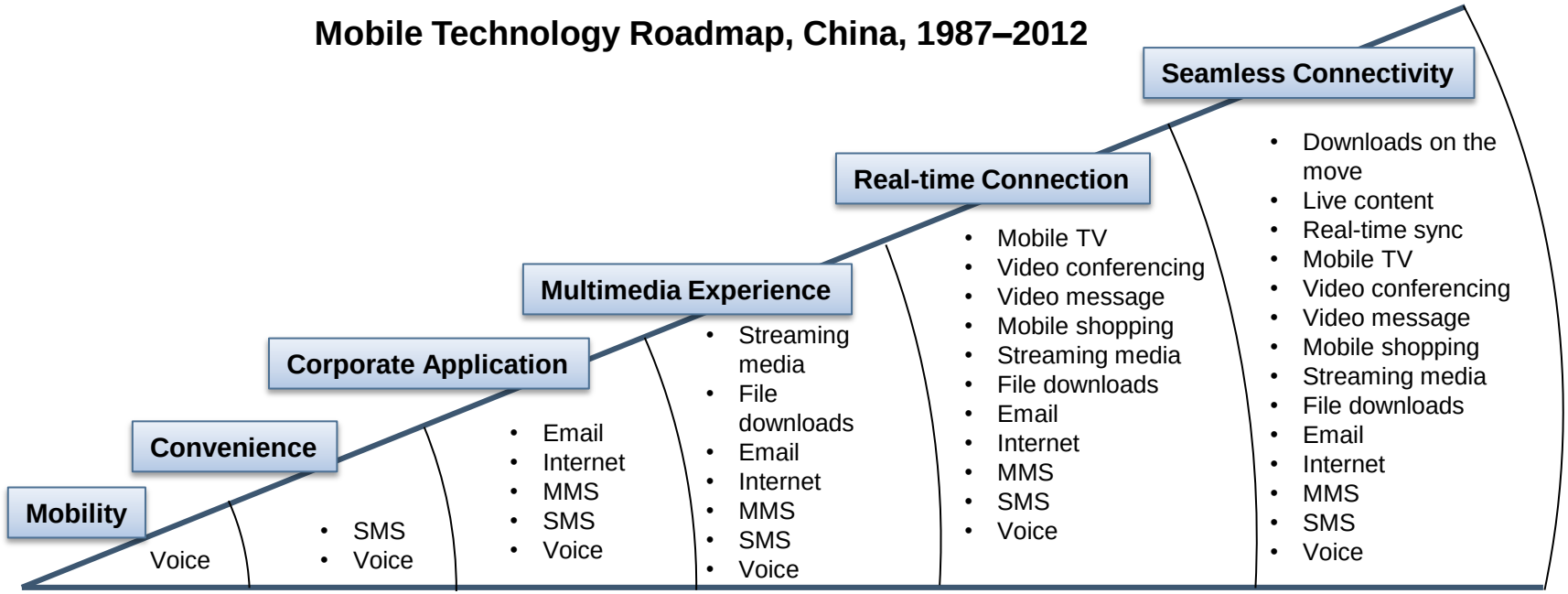
Note: Some numbers do not add up because of rounding.

*Note: Data updated in April 2012.

Source: Ministry of Industry and Information Technology, PRC; China Mobile Limited; China Telecom; China Unicom; Frost & Sullivan analysis.

Connectivity and Convergence—From 1G to 4G Roadmap, China's Wireless Mobile Technology

Mobile Technology Roadmap, China, 1987–2012



Standards in China	1G TACS	2G GSM, CDMA	2.5G GPRS	2.75 EDGE	3G and 3.5G TD-SCDMA, WC DMA, CDMA2000, and HSDPA	4G TD-LTD
Commercial launch date	1987	1995	2002	2007	2009 and 2010	2012
2012 Status	Service closed	Serving 75% of subscribers	Serving 26% of subscribers		Serving 11% of subscribers	Trial launched

Source: Ministry of Industry and Information Technology, PRC; China Mobile Limited; China Telecom; China Unicom; Frost & Sullivan analysis.

Macro-to-micro Implications of Connectivity and Convergence Trends in China

Macro-to-micro Implications of Connectivity and Convergence Trends, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Space Jam	Satellites used for control applications.	In 2025, satellites will be used for broadband applications.	• Unique fleet management solutions will becomes more real-time solutions. • Communication with remote areas will become easier with satellite phones. • Entertainment businesses will be influenced by the globalization of a wide range of entertainment options.
	Satellite technology was applied for geo-mapping, agricultural control, disaster monitoring, and resource investigation.	Broadband and satellite technology will converge to unleash a range of unique solutions, such as mobile TV or fleet management tools.	
Internet	The Internet of people was the trend.	The Internet of things will be the trend.	• Integrated solutions in M2M communications will be the trend for manufacturing, logistics, and supply chain management. • Technology-enabled city services will be created.
	Internet penetration reached 35% of the population. The application of M2M* communications, however, was still nascent.	Heavy usage of M2M communication will occur in city-controlled operations (e.g., with IT-enabled traffic systems). The Internet of things market is expected to reach $1.6 trillion by 2025.	
Mobile	Mobile connectivity was the trends.	Mobile lifestyles will be the trend.	• The service sector will embrace mobile payment solutions—for example, retail payments will occur through connected mobile devices. • Mobile banking will become a major touch point of the banking industry's customer service. • Opportunities will arise for augmented reality firms for market development and engineering. • New types of converged personal devices will emerge. • New and advanced materials for devices that help reduce the weight and increase the performance of these devices will be created. • Growth opportunities in the mobile software industry will emerge as mobile app products proliferate.
	Mobile Internet activities mostly centered around messaging, browsing, and searching. The mobile payment trend in China was still very small, accounting for only 8.6% of mobile Internet usage.	Mobile transactions (e.g., mobile banking) will increase. Location-cased functions (e.g., mobile advertising) will increase. Mobile devices will replace conventional tools for such activities as navigating directions, creating lists, or securing one's home.	

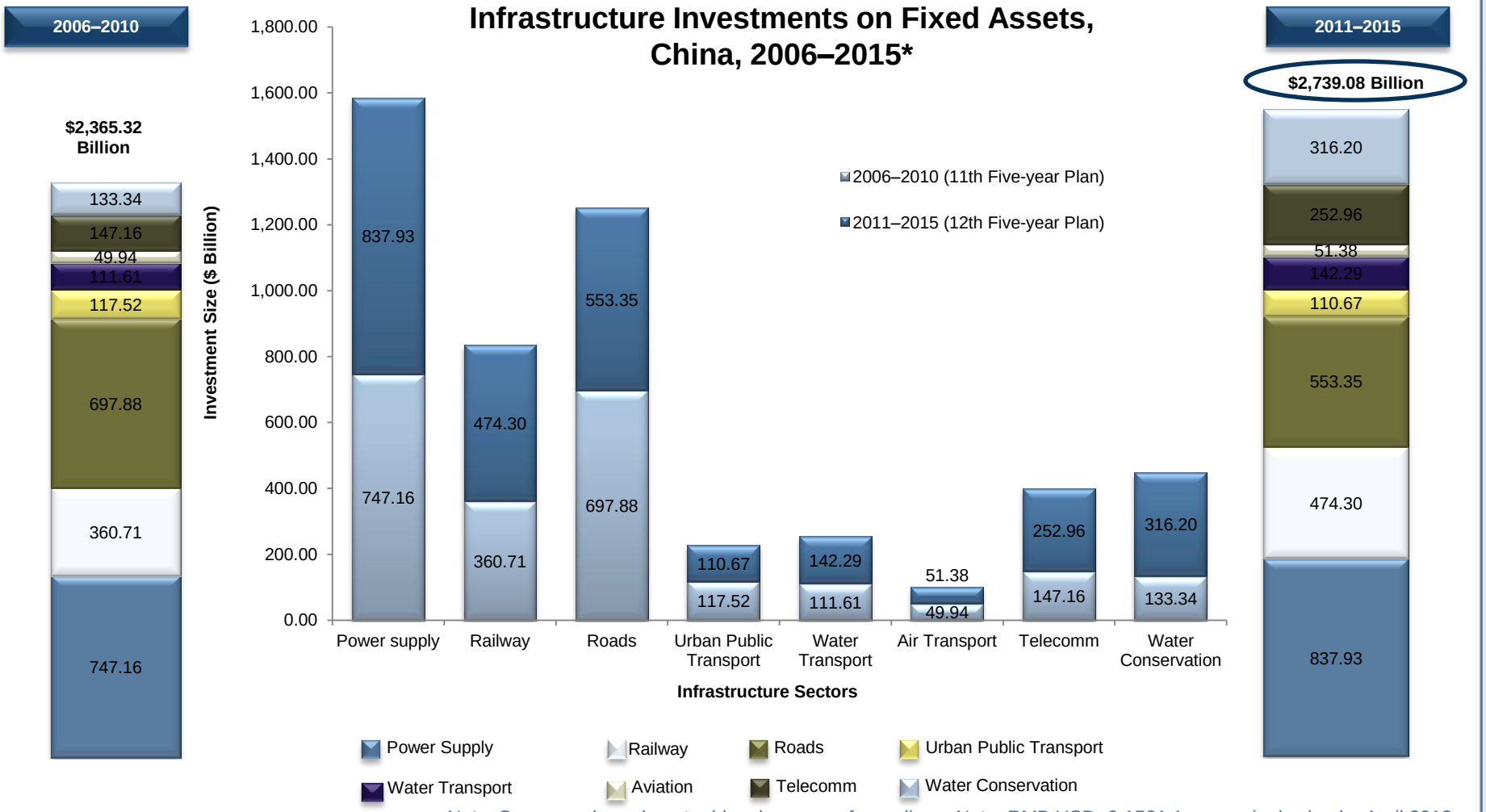
*Note: M2M: Machine-to-machine; SCM: Supply chain management.
Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

Future Infrastructure Development Trends—Public Infrastructure Spending, Future High-speed Rail, Expansion of Coastal Ports, Expansion of Aviation, Mega Projects, From "Open the Door" to "Going Out"

Future Infrastructure Development Trends—Public Infrastructure Spending

Between 2011 and 2015, China's infrastructure spending is to grow to $2,739.08 billion.



Note: Some numbers do not add up because of rounding. Note: RMB:USD=0.1581:1 as nominal value by April 2012.

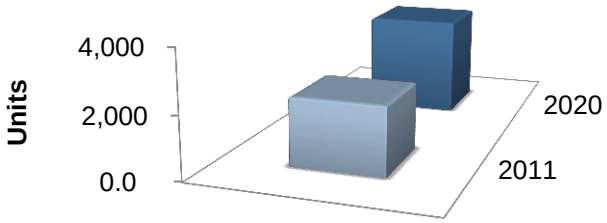
Source: National Development and Reform Commission, PRC; National Bureau of Statistics, PRC; Ministry of Housing and Rural-Urban Development, PRC; Asian Logistics and Maritime Conference, 2011; KPMG, 2011; Ministry of Transport, PRC; Ministry of Railways, PRC; Credit Suisse; Frost & Sullivan analysis.

Future Infrastructure Development Trends—Future High-speed Rail

China will invest more than $500 billion* to extend the railway network to 120,000 km by the end of the 12th Five-year Plan (2011 to 2015).

Railway Locomotive Market

Locomotive Demand, China, 2011 and 2020



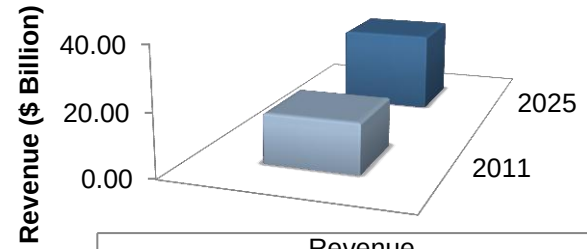
	Units
2011	2,200
2020	3,250

High-speed EMU** Market

Total investments in 2020	$553.5 Billion
High-speed rail network in 2020	16,000 km

Railway Passenger Train Market

Revenue Growth, China, 2011 and 2025



	Revenue
2011	16.01
2025	26.36

Major Participants

- **China CNR Corporation Limited**
- **CSR Corporation Limited**
- **China Railway Co Ltd**
- **China Railway Engineering Corporation**

Major Opportunities

- **Investment opportunity in hotels**
- **Investment in tourism sector**
- **Increased use of car rentals**

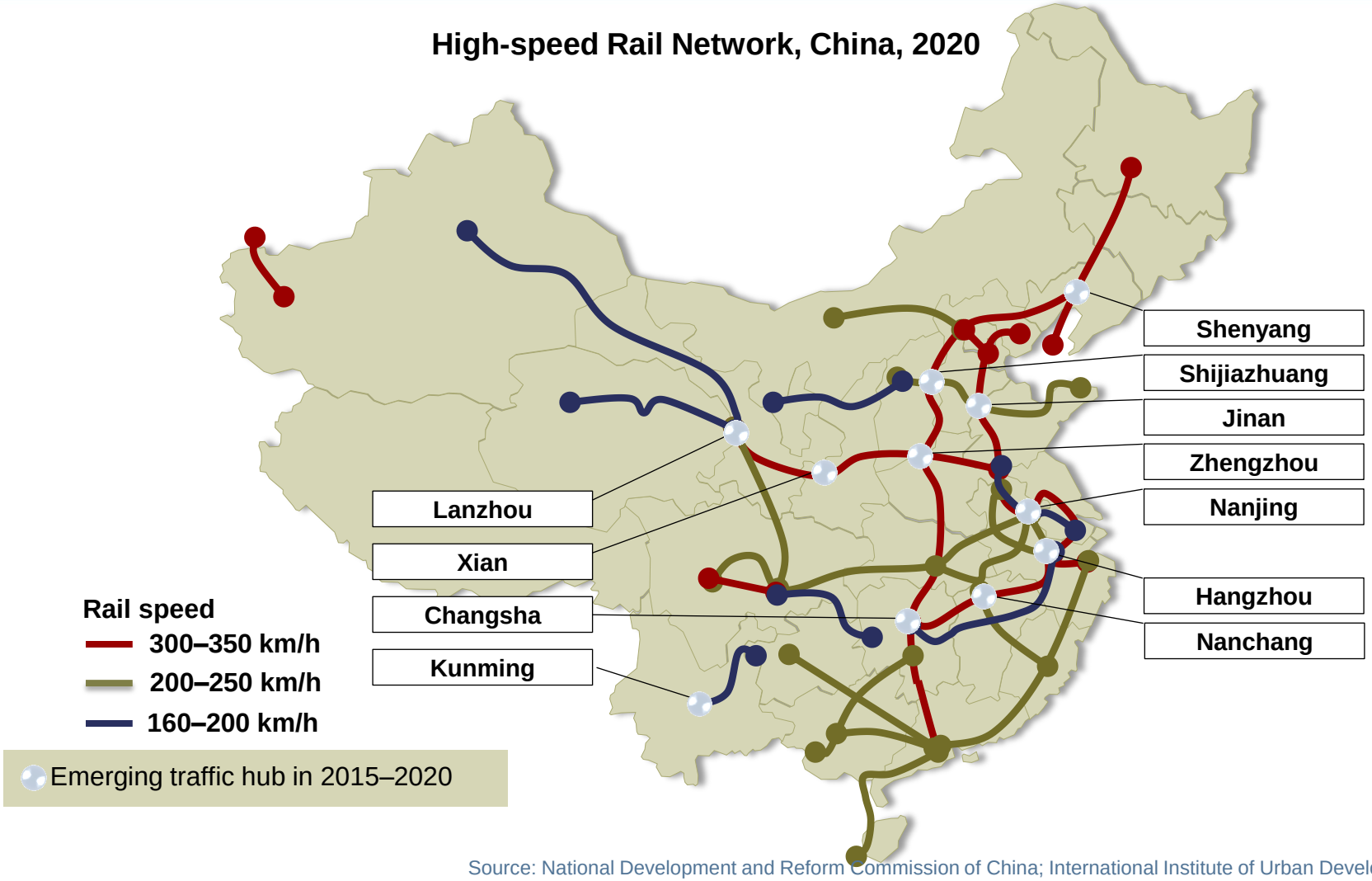
Note: Some numbers do not add up because of rounding.

*Note: $500 billion investment includes fixed assets and liquid assets. **Note: EMU: Electric multiple unit.

Source: Ministry of Railway, PRC; and Frost & Sullivan analysis.

Future Infrastructure Development Trends—Future High-speed Rail (continued)

China will invest $553.5 billion to extend the high-speed rail network to 16,000 km by 2020.



Source: National Development and Reform Commission of China; International Institute of Urban Development, Beijing; Ministry of Railway of China; Ministry of Railway of China; and Frost & Sullivan analysis.

Future Infrastructure Development Trends—Expansion of Coastal Ports

China will develop its coastal ports by increasing the number of its deep-water berths* to 440 from 2011 to 2015.

Ranking of Ports by Tonnage Capacity, China, 2010–2015

Ports	2010 Million Tonnage	2015 Million Tonnage
Ningbo-Zhoushan	633 (1)	660 (2)
Shanghai (Yangshan)	563 (2)	700 (1)
Tianjin	413 (3)	560 (3)
Guangzhou	411 (4)	500 (4)
Qingdao	350 (5)	450
Dalian	314	500 (4)
Qinhuangdao	263	400
Tangshan	246	500 (4)
Rizhao	226	300
Yingkou	226	400
Shenzhen	221	300
Yantai	150	200
Zhanjiang	136	200
Lianyungang	127	250
Xiamen	127	200
Beibuwan	119	300

*Note: Deep-water berth: Berths that can handle vessels that are over 10,000 deadweight tonnage (dwt).

Major Coastal Ports, China, 2010–2015

Source: Ministry of Transportation of China; National Bureau of Statistic of China, and Frost & Sullivan analysis.

Future Infrastructure Development Trends—Expansion of Aviation

Annual passenger traffic is expected to reach 692 million, with 244 civil airports and investments of $71.4 billion by 2020.

Airport Deployment Plan, China, 2020

Northwestern Region
2010: 24 Airports
2020: 50 Airports
Air Hub: Urumuqi

Southwestern Region Area
2010: 31 Airports
2020: 52 Airports
Air Hub: Kunming

Northern Area
2010: 30 Airports
2020: 54 Airports
Air Hub: Beijing

Eastern Area
2010: 37 Airports
2020: 49 Airports
Air Hub: Shanghai

Central Southern Area
2010: 25 Airports
2020: 39 Airports
Air Hub: Guangdong

Air Hub*

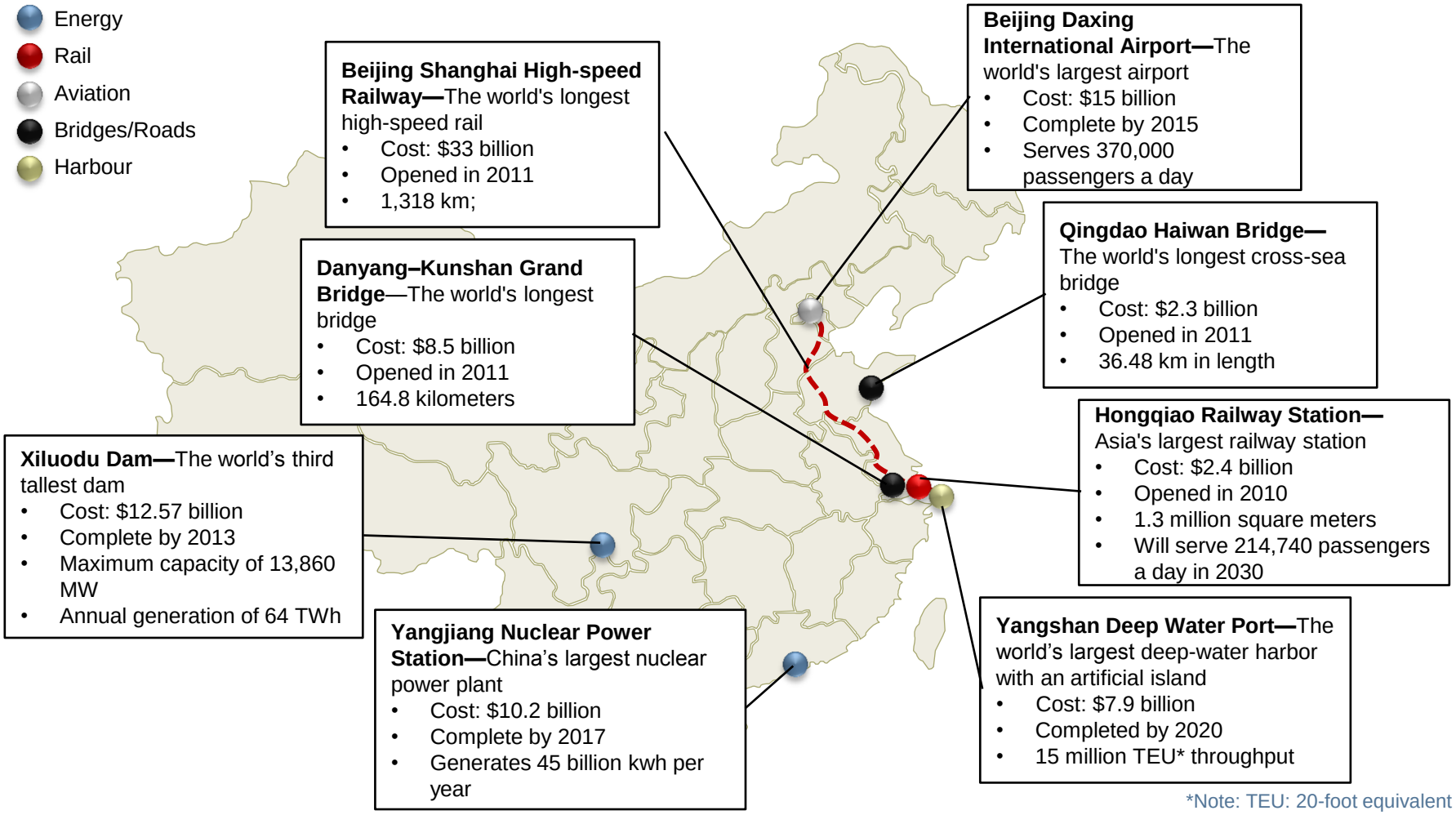
	2010	2020
National air transportation turnover (Billion Ton-km)	53.8	167
Annual passenger traffic (Million)	268	692
Annual cargo and mail traffic (Million Tons)	5.6	13.0
Transportation fleet size (Units)	1,597	4,251
Annual jet fuel supply (Million Tons)	16.1	48.0

*Note: Air hub: The most important international airport in each region in terms of scale, capacity, and investment volume. These are named by the Civil Aviation Administration of China.
Source: Civil Aviation Administration of China; Frost & Sullivan analysis.

Future Infrastructure Development Trends—Mega Projects

In 2015, China will have the world's largest airport and the longest high-speed rail.

Selected Mega Infrastructure Projects, China, 2012



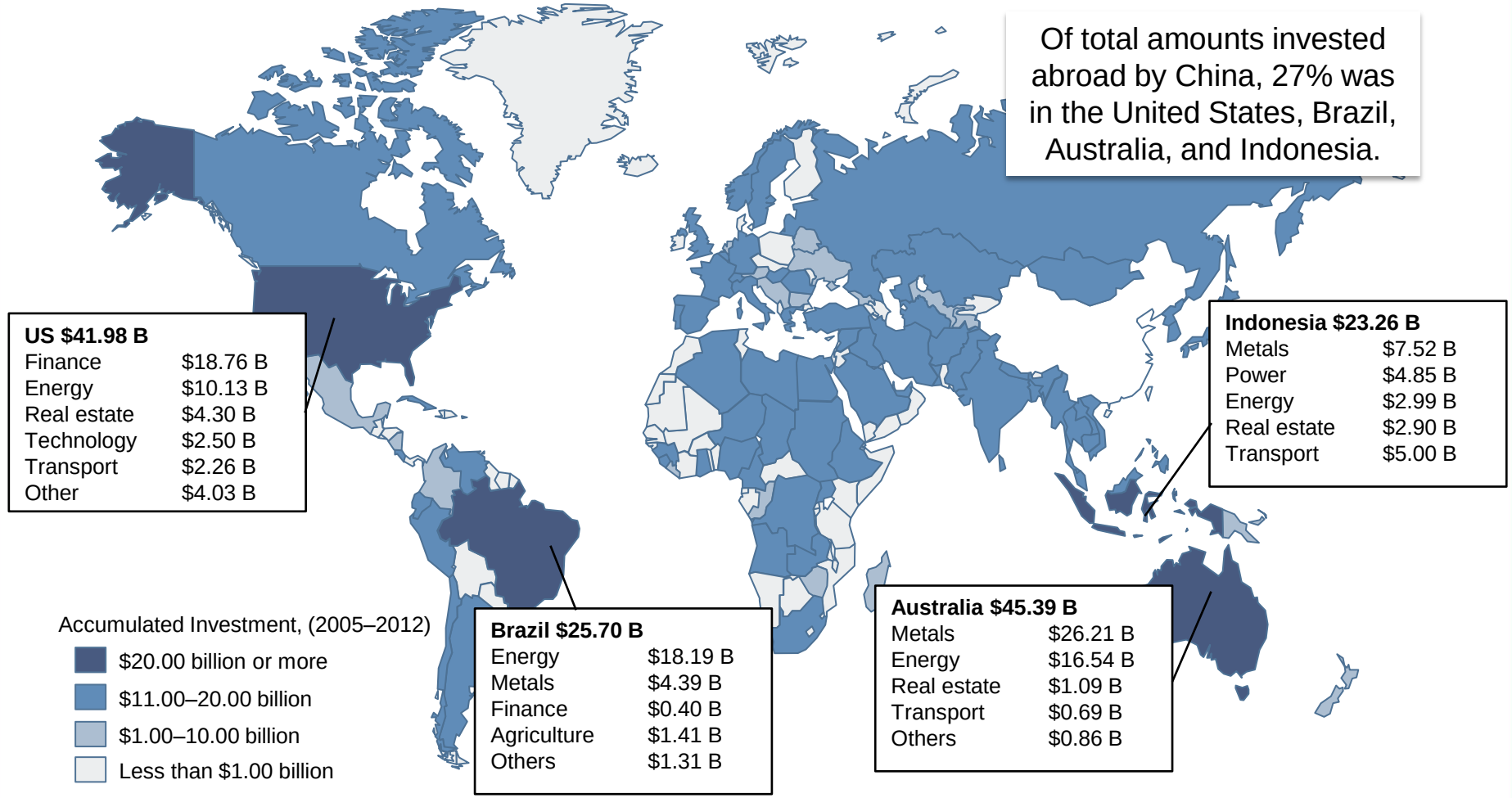
*Note: TEU: 20-foot equivalent unit.

Source: Frost & Sullivan analysis.

Future Infrastructure Development Trends—From "Open the Door" to "Going Out"

From 2005 to 2012, China will have invested $505.20 billion abroad.

Chinese Outward Investment Breakdown by Country, Global, 2005–2012



Source: The Heritage Foundation; and Frost & Sullivan analysis.

Macro-to-micro Implications of Future Infrastructure Development Trends in China

Macro-to-micro Implications of Future Infrastructure Development Trends, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Investment Focus	2011 was characterized by investments in traditional Infrastructure.	2025 will be characterized by investments in advanced smart infrastructure.	• Infrastructure spending will be largely focused on telecommunications, transportation development, and power generation. Between 2013 and 2020, investments will be focused on making infrastructure smarter, more sustainable. • Public-private partnerships for integrated infrastructure systems will increase. • Opportunities will arise for foreign companies to invest directly in Chinese infrastructure and leverage a build-operate-transfer (BOT) model. • In terms of investments in foreign infrastructure, Chinese investors will have control in the invested areas, especially in the developing countries of Africa.
	Average spending of 9% of the GDP was for basic and common amenities such as transportation and power generation.	Infrastructure projects will be focused on green and smart technology such as electric vehicle support systems, smart meters, and smart grids.	
Transportation	Transportation projects were prevalent in 2011.	The use of transportation networks will be prevalent.	• Demand for traffic management solutions, monitoring systems, and accident-controlling systems will increase. • Demand for real-time travel update systems for end users will rise. • Logistics industries will benefit from an integrated transportation infrastructure, which will greatly reduce delivery time and costs.
	China's transportation projects were dedicated to highway, railway, and postal infrastructure during 2006 to 2010. The basic highway network reached 73,000 km in 2011.	The total length of the highway, railway, and high-speed rail networks will increase over 30%. Over 100 transportation hubs will be built for transportation integration.	

Note: Numbers are provided according to the timeframe of available data.

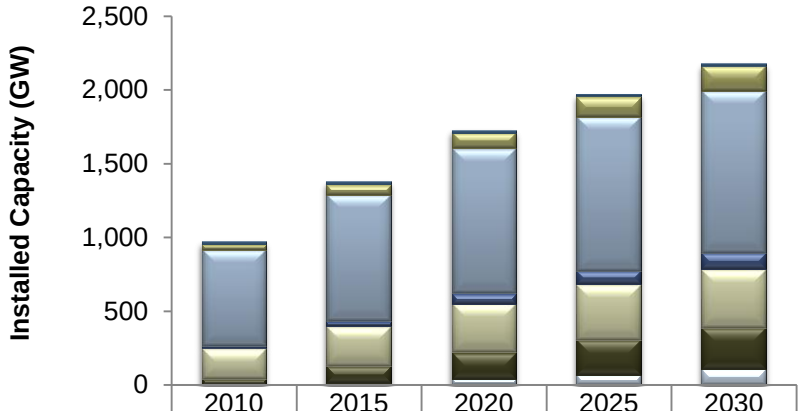
Source: Frost & Sullivan analysis.

Future of the Energy and Power Sector Trends—Power Supply Composition, China's Ultra-high-voltage Power Transmission Network, Oil and Gas, Nuclear Power, Hydropower

Energy and Power Trends—Power Supply Composition

The installed capacity of China is forecasted to rise from 972 GW in 2010 to 2,179 GW in 2030. Electricity generation will rise from 4,271 Twh to 9,169 Twh.

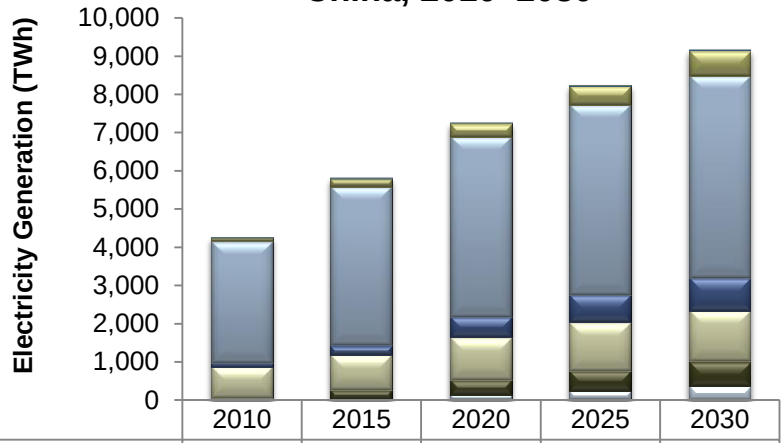
Installed Capacity Forecast, China, 2010–2030



	2010	2015	2020	2025	2030
Oil	16	15	14	12	12
Gas	38	73	107	135	169
Coal	655	859	984	1,044	1,099
Nuclear	12	32	71	94	111
Hydro	207	270	330	376	397
Wind	42	114	180	236	280
Other Renewables	3	17	42	72	110
Total	972	1,379	1,728	1,970	2,179

Year

Electricity Generation Forecast, China, 2010–2030



	2010	2015	2020	2025	2030
Oil	18	18	15	12	12
Gas	86	204	355	499	673
Coal	3,184	4,156	4,704	4,976	5,281
Nuclear	95	241	544	721	850
Hydro	817	909	1,112	1,266	1,337
Wind	64	237	388	526	642
Other Renewables	7	47	147	249	374
Total	4,271	5,812	7,264	8,249	9,169

Year

Total Length of Cable (110kV+)
2011: 810,000 Km
2020: 17,600,000 Km

Smart meter coverage is to reach 80% before 2020.

Major Participants

- China Datang Corporation
- China Guodian Corporation
- China Huadian Group
- China Huaneng Group
- China Power Investment Corporation

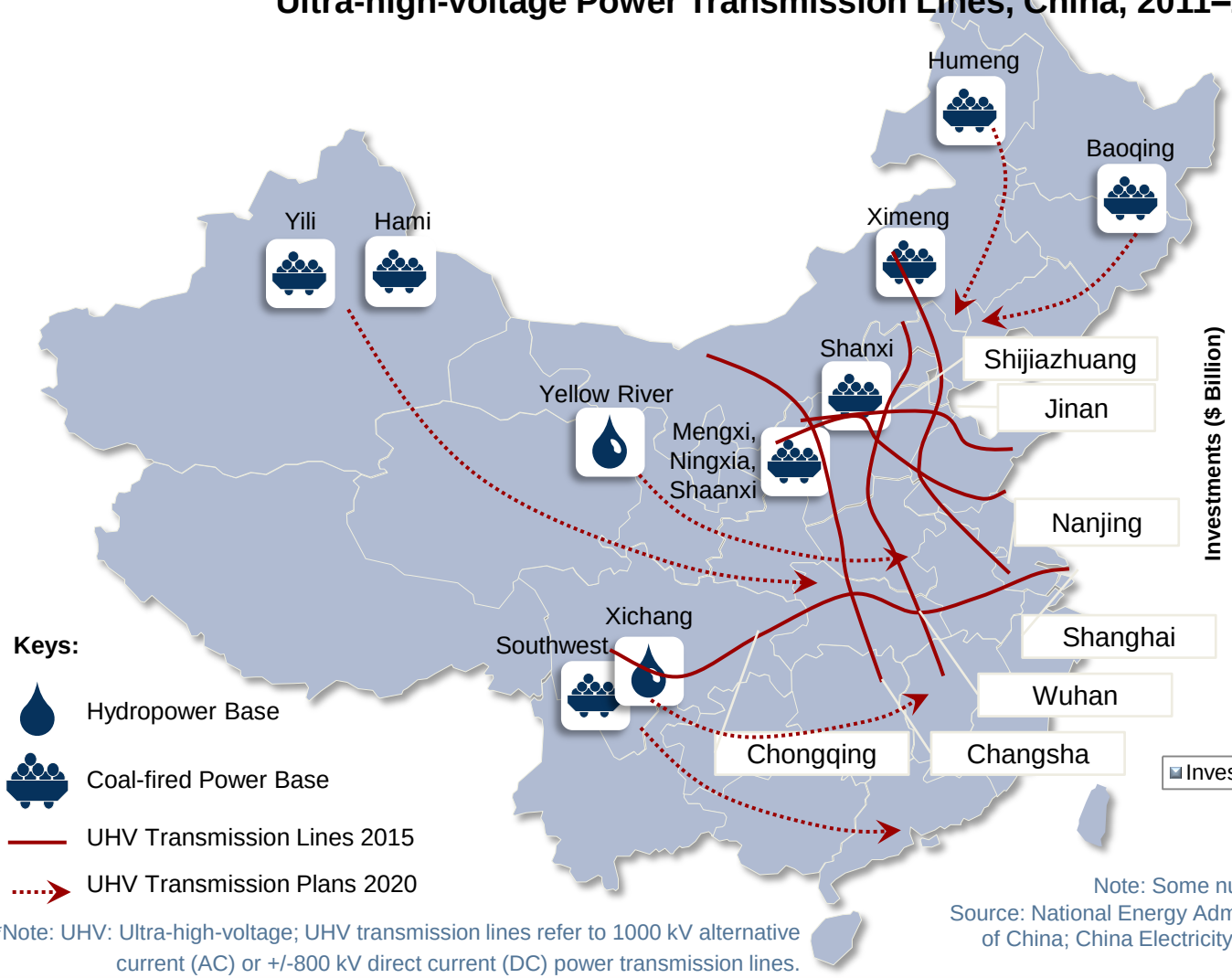
Note: Some numbers do not add up because of rounding.

Note: Some numbers do not add up because of rounding. Source: Frost & Sullivan analysis.

Energy and Power Trends—China's UHV* Network

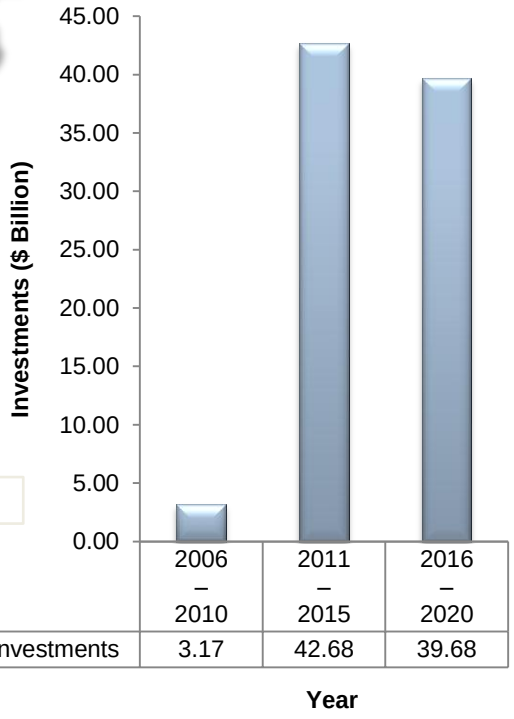
China is to invest $82.36 billion from 2011 to 2020 to develop a national UHV* power transmission network; investments will be nearly 14 times greater than those in the Five-year Plan for 2006 to 2010

Ultra-high-voltage Power Transmission Lines, China, 2011–2020



*Note: UHV: Ultra-high-voltage; UHV transmission lines refer to 1000 kV alternative current (AC) or +/-800 kV direct current (DC) power transmission lines.

UHV Investment, China, 2006–2020



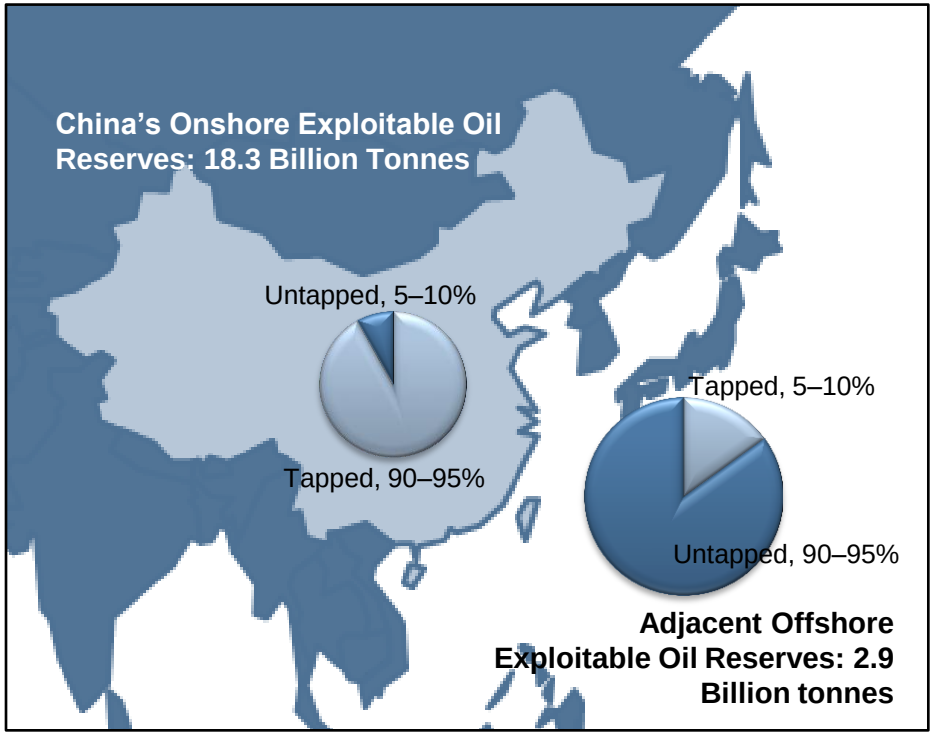
Note: Some numbers do not add up because of rounding.

Source: National Energy Administration of China; State Grid Corporation of China; China Electricity Council; State Power Information Network; and Frost & Sullivan analysis.

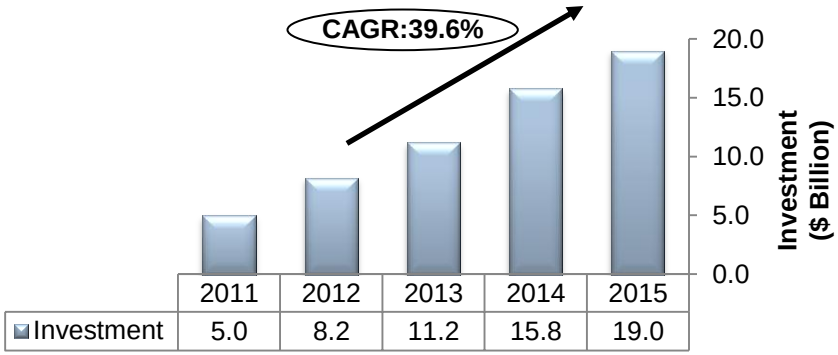
Energy and Power Trends—Oil and Gas

Chinese offshore oil equipment investment will have a CAGR of 39.6% until 2015.

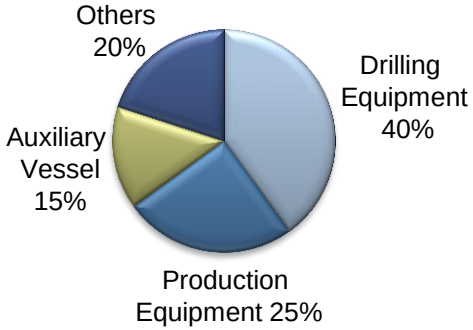
Exploitable Oil Reserves, China, 2012



Offshore Equipment Investment, China, 2011–2015



Offshore Equipment Investment, China, 2009–2015



Offshore Oil Field Services	Engineering contract, drilling services
Offshore Oil Field Equipment	Drilling equipment, production equipment, auxiliary vessels

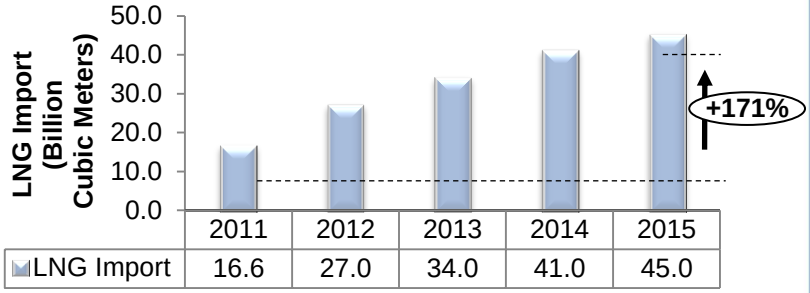
Note: Others include geophysical prospecting equipment, refining and chemical equipment, pipeline construction equipment and pipes.
Note: Some numbers do not add up because of rounding.
Source: National Development and Reform Commission, PRC; Ministry of Land and Resources, PRC; Environmental Investigation Agency; China National Petroleum Corporation ; BP Statistics; and Frost & Sullivan analysis.

Energy and Power Trends—Oil and Gas (continued)

China is open 11 liquefied natural gas terminals between 2011 and 2015; total LNG storage capacity is to reach 51.8 million tonnes.

Location of Liquefied Natural Gas Terminals, China, 2012*

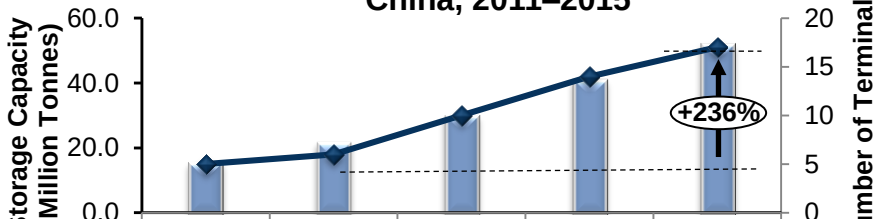
Liquefied Natural Gas Import, China, 2011–2015



	2011	2012	2013	2014	2015
LNG Import	16.6	27.0	34.0	41.0	45.0

Year

Liquefied Natural Gas Storage Capacity, China, 2011–2015



	2011	2012	2013	2014	2015
Storage Capacity (Million Tonnes)	15.4	21.6	29.8	40.8	51.8
Number of Terminals	5	6	10	14	17

Year

Note: Some numbers do not add up because of rounding.

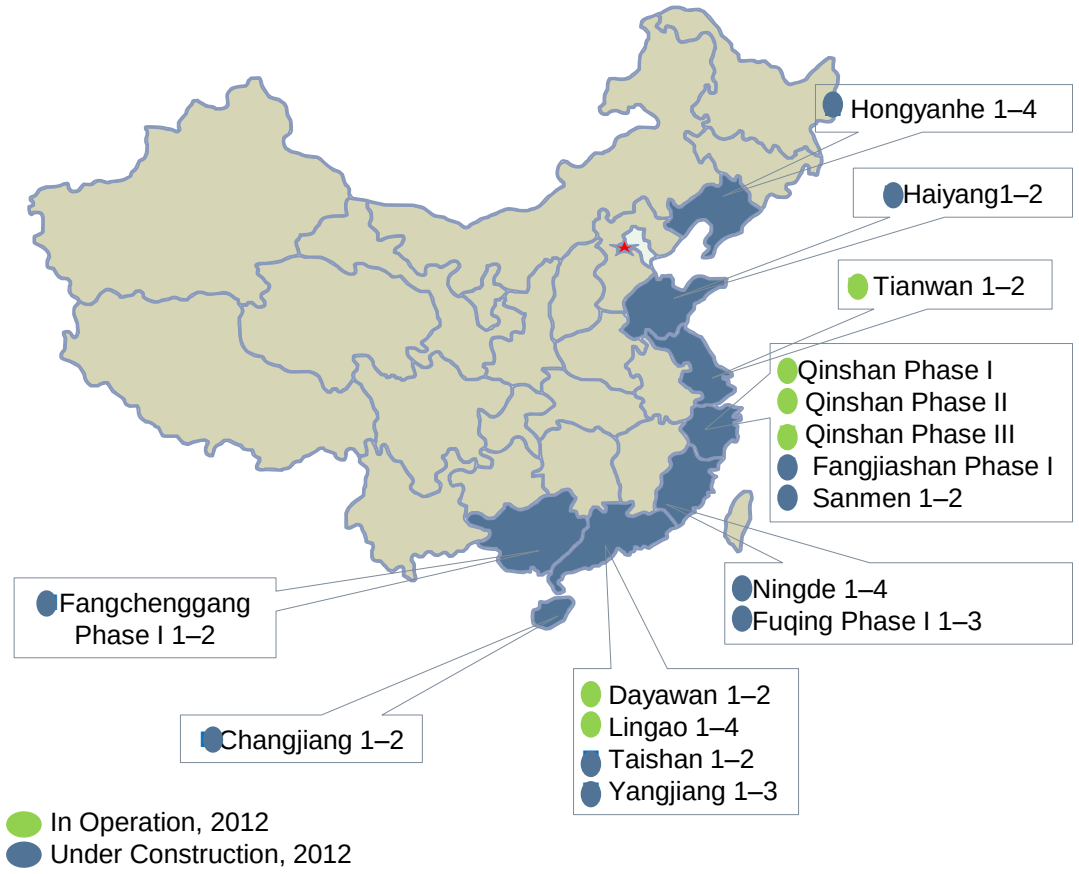
*Note: The years in brackets represent the expected opening year.

Source: China National Offshore Oil Corporation; and Frost & Sullivan analysis.

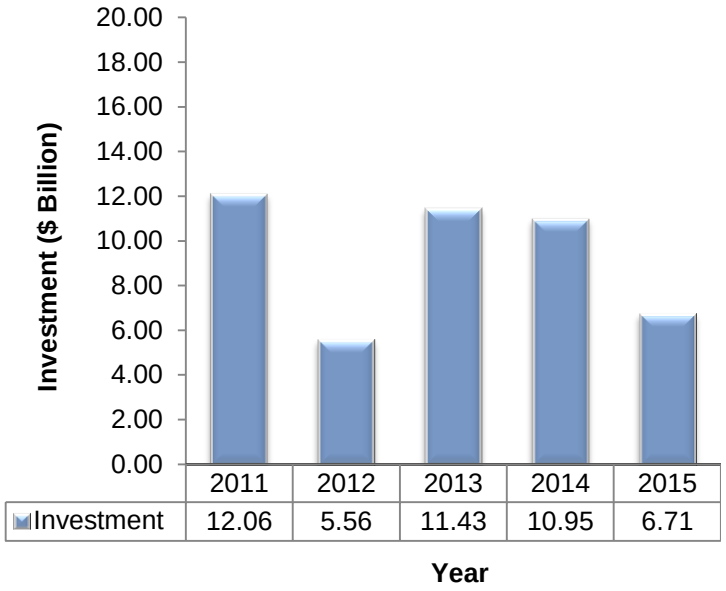
Energy and Power Trends—Nuclear Power

China will invest about $46.71 billion between 2011 and 2015 in nuclear power equipment.

Nuclear Power Plants, China, 2025



Nuclear Equipment Investment, China, 2011–2015



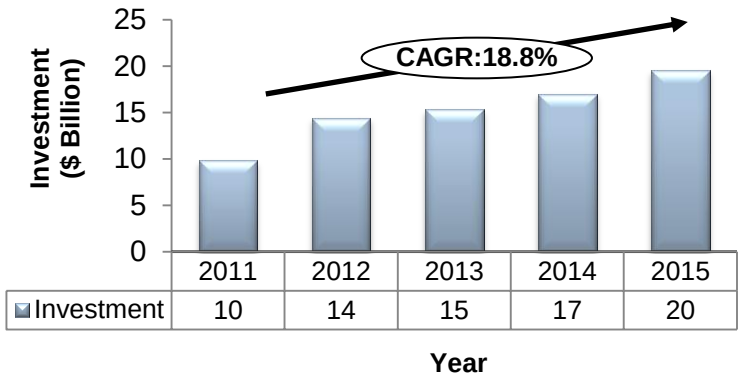
Note: Some numbers do not add up because of rounding.

Source: World Nuclear Association; and Frost & Sullivan analysis.

Energy and Power Trends—Hydropower

Rapid expansion of hydropower in southwestern China will bring investments in hydropower plant equipment and pumped storage equipment.

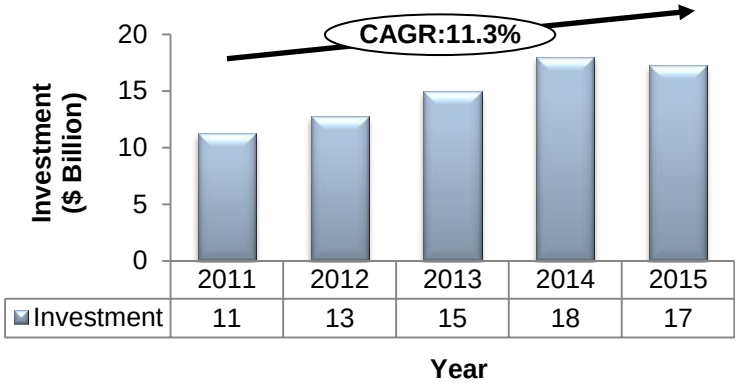
Hydropower Plant Equipment Investment, China, 2011–2015



	2011	2012	2013	2014	2015
Investment	10	14	15	17	20

Year

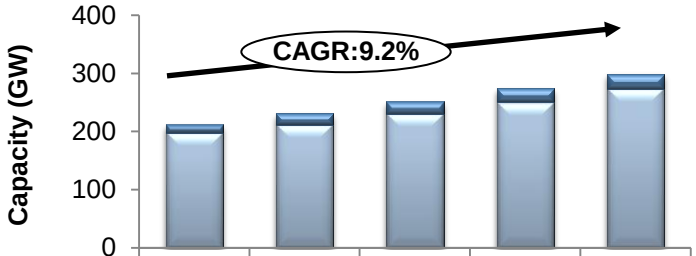
Pumped Storage Equipment Investment, China, 2011–2015



	2011	2012	2013	2014	2015
Investment	11	13	15	18	17

Year

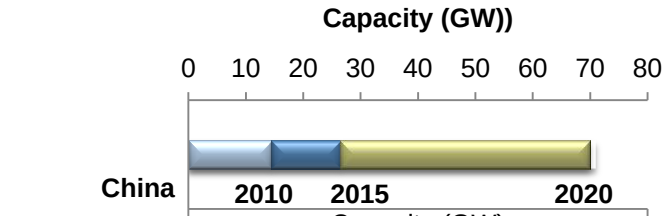
Installed Capacity of Hydropower Plants, China, 2011–2015



	2011	2012	2013	2014	2015
Addition (GW)	14	19	20	23	25
Capacity (GW)	198	212	231	251	274
Total	212	231	251	274	299

Year

Pumped Storage Capacity, China, 2010–2020



	Capacity (GW)
In Operation	15
Under Construction	12
Planned	44
Total	71

Note: Some numbers do not add up because of rounding.

Source: United Nations; and Frost & Sullivan analysis.

Macro-to-micro Implications of Energy and Power Trends in China

Macro-to-micro Implications of Energy and Power Trends, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Energy Source	2011 was characterized by conventional energy.	2025 was characterized by cleaner energy.	• Demand for power supply management and facilities management will increase. • Opportunities for nuclear power technology and management will arise from government support. • Opportunities for joint ventures and investment in producing alternative energy sources, such as wind, solar, and biomass energy sources, will emerge. • Opportunities for foreign companies to invest in or venture into Chinese public projects for energy savings and power management will also arise.
	Over 90% of China's primary energy consumption was from fossil fuels in 2011.	By 2020*, China wants to increase its clean energy generation capacity to 35% of the total energy generated. The majority of clean energy will be from sources such as hydro power, nuclear power, and clean coal power.	
Installed Capacity	China’s installed capacity was on par with the global average.	By 2025, China’s installed capacity will have grown significantly.	• Opportunities will be great in smart meter maintenance and service as China’s target is to have 100% smart meter access by 2017. • Small-scale distributed renewable energy sources will be used for developing power grids in rural areas.
	Commercial electricity usage was over 3.21 trillion kilowatt hours per year, while more than 90% of consumption was from fossil fuels.	China’s power generation capacity will double to 2.6 billion kilowatts; the transmission cable network will connect to remote power generation bases such as Mongolia, Yunan, and Xinjiang.	

Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

Top Industries in the Future—Retail, Construction Finance, Logistics, Aviation, Defense, Automotive, Luxury Goods

Top Industries in China in 2025

Retail

Construction

Finance

Logistics

Aviation

Defense

Automotive

Luxury Goods

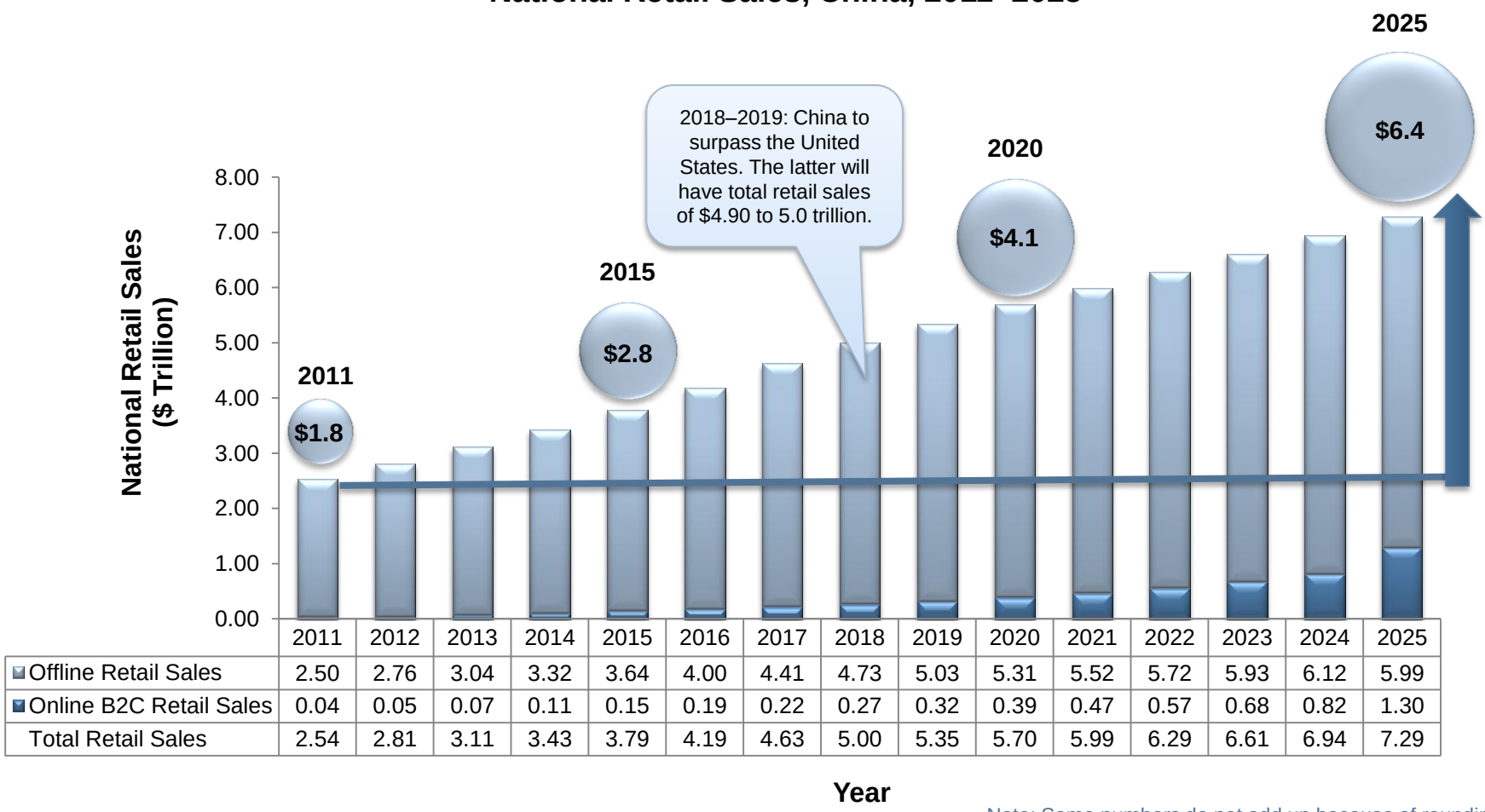
Image source: Dreamstime

Source: Frost & Sullivan analysis.

Top Industries—Retail

China's retail sales will account for one-third of global volume in 2025; China is to surpass Japan to be the second-largest retail market by 2015. Retail sales in 2025 will be over 3 times those of 2011.

National Retail Sales, China, 2011–2025



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Offline Retail Sales	2.50	2.76	3.04	3.32	3.64	4.00	4.41	4.73	5.03	5.31	5.52	5.72	5.93	6.12	5.99
Online B2C Retail Sales	0.04	0.05	0.07	0.11	0.15	0.19	0.22	0.27	0.32	0.39	0.47	0.57	0.68	0.82	1.30
Total Retail Sales	2.54	2.81	3.11	3.43	3.79	4.19	4.63	5.00	5.35	5.70	5.99	6.29	6.61	6.94	7.29

Year

Retail Sales Per Capita ($ Thousand)

Note: Some numbers do not add up because of rounding.

Source: World Bank; Economic Intelligence Unit; National Bureau of Statistics, PRC; and Frost % Sullivan analysis.

Top Industries—Retail (continued)

Tier II and Tier III Cities to Emerge as Future Retail Hubs in China; International Retailers to Target Emerging Cities

Future Retail Growth Potential by City*, China, 2010–2025

*Note:
Established cities: Cities with high levels of connectivity and the presence of international businesses and corporate bases.

Growth cities: Cities with a high degree of wealth, strong consumer base, and industrial diversification.

Emerging cities: Cities with large commercial real estate development and that are targeted aggressively by retailers and hotels.

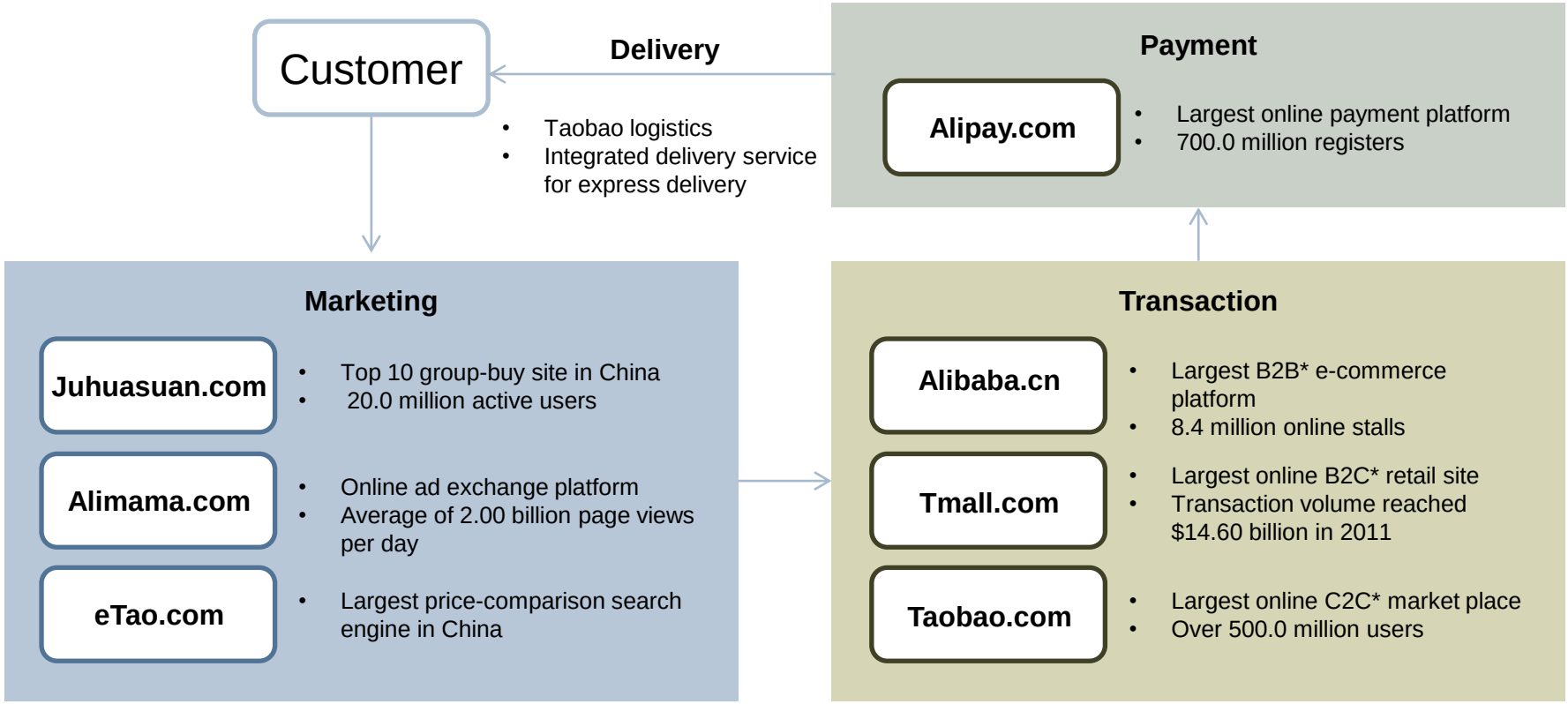
Source: National Bureau of Statistics, PRC; Jones Lang Lasalle; and Frost & Sullivan analysis.

Top Industries—Retail (continued)

The Alibaba Group is the largest online retailer, accounting for 75% of the Chinese e-retailing's market share; the company is building a one-stop-shop experience.

Online Retail Case Study: The Alibaba Group

Alibaba One-stop Online Shopping Experience, China, 2011



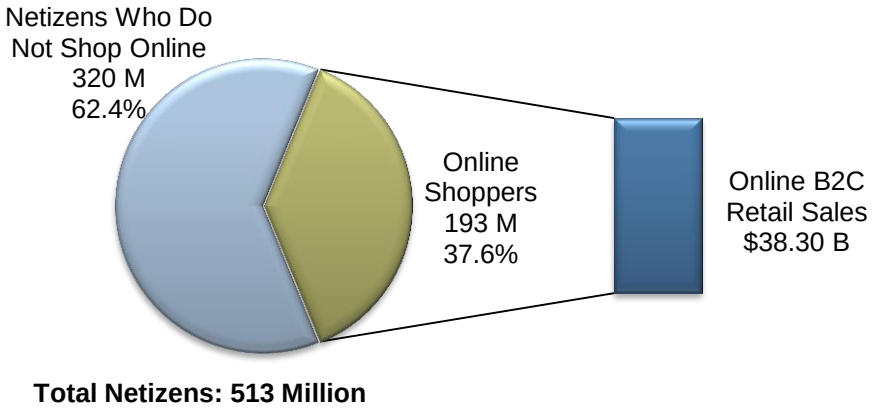
*Note: B2B: Business-to-business; B2C: Business-to-Consumer; C2C: consumer-to-consumer; information shown is correct as of Jun 2012 unless otherwise specified.

Source: Alibaba Group; and Frost & Sullivan analysis.

Top Industries—Retail (continued)

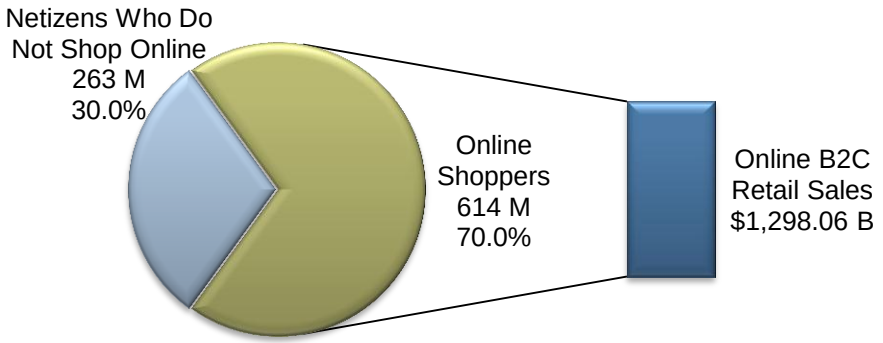
China's B2C* online retail sales are to reach $1.298 trillion in 2025. The top 4 retail participants will contribute 58.4% to the online retail market.

Online Shopping Trends, China, 2011



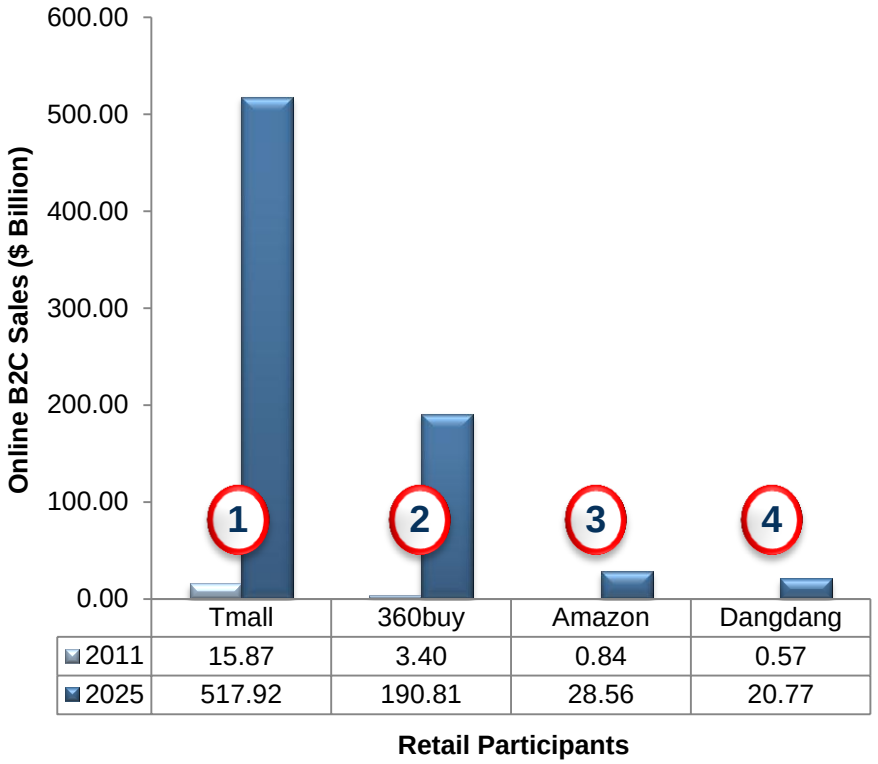
Total Netizens: 513 Million

Online Shopping Trends, China, 2025



Total Netizens: 877 Million

Sales of Top Online B2C Retail Participants, China, 2011 and 2025



	Tmall	360buy	Amazon	Dangdang
2011	15.87	3.40	0.84	0.57
2025	517.92	190.81	28.56	20.77

Note: Some numbers do not add up because of rounding.

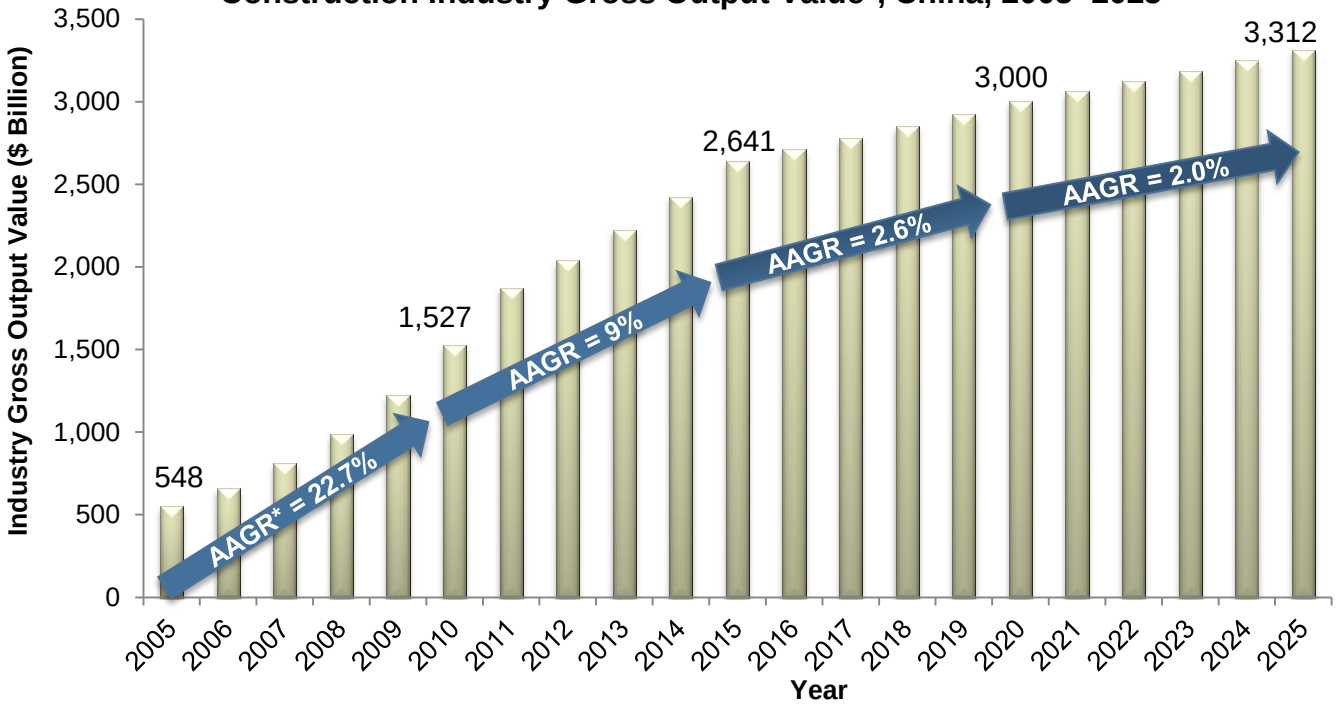
*Note: B2C: Business-to-consumer transactions; This study has excluded online consumer-to-consumer (C2C) transactions, which accounted for 70% of online retail sales in 2011. However, the B2C sector is expected to take over 50% of online retail sales after 2015.

Source: China Internet Network Information Center; McKinsey & Company; iResearch China, Frost & Sullivan analysis.

Top Industries—Construction

China will lead the world's construction market up to 2025, by when China's construction market will be worth $3 trillion and account for more than 20% of the global construction market's value.

Construction Industry Gross Output Value*, China, 2005–2025



Construction Market Rankings, Global, 2010 and 2025

2010		2025
China	1	China
US	2	US
Japan	3	India
India	4	Japan
France	5	South Korea
Germany	6	Germany
Canada	7	Russia
Spain	8	UK
Italy	9	Canada
UK	10	France

Leading Enterprises in the Chinese Construction Industry

- China State Construction
- Beijing Urban Construction
- China Railway Construction
- Ninbo Construction
- Shanghai Construction Group
- Guangdong Construction Engineering
- China State Construction International
- Hunan Construction Engineering
- Beijing Construction Engineering
- Zhejian Group

*Note: AAGR: Average annual growth rate. Note: Gross output value refers to total of construction products and services in money terms, produced by construction and installation enterprises during the year.

Note: Some numbers do not add up because of rounding.

Source: National Bureau of Statistics, PRC; Global Construction Perspective; Oxford Economics; Adhesives & Sealant Industry; and Frost & Sullivan analysis.

Top Industries—Finance

Asia will become the world's financial center; Hong Kong is expected to be home to 2% of foreign IPOs* in 2025.

Ranking of Top 10 Financial Centers, Global, 2012

Financial Products that Will Grow in Hong Kong's Exchange

- RMB Bonds
- RMB Deposits
- Chinese IPOs
- Offshore RMB

Stock Exchange Parameters, Hong Kong, 2000–2020

	2000	2005	2010	2015	2020
Number of Trades (Million)	36.9	37.0	193.9	350+	600+
Turnover Value ($ Billion)	404.11	583.28	2,200.66	3,800+	5,000+
IPOs ($ Billion)	17.05	21.37	58.00	70.00+	100.00+
No. of Listed Companies	790	1,135	1,413	1,700+	1,900+

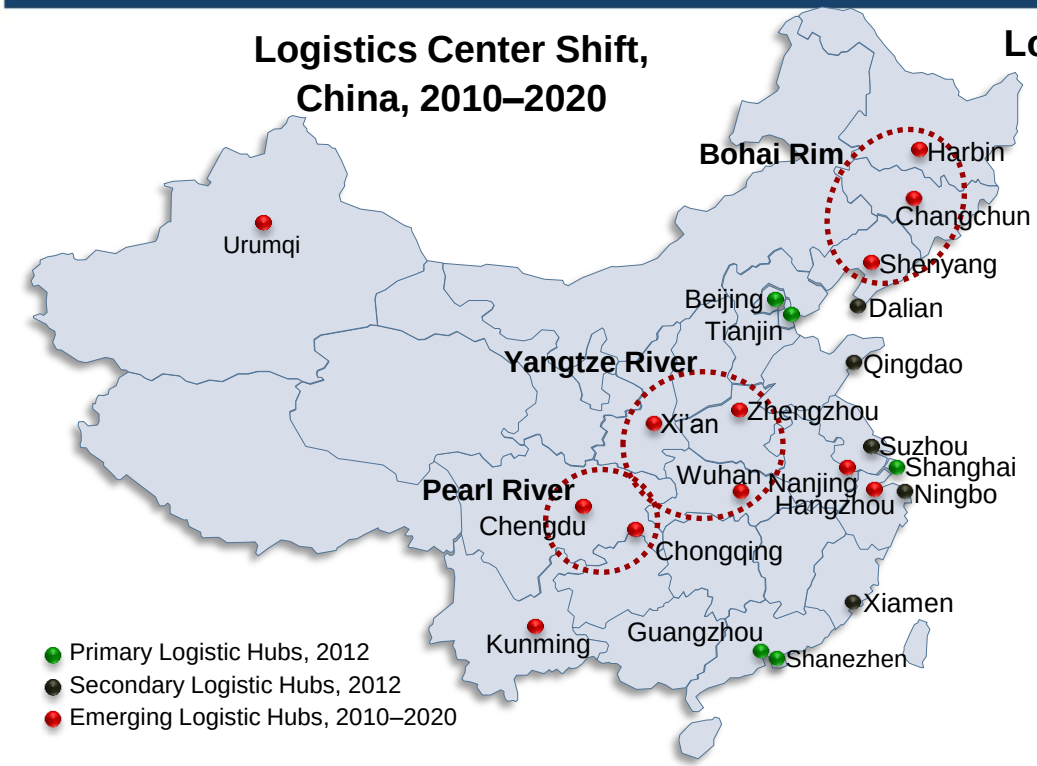
*Note: IPOs: Initial public offers. $1 = HK$7.76

Source: Global Financial Center Index; Hong Kong Exchange; World Federation of Exchanges; and Frost & Sullivan analysis.

Top Industries—Logistics

China's logistics industry is to become the world's largest in 2016. The logistics industry will be worth $450 billion in 2015 and $1 trillion in 2020.

Logistics Center Shift, China, 2010–2020



Logistics Infrastructure, China, 2010 and 2020

	2010	2020
Railway (km)	92,000	120,000
Highway (Million km)	2.3	3.0
No. of Coastal Deep-water Berths*	1,750	2,190
Costal Port Transportation Capacity (Billion tons)	4.5	6.5
Coastal Port Container Handling Capacity (Million TEU**)	136	240
No. of Civil Airports	147	244
General Aviation Fleet Size	1,597	4,251

Industry Trends	Fast Growing Market Size	Emerging Hubs In the West	Booming Express Deliveries	Growing Third-party Market
	Aided with country's infrastructure development	Manufacturing companies are preferring the western part of the country for investment	Growth of consumption along with economy	Professional logistics service outsourcing

*Note: Deep-water berth: Berths that can handle vessels that are over 10,000 deadweight tonnage (dwt). **Note: TEU: 20-foot equivalent unit.

Source: Research Center for Modern Logistics, Tsinghua University; A. T. Kearney; CEVA Logistics; CAAC Center for Aviation; China Federation of Logistic and Purchasing; Chinese Academy of Industry Economy Research; Frost & Sullivan analysis.

Top Industries—Aviation

Fueled by a compound annual growth rate of 16.1%, the Chinese aviation market will reach $238.96 billion in 2020, which will be up from $62.15 billion in 2011.

Total Aviation Market Overview, China, 2011 and 2020

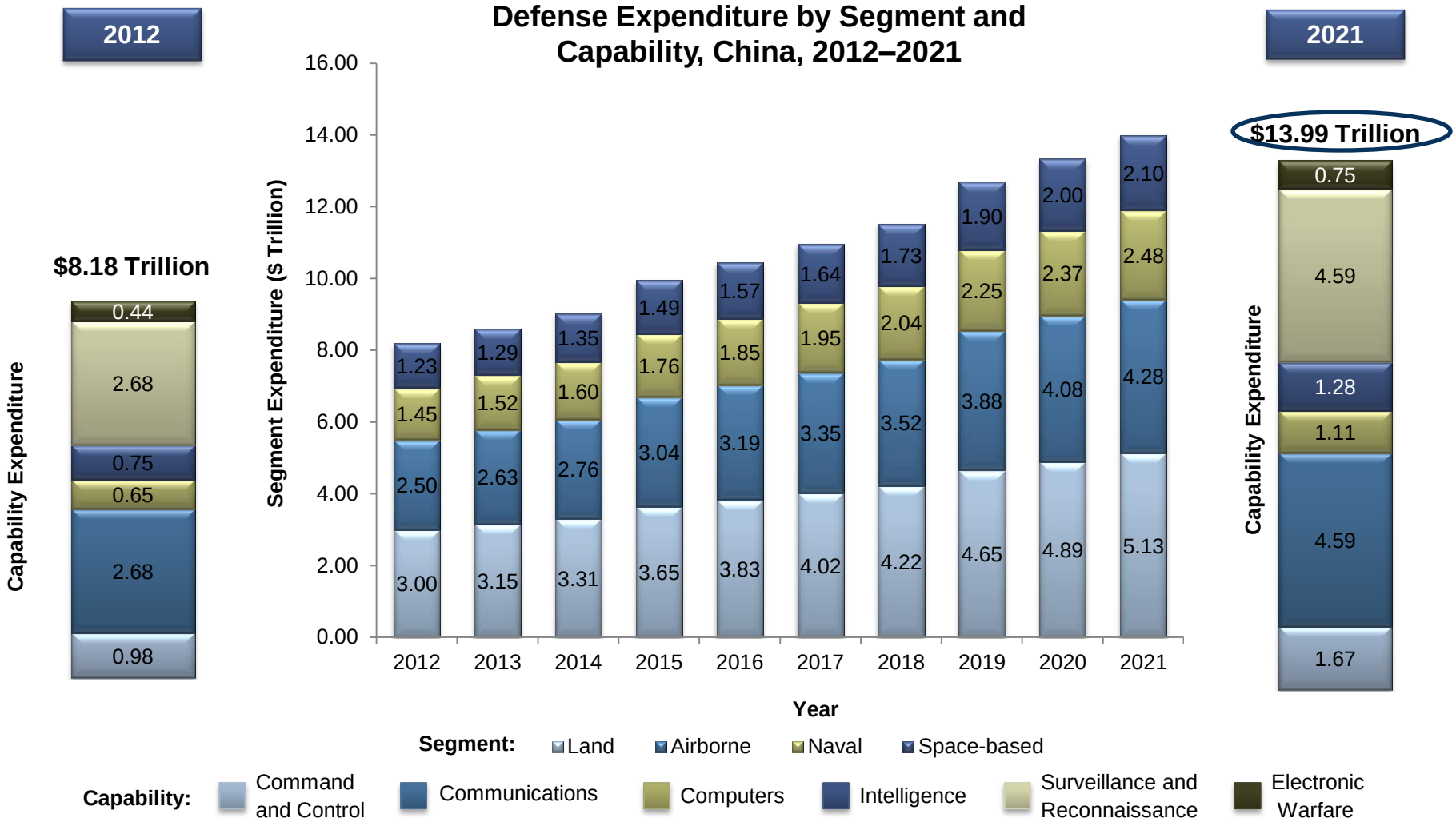
	Airline		Airport		General Aviation	
	2011	2020	2011	2020	2011	2020
Revenue Growth	$52.05 Billion	$209.21 Billion	$7 Billion	$21.44 Billion	$3.1 Billion	$8.31 Billion
Market Overview	Annual Passenger Traffic	Annual Passenger Traffic	Annual Passenger Traffic	Annual Passenger Traffic	Flight Hours	Flight Hours
	268 Million	692 Million	620.5 Million	1.47 Billion	0.5 Million	2.94 Million
Market Participants	Market Participants—Top Three Carriers		Market Participants—Top Three Airports		Market Participants—Top Business Jet Manufacturers	
	• Air China • China Southern • China Eastern		• Beijing Capital • Shanghai Pudong • Guangzhou Baiyun,		• Gulfstream • Bombardier • Cessna • Hawker Beechcraft	
	Collective market share of 67.8% by passenger traffic volume in 2011		**Collectively handled a cargo throughput of about 50 percent of the total cargo throughput in 2011**			

Opportunities	
	• Tap into providing more international routes • Higher freight transportation facility • International expansion and merger to cater to LCC demand

Source: Frost & Sullivan analysis.

Top Industries—Defense

China is set to reach $13.99 trillion in defense expenditures in 2021; land and airborne applications will account for over 60% of defense expenditures during 2012 to 2021.



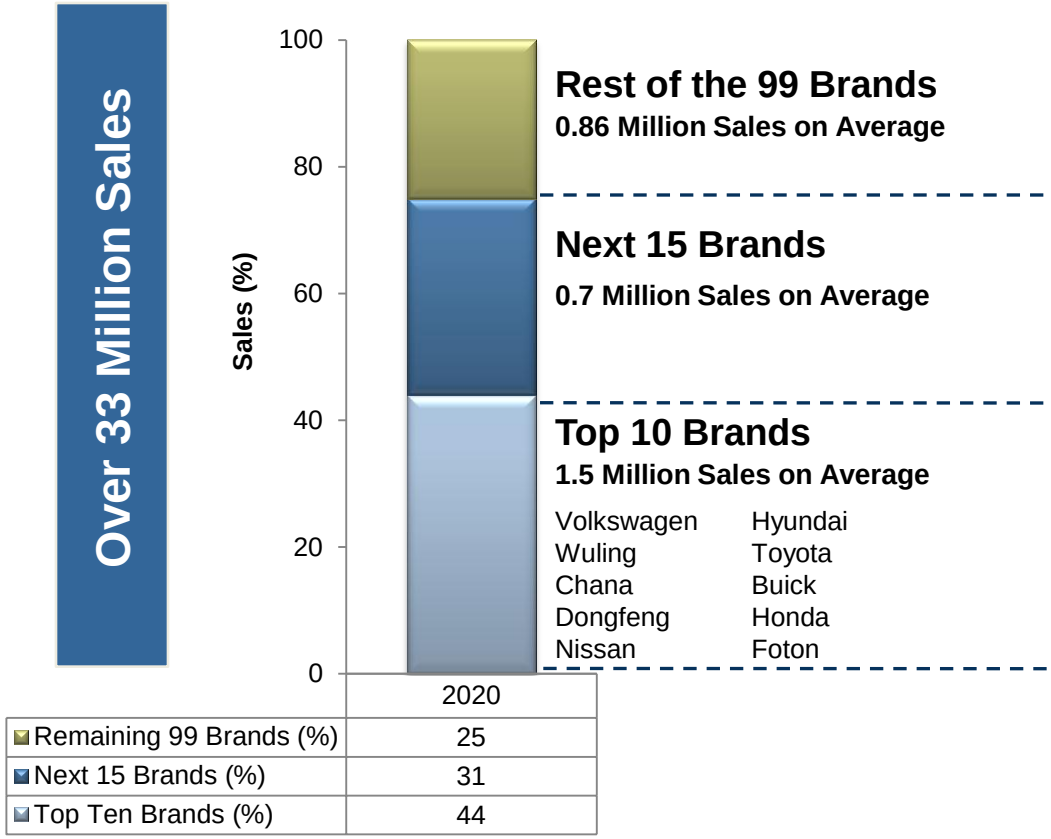
Note: Some numbers do not add up because of rounding.

Source: Stockholm International Peace Research Institute; and Frost & Sullivan analysis.

Top Industries—Automotive

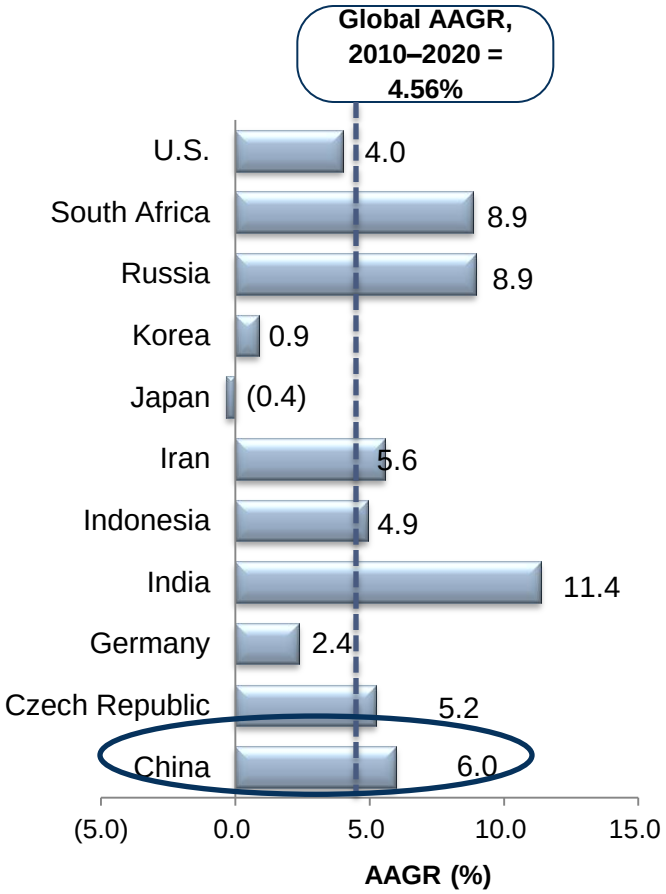
By 2025, China will account for 31% of global light vehicle* sales. Among 124 OEM brands, the top 10 OEM brands are set to hold 44% of the market share by 2020.**

Automotive OEM Brand Structure, China, 2020



	2020
Remaining 99 Brands (%)	25
Next 15 Brands (%)	31
Top Ten Brands (%)	44

Automotive Industry: Vehicle Sales AAGR**, Global, 2010–2020



Note: Some numbers do not add up because of rounding.

*Note: Light vehicle: Passenger vehicles and light commercial vehicles that weigh less than 3.5 tons

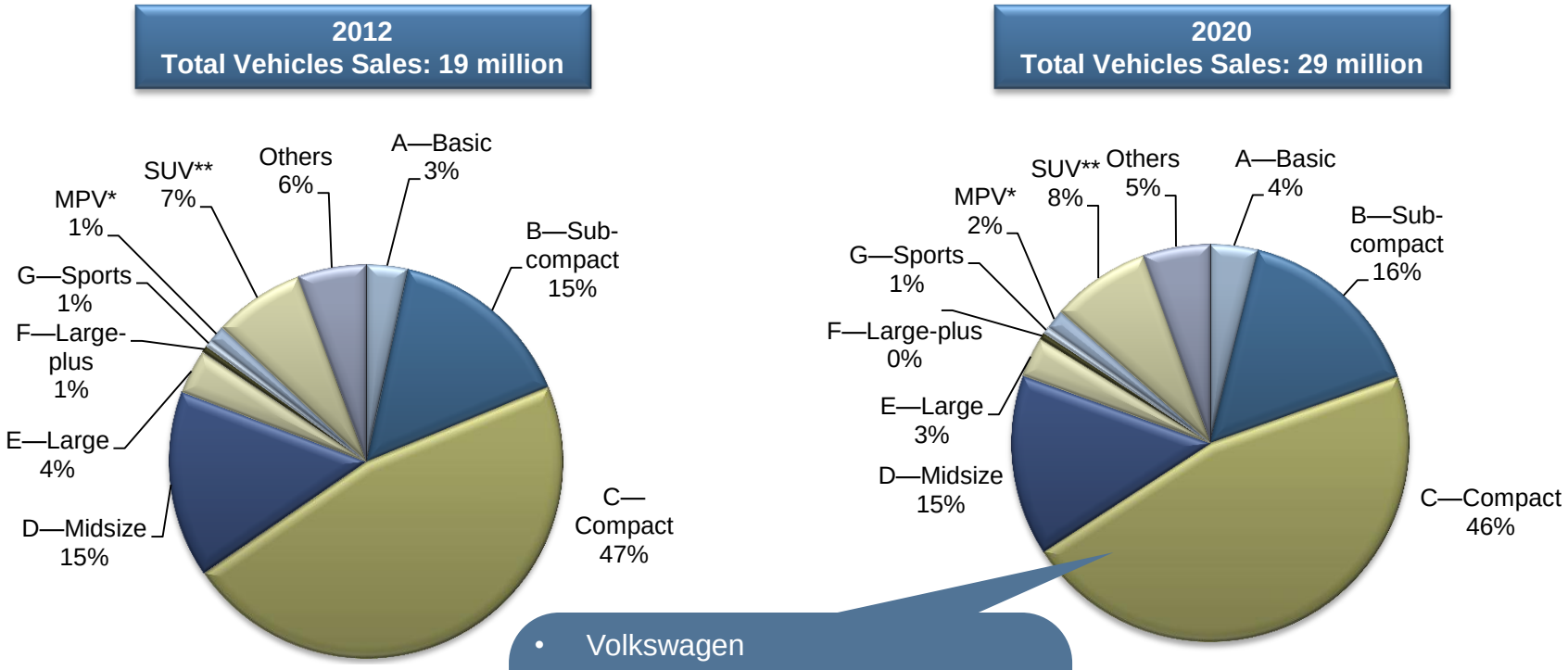
**Note: OEM: Original equipment manufacturer; AAGR: Average annual growth rate

Source: LMC Automotive Forecasting; and Frost & Sullivan analysis.

Top Industries—Automotive (continued)

In China, compact cars will continue to dominate the Chinese passenger vehicle market with 46% of the market share.

Passenger Vehicle Sales by Segment, China, 2012 and 2020



- Volkswagen
- Nissan
- Hyundai
- Chevrolet
- BYD

By 2020, these five brands are to lead compact segment sales with 33% of this segment's share.

Note: Some numbers do not add up because of rounding.

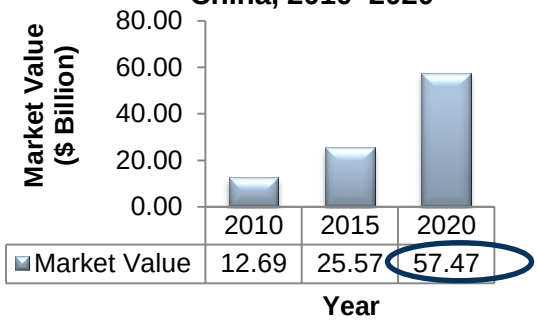
*Note: MPV: Multi-purpose vehicle.
**Note: SUV: Sport utility vehicle.
Source: LMC forecasting and Frost & Sullivan analysis.

Top Industries—Luxury Goods

In 2020, China's luxury goods market is to reach $57.47 billion, which is up from $12.69 billion in 2010. The 11 most prosperous markets in China will capture over 50% of the domestic market share.

Important Luxury Goods Markets, China, 2020

Luxury Market Value, China, 2010–2020



Luxury Market in China, 2020	Average Annual Growth 2010–2020 (%)	Market Share in China (%)
Top luxury goods markets	16%	20%
Tier II luxury goods markets	17%	30%
Tier III luxury goods market (next 25 cities)	19%	26%

Note: Some numbers do not add up because of rounding.

Note: Hong Kong Special Administrative Region is not included in this slide because of its special position in global luxury market.

Source: Hurun Report 2011; Boston Consultant Group; KPMG; McKinsey & Company; and Frost & Sullivan analysis.

Top Industries—Fortune 500 Companies in China for 2012

Chinese companies occupied 73 places on the global Fortune 500 list in 2012.

Number of Fortune 500 Companies, Global, 2012

US: 132

China: 73

Japan: 68

Headquarters of Chinese Fortune 500 Companies

Fortune 500 Companies in Top Industries, China, 2012

Petroleum Mining and Production		Utilities	
Rank		Rank	
5	Sinopec Group	7	State Grid
6	China National Petroleum	152	China Southern Power Grid
234	Shenhua Group	246	China Huaneng Group
Finance and banking		**Telecommunications**	
54	Industrial & Commercial Bank of China	81	China Mobile Communications
77	Bank of China	221	China Telecommunications
84	China Construction Bank	333	China United Network Communications
	Agriculture Bank of China		
Engineering and construction		**Trading**	
100	China State Construction Engineering Corp	91	Noble Group
111	China Railway Construction	113	Sinochem Group
112	China Railway Group	349	China Railway Materials
Insurance		**Automotive**	
129	China Life Insurance	130	SAIC Motor
242	Ping An Insurance	142	Dongfeng Motor Group
292	People's Insurance Co. of China	165	China FAW Group
Metals		**Retailing**	
169	China Minmetals	233	China Resources National
197	Baosteel Group	275	Jardine Matheson
269	Hebei Iron & Steel Group	362	Hutchison Whampoa

Source: Fortune Global 500 Report 2012; and Frost & Sullivan analysis.

Macro-to-micro Implications of Top Industries in China

Macro-to-micro Implications of Top Industries, China, 2011 and 2025

	2011*	2025*	Macro-to-micro Implications
Retail	In 2011, the retail market in China generated $2.54 trillion in sales, and the online B2C sales reached about $40.0 billion.	In 2015, China will become the second- largest retail market in the world with a value of $3.79 trillion. Online retail will see strong growth in the B2C sector, which will reach $1.298 trillion by 2025.	• Street retailers will widen their online portfolio and follow a multi-channel approach by integrating their traditional retail channels with their online stores. • Mobile payments and online billing services will see increased usage.
Construction	In 2012, China had the world's largest construction market.	Supported by infrastructure projects, the construction industry in China will see continuous and strong growth momentum to 2025.	• Opportunities in public-private partnerships with Chinese construction firms will arise. • Opportunities in advanced building materials and green building technology will also emerge.
Finance	Exchange centers in China, Shanghai, and Hong Kong grew in importance in the global financial market.	The Shanghai and Hong Kong Exchanges will attract equal amounts of capital as the traditional leading exchange centers of London and New York.	• Asia is poised to become the world's financial center, with more western companies seeking IPOs*** in emerging markets.
Logistics	Logistics hubs were mostly clustered around China's east coast region, resulting in long delivery trips to inland China. Low-cost logistics services provided by local firms accounted for 60% of the market.	With an increase in freight traffic, over 100 logistic hubs will emerge within inland China. These will be encouraged by a strong transportation infrastructure, GDP growth, and retail industry growth. China will become the largest logistics market by 2016.	• Inland logistics hubs will experiment with new business models to cater to the expanding manufacturing industry in inland China. • High-end logistics services will increase with timely and precise bundled deliveries. • Smaller local logistics providers will see a decline in their profits and labor force before 2020.

Note: Numbers are provided according to the timeframe of available data.
*Note: B2C: Business-to-consumer; ***Note: IPO: Initial public offer.
Source: Frost & Sullivan analysis.

Macro-to-micro Implications of Top Industries in China (continued)

	2011*	2025*	Macro-to-micro Implications
Aviation and Defense	China emerged as the top investment destination for aerospace and defense manufacturing.	• The aviation industry will see a 16.1% compound annual growth rate between 2011 and 2020. This growth will be fueled by demand for jet fleets from a growing logistics market. • The Chinese national defense budget is forecasted to grow steadily at a CAGR of 10% through 2020.	• Demand for aviation fleets for passenger travel and logistics will increase, and China is projected to account for 14% of global jet demand during 2020s. • Aircraft maintenance, repair, and operation services market in China will see a 9.6% AAGR from 2010 to 2020.
Automotive	China became one of fastest growing auto markets in the world. Automotive sales in China reached 18 million in 2010. Among the vehicles sold, 62% were for personal use.	China is set to be the leading market for light vehicles, accounting for 31% of the global share in 2020.	• High expected demand for hybrid fuel systems will bring investment opportunities. • China will export more than 100 million vehicles by 2015.
Luxury Goods	Over 30 Chinese cities were identified as new emerging markets for luxury goods.	Sales of luxury goods in China are forecasted to account for over half of the world's luxury good sales by 2020.	• Imitation goods will disappear from the market as consumers become more aware of product authenticity. • The luxury jewelry and fine timepiece category in China is expected to see the highest growth among all segments.

Note: Numbers are provided according to the timeframe of available data.

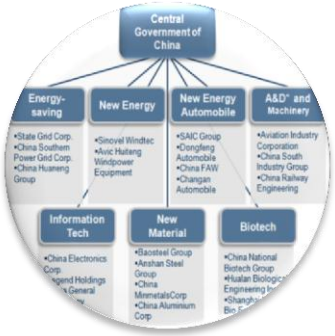
Source: Frost & Sullivan analysis.

Political Economy—Political Shift, State-owned Enterprises, Hukou System Reform, Family Planning Policy, The Great Firewall of China

Political Economy—Political Influences on Chinese Society and Economy

Political Shift

China will transition to more liberal foreign investment policies.

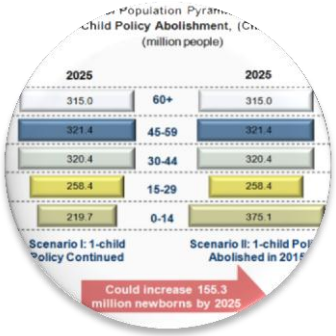


State-owned Enterprises

The influence of state-owned enterprises will decline.

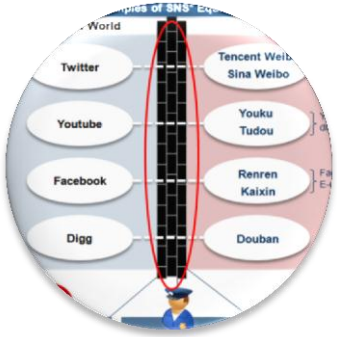
Hukou System

Liberal internal migration policies will accelerate the growth of smaller cities.



Family Planning Policy

Family planning policies will be more flexible and lenient.



The Great Firewall of China

Chinese social media is set to gain international influence.

Source: Frost & Sullivan analysis.

Political Economy—Political Shift

China is in its fifth generation of leaders. China's leaders in the central government will have a background in law and economics 2012 to 2022.

Political Generations, China, 1949–2022

	First Generation Mao—1949	Second Generation Deng—1975	Third Generation Jiang—1987	Fourth Generation Hu and Wen—2002	Fifth Generation Xi and Li—2012
Leader					
	Revolutionists			Engineers	Legal Professionals
Core Thoughts	• Marxism • Revolution • Military and political unity	• Pragmatism • Socialist market economy	• Change Communist Party of China: allow private entrepreneurs to join the Party	• Scientific development: empower SOEs* • Harmonious society: Media control and Internet censoring	• Stability: expected to stabilize commercial environment for foreign businesses • More liberal: expected to pass more liberal public communication policies
Milestone	• Chinese Civil War (1927–1949) • People's Republic of China (1949)	• Chinese Economic Reform (1978–1992)	• Hong Kong and Macao's reunification with China (1997,1999)	• 17% GDP CAGR through financial crisis. • Beijing Olympics (2008) • Shanghai expo	

Image Source: Zhang Zhenshi; World Economic Forum.

*Note: SOE = State Owned Enterprise.

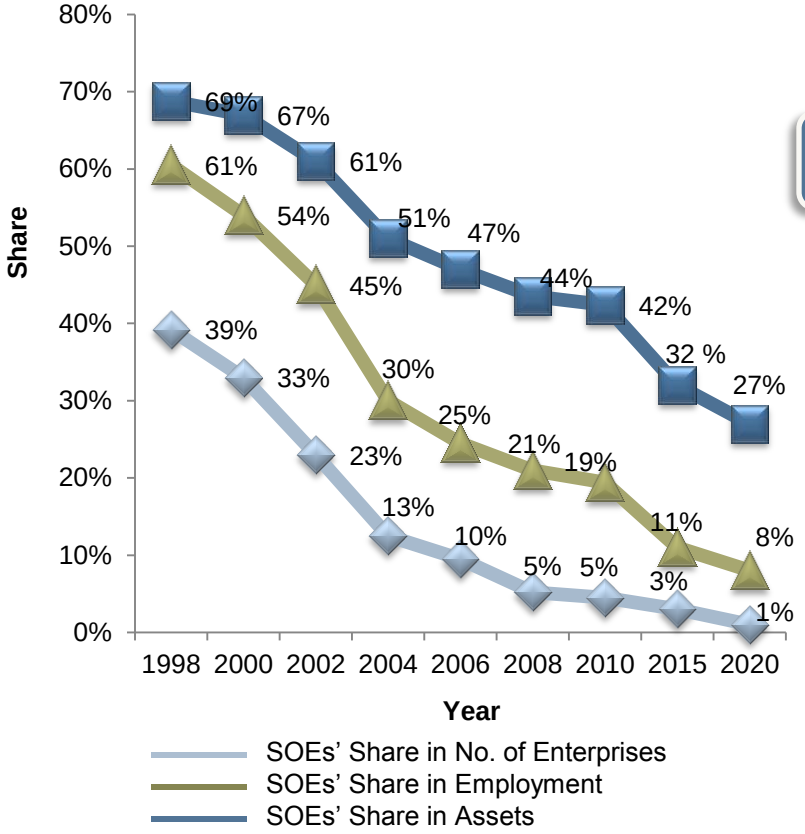
Source: The Central People's Government of China; Frost & Sullivan analysis.

Political Economy—State-owned Enterprises

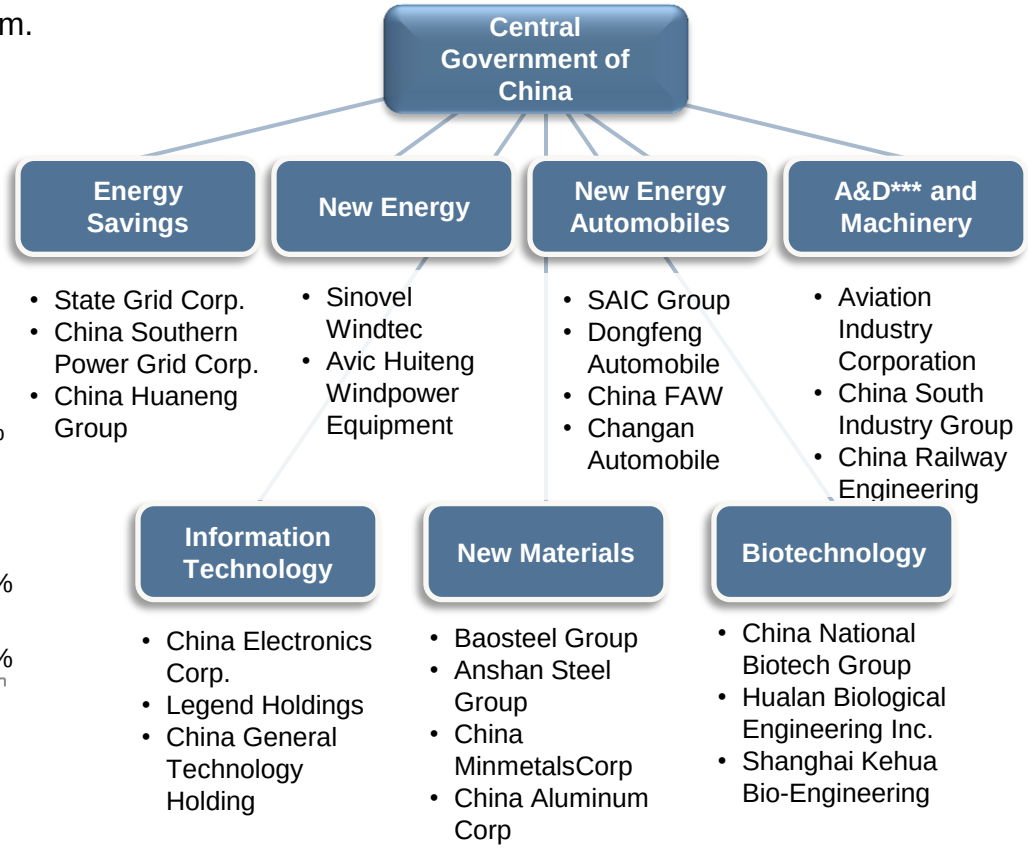
The state-owned enterprises in China will account for one-quarter of national industrial assets until 2020.

Share of SOEs*, China, 1998–2020

SOEs have shown a relative decline in importance, and this decline will likely continue due to SOE reform.



"Pillar Industries"** and Dominant SOEs, China, 2010–2020



Note: Some numbers do not add up because of rounding.
*Note: SOE = State-owned enterprise;
**Note: "Pillar Industries" = the key developing industries listed by the State Council of China on Oct 2010.
***Note: A&D = Aerospace and defense

Source: State-owned Assets Supervision and Administration Commission of China; US-China Economic and Security Review Commission; World Bank; OECD Working Group on Privatization and Corporate Governance of State-owned Assets; Frost & Sullivan analysis.

Political Economy—Hukou System Reform*

China is expected to loosen its intercity migration control before 2020.

Hukou System in China

The Hukou System is a household registration system in China that restricts access to urban areas from rural regions, ensuring that cities do not become overly congested.

The system restricts social welfare benefits, medical care, education, and the right to own property and vehicles only to authorized residents in regions.

China is expected to loosen its registration control in the next decade in a bid to foster growth in its metropolises and ensure a fluid labor supply to growing industries in urban cities.

Intercity Migration Scenario after Leniency of Hukou System, China, 2025

City	Tier I	Tier II	Tier III	Tier IV	Township or Rural Area
Hukou Control	Very strict	Less strict	Moderate	Lenient	--
Migrant Size	Large	Largest	Moderate	Small	--
Factors to Pull Migrants to Larger Cities	• Work opportunities • Income • Higher living standards and greater convenience				
Factors to Push Migrants to Smaller Cities	• Hukou availability (social welfare availability) • Lower living costs				
Implications and Opportunities	Demands for: food, healthcare, public security, and public transportation solutions			Demands for: automated equipment (e.g., agricultural)	

*Note: The policy scenario is based on several speeches by Wen Jiabao, Premier of the People's Republic of China, between 2009 and 2011. The term intercity migrant refers to the people who move into cities where they do not have the right to register with the local Hukou System.

Source: Ministry of Civil Affairs, PRC; Central People's Government, PRC; Tsinghua University, Beijing; Nielsen Company; Frost & Sullivan analysis.

Political Economy—Hukou System Reform* (continued)

Tier II and Tier III cities will attract large amounts of intercity migrants because of leniency in the Hukou system.

Tier I and Tier II Cities** to be Affected by Hukou System Reform, China, 2012–2025

*Note: The policy scenario is based on several speeches by Wen Jiabao, Premier of the People's Republic of China, between 2009 and 2011. The term intercity migrant refers to the people who move into cities where they do not have the right to register with the local Hukou System

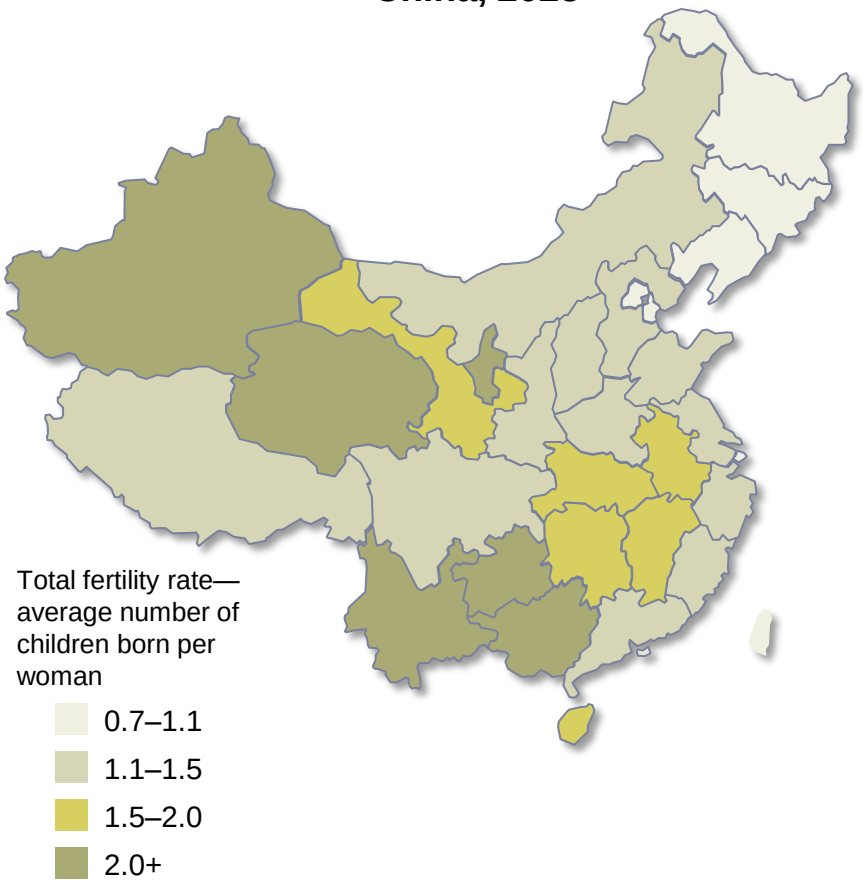
**Note: Tier I and Tier II cities are plotted for comprehensive qualitative and quantitative reasons, including political divisions, population sizes, infrastructure levels, and economic development.

Source: Ministry of Civil Affairs, PRC; Central People's Government, PRC; Tsinghua University, Beijing; Nielsen Company; and Frost & Sullivan analysis.

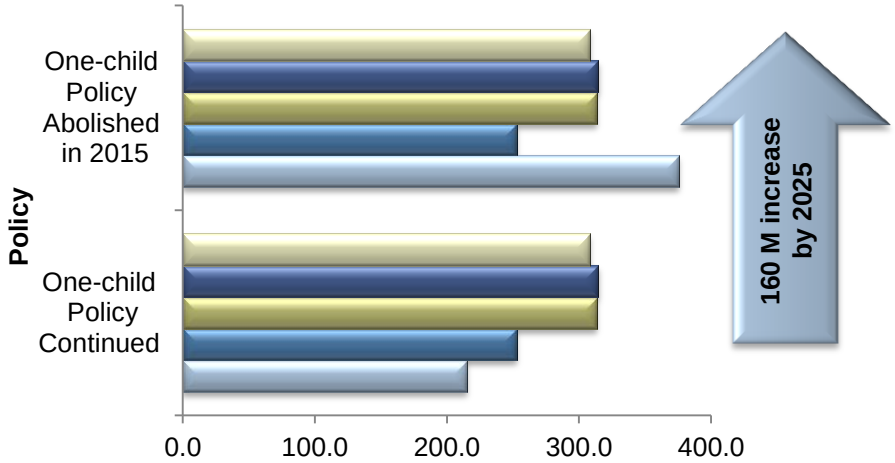
Political Economy—Family Planning Policy*

If the Chinese government loosens the one-child policy, between 155 million and about 160 million newborn babies will require healthcare and education services.

Total Fertility Rate by Province After Loosening One-child Policy in 2015, China, 2025



Comparison of Population Between Abolishment and Continuation of One-child Policy, China, 2025



	One-child Policy Continued	One-child Policy Abolished in 2015
60+ (M)	308.2	308.2
45–59 (M)	314.5	314.5
30–44 (M)	313.5	313.5
15–29 (M)	252.9	252.9
0–14 (M)	215.0	375.1

Population (Million)

Note: Some numbers do not add up because of rounding.
*Note: The scenario presented in this study is based on the assumption that the Chinese government will abolish the one-child policy by 2015.

Source: National Population and Family Planning Commission PRC; National Statistic Bureau, PRC; Department of Economic and Social Affairs, UN; and Frost & Sullivan analysis.

Political Economy—The Great Firewall of China

China will have the most active social media population, with 85% of Netizens using social networking sites.

Examples of SNS* Equivalents in China

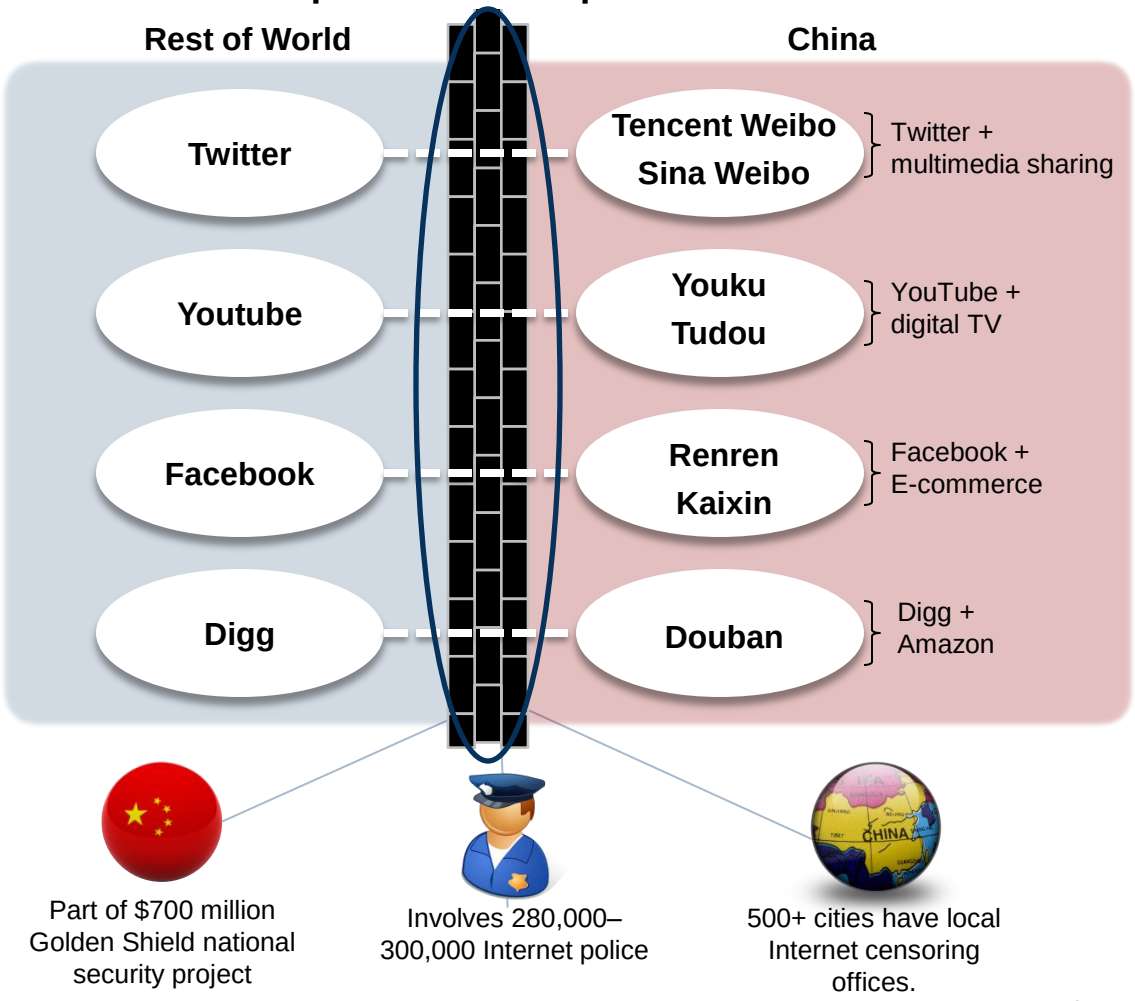


Image Source: Dreamstime.

Trends and Implications

"Copy to China'" → innovate in China
Chinese SNS enterprises copy from foreign SNSs and reform the service to fit local markets.

Social media to overtake the press
Of Chinese netizens, 85% will be active SNS users in 2025. Social media will be more influential than traditional press.

Monetized Chinese SNS
Chinese netizens pay more for SNS functions than netizens in other countries. For instance, 62% of Chinese social gamers are pay participants compared to 19% of US participants.

Majority of Internet content will be in Chinese by 2015
Of Chinese adult netizens, 40% will create Web content compared to 18% of social media users in the United States

*Note: SNS: Social network services; **Note: GFW: Great Firewall of China

Source: Frost & Sullivan analysis.

Macro-to-micro Implications of the Political Economy in China

Macro-to-micro Implications of Top Industries, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
State-owned Enterprises	In 2011, China has a planned economy.	In 2025, China will have a capitalist economy.	More venture opportunities in public projects for foreign corporations will arise. This will be especially true in the energy, automotive, new materials, and medical industries for which China strives toward innovation and wants to derive knowledge from the West.
	In 2010, the number of SOEs declined to around 114,000.	Less than 3% of enterprises are SOE	
Hukou System Reform	China had less rural-to-urban migration.	China will have more rural-to-urban migration.	Tier II and III cities will attract large amounts of intercity migrants as a result of Hukou leniency, and this will increase demand for food, healthcare, public security, and public transportation solutions.
	In 2011, there was less rural–urban migration because of the Hukou System, which restricts entry to urban areas.	In 2025, over 65% of the Chinese population will live in urban areas through the leniency of the Hukou System.	
Family Planning Policy	The one-child policy remained rigid.	Family planning policies will be more flexible.	The abolishment of the one-child policy could drive an increase of 155.4 million newborns between 2015 and 2025. Demand for healthcare and education facilities to increase in both top-grade markets and less developed markets.
	The one-child policy established in 1979 has controlled China's population. However, the signs and problems of an aging society emerged by 2010.	Fertility rates have increased in the wealthy and upper middle classes. Fertility rates have also risen in less developed regions.	
The Great Firewall	The Internet was heavily censored.	The Internet will have more freedom.	There is potential for foreign social media to venture within the Chinese social media market. Chinese content will gain worldwide importance.
	Strict content censorship blocked the majority of Chinese netizens from full Internet freedom.	Chinese netizens will embrace alternative ways to avoid censorship and access information on the Internet.	

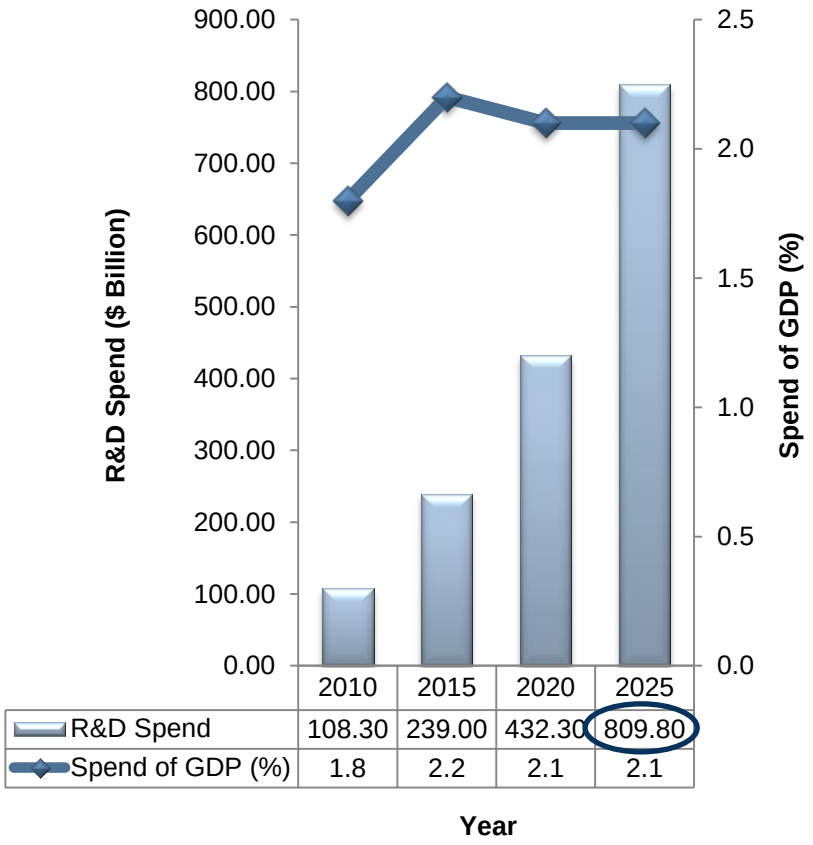
Note: Numbers are provided according to the timeframe of available data.
*SOE: State-owned enterprises.
Source: Frost & Sullivan analysis.

From “Made in China” to “Created in China”—China’s Research and Development Spending

From "Made in China" to "Created in China"—China's R&D Spending

In 2025, China will spend $809.8 billion on R&D*; of this total, 75% will come from the private sector.

National Spend on R&D, China, 2010–2025



R&D Spending by Selected Industries, China, 2010 and 2025

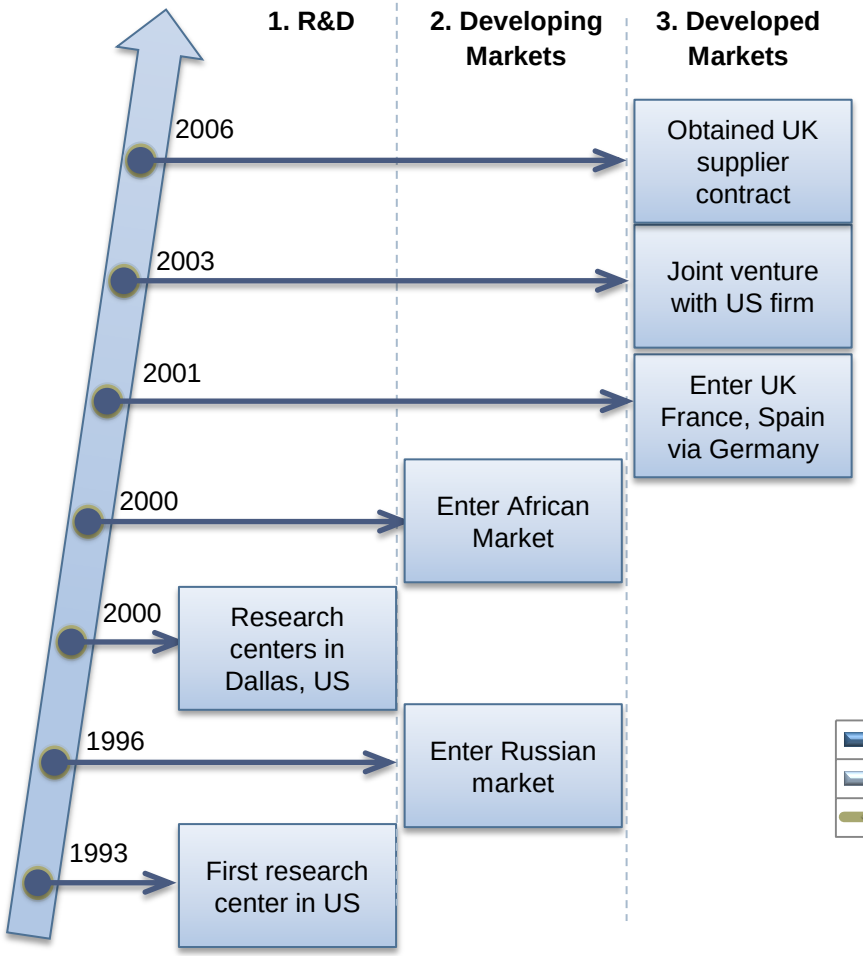
Industry		R&D Spending ($ Million)	Percent of Profit (%)
Special Purpose Machinery	2010	600.7	2.1
	2025	3,466.3	2.3
Medical Equipment	2010	384.5	1.8
	2025	2,271.0	2.1
Electrical Machinery and Equipment	2010	786.5	1.6
	2025	4,970.0	2.1
General Purpose Machinery	2010	684.1	1.6
	2025	2,255.5	1.9
Measuring Instruments and Office Facilities	2010	128.1	1.5
	2025	776.3	1.9
Other Industries	2010	105,736.5	--
	2025	796,076.8	--

Note: Some numbers do not add up because of rounding.
*Note: R&D: Research and development.
Source: National Bureau of Statistics, PRC; China Science & Technology Statistics; National Development and Reform Commission; and Frost & Sullivan analysis.

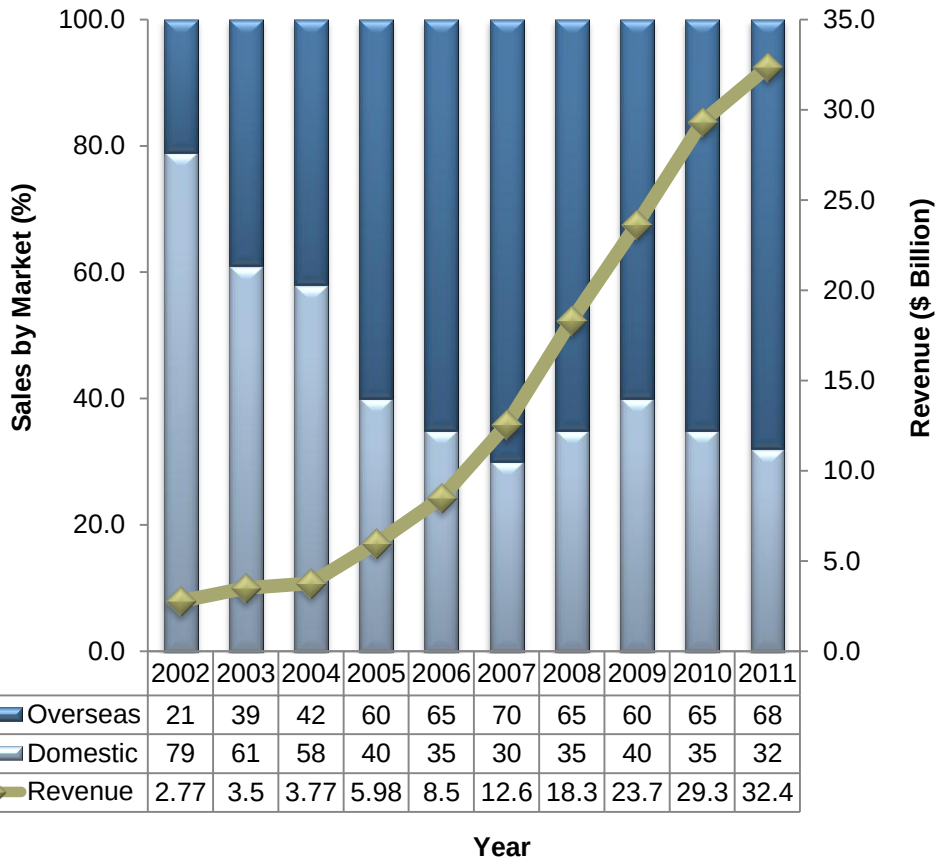
From "Made in China" to "Created in China"—Case Study, Huawei

Huawei's globalization separates the developed from the developing; the Chinese firm is now the largest telecomm equipment company in the world.

Huawei Globalization Roadmap, Global, 1993–2006



Percent Huawei Sales by Market and Huawei Revenue, China, 2002–2011



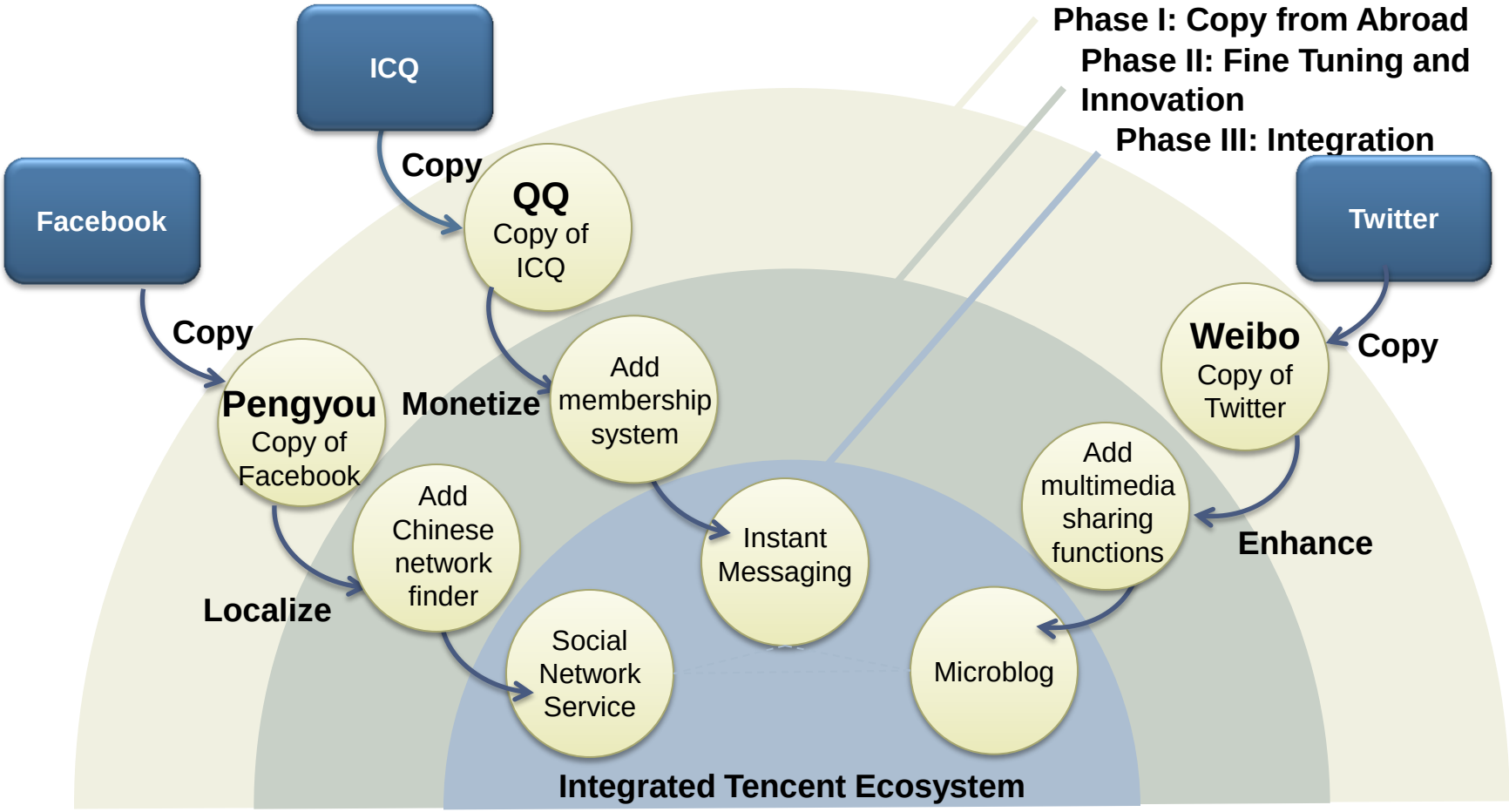
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Overseas	21	39	42	60	65	70	65	60	65	68
Domestic	79	61	58	40	35	30	35	40	35	32
Revenue	2.77	3.5	3.77	5.98	8.5	12.6	18.3	23.7	29.3	32.4

*Note: R&D: Research and development.
Note: Some numbers do not add up because of rounding.
Source: Huawei Technologies Co. Ltd; and Frost & Sullivan analysis.

From "Made in China" to "Created in China"—Case Study, Tencent

Tencent is the third-largest Internet company in the world; it offers integrated and innovative solutions for copy-cat versions of original Internet services.

Tencent's Innovation Model, China, 2011



Source: Tencent and Frost & Sullivan analysis.

Macro-to-micro Implications of From “Made in China” to “Created in China”

Macro-to-micro Implications of from “Made in China” to “Created in China,” China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
From Manufacturing to Innovating	China could be characterized as seeking innovation.	China will be characterized as leading innovation.	• Opportunities for joint ventures with companies from developed countries will arise, especially in technologically developed industries such as the manufacturing, medical, and automotive industries. • Demand for high-level personnel, training, and education services.
	In 2010, China spent 1.8% of its GDP on research and development activities. Of this, more than 70% came from the private sector.	China will spend more than 2% of its GDP on R&D. Over 75% of this will come from the private sector.	
Chinese Brands Go Abroad	Most Chinese brands stayed local.	Chinese brands will go global.	• Opportunities for venture partnerships, investment, and technical cooperation with foreign firms in the markets of developed countries will be prevalent.
	China exported its products and services mostly as OEMs and under foreign brand names.	Chinese brands enter the global market, leading through giant Chinese enterprises	
Copy—Innovation—Integration	Many technologies were copied from abroad.	Innovation will occur in China.	• Investment opportunities for innovative new business models in China will emerge.
	Chinese companies created new services by copying from existing foreign business models. This was especially true for Internet industries.	Chinese companies will build new business models by incorporating know-how from foreign companies.	

Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

Future Business Models—Consumer-initiative Business Model, Value for Many in Rural Market

Future Business Models in China

Consumer-initiative Business Model

Image source: Dreamstime

Value for Many in Rural Markets

Image source: David Cowhig

Source: Frost & Sullivan analysis.

Future Business Models—Consumer-initiative Business Models

Chinese consumers are grouping together through the Internet to lead transactions.

Consumer-initiative Business Models, China, 2011

C2C* E-commerce

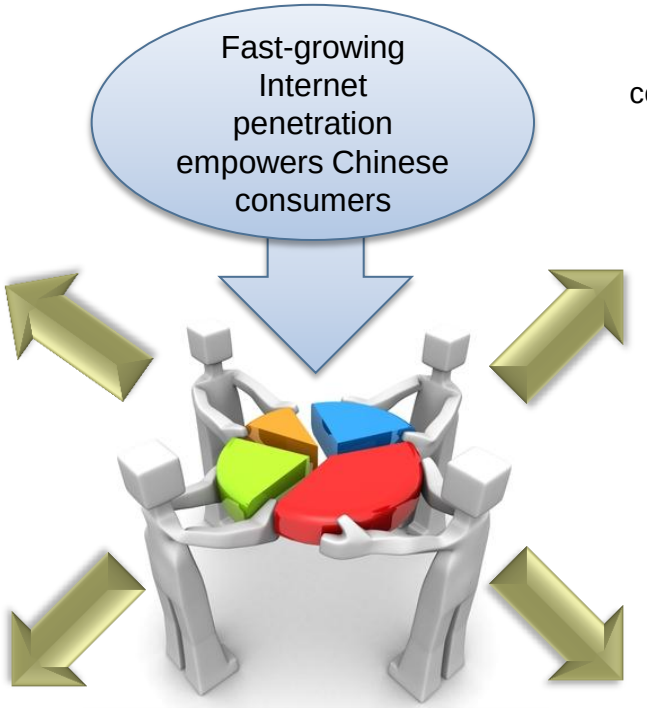
Chinese online C2C transaction sales reached $90 billion in 2011, which was more than two times B2C transactions.

Example: Taobao auction

C2B* Group buy

Consumers assemble to strive for group offers from the seller.

Example: Dianping.com



C2C Lending

There are 4,144 C2C micro-lending companies in China. Total lending reached $58.51 billion in 2011.

Example: Credit Ease C2C Lending

C2B Kick-Start

Consumers sponsor the services they want from SMEs*.

Example: Demohour.com

*Note: C2C: Consumer-to-consumer; C2B: Consumer-to-business; SMEs: Small and medium enterprises.

Image source: Changemakers, carhubindia, itcportal.com, and grameenfoundation
Source: Company Web sites; and Frost & Sullivan analysis.

Future Business Models—Value for Many in Rural Markets

Chinese companies are targeting business models for low-cost products.

Personal Computer

- **Designed for rural markets:** Computers with simple features that can be operated with minimal computer skills.

Market Size:

- Rural PC sales are expected to account for 30 to 40% of national PC sales by 2015.

Participants:

- Dell, Haier, Acer, Lenovo

Domestic Appliance

- **Fitting in rural households:** Lower-priced domestic appliances with smaller capacities and energy-saving features are being sold to rural households.

Market Size:

- Smaller cities will be home to 198 million people among all rising middle classes.

Participants:

- Haier, Suning, Samsung, Panasonic

Mobile Devices

- **Fast-growing demand:** Over 50% of new Chinese Internet users in 2012 were mobile Internet users from rural areas. Mobile networks will cover 98% of rural areas before 2015.

Market Size:

- Rural China will see an increase of 343 million 3G subscribers between 2012 and 2025.

Participants:

- Nokia, Samsung, LG

Rural Logistics

- **Emerging Market:** Rural logistics in China will see widespread growth supported by increasing consumption in rural areas. Demand for express distribution of agricultural produce from rural areas to cities will grow.

Participants:

- Smaller Chinese logistics firms

Image source: Zoi.com; Haier Group; Nokia Corporation; China Agriculture Promotion Platform

Source: China Internet Network Information Center, PRC; Ministry of Agriculture, PRC; Ministry of Commerce, PRC; Ministry of Finance, PRC; P&G; and Frost & Sullivan analysis.

Macro-to-micro Implications of Future Business Models in China

Macro-to-micro Implications of Future Business Models, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Selling Platforms	In 2011, business models revolved around “bricks.”	In 2025, business models will revolves around “clicks.”	• Online platforms for various transactions will increase. Potential platforms would be marketplaces for C2C* produce exchange and platforms for freelance service providers. • Integration between high-street and online platforms will launch innovative omni-channel retail models. • Consumers will become brand ambassadors and advocates for social media. • Corporate spending on conventional market surveys will be reduced. New research approaches—for example, research on consumers’ social media behavior—will become more popular.
	Business was initiated by corporations with conventional market research, product design, and manufacturing models. Of retail revenue, 98.5% from brick-and-mortar stores.	Increase in percentage of consumer-initiated business, virtual transactions, and payments resulting in the creation of new consumer-funded business models.	
Tailoring for the Rural	The rural population was neglected.	The rural population will be targeted.	• Opportunities will arise for international brands to enter the Chinese rural market with innovative offerings in segments such as white appliances and personal care products. • Large logistics firms will partner with or sub-contract logistics activities to smaller local logistics providers in remote areas as business and freight movement in these areas increase. • Retailers will build simplified channels in rural areas. For example, the postal service will be used as a delivery channel.
	Both national and international brands neglected the rural poor as consumers and potential buyers.	Businesses will target the rural poor in China by exclusively launching a wide range of products that are tailor-made for rural households or those in remote areas.	

Note: Numbers are provided according to the timeframe of available data.

*B2C: Business-to-consumer transactions; C2C: Consumer-to-consumer transactions.

Source: Frost & Sullivan analysis.

Future of Mobility—Mobility Integrator Market, Electric Vehicles, Focus on the "Wild Side," Integrated Solutions, Mega City Vehicles

Future of Mobility—Mobility Integrator Market

Cross-interoperability and cooperation between different entities in the ecosystem will be what makes or breaks the future of mobility integration.

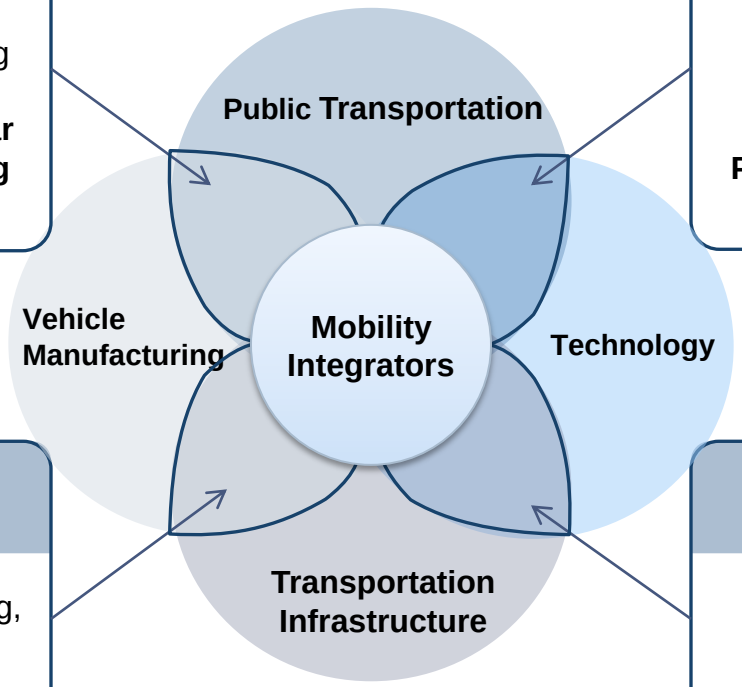
Mobility Integrators Market: Ecosystem, China, 2020

Integration of Vehicle and Public Transportation

Car sharing, bike sharing, parking operators, rentals, leasing
Key Participants: Shenzhou Car Rental, a traditional car sharing firm

Integration of Technology and Public Transportation

Smartphone apps, tracking, ticketing, security, payments
Key Participants: Shanghai Public Transportation Card Co., Local SOEs*



Integration of Vehicle and Infrastructure

In-vehicle telematics, EV* charging, electricity as fuel
Key Participants: AutoNav, Paeto, Navinfo

Integration of Technology and Infrastructure

NFC, GPS, RFID* smart tags
Key Participants: ZTE ITS (platform, monitoring, HD Identification, and terminal)

*Note: SOE: State-owned Enterprise; NFC: Near Field Communication; GPS: Global Positioning System; RFID: Radio Frequency Identification; EV: Electric Vehicles.

Source: Frost & Sullivan analysis.

Future of Mobility—Electric Vehicles

The Chinese government is set to invest $15.8 billion from 2011 to 2020 in the EV* industry.

Government Investment in EV Industry, China, 2011 and 2020

	Investment Area	Investment ($ Billion)
	R&D and Industrialization	7.93
	Vehicle Component Development	4.76
	Promotion and Demonstration	3.17

EV Development		
	Year	
	2011	2020
EV Manufacturers	5	35
EV Models	8	75

Pilot Cities* for EV Industry Development, China, 2009 and Beyond

In the cities mapped, $793.7 million is to be invested to establish a charging infrastructure.

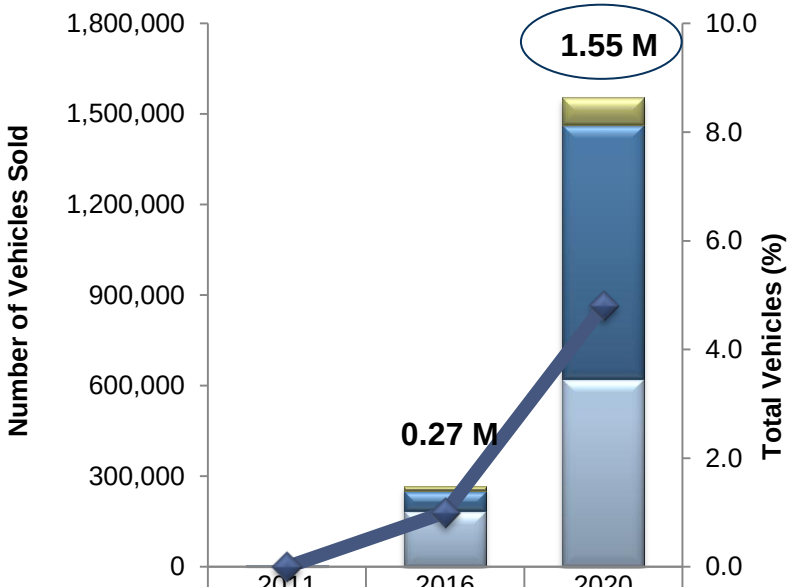
*Note: EV: Electric vehicles. Pilot cities include 25 cities that were selected by the Chinese government for developing a new energy vehicle industry.

Source: Ministry of Finance of China; Ministry of Science and Technology of China; Ministry of Industry and Information Technology of China; National Development and Reform Commission of China; and Frost & Sullivan analysis.

Future of Mobility—Electric Vehicles (continued)

In China, 1.55 million EVs will have been purchased by 2020.

Electric Vehicle Ownership*, China, 2011–2020



	2011	2016	2020
Others	0	15,751	91070
PHEV	1,702	66,571	841,026
CEV	3,810	184,093	622,386
Total Vehicles (%)	0.0	1.0	4.8

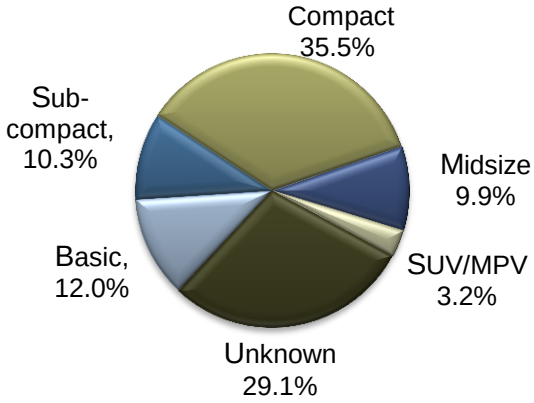
Year

Note: Others include BEV-Battery Electric Vehicles, HEV-Hybrid Electric Vehicles and FCEV-Fuel Cell Electric Vehicles.

Note: Some numbers do not add up because of rounding.

*Note: EV: Electric vehicle; CEV: City electric vehicle; PHEV: Plug-in hybrid electric vehicles; Percent for 2011 total EVs is too small to note.

Electric Vehicle Market Share Breakdown by Segment, China, 2020



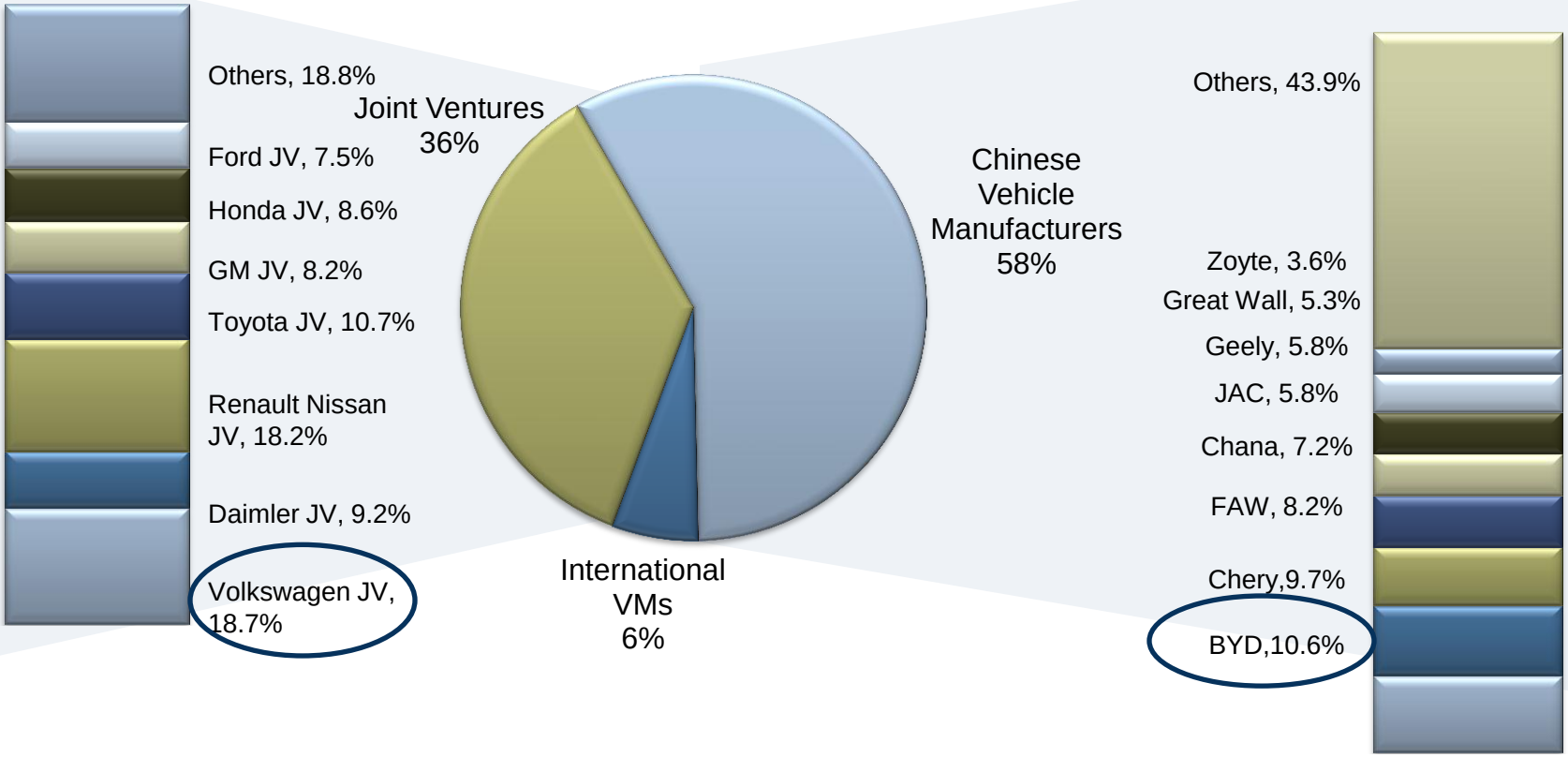
Electric Vehicle Market: Key Suppliers of Battery Packs and Electric Motors, China, 2011	
Powertrain	Manufacturer
Battery Packs	Wanxiang, Lishen, BYD, ANX, A123 System, LG Chem, MGL, Skyenergy, etc
Electric Motors	Ananda, Weiteli, Dajun,Shanghai Edrive,Wanxiang, etc

Source: Frost & Sullivan analysis.

Future of Mobility—Electric Vehicles (continued)

Chinese manufacturers are to account for 58% of the EV* market share in China by 2020. BYD and Volkswagen are projected to be the biggest participants in the market.

Share of Sales in the Electric Vehicle Market, China, 2020



Note: Other Joint Ventures include Chevrolet JV, BMW JV, Mistubishi JV.

Note: Other China Manufacturers include ANANDA, ZHEJIANG, WUHU GENERATOR, XIN Ri, DEHONG, YADEA, SAIC.

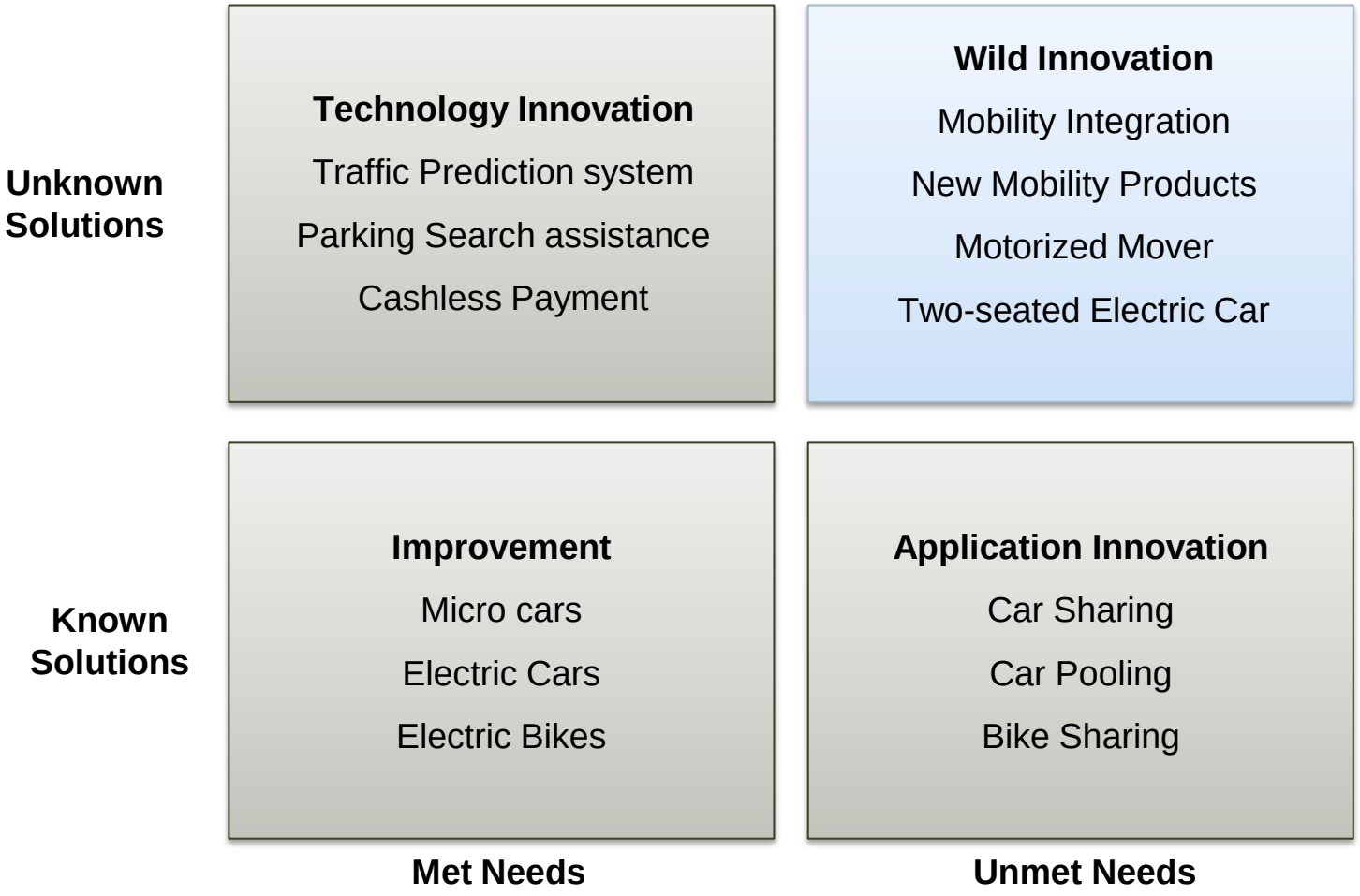
Note: Some numbers do not add up because of rounding.

*Note: EV: Electric vehicle.

Source: Frost & Sullivan analysis.

Future of Mobility—Focus on the "Wild" Side

China's future innovation in mobility will focus on the "wild" side.

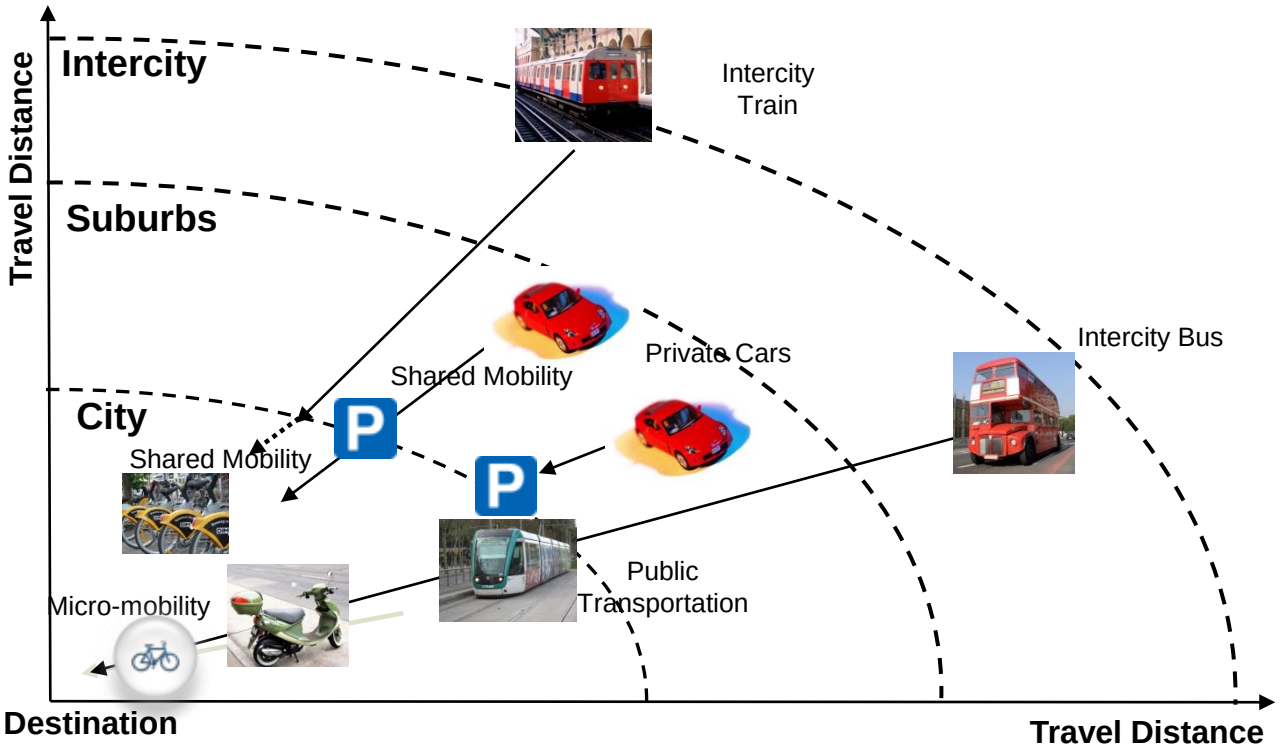


Source: Frost & Sullivan analysis.

Future of Mobility—Integrated Solutions

Multi-modal commuting, combining door-to-door solutions, and using dedicated mobility platforms will be popular.

Future of Mobility, China, 2025



- Door-to-door integrated multi-mobility solutions will be a reality in the future.
- Vehicle manufacturers will offer smart mobility solutions, ensuring first and last mile connectivity.
- Government will encourage public transport with bikes, two-wheelers, car rental schemes
- The market will see new participants in market termed as "**mobility integrators**"

Source: Frost & Sullivan analysis.

Future of Mobility—Mega City Vehicles

From cities designed around cars to cars designed around Mega Cities—BMW i3 and i8 Mega City vehicles will be launched in 2014.

- Autonomous Parking Assistance
- Traffic Jam Assistance
- Pro-active Collision Warning
- Rapid Charging

BMW i3
Electric City Car

Image Source: BMW-i.com

- Pure electric, zero emission
- Market Launch in China: 2014

BMW i8 Plug-in
Hybrid Sports Car

Image Source: BMW-i.com

- Plug-in Hybrid, 1.5L 3 Cylinder Gasoline, 66 g/km
- Market Launch in China: 2014

- Voice Recognition
- Range Assist
- Panoramic Roof

Smartphone app-based remote vehicle management is being developed in-house.

Image Source: BMW-i.com

Multimodal transport and EV-related app includes dynamic intermodal transport planning.

Carbon fiber reinforced plastic

Image Source: BMW-i.com

Aluminium chassis

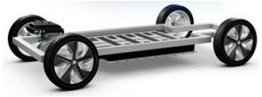


Image Source: BMW-i.com

Opening up iDrive API to third-party app developers

Investment in app companies that provide mobility-related apps

Source: BMW; and Frost & Sullivan analysis.

Macro-to-micro Implications for the Future of Mobility in China

Macro-to-micro Implications for the Future of Mobility, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Mobility Integrators	Non-integrated mobility was the trend.	Integrated mobility will be the trend.	• Opportunities for intellectual transportation solution will be in software and information management. • Opportunities for connected micro-mobility devices— such as embedded telematics and GPS—will emerge. • New business models will be developed to fill the gap between private vehicles and public transportation. One example will be car sharing.
	Mobile apps provide real-time information for travelers in Tier I cities.	Public and private mobility will be seamlessly integrated. Passengers will be able to access all modes of transportation with a single payment method and book journeys with the lowest costs and shortest travel times.	
Charging Infrastructure	Charging infrastructure is in a nascent stage.	Charging infrastructure will be deployed in 25 major cities.	• Opportunities for public-private partnerships for the installation, service, and maintenance of charging facilities will abound. • Opportunities for foreign charging facility firms to partner with Chinese car manufacturers will also arise.
	Chinese government initiated a $15.8 billion project on electric vehicle infrastructure implementation during 2010–2020	Beijing, Shanghai, Shenzhen, Hefei, and 21 other major cities will have 11.4 million charging stations installed by 2020.	

Note: Numbers are provided according to the timeframe of available data.

*EV: Electric vehicles.

Source: Frost & Sullivan analysis.

Macro-to-micro Implications for the Future of Mobility in China (continued)

	2011	2025	Macro-to-micro Implications
Electric Vehicle Market	The EV market was emerging.	The EV market will be mature.	• There will be opportunities in selling e-mobility solutions, such as battery leasing, energy subscription packages, and after-sales services. • Providing green solutions, such as solar panels, wind turbines, and CNHG, to electric car users will provide new opportunities. • Opportunities will be present for urban light vehicles that target urban populations and are equipped with city-orientated functions, such as parking assistance and traffic jam assistance.
	There were 5 car manufacturers providing 8 EV models in 2011. China will see around 6,000 EVs by the end of 2011.	China is projected to have 1.55 million EVs by 2020, with more than 30 different brands and over 70 models. EVs account for almost 5% of city vehicles.	
Electric Vehicle Buyer	In 2011, interest in EVs was minimal.	In 2025, EVs will have a loyal consumer following.	Electric cars will provide value, comfort, safety, reliability, good design, and performance while lowering fuel consumption.
	EVs have not influenced the vast majority of car buyers because of their prices, general performance, and lack of infrastructure support.	Given a rising awareness of environmental issues, EVs are to become a preferred choice.	

Note: Numbers are provided according to the timeframe of available data.

*EV: Electric vehicles.

Source: Frost & Sullivan analysis.

Health, Wellness, and Well-being in China

Health, Wellness, and Well-being

The healthcare industry in China is to become the world's second-largest market by 2025; The healthcare IT software market is to reach $30.5 billion in revenue by 2025.

Healthcare Market, China, 2010 and 2025

	2010 ($ Billion)	2025 ($ Billion)
 **Pharmaceuticals and Medical Research**	56.3	427.8
 **Healthcare IT Software Expenditure**	2.2	30.5
 **Medical Devices**	16.0	79.6
 **Health Spending**	252.2	891.4

Image source: Dreamstime

Leading Participants

- **Medical Devices**
  - Mindray Medical International Limited
  - Beijing Wandong Medical Equipment Co., Ltd.
- **Healthcare IT**
  - Xian Huahai Medical Info-Tech Co., Ltd.
  - Microsoft Corporation (China) Limited Co.
  - Tianjian Technology Group
- **Pharmaceutical**
  - Pfizer
  - Astra Zeneca
  - Sinopharm Group
  - Shenzhen Hepalink

Source: Ministry of Health, PRC; Ministry of Human Resource and Social Security, PRC; National Bureau of Statistics, PRC; APCO Worldwide; and Frost & Sullivan analysis.

Health, Wellness, and Well-being (continued)

The healthcare industry in China is to become the world's second-largest market by 2020; the government will spend $125 billion on expanding civil healthcare access.

Image source: Dreamstime

Rural Healthcare Infrastructure Expansion, China, 2011–2020

29,000

Between, 2011 and 2020, township health centers will be built.

11,000

Between 2011 and 2020, 11,000 community healthcare stations will be built.

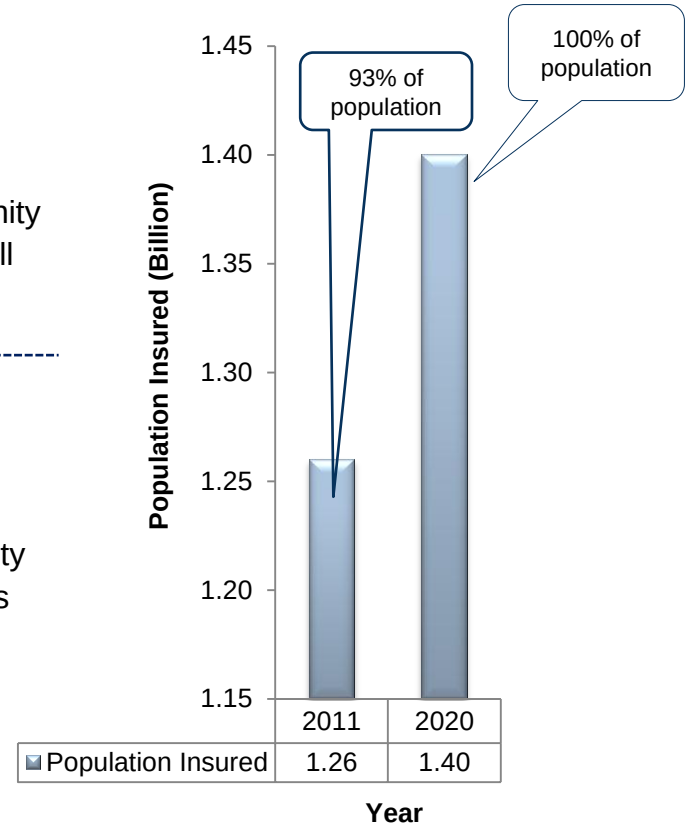
5,000

Between 2020 and 201, 5,000 lead township health centers will be built.

3,700

Between 2011 and 2020, 3,700 community health service stations will be built.

Basic Medical Insurance Coverage, China, 2011 and 2020



Source: Ministry of Health, PRC; Ministry of Human Resource and Social Security, PRC; National Bureau of Statistics, PRC; Insurance Regulatory Commission, PRC; Swiss Re; APCO Worldwide; Frost & Sullivan analysis.

Macro-to-micro Implications of Health, Wellness, and Well-being in China

Macro-to-micro Implications of Health, Wellness, and Well-being, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Spending/ Investment	2011 was characterize by healthcare reform.	In 2025, healthcare expenditure will be over $1 trillion.	• Longevity will increase, creating an aging society. • China will see a 3-fold growth in healthcare expenditure between 2010 and 2020. • China will implement general use of health IT, e-health, and m-health facilities. • Investment focus will move from monitoring and treatment to diagnosis and prediction. • There is a possibility for foreign private hospital brands to enter the Chinese market through joint ventures. • Integrated healthcare solutions will emerge (for example, Medical SPA).
	The nation's healthcare expenditure reached $256 billion in 2011, nearly half of which was financed through private spending.	China will become the second-largest pharmaceutical market by 2020. Government spending on healthcare will account for over 51% of the nation's total spending.	
Insurance	Over 90% of the population was covered by insurance.	Of the total population, 100% is to be covered by public or private insurance.	• China's market potential in the private medical insurance market will increase. • The insurance schemes for rural residents, the unemployed, and the poor will emerge during the medical reform. • Opportunities for supplementary and voluntary insurance will also increase.
	Apart from basic public medical insurance, Chinese spending on private insurance accounted for only 3.4% of the GDP.	Middle-class consumers will look for better protection policies against prevalent diseases.	

Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

Macro-to-micro Implications of Health, Wellness, and Well-being in China (continued)

	2011	2025	Macro-to-micro Implications
Infrastructure	Rural areas still had little access to healthcare.	Of the total population, 100% will have access to healthcare.	• There will be heavy demand for basic medical facilities and consumable medical materials in remote areas. • Middle- to lower-class consumers will shift to public community care centers.
	The Chinese government launched projects worth $125 billion to improve medical infrastructures, especially in rural areas.	By establishing over 11,000 health service stations outside urban areas, China's public medical service will extend its coverage to all areas and the entire population.	

Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

Innovating to Zero

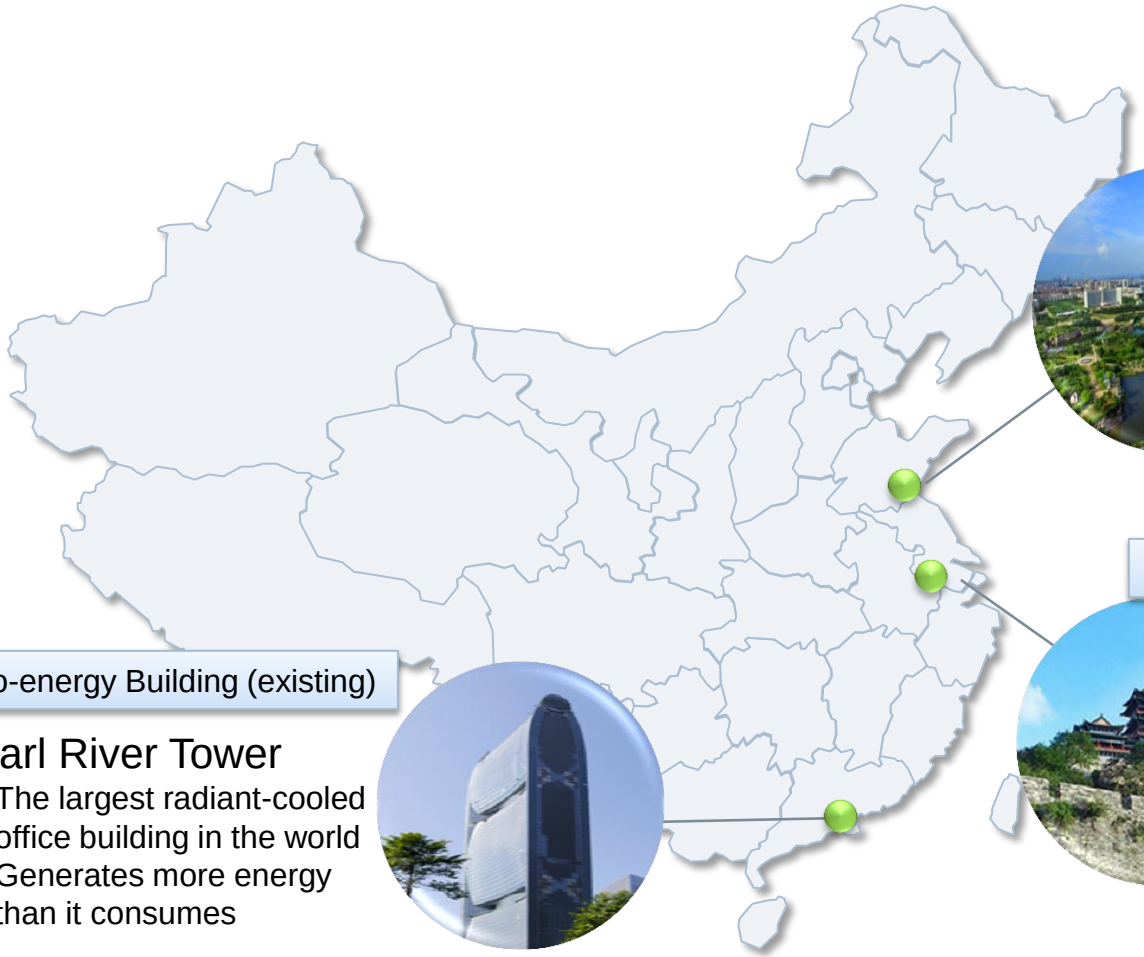
Innovating To Zero—Snapshot of a "Zero Concept" World in 2025

Emerging technologies are innovating to zero emissions and zero waste.

Image source: Dreamstime

Source: Frost & Sullivan analysis.

Innovating to Zero—Examples of Innovating to Zero in China



Carbon-neutral City by 2020

Rizhao

- Solar water heating
- Industrial emissions control
- Renovation of existing buildings into energy-saving buildings

Zero Adolescent Crime Rate by 2015

Nanjing

- Destitute adolescent rescue and protection program
- Construction of specialized schools
- Urban planning of youth activity venues

Zero-energy Building (existing)

Pearl River Tower

- The largest radiant-cooled office building in the world
- Generates more energy than it consumes

Image source: Rizhao Municipal Government; PearlRiverTower by Bradwikins; Montage of Nanjing by Desmond.

Source: Rizhao City Government, PRC; and Frost & Sullivan analysis.

Macro-to-micro Implications of Innovating to Zero in China

Macro-to-micro Implications of Innovating to Zero, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Economy/City	China deployed pilot initiatives such as carbon-neutral cities and cradle-to-cradle recycling, indicating the move toward innovating to zero.	Every major city will see "innovation to zero" concepts, including the following: • Zero fatal accident cities • Zero carbon-discharge cities • Carbon-neutral cities • Zero waste-to-landfill cities	Opportunities will arise in R&D for advanced green technology; for example, innovations in smart materials and new energy solutions will occur.
Business	The zero-defects and zero-faults concepts had been developed and adapted in some manufacturing businesses.	Manufacturing and business management will initiate approaches to the "zero concept." Goals will include zero email, zero accidents, and zero breaches of security.	• Demand for high-value recyclable materials and reusable packaging will rise. • Greener supply chains, with reverse distribution and reverse-flow logistics, will emerge.
Personal Lives	Chinese authorities launched a few trials to encourage zero carbon-discharge and zero crime rates among residents in cities. However, the vast majority of Chinese were barely affected.	With comprehensive education resources for green concepts, the younger Chinese generation will have a better understanding of environmental issues. In general, zero concepts will be practiced on a personal level.	• Lifestyles will be civically oriented and environmentally friendly. • Consumers will become "prosumers," producing their own energy and resources through rainwater harvesting, solar panelled homes, and rooftop harvesting.

Note: Numbers are provided according to the timeframe of available data.

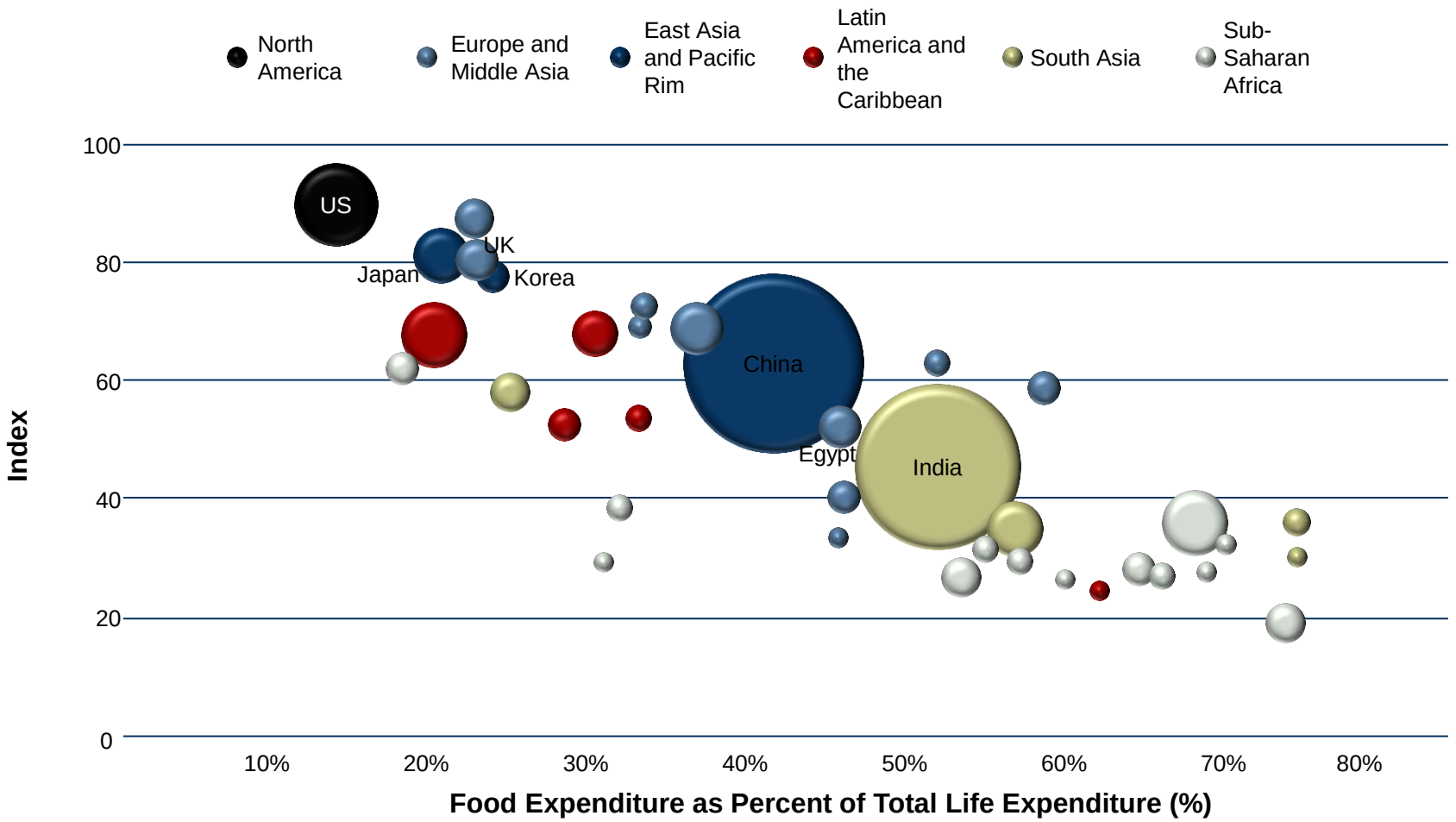
Source: Frost & Sullivan analysis.

Food Security and Safety

Food Security and Safety—Food Security

Globally, China was ranked 39th in food security in 2012. China has a total arable land mass of 18.26 million acres, which averagely to 0.005 hectares per capita.

Global Food Security Index, Global, 2012



Note: Bubble size indicates the population of the nations.

Source: The Economist; Food and Agriculture Organization of the United Nations; and Frost & Sullivan analysis.

Food Security and Safety—Food Safety, Case Studies

The development of the high-end food ingredient industry will accelerate in the 2010s because of common Chinese food safety concerns.

Case Studies: NetEase Pork and 360Buy Rice

NetEase Pork

Antibiotic-free, organic pork from modern, hygienic pig farms

- Produced by Chinese online gaming giant NetEase
- Since 2009, $47.6 million investment in a 1,200 acre agricultural park
- Expected market launch in 2013
- Market size: Chinese consume 600.0 million pigs per year

Lailong Organic Rice

No use of chemical fertilizer Pesticide-free From pollution-free land

- Produced by the top online retailer 360buy.com
- Produce 300 kg per year
- Retail price is $4 per kg, more than four times the price of ordinary rice
- Market size: Chinese consume about 105.00 billion kg of rice every year

Future Agricultural Trends in China, 2012–2025
Branded food
Organic farming
Modern animal husbandry
Streamlined production
Low production volume, high unit value
Online retail food

Source: Netease; 360buy.com; and Frost & Sullivan analysis.

Macro-to-micro Implications of Food Security and Safety in China

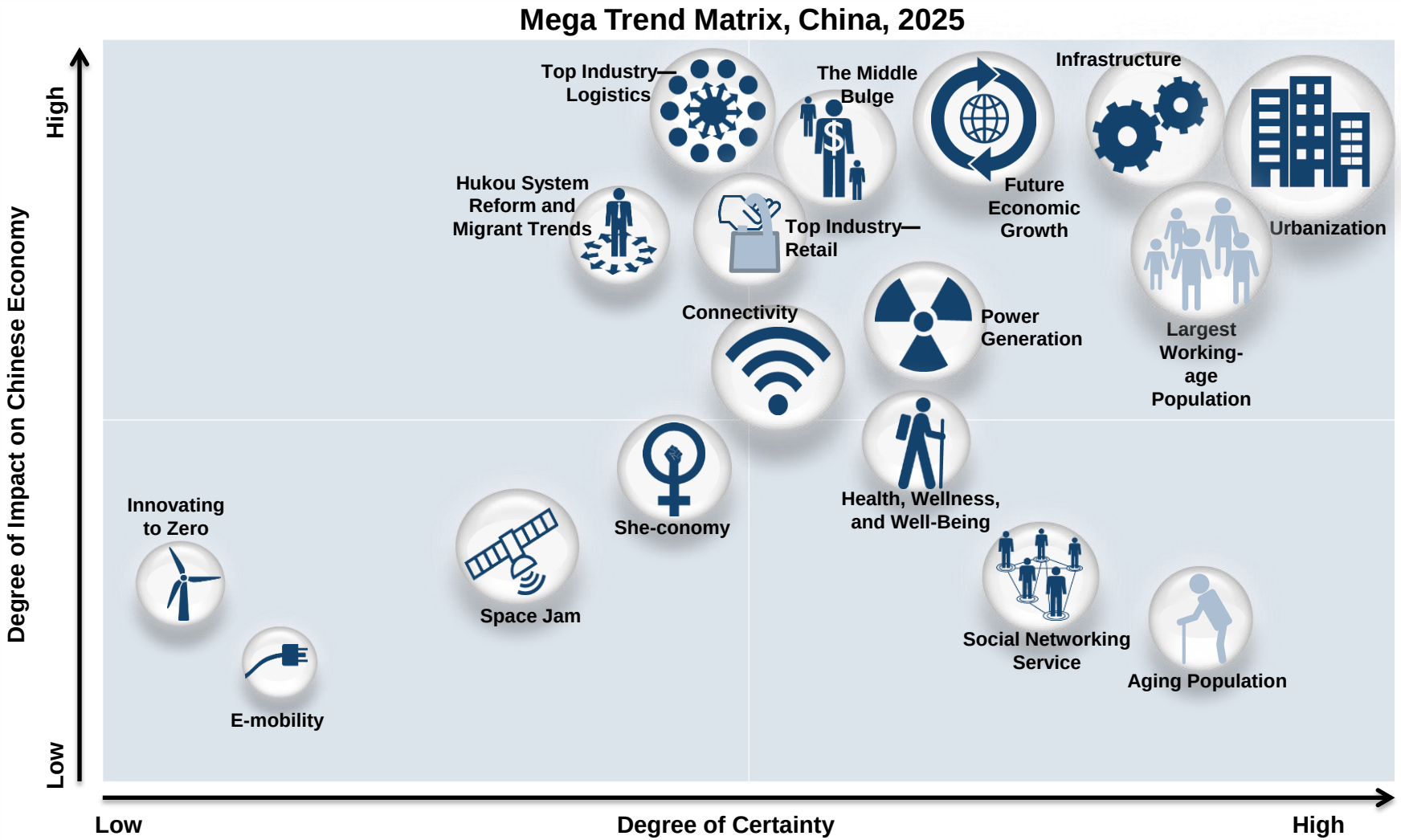
Macro-to-micro Implications of Food Security and Safety, China, 2011 and 2025

	2011	2025	Macro-to-micro Implications
Food Security	In 2011, food security could be characterized as moderate.	By 2025, food security will be much improved.	• There will be demand for industrial agricultural equipment in rural areas. • Opportunities for food logistics to remote areas will emerge.
	China ranked 39th in the global food security index, with about 150 million people subject to food security issues.	With improved agricultural technology and smaller poverty populations, China will see improved food security.	
Food Safety	Concerns over food safety were rising.	Licensed food will become mainstream.	• Demand for high-end food ingredients markets, including organic food, licensed food, and streamlined food production, will arise. • Opportunities will be present in transparent, express food logistics.
	Chinese, 72% considered food safety as their first concern in 2011.	Rising middle-class populations are willing to spend more to ensure food safety.	

Source: Frost & Sullivan analysis.

Macro-to-micro Analysis

Micro-to-macro Analysis—Understanding Implications of Key Mega Trends on the Chinese Economy



Note: The size of the bubble represents the scale of opportunity within each Mega Trend.
These Mega Trends have been plotted based on quantitative and qualitative reasoning.

Source: Frost & Sullivan analysis.

Macro-to-micro Analysis—Taking Mega Trends from Information to Strategy Implementation

Macro

Micro

Mega Trend
Selected trends that impact your business and markets

Urbanization

Sub Trend
A sub-layer of trends, which has a wide-ranging impact

China to have 4 Mega Regions by 2025, each with population over 15 million

Impact to Your Industry
Visualizing the roadmap of these critical forces through scenario-building and macroeconomic forecasts

- New mobility solutions
- Hub and spoke business model for different industries; e.g., the logistics industry

Impact on Future Products and Technology

New electric cars; smart city solutions such as networked infrastructure and integrated transportation telemetrics systems

Analysis of Opportunities and Unmet Needs

Mega City electric cars with small turning radii, autonomous parking in busy cities, Facebook on wheels, and seamless switching from home to car

Image source: Dreamstime.

Source: Frost & Sullivan analysis.

Macro-to-micro Analysis—Impact of Mega Trends on Cities, Businesses, and Personal Lives in China

Macro-to-micro Implications of Innovating to Zero, China, 2025

Mega Trend	Impact on Cities/Economy	Impact on Business	Impact on Personal Lives
Macro		Micro	
Urbanization	• City infrastructure will become integrated, green, and intelligent for transportation, energy, healthcare, and buildings. • China will have a more balanced urban landscape with midland cities and cities in western regions having growth rates parallel to those of the east coast Mega Cities and emerging Mega Cities. • Infrastructure projects will see a lot of PPP* synergies in deploying customized "city solutions."	• Solutions for fast-growing cites will affect the security, healthcare, food, logistics, and entertainment industries. • New mobility solutions will emerge. • Hub-and-spoke business models will be prevalent in different industries (e.g., in logistics).	• Over 40% of city populations will use public transportation. • The majority of household appliance will be energy-saving appliances. • Living standards in the cities will improve due better public transportation infrastructure, electricity supply, and Internet availability.
Largest Working-age Population	China will have the largest working-age population (those between the age of 15 and 64) of 966 million by 2025. This will increase the country's competitive advantage.	• The workforce will be energetic and highly skilled. The labor force will be more educated. • Digital marketing tactics will focus on the Gen Y cohort.	Consumer markets and mass media will focus on the young generation, which will contain the majority of consumers.
"She-conomy"	By 2020, 35% of senior management roles will be held by women.	• New ways of working, such as work from home and flexible office hours, will become common. • Products and solutions supporting dual-income households will increase.	• Egalitarian relationships between men and women will strengthen/ Gender roles will be more flexible. • Late marriages will be prevalent, and the number of house husbands will increase. • Fertility rates will lower, especially if the one-child policy is kept in place.

*Note: PPP: Public-private partnership

Note: Numbers are provided according to the timeframe of available data.
Source: Frost & Sullivan analysis.

Macro-to-micro Analysis—Impact of Mega Trends on Cities, Businesses, and Personal Lives in China (continued)

Mega Trend	Impact on Cities/Economy	Impact on Business	Impact on Personal Lives
Macro		Micro	
Middle Bulge	• As people climb up the social ladder, only 1.5% of the Chinese population will live below the poverty line by 2020. • Parks, shopping centers, and entertainment hubs will thrive on increases in middle-class incomes. • Private car ownership will increase.	• Individuals will spend more on food, apparel, and personal products • Consumption of imitation products will decline due to growing preferences for authenticity. • Branded products will launch more affordable alternatives.	• Standards of living, along with rates of home and auto ownership, will increase. • Middle-class ownership of luxury products will increase.
Social Networking	Increases in the penetration of social media will support growth in the media industry, the retail industry, and business communications, which will influence the overall economy.	• Demand for faster Internet speeds and multimedia content will increase. • Monetizing online social networking services will provide opportunities. • Urban young generation will own more than one connected mobile device. Thus, the potential for new types of portable connected devices is great. • All online advertisement will be personalized or selective. • Demand for real-time virtual and augmented reality will increase, while the use of email will decline.	• People will lead virtual lives, replacing offline personal communications with online ones. • The definition of personal privacy will be ambiguous. • Social networking sites will overtake traditional media outlets as the major source of information.
Economy	• Cities will see upscaled infrastructure facilities for transportation, telecommunication, and waste processes. • Commercial and industrial zones in midland and western China will grow.	• Business investment opportunities will emerge in industrial and outsourcing segments. • The focus of outsourcing will transfer from manufacturing (e.g., with OEMs) to more highly skilled services (e.g., for example, to IT design, creative, and business services).	

Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

Macro-to-micro Analysis—Impact of Mega Trends on Cities, Businesses, and Personal Lives in China (continued)

Mega Trend	Impact on Cities/Economy	Impact on Business	Impact on Personal Lives
Macro		Micro	
Longevity and Aging Population	• Productivity will increase. • The social pension plan will experience a funding crisis.	• Better healthcare services will be demanded, and opportunities in the therapies for chronic diseases will increase. • Opportunities, such as loans with longer mortgages and long-term saving schemes, will emerge in the financial sector. • Opportunities will also be great in post-retirement care—such as in old-age homes—and recreational getaways, such as health spas.	• Retirement will be delayed. • Post-retirement education and entertainment tailored for the elderly will be prevalent.
Space Jam	• Satellite-based tools will be used in city planning. • City weather will be accurately monitored by the use of satellite technology.	Monitoring satellites will be used to support agriculture and traffic planning.	• Satellite TV will provide a wide range of entertainment options. • Communication in and with remote areas will become easier with satellite phones.
Connectivity	• Technology-enabled city services will be created. • Digital mapping and networking facilities will grow among cities. • Intelligent IT-enabled* traffic systems will be popular.	• Cloud computing and cloud storage will become more integrated. • Location-based mobile advertising and mobile banking will increase in use. • There will be potential for new types of portable connected devices.	• Life will be heavily dependent on various types of connected devices. • Growth in the mobile software industry will be huge. Various types of mobile software will developed to support different businesses (e.g., those in retail or entertainment).

Note: Numbers are provided according to the timeframe of available data.
*Note: IT: Information technology

Source: Frost & Sullivan analysis.

Macro-to-micro Analysis—Impact of Mega Trends on Cities, Businesses, and Personal Lives in China (continued)

Mega Trend	Impact on Cities/Economy	Impact on Business	Impact on Personal Lives
Macro		Micro	
Infrastructure Development	• From 2013 to 2020, infrastructure spending will be largely focused on transportation, telecommunications, and power generation. • Air, rail, and water traffic will increase.	• The increase in airports, ports, and air traffic will create business opportunities for logistics and tourism.	• Rise in urban living standards will rise with improvements in power supplies, public transportation, and water supplies. • Time spent on transportation will be reduced considerably.
Power Generation	• China to improve its ultra-high-voltage transmission line network to major cities • Urban areas are expected to have a power supply reliability of 99.9555% • China will have 100% smart meter penetration by 2016.	Wind, solar, and biomass sources will provide alternative energy.	• The average Chinese will become more conscious of his or her energy consumption. • Use of smart grids, smart meters, and appliances with smart technology will increase.
Top Industry—Retail	• China will have the largest retail market in 2015. • Public areas, such as railway stations, will feature “online” or “virtual” kiosks.	• New business models, such as cross-channel retail, will be created. • Online retailing will be integrated with other channels. • Local marketing tactics, such as advertising in cinemas, product bundling, and high discounts, will multiply investments, • Virtual stores and kiosks will be installed in public areas, such as railway stations.	• Shopping will become more convenient because retailers will provide multiple shopping channels, such as physical stores and virtual stores. • Retailers’ will improve their interaction with shoppers. Technology will be used to record and analyze buying habits.

Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

Macro-to-micro Analysis—Impact of Mega Trends on Cities, Businesses, and Personal Lives in China (continued)

Mega Trend	Impact on Cities/Economy	Impact on Business	Impact on Personal Lives
Macro	Micro		
Top Industry—Logistics	• The logistics industry will grow in relation to fast GDP* growth. • Logistics hubs to emerge in inland and western China, while manufacturing centers will move to the west.	• Demand for express delivery services will increase with rapid urbanization. • Demand for services and support from third-party logistics firms will increase with an online retail boom.	• Shopping and delivery services will become more convenient. • Highly developed logistics services will include express and tailor-made delivery.
Political Economy	• Migration to Tier II and Tier III cities will increase, resulting in a faster growth rates in these cities than in first-tier Mega Cities. • Slums may potentially form in Tier I and Tier II cities as the low-income migrant population increases. • As exodus from rural areas will result in a shortage in the young labor pool. • The Great Firewall will weaken in control as more netizens join the social media community.	• Fast-growing cities will demand solutions in public transportation, security, healthcare, food, logistics, and entertainment. • Private vehicle ownership will increase. • Automatic agricultural equipment will replace manpower in rural areas.	• Intercity migrants will be offered an opportunity to register with their local Hukou System and its accompanying medical and social welfare systems. • Chinese people will be able to move between cities more freely, thus lowering difficulties in business recruiting and relocation. • Social networking sites will overtake traditional media outlets as the major sources of information.
Electric Mobility	• Charging stations will be built in 25 pilot cities. • Charging stations will be multi-faceted, offering other products and services such as confectionaries, diagnostic tools for cars, and garage advisory services.	• Opportunities in selling e-mobility solutions—such as battery leasing, energy subscription packages, and after-sales services—will increase. • Opportunities will abound in green solutions—such as in providing solar panels, wind turbines, and electric car charging facilities.	• Electric cars will meet the new generation's desire for cars with value, comfort, safety, performance, low fuel consumption, reliability, and good design.

*Note: GDP: Gross domestic product

Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

Macro-to-micro Analysis—Impact of Mega Trends on Cities, Businesses, and Personal Lives in China (continued)

Mega Trend	Impact on Cities/Economy	Impact on Business	Impact on Personal Lives
Macro		Micro	
Healthcare Industry	• The Chinese government will fund healthcare centers exclusively for county and rural areas. • Basic medical insurance will cover 100% of population before 2020.	• Point-of-care services will expand beyond hospital territories to “mobile vans” and e-healthcare. • Healthcare will be made more affordable for the poor, without quality compromises. • Opportunities will emerge in rehabilitation centers, medical textiles, and medical equipment. • Training and education will improve for doctors, managers, nurses, clinical researchers, and workers in healthcare management. • Telemedicine and medical outsourcing will be popular. • Specialized hospitals will be located in city centers, and walk-in clinics will be located in city suburbs.	Uptake of health insurance will increase.
Innovating to Zero	Cities will encourage innovation concepts, such as the following: • Zero sewage discharge cities • Cites with zero fatal accident • Zero carbon-discharge cities • Carbon-neutral cities	• Use of green technology will increase. • Use of recycled materials will increase.	Citizens will embrace an environmentally conscious lifestyle.

Note: Numbers are provided according to the timeframe of available data.

Source: Frost & Sullivan analysis.

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Appendix

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