



China's Energy Development Perspective and Energy Challenges

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Content

- **Current Development Situation**
- **Challenges in Energy and Environment**
- **Opportunities and Policy Efforts**





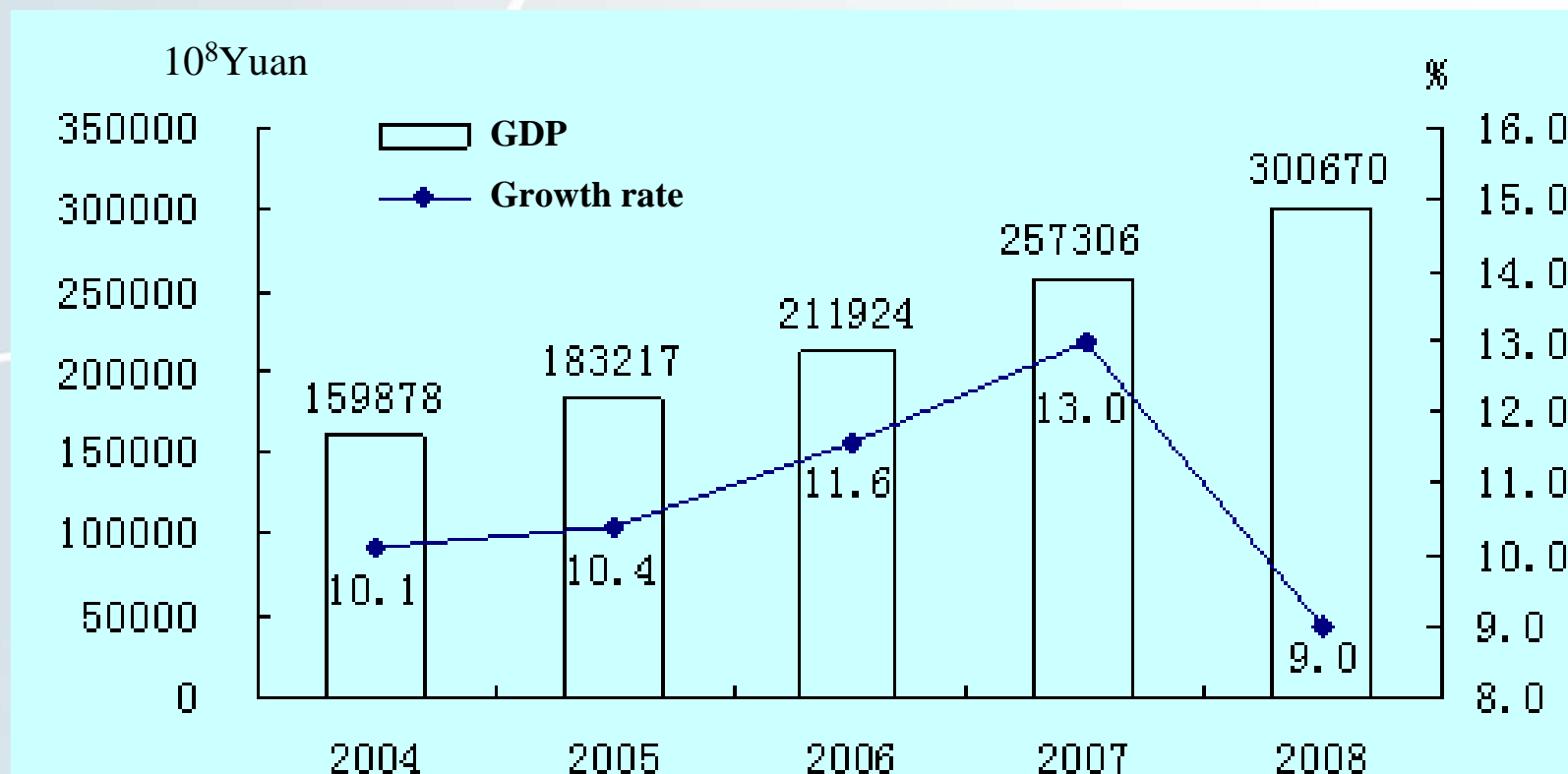
Current Development Situation of China



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Economic Situation of China In 2008

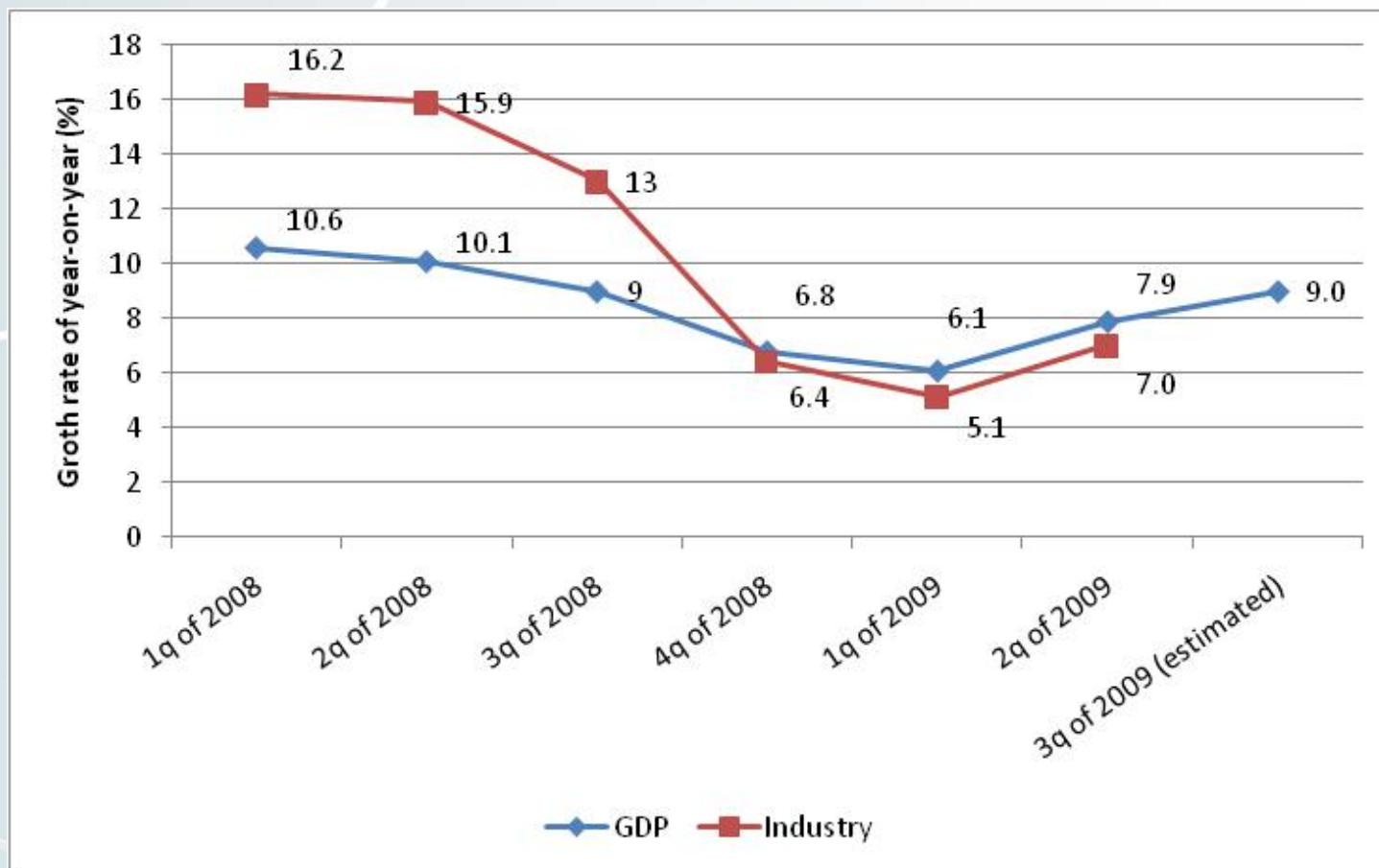


In the last year, China had faced with a lot of disadvantageous factors, such as, serious rain-snow freezing calamity in China southern area, the Wenchuan destructive earthquake and the global financial crisis, China economy still kept a relative rapid growth, the annual increasing rate was about 9%. It was lower 4 percent than 2007, and it is the first time for the rate to be lower than 10% since 2003.





The Comparison of Year-on-year Growth Rate by Quarter

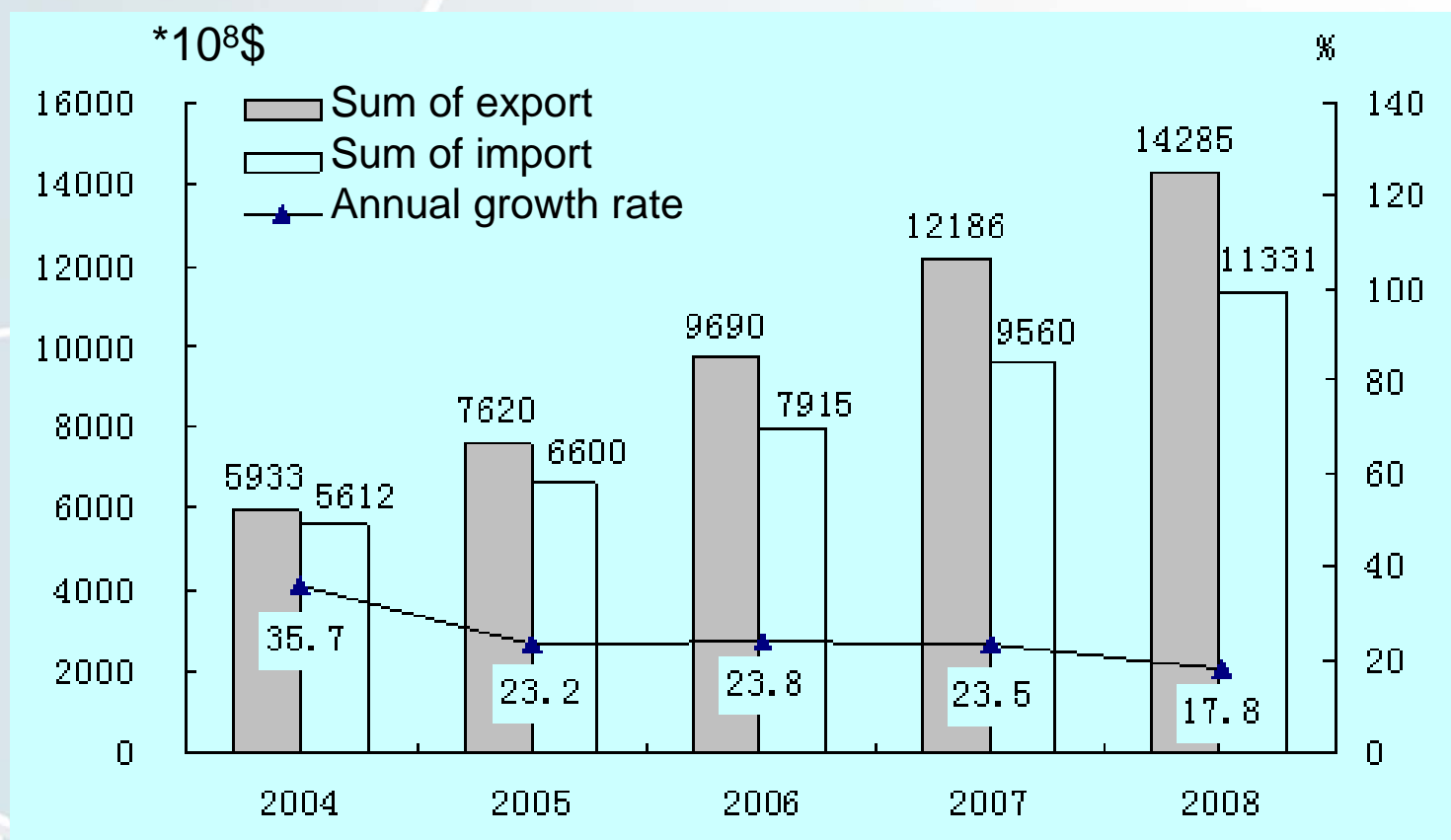


In special, the growth rate of China industry went down quickly in the fourth quarter last year, just 6.4%, and began to rebound since the second quarter of 2009.





Economic Situation of China In 2008

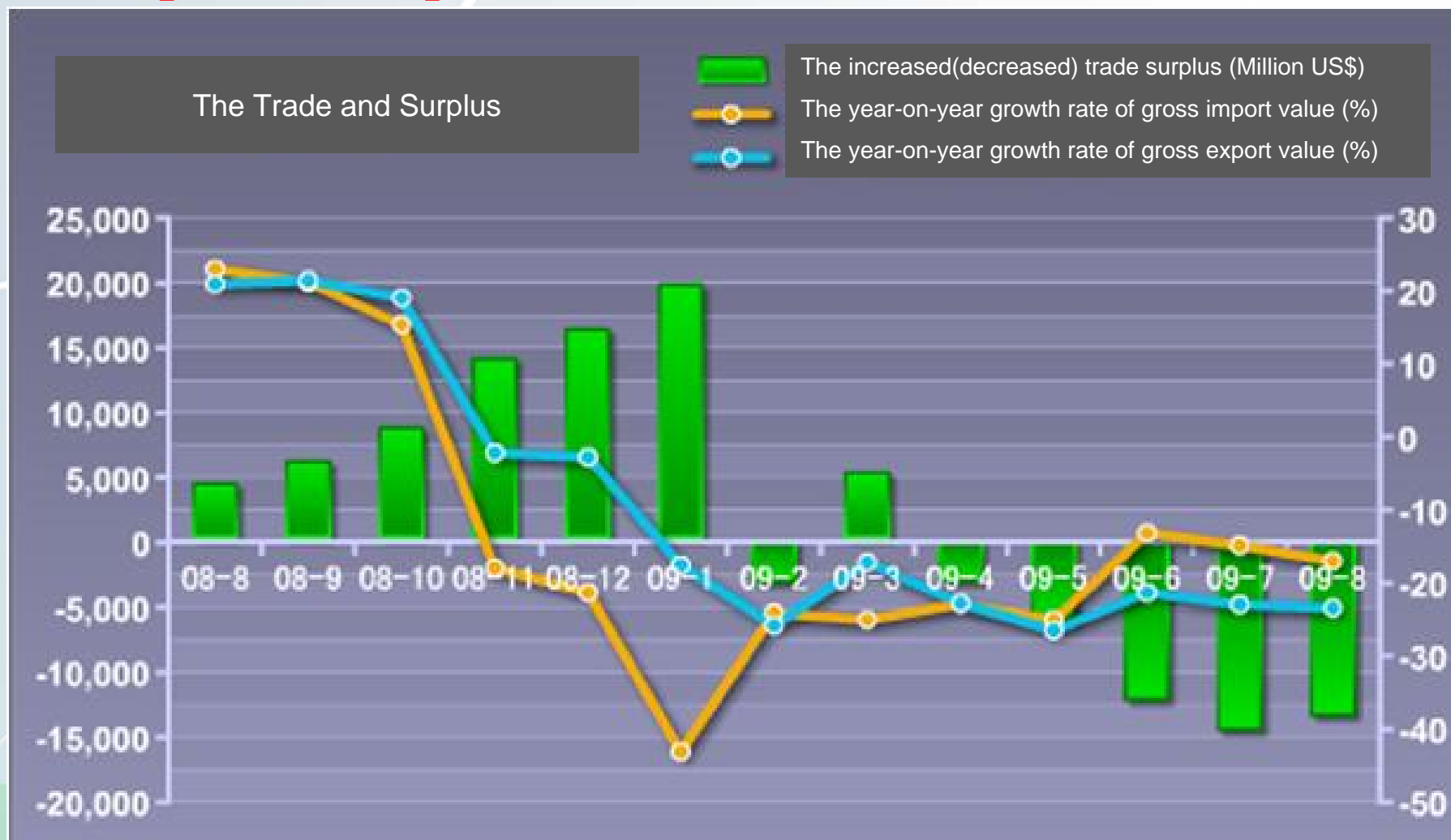


The growth rate of the sum of the import and the export fell down quickly too, lower 5.7 percent than 2007.





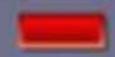



Import and Export





The Troika of Economy Expand: export, expense and invest

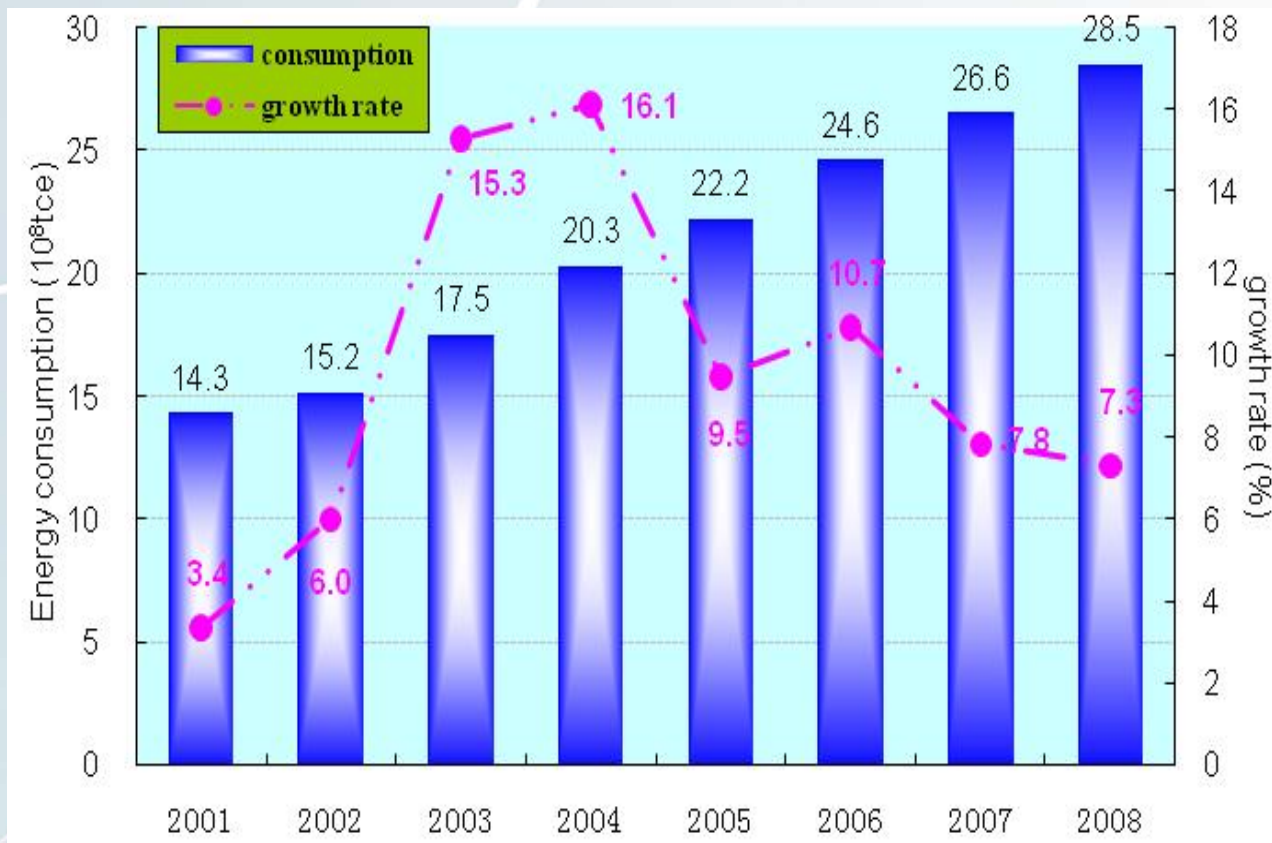
-  The year-on-year growth rate of urban fixed-asset investment (%)
-  The year-on-year growth rate of total retail sales of consumer goods (%)
-  The year-on-year growth rate of gross export value (%)
-  The year-on-year growth rate of industrial added value (%)



Energy Market of China In 2008



Energy consumption of China



- World of 2008 , total energy consumption is 11294.9Mtoe,1.4% growth rate than 2007;
- The total energy consumption of China is 2002.5Mtoe , the second largest consumer in the world;
- In 2008, the energy consumption in selected countries:
 - US -2.8%,
 - Japan -1.9%
 - Australia, -4.2%
 - OECD, -1.3%
 - EU, -0.5%
 - China,7.5%

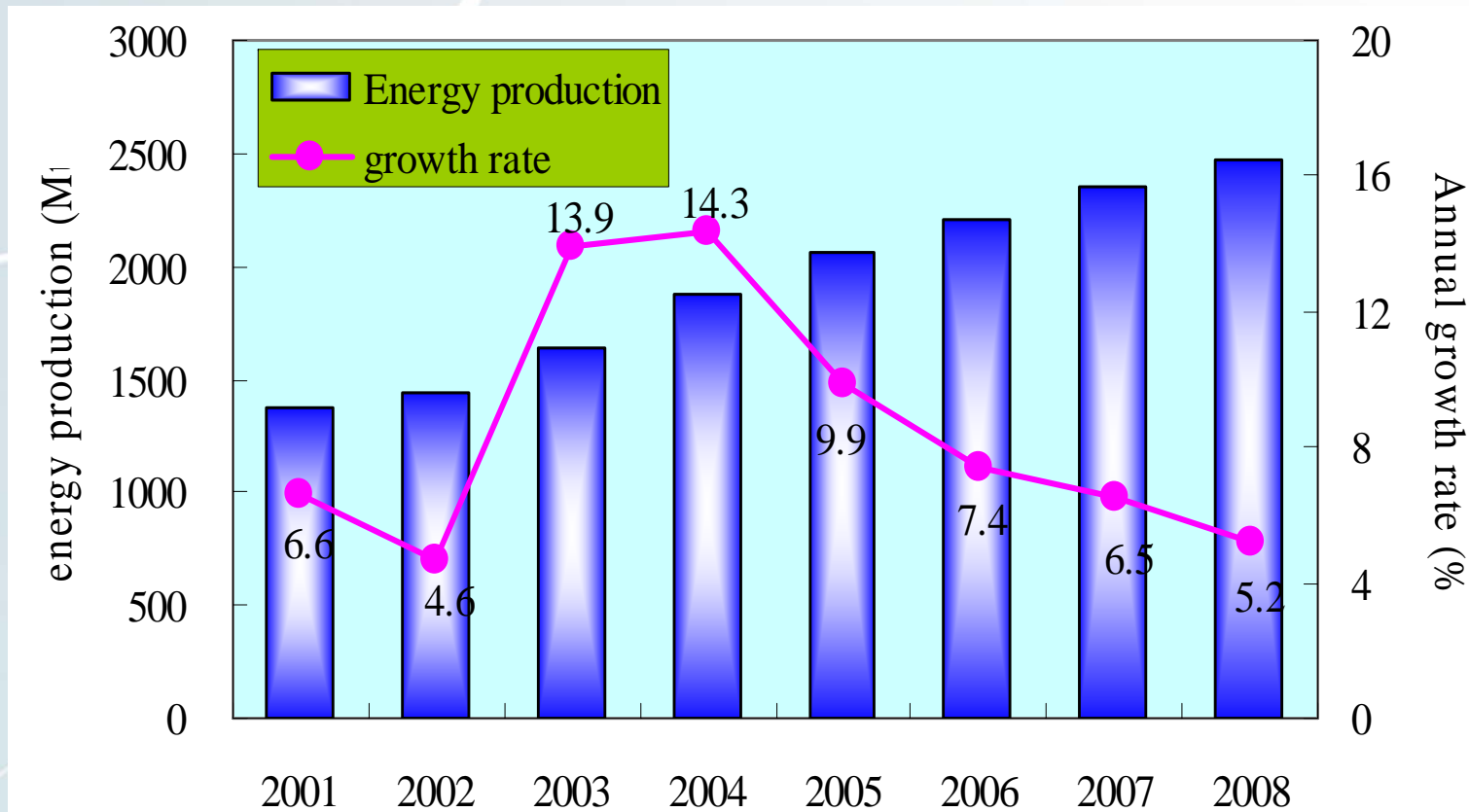
In last year, the energy consumption was 2850 Mtce, an annual growth rate was about 7.3%, and it was the lowest since 2002.



Energy Market of China In 2008



Energy production of China



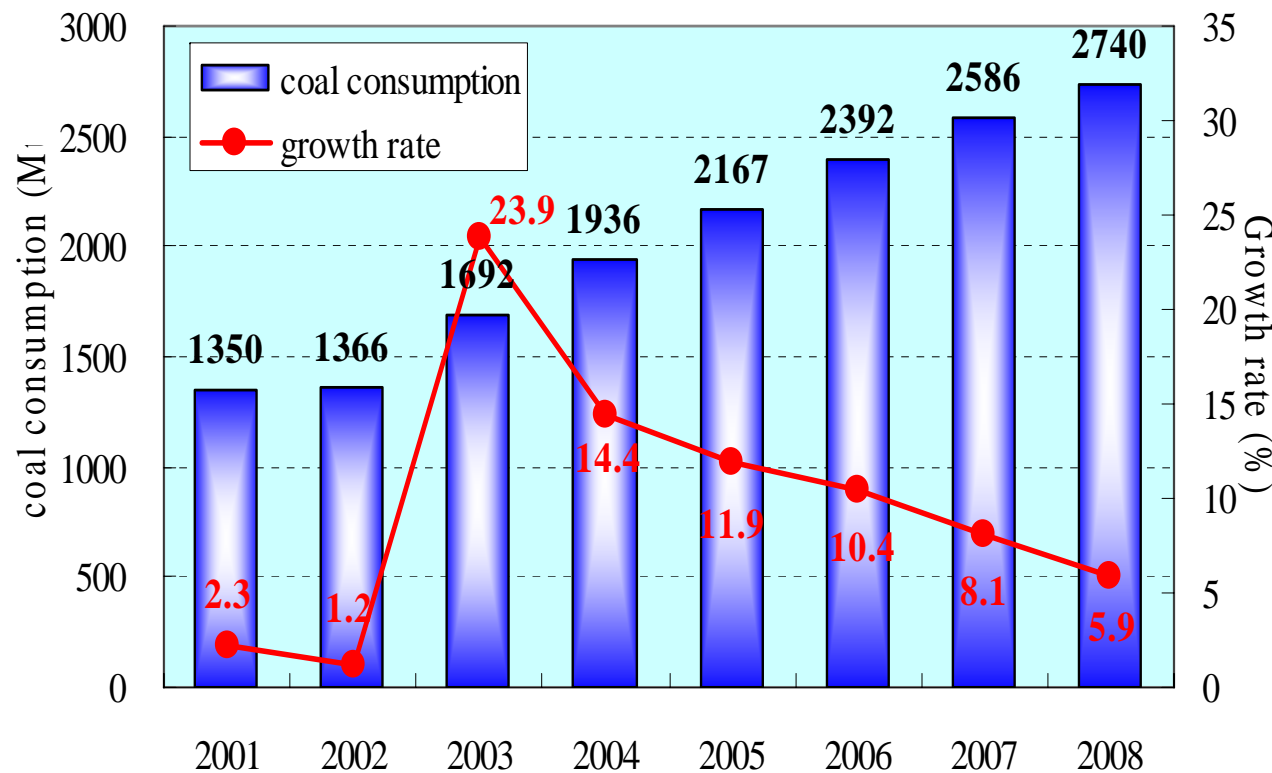
The domestic primary energy production was about 2600 Mtce, and the annual growth rate was about 5.2%, lower 1.3 percent than 2007, and was the lowest since 2003.



Energy Market of China In 2008



Coal consumption of China

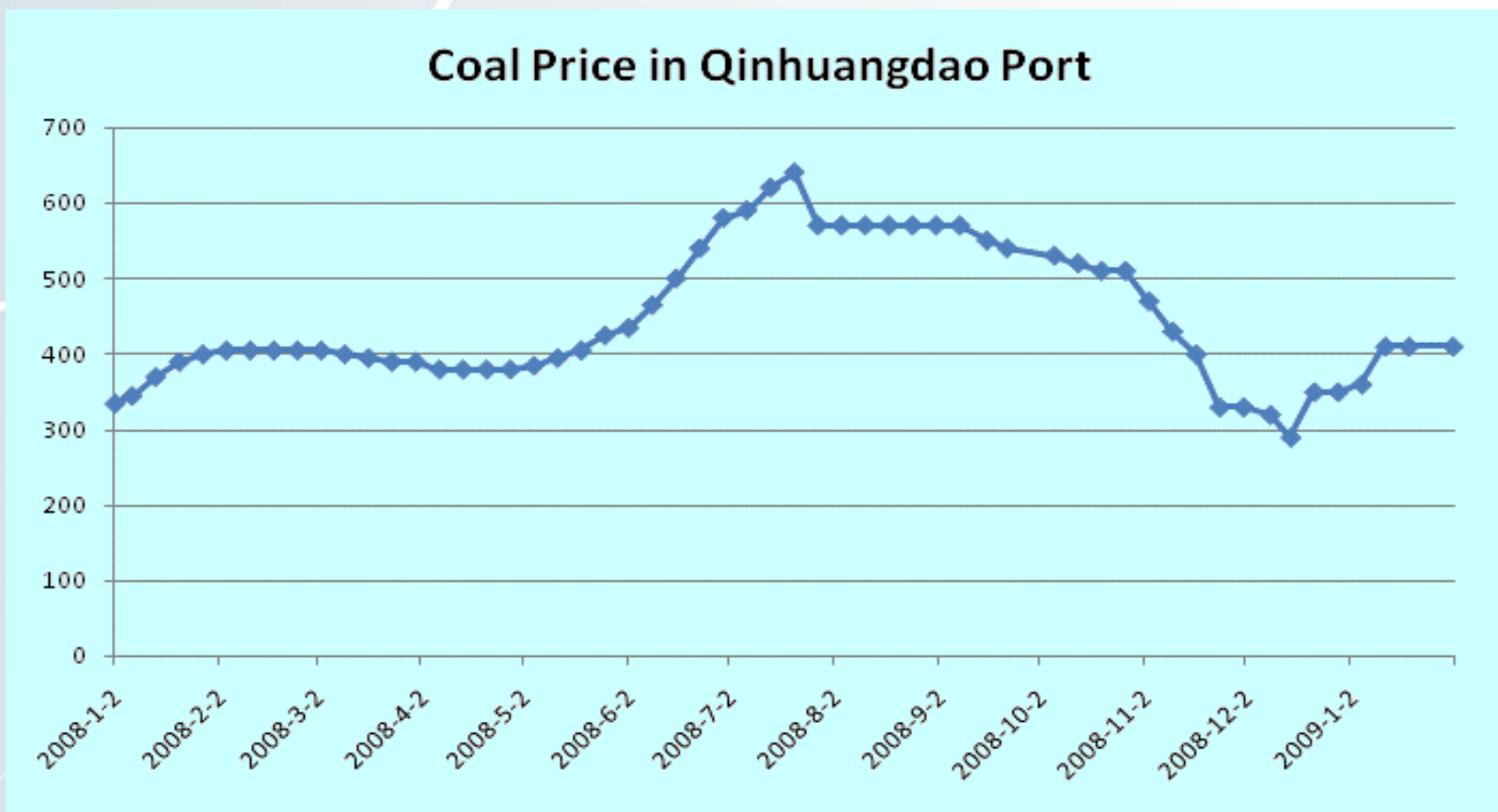


- In 2008 , the coal consumption in the world amounted to 3303.7Mtoe , increase 3.1 % ,
- Among which,
 - U.S -1.7%
 - EU -5.4%
 - OECD -1.9%
- China: consuming 1406.3Mtoe , 42.6% of the world , the largest coal consumer
- 2.5 times than US, the second largest consumer
- The total of the top2 and top 10 coal consumer

Coal consumption in 2008 continued quicker growth at AAGR of 5.9% and reached around 2.74 billion tons. However, its incremental pace started decrease after Sept. due to the decline of growth rate in major coal consumption sectors like power sector, iron & steel industry etc.;



Energy Market of China In 2008



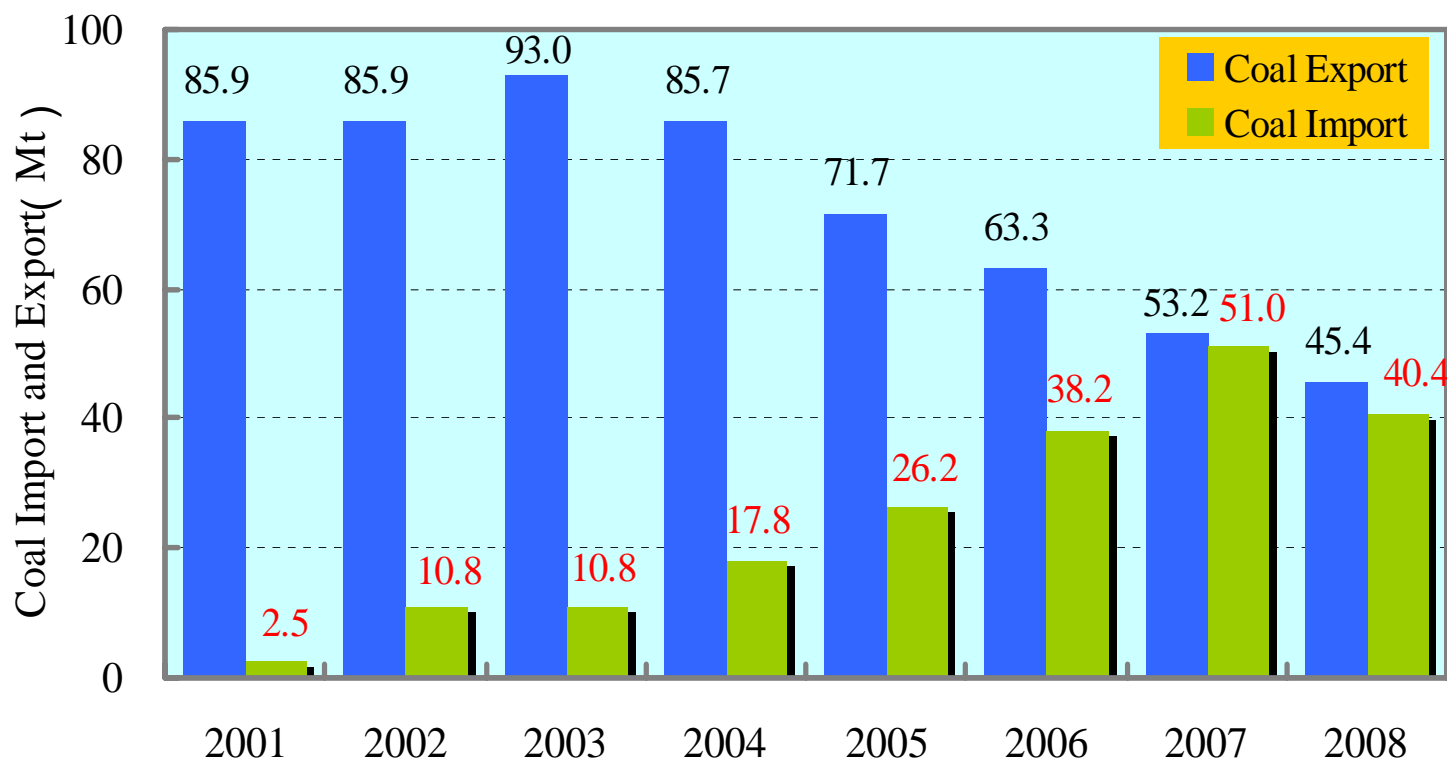
Coal price in 2008 kept rising during the second quarter and rapidly decline from the second half year because both international coal price and domestic coal consumption dropped; coal price at the end of December was just half in July.



Energy Market of China In 2008



Coal Import and Export of China



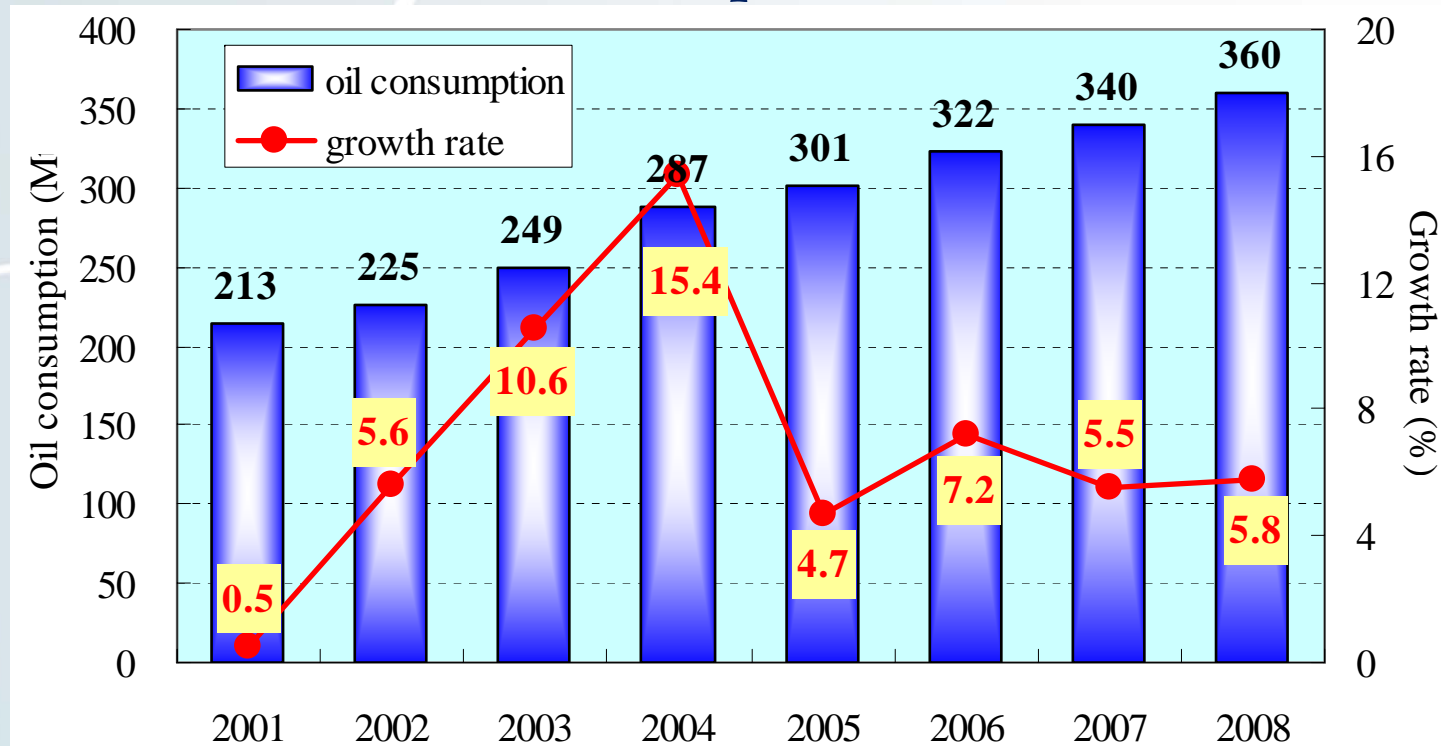
The sum of coal export and import was respectively 45.4 Mt and 40.4Mt, and lower 14.6% and 20.8% than 2007; The net coal export was about 5Mt, and added 2.88Mt than 2007. Due to Coal market will face a oversupply in 2009, the net export may keep increasing.



Energy Market of China In 2008



Oil Consumption of China



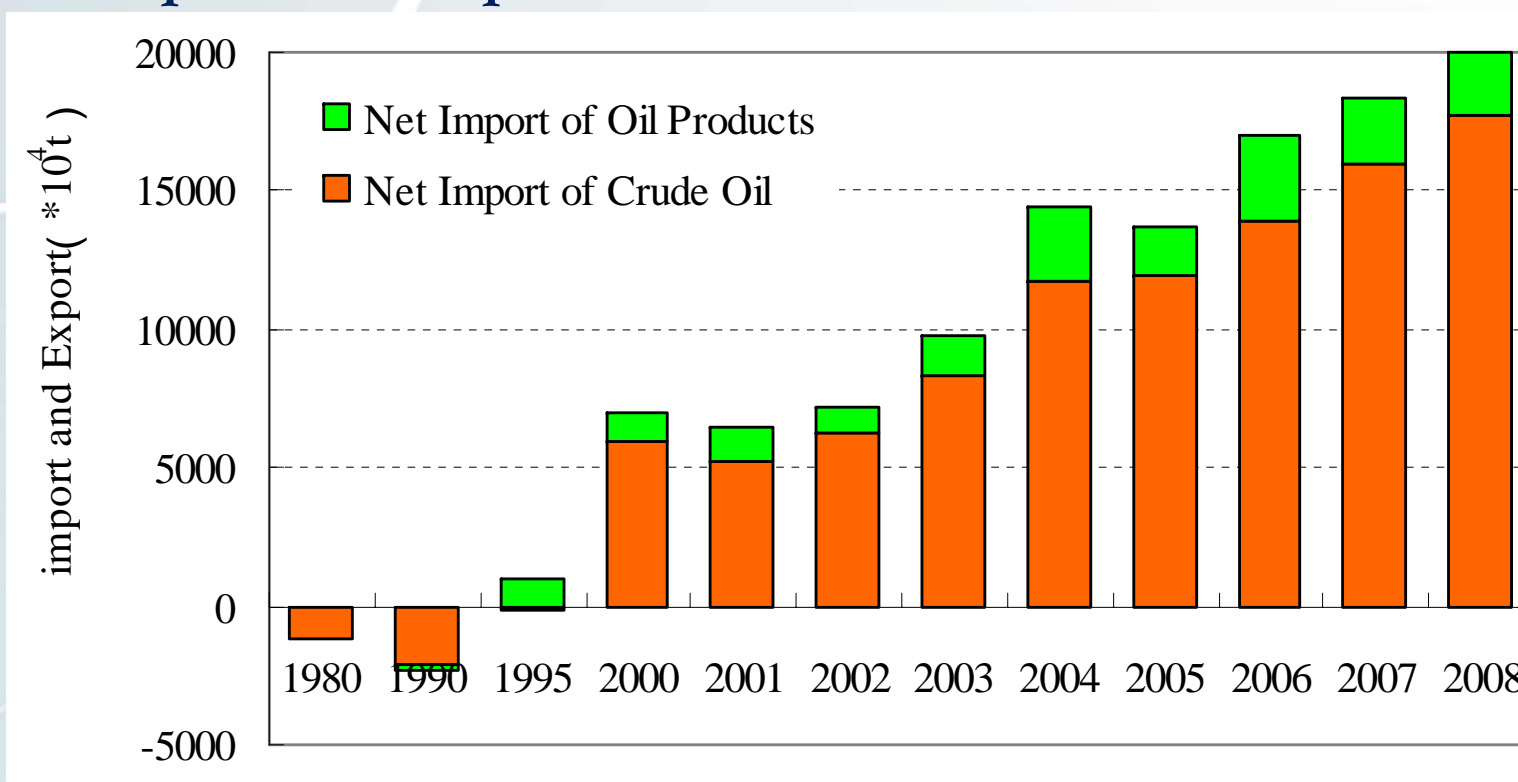
- China kept a higher growth rate of oil consumption in the whole year of 2008 and crude oil consumption reached 360 Mt at growth rate of 5.8%;
- Domestic crude oil production increased by 2.3% from the previous year, the highest growth rate in the last three years and reached 189.73 Mt in 2008;



Energy Market of China In 2008



Oil Import and Export of China



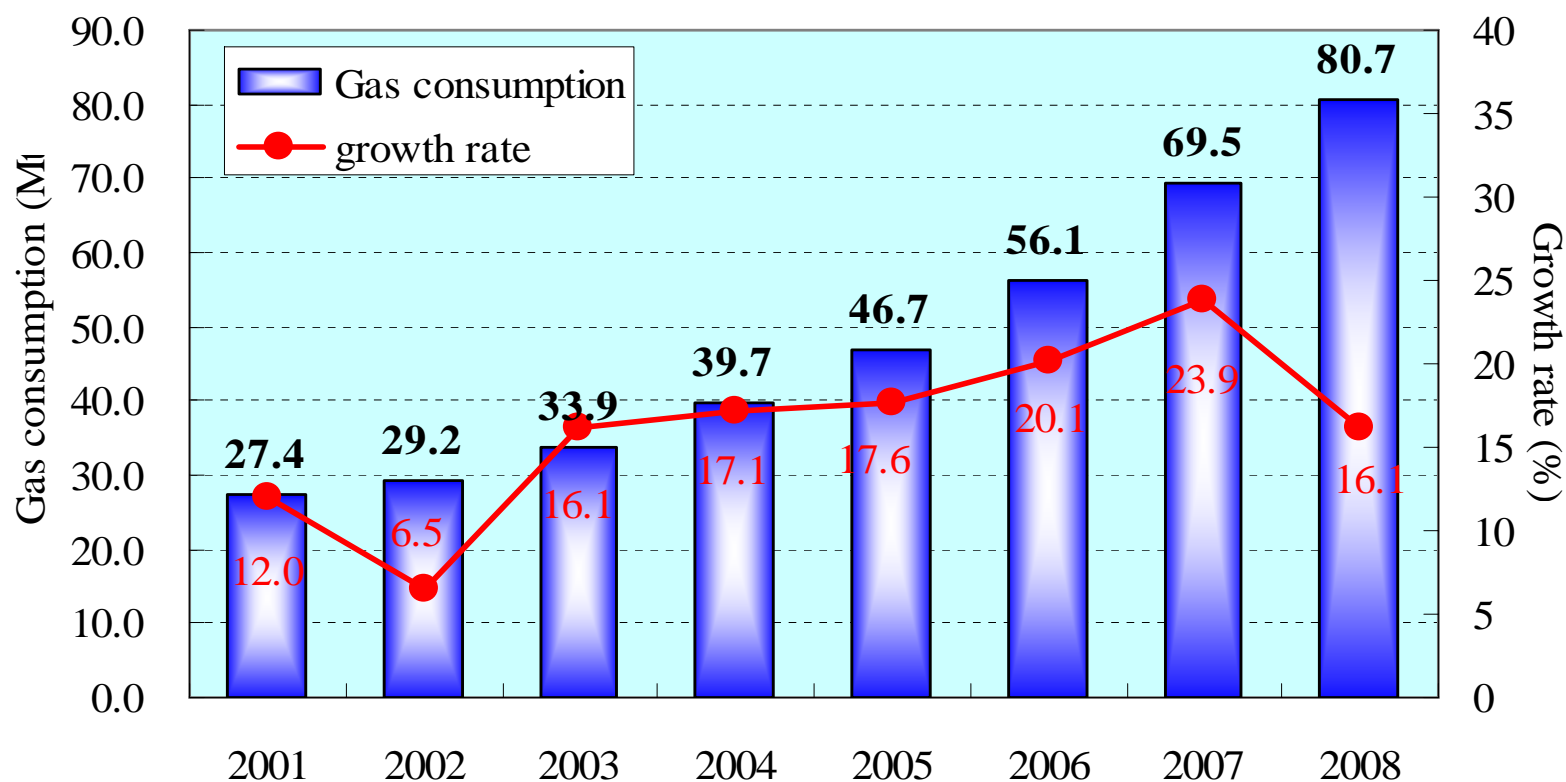
China oil net imported was close to 200 Mt in 2008, at annual growth rate of 12.5%. Import dependence was over 50%.



Energy Market of China In 2008



Natural Gas Consumption of China



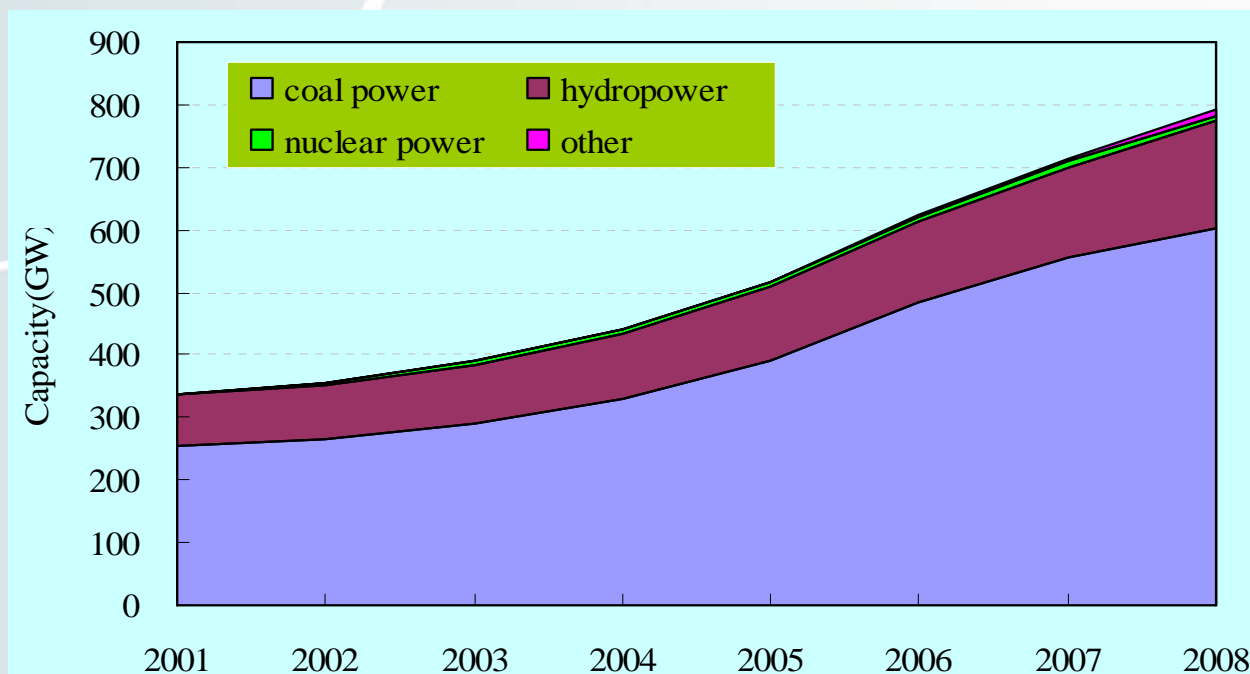
- Domestic natural gas supply increased very rapidly, and totalled 76.1 BCM, at a rate of 12.3%
- Gas proportion in the primary energy supply is still quite small;
- China importing LNG 3.34 Mt in 2008, increasing 14.5% compared to 2007.



Energy Market of China In 2008



Power Installed Capacity of China



- China power industry kept rapid development in 2008. New incremental capacity reached 90.5GW, of the total, 20.1GW for hydropower;
- Total wind power installed capacity came to 10 GW, ranking the fifth in the world;
- Nuclear power plants with 15.12 GW of installed capacity has been constructed in last year, it was the sum of the past 20 years.
- Total electricity consumption reached 3.43 TkWh, at an annual growth rate of 5.2%, the elastic coefficient was 0.58, the first time for lower than 1 since 2000.



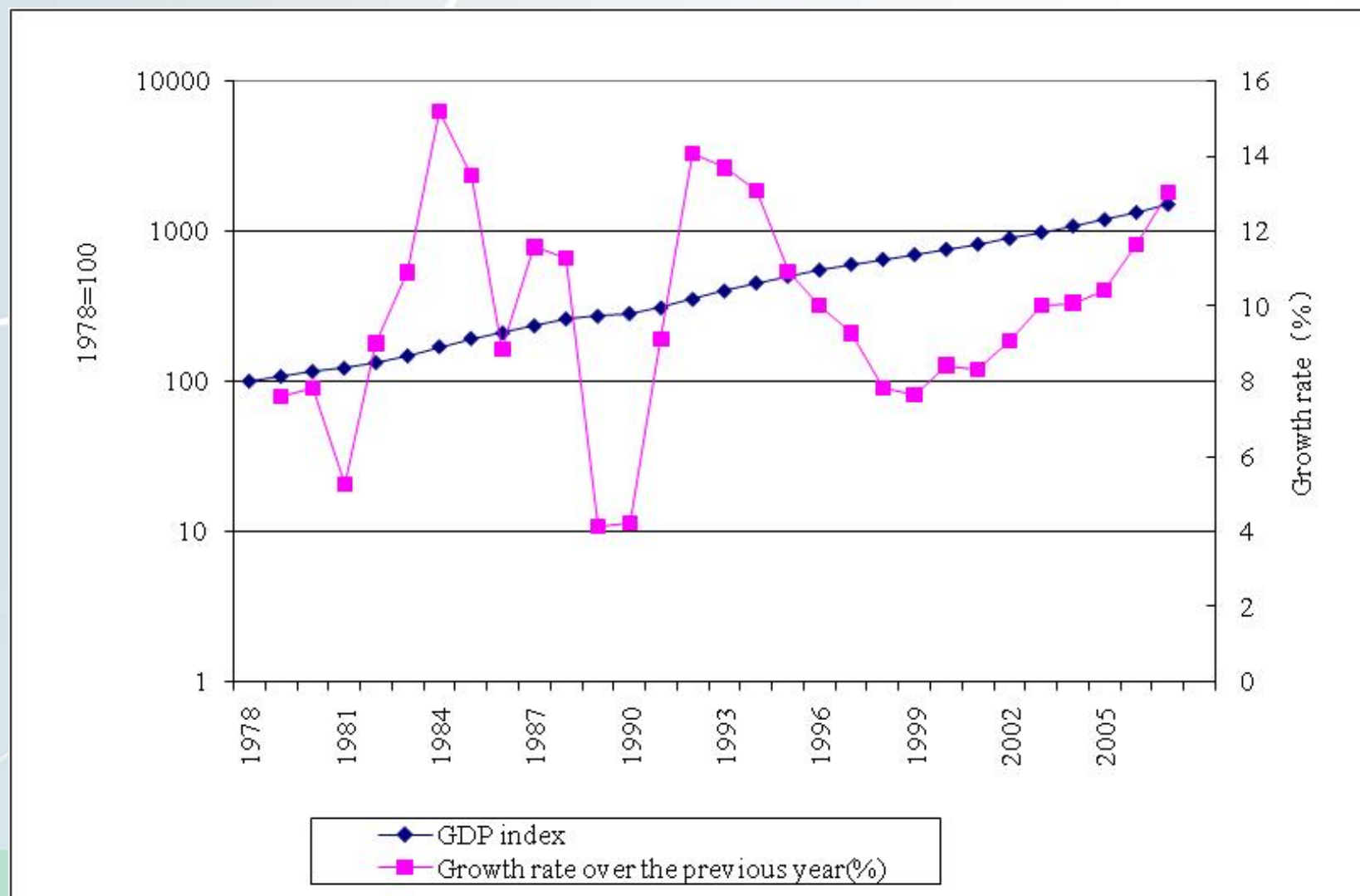


Challenges in Energy and Environment



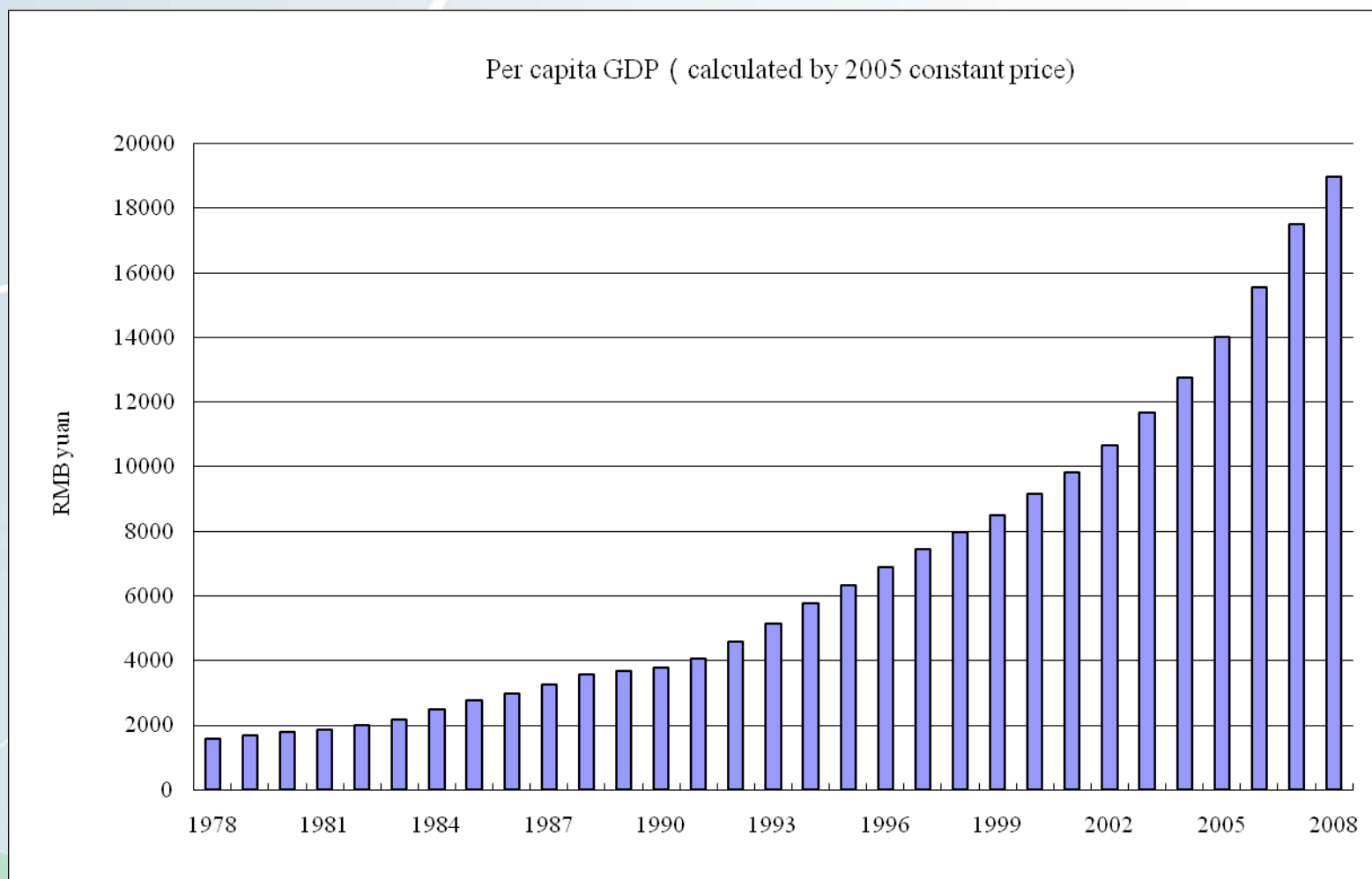
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Great achievements yielded with the reform and opening-up of 30 years





Great achievements yielded with the reform and opening-up of 30 years



Hongkong?

Chongqing, western region!

Sydney?



Qingdao,
Shandong

London?

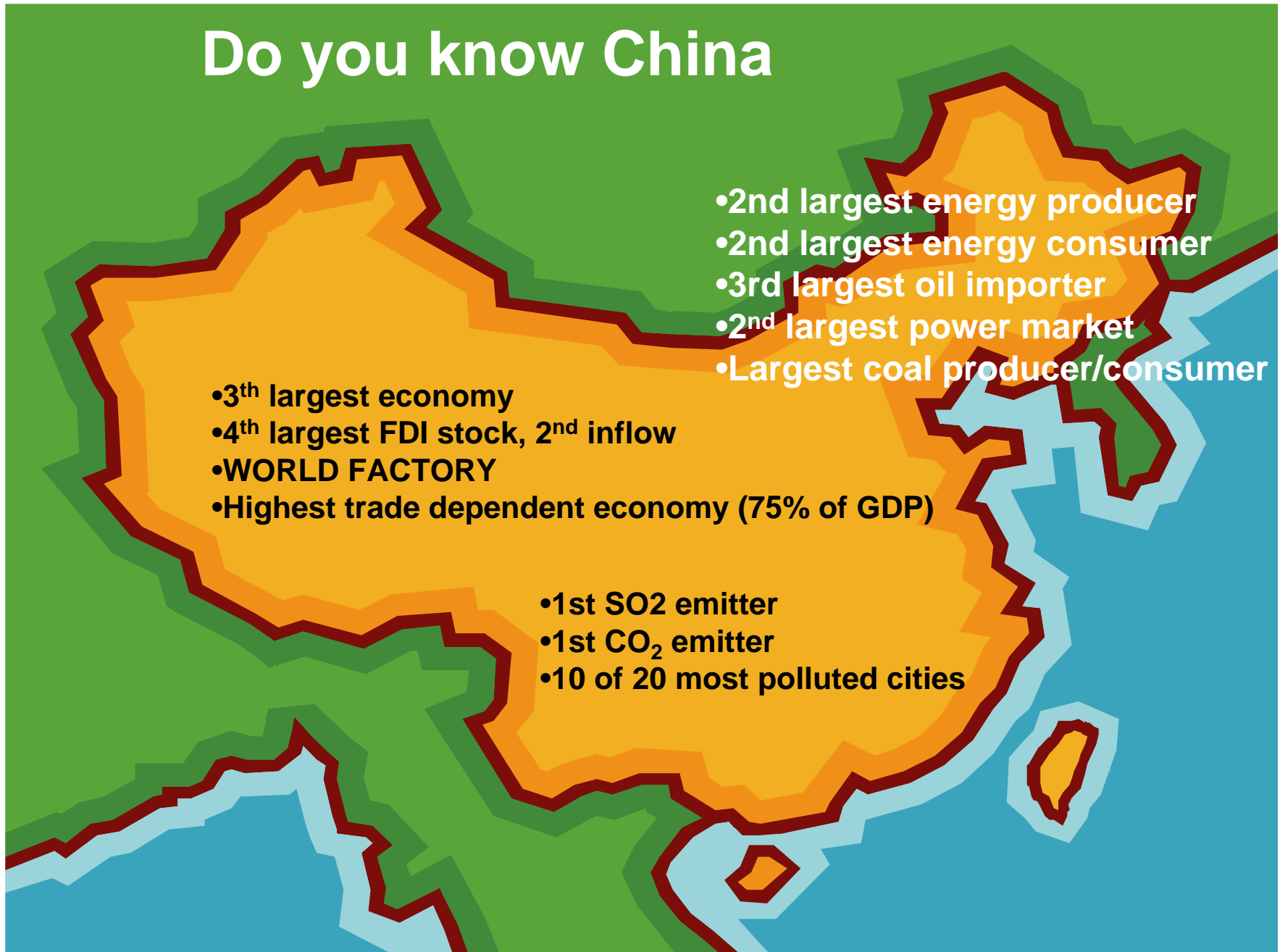
Shanghai

Do you know China

- 3th largest economy
- 4th largest FDI stock, 2nd inflow
- WORLD FACTORY
- Highest trade dependent economy (75% of GDP)

- 1st SO₂ emitter
- 1st CO₂ emitter
- 10 of 20 most polluted cities

- 2nd largest energy producer
- 2nd largest energy consumer
- 3rd largest oil importer
- 2nd largest power market
- Largest coal producer/consumer



Some rural area in China's west



Service

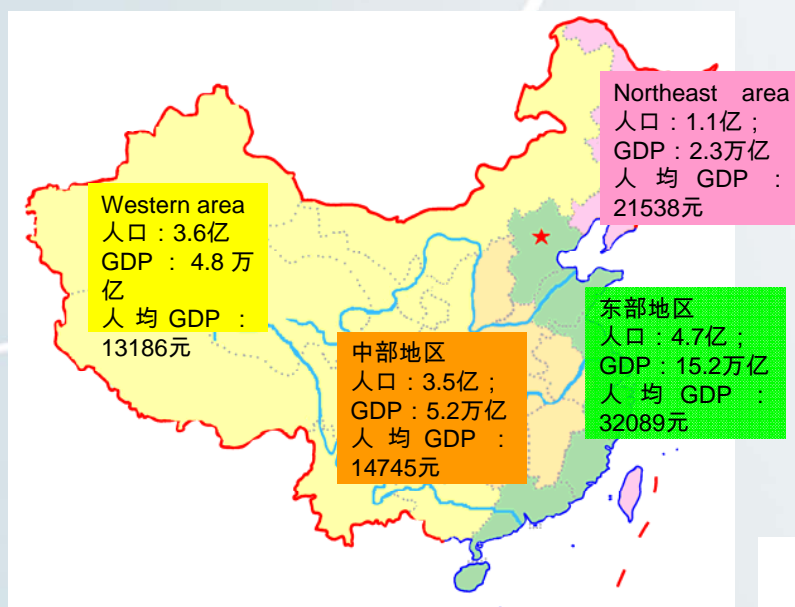
Building

Transportation

Education



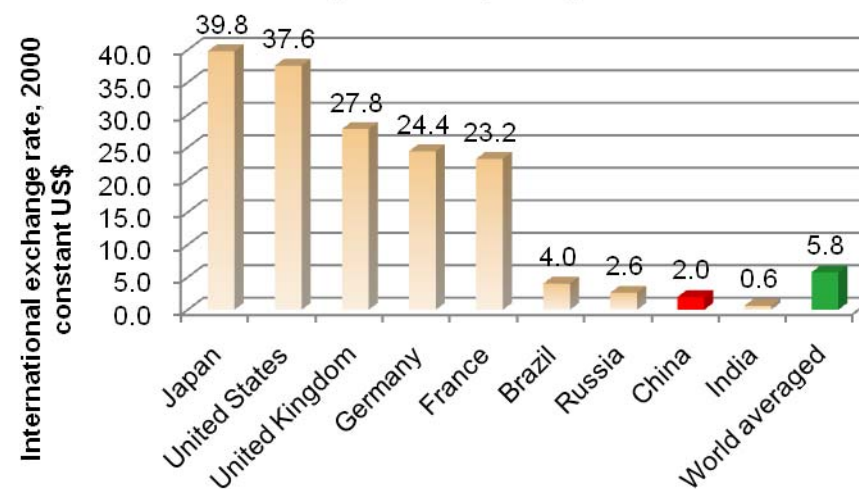
Some urban area in China's southeast



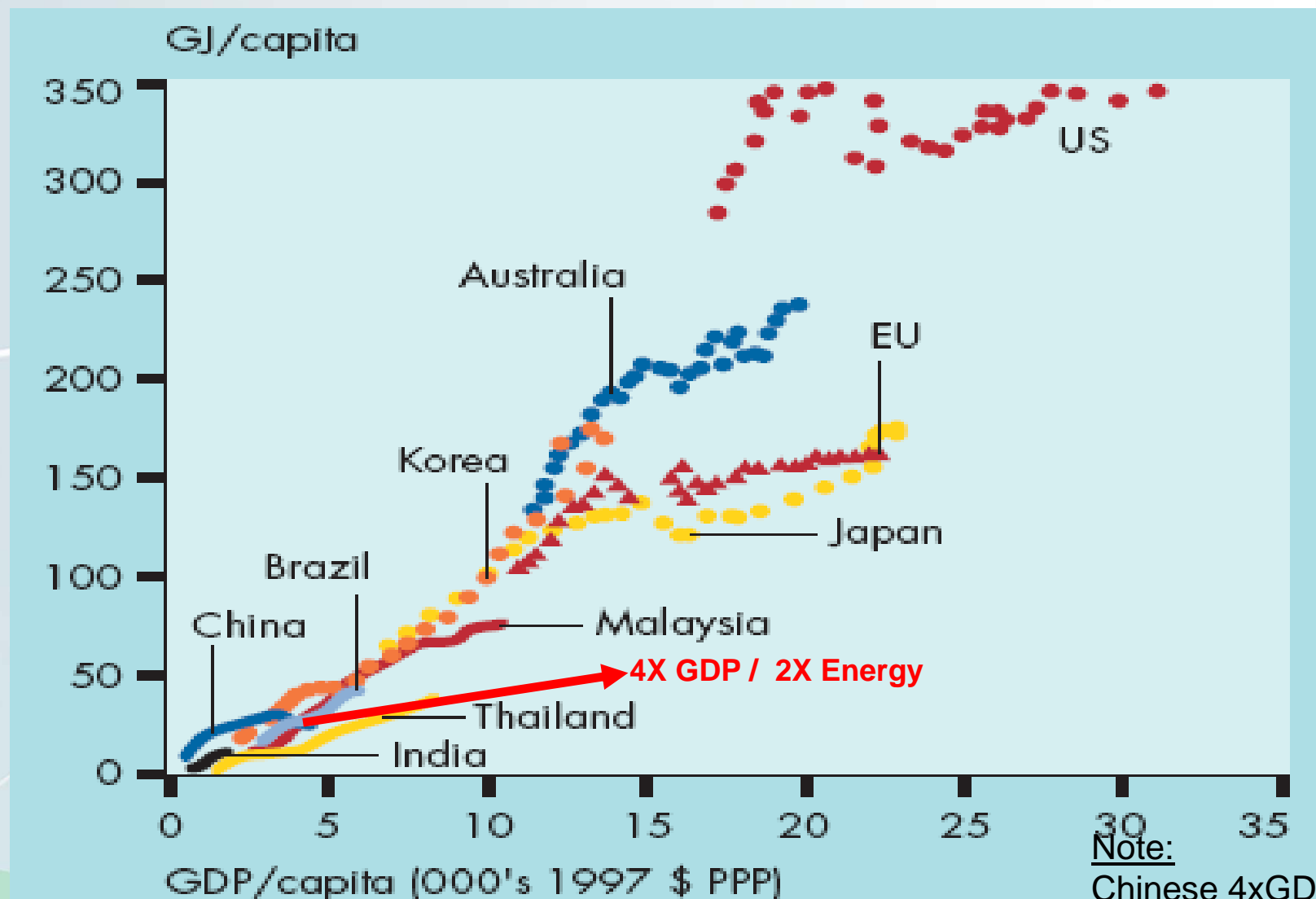
China is still the largest developing country in the world, although the economic aggregate ranked the top 3.

There are obvious difference among region, urban and rural, there is still a long way to go

International comparison of per capita GDP in 2006



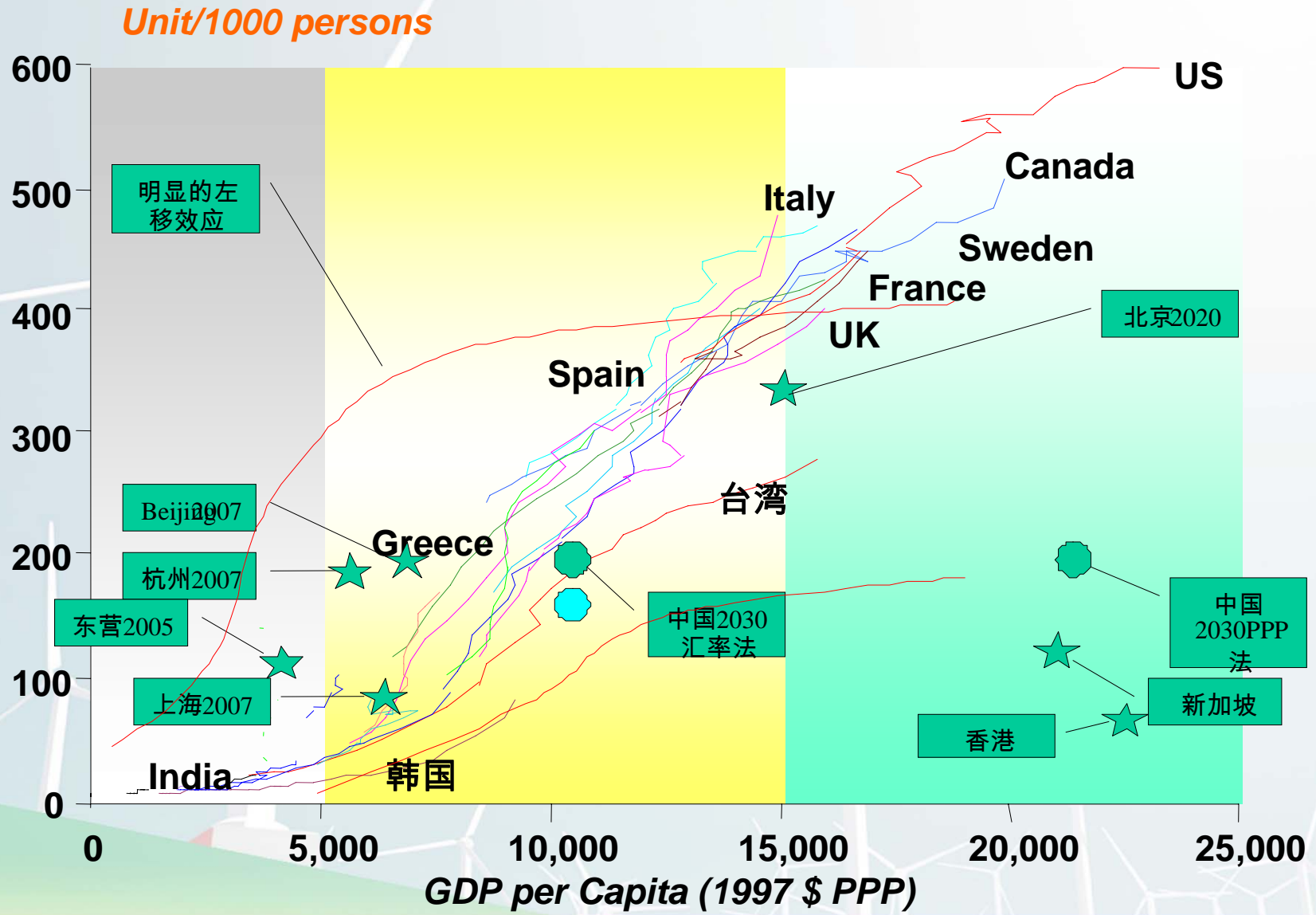
Fighting Against the Growth Gravity



Note:
Chinese 4xGDP
objective over
2000-2020 is not in
ppp terms.

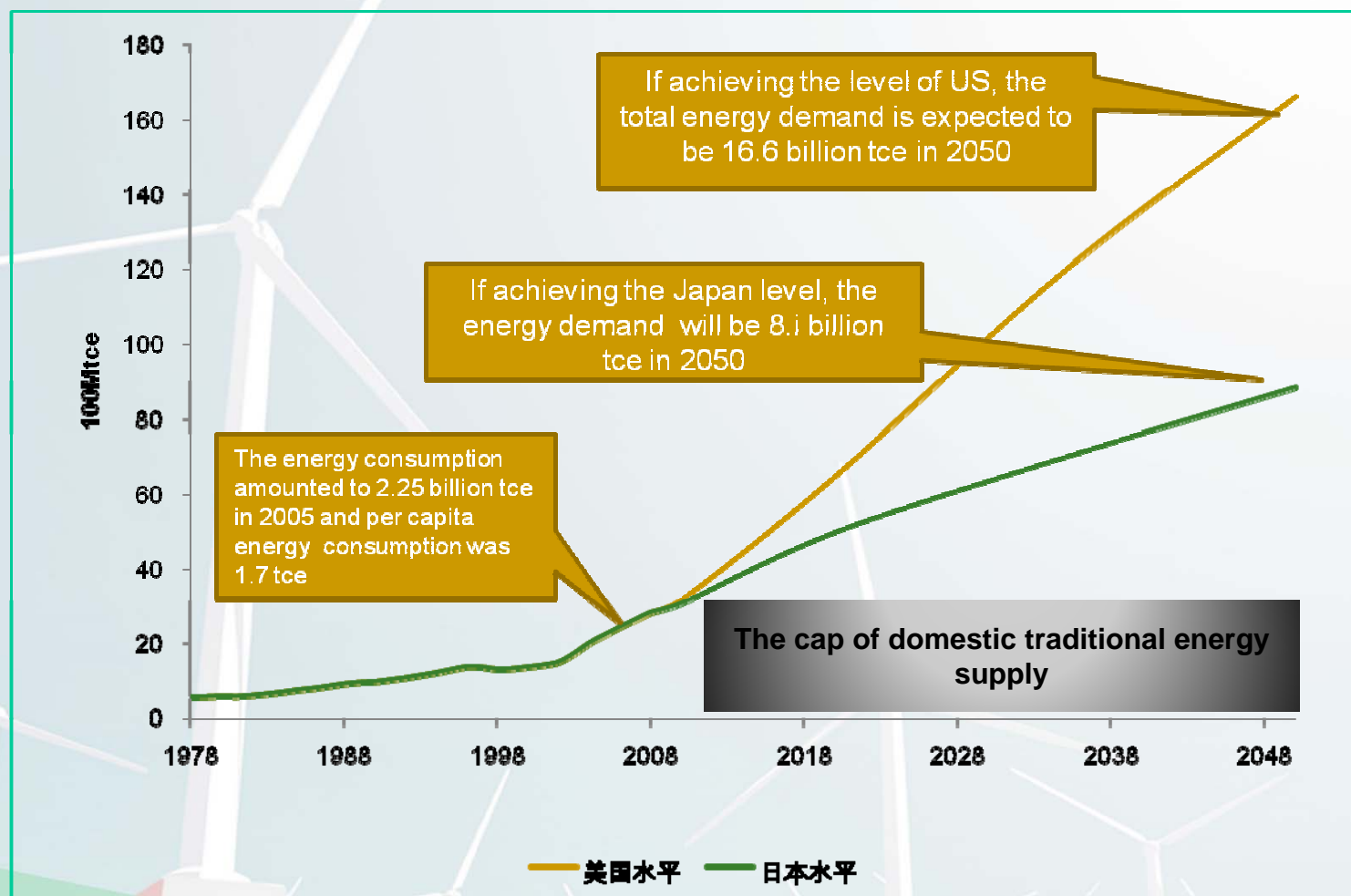


The relation between the income and motor vehicle possession



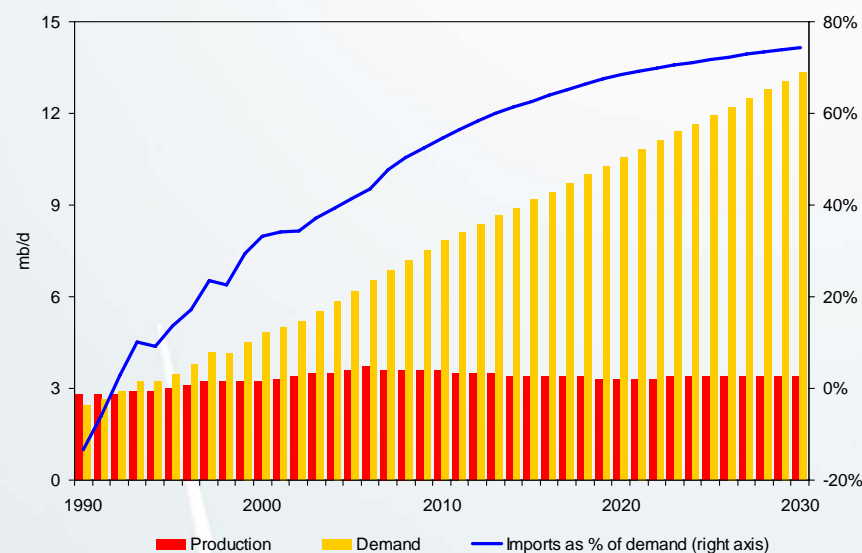
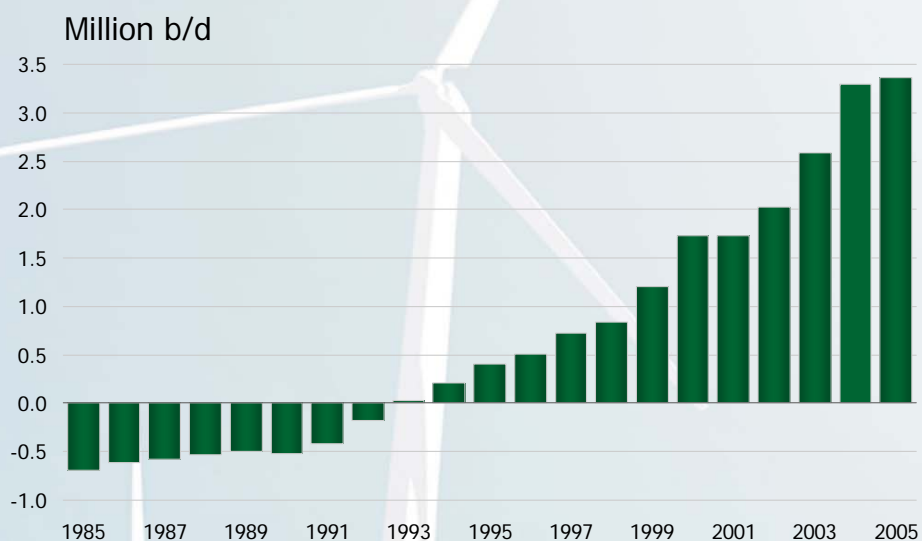


China's future energy perspective following the track of developed economies





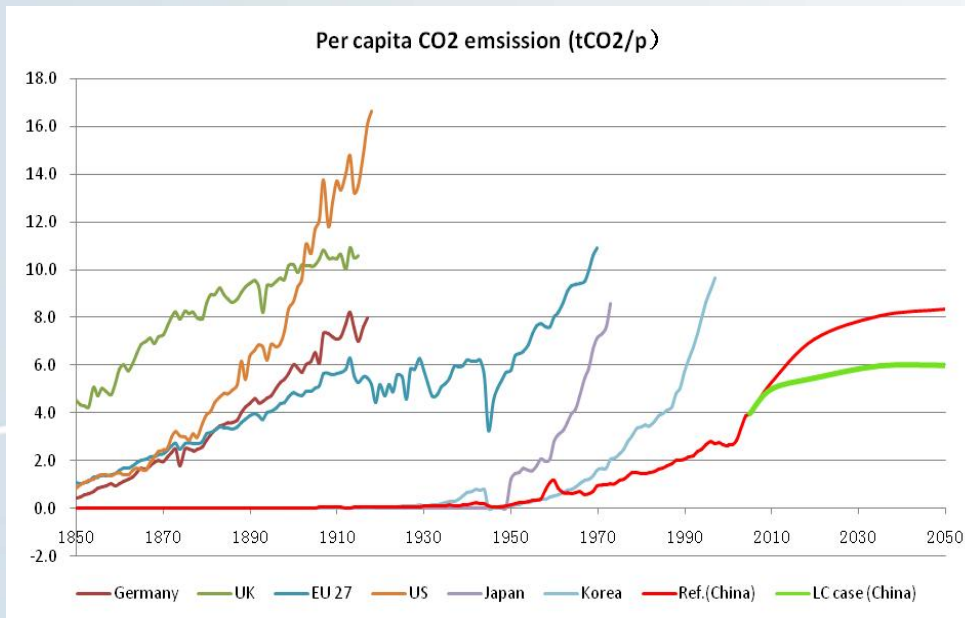
China's oil security challenge



- Rapidity in dependency rise: 47% in 12 years
- Perceived vulnerability in response options

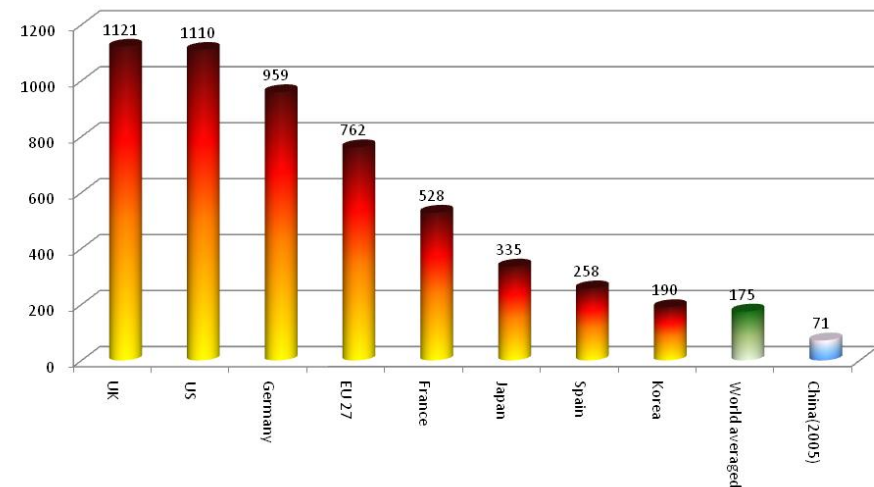


Although growing with lower energy and carbon intensity in the past 30 years, the economic development is still following the traditional pattern



The per capita carbon footprint is much lower than that in the same period among the industrialisation, the attention on carbon emission from China is increasing

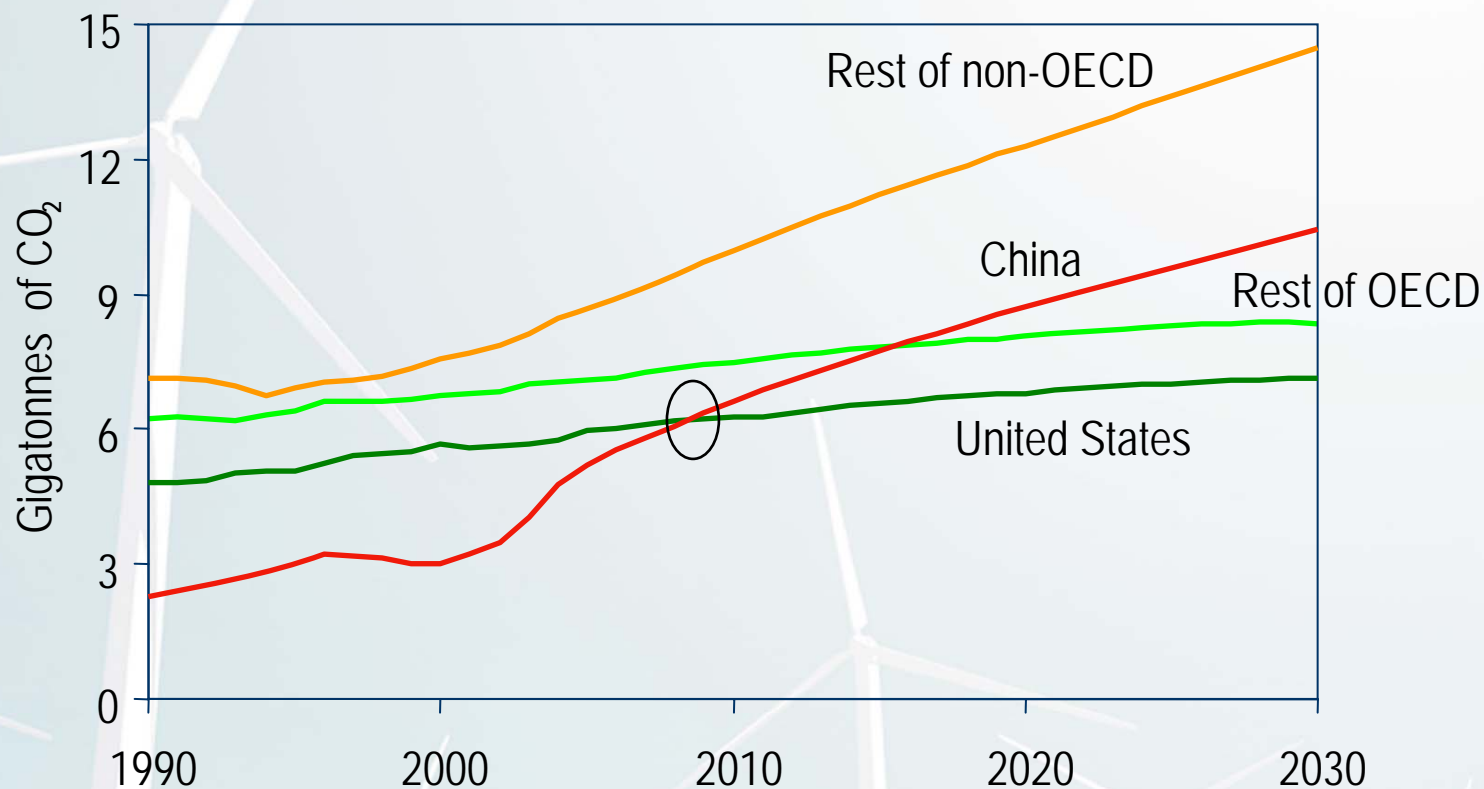
Per capita acumulative CO2 emission from 1850 to 2005 (tCO2/person)





Global climate change challenge

Energy-Related CO₂ emissions by Region



Source: IEA, WEO 2006





Opportunities and Energy Efforts



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Why energy security is concerned

- Oil price soars up and fluctuated
- Difficult to forecast oil price of future
- Fragile balance between oil supply and demand, less supply margin?
- Does supply capacity peak? Or is peaking?
- Instability of Middle-East, and pessimism on foreseeable solution
- Unconventional threads on supply chain, (terrorism, local conflicts, natural accident, etc.)





Energy security for a changing market

- The world energy demand continues increase
- US is still the biggest energy consumer and importer, and EU depends on import, while,
- Strong economic growth in BRICs and other developing countries
- Asia becomes another driving force for global economic growth
- Energy consumption in developing countries increase faster than in developed countries
- Energy consumption in Asia will rank the first in the world regions





New trends of energy supply side

- Nationalization of oil reserves in major oil exporting countries
- OPEC and Russia play more important roles
- Consensus of OPEC and NON-OPEC oil exporting countries on high price, because:
 - High oil price and stable market are crucial for major supplier countries
 - Non-market constraints on key suppliers, (Iran, Iraq, and some African producers)
 - New suppliers added but not enough to change the trends





Optimistic elements on oil supply

- Proven oil and natural reserves increase in last 30 years, and will keep increase
- The ratio of proven oil gas reserves to production keeps high
- Oil production may not peak soon
- Alternative energy is encouraged by high price and climate change policy
- No real economic constraint on Investment for energy sector





Possible new trends of energy consumption

- Progress of global efforts on climate change
- Bali roadmap will have meaningful solution
- Suggested targets of global mitigation: carbon emission peak around 2030, or before 2050
- Need dramatic decrease from baseline of fossil energy demand
- Non-carbon energy alternatives will develop faster than before





Energy Policy Efforts

- Create peace and harmonious international relations
- Break the Cold War Thinking pattern
- Peace and stability in Middle East is the key
- Help energy exporting countries to develop economy without political preconditions
- Improve geopolitical relation to encourage global and regional cooperation on energy sector
- eliminate the sources of unconventional threats
- Help developing countries to access energy supply
- Encourage major consumers' investment in upstream
- Then stable oil price, maybe at high level





Energy Policy Efforts in China

- Energy security is a components of peaceful, harmonious, and sustainable development and diplomacy of China
- Approach of sustainable energy development
- Energy conservation first
- Fully exploit domestic resources
- Active policy to combat climate change
- Cooperation with all the stakeholders
- Fair play in the market, including competition





**THANKS FOR
YOUR ATTENTION**



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