



中国石油集团经济技术研究院
Research Institute of Economics and Technology CNPC

The 4th CNPC/IEEJ Press Conference of Oil
Market Research

Outlook for China's Oil Demand and Supply before 2020

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December 10th, 2010



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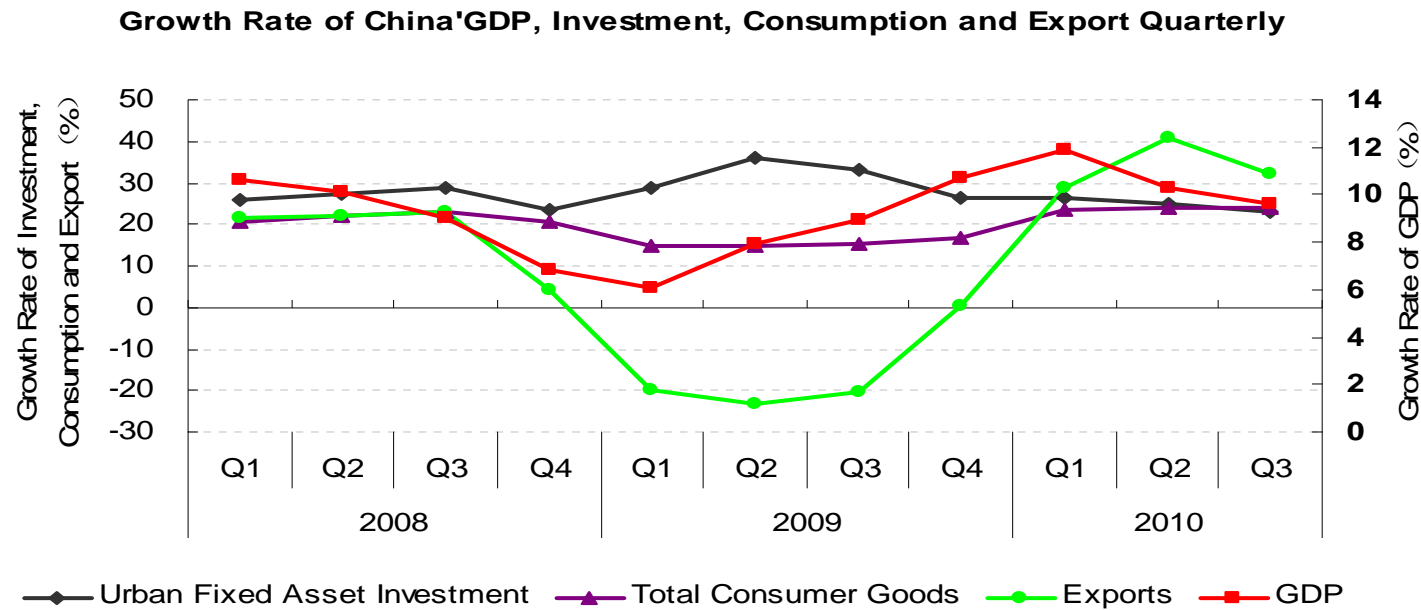
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1. China's economy rebounds and makes a sustained recovery after hitting the bottom



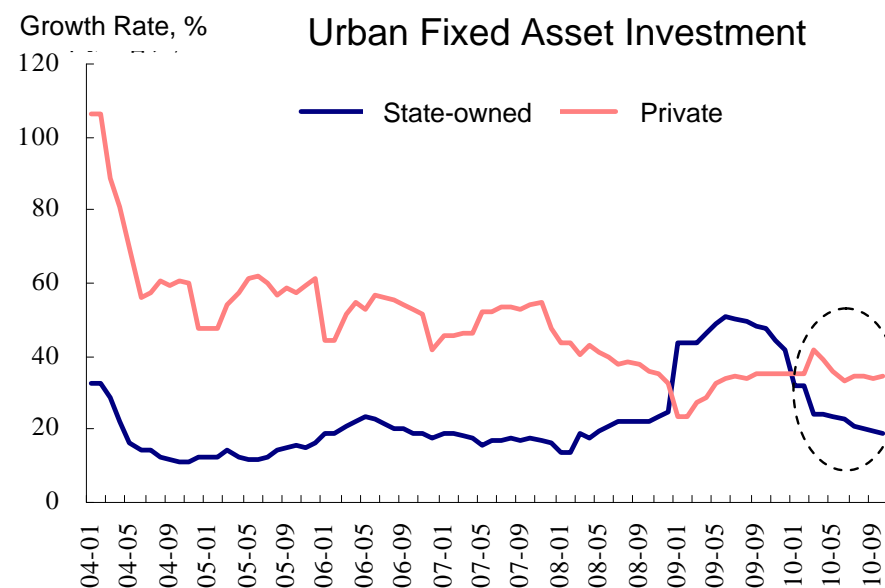
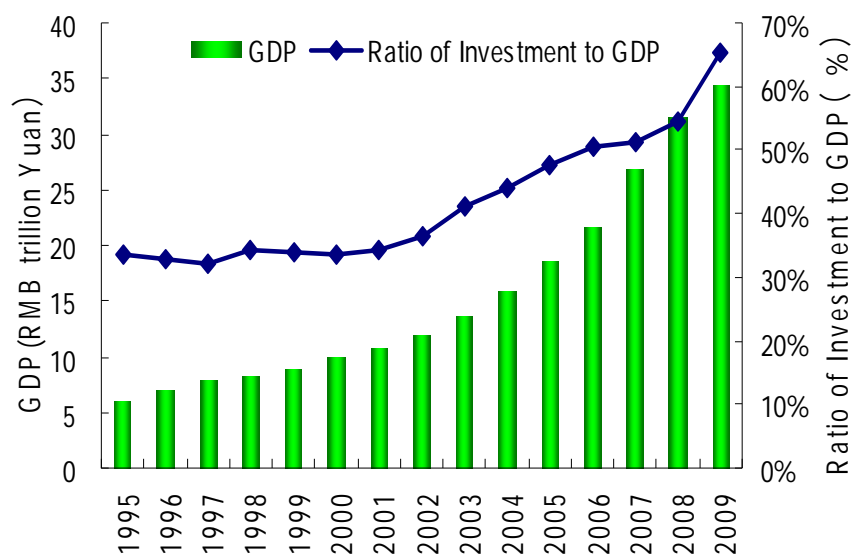
- Chinese government took active fiscal policies after the financial crisis, which makes remarkable achievement.
- China's GDP increased by 9.1% in 2009 and 10.6% in the last three quarters, which is expected to increase by 10% around in 2010.



2. Investment is the main engine that stimulates economic growth



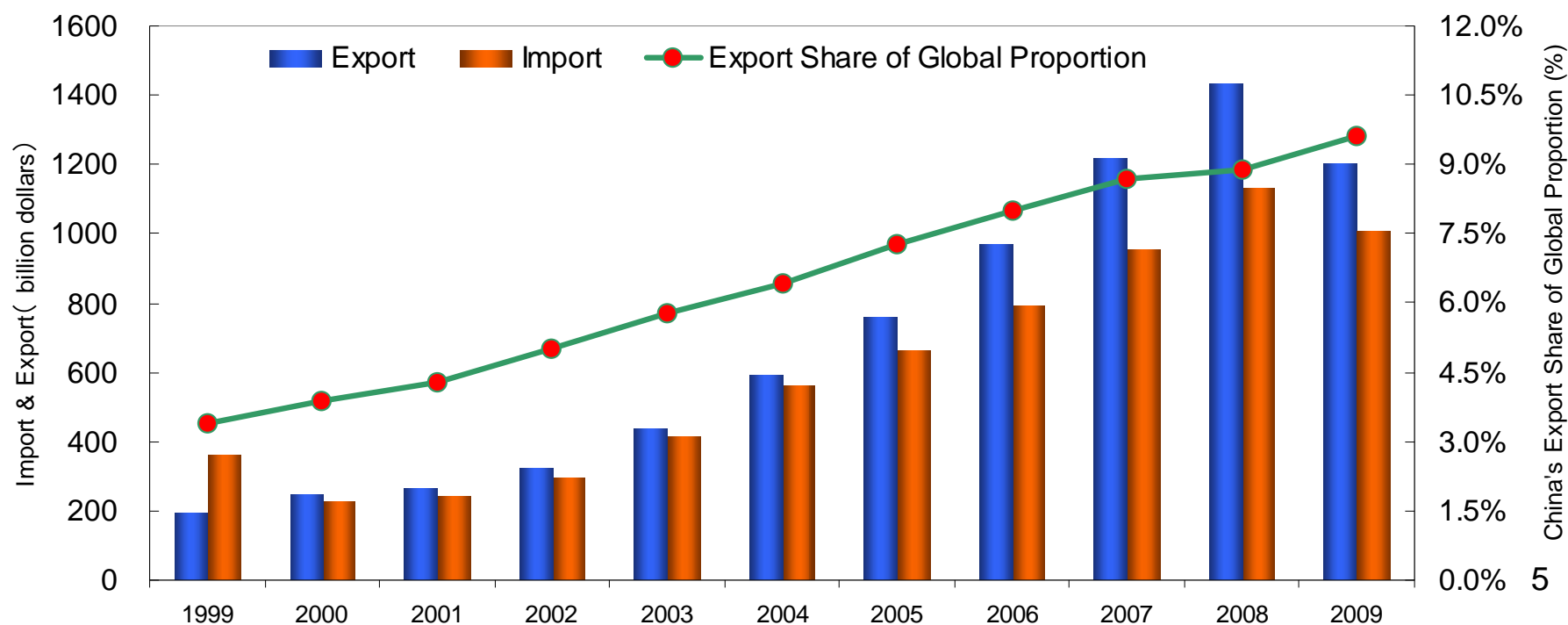
- Chinese government launched two-years investment plan of 4 trillions RMB after the financial crisis. The total investment of 22.46 trillion RMB in 2009 is 30% larger than last year.
- The growth rate of urban investment in the first 10 months of 2010 is as high as 24.4%.



3. The export was impacted severely, which has realized recovery growth



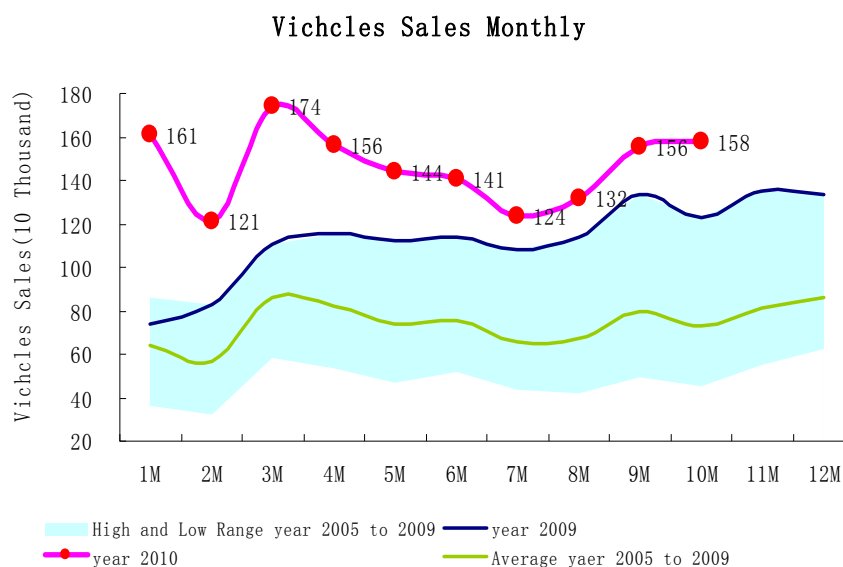
- The average annual growth rate of China's export is almost 20% in the last 10 years, which is about two times of the world's average level. China's export was impacted by the financial crisis severely, and decreased by 16% in 2009.
- Following the recovery of the world's economy, China's export from Jan. to Oct. in 2010 is 1.27 trillion dollars, which increases by 32.7% than the last year.



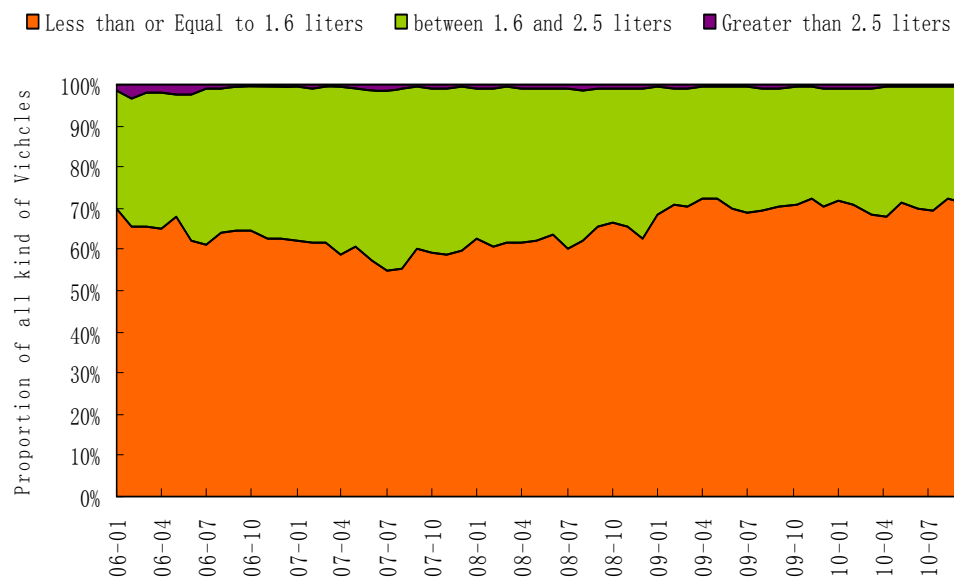
4. Consumption grows steadily, and car sales increases sharply



- Chinese government launched a basket of measures to stimulate consumption.
- The whole society total retail sales of consumer goods from Jan. to Oct. in 2010 increases by 18.3% greater than the period from 2001 to 2009(11.6%).
- The sales and production of China's vehicles all exceeded 13 million in 2009, which are expected to be more than 17 million in this year and break the record of America (17.4 million in 2000).



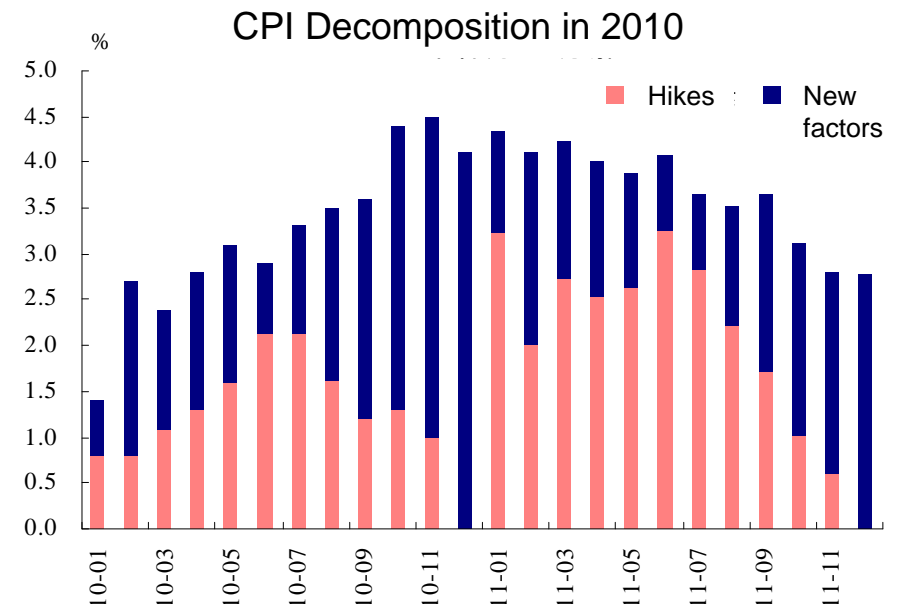
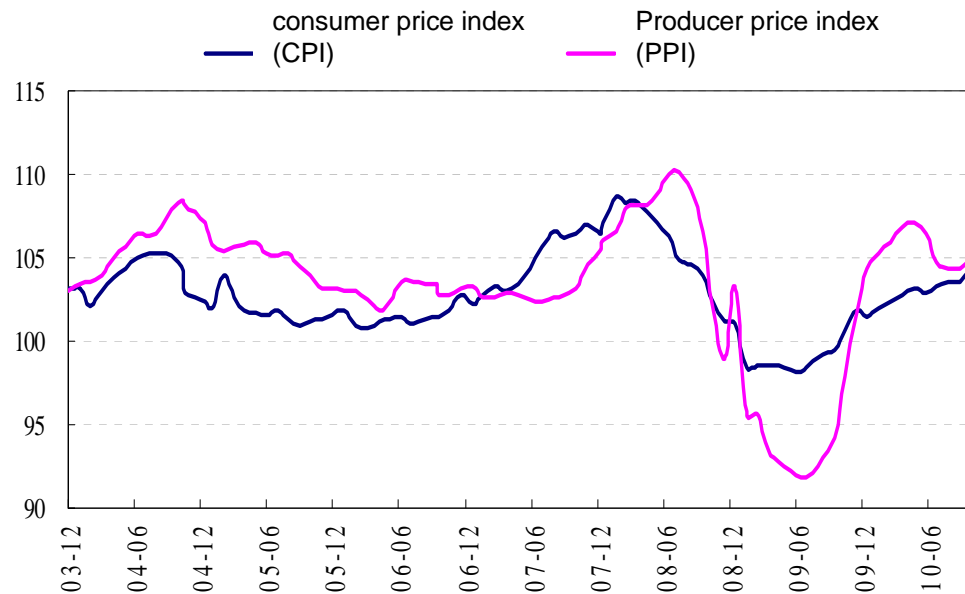
the Proportion of Small Cars Grows Up



5. High inflation pressure and tightening monetary policy



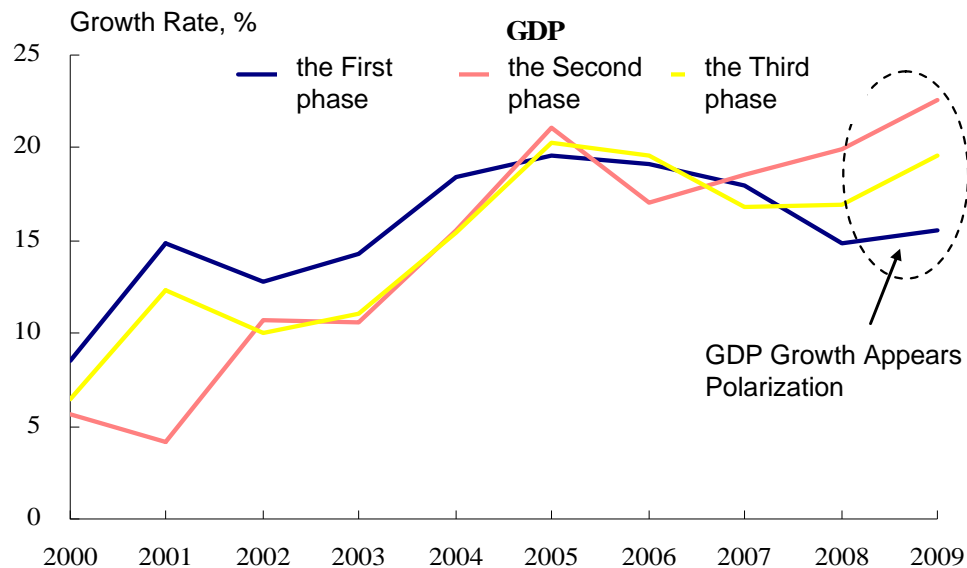
- China is under the pressure of high inflation. The CPI rise by 4.4% in Oct. 2010, which is the highest of the last 25 months. It is expected that the CPI growth will be 3.5% in 2010, beyond the government's target (3%).
- The central bank's monetary policy tends to be tightened for curbing inflation now.
- The central political bureau also put forward proactive fiscal policy and prudent monetary policy in 4th Dec.



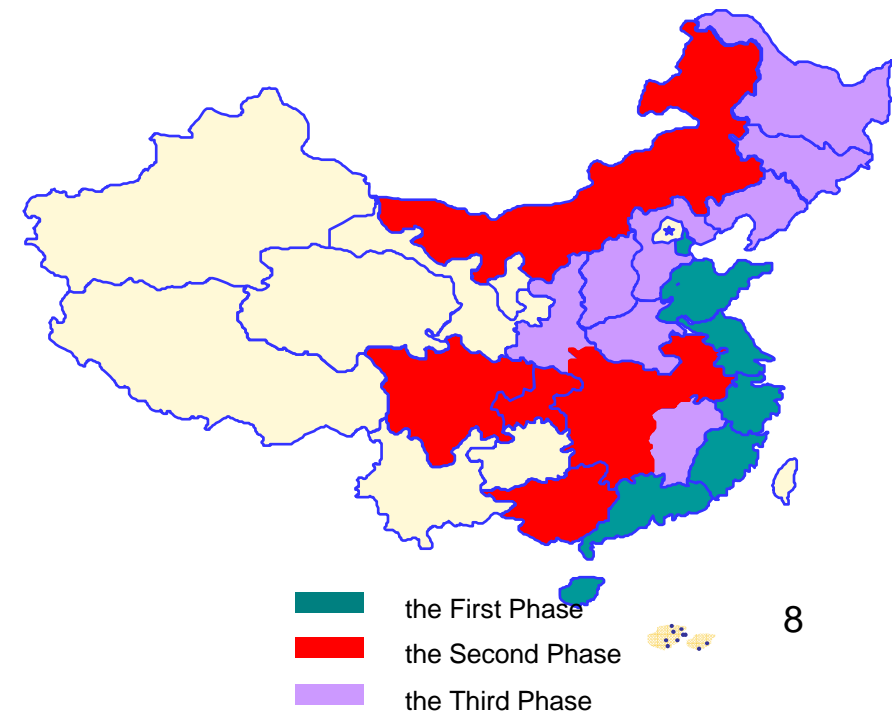
6. Regional economic growth is different, and the inland areas will be leading



- China's regional economy is forming three areas with different levels:
 - The growth rate of coastal provinces is decreasing, which used to be leading;
 - 7 provinces (Anhui, Hunan, Hubei, Sichuan, Chongqing, Neimenggu, Guangxi) in Midwest area will be leading in the next 5 years;
 - GDP growth rate of other provinces will also exceed the coastal area.



Data Source: 中金公司



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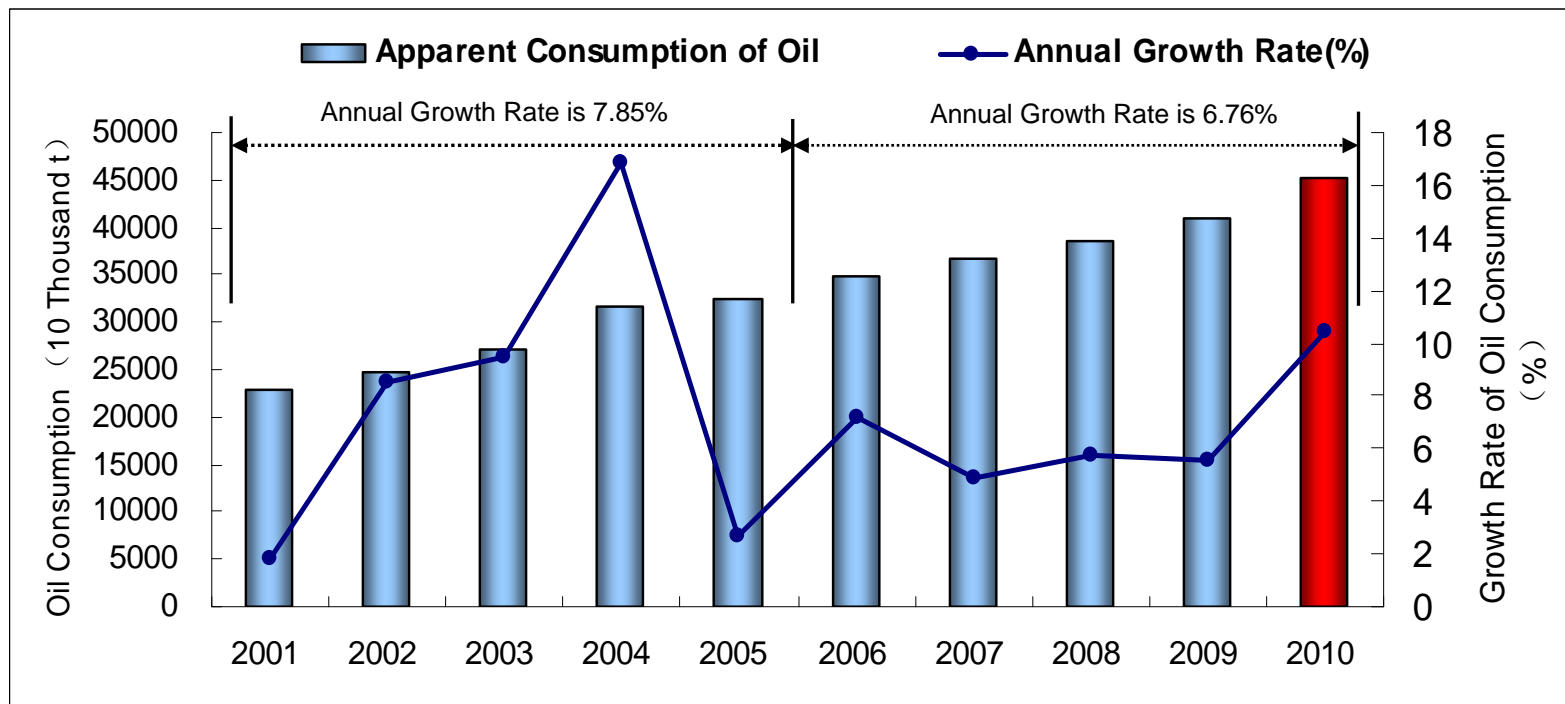
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1. Oil demand growth has recovered to the pre-crisis level



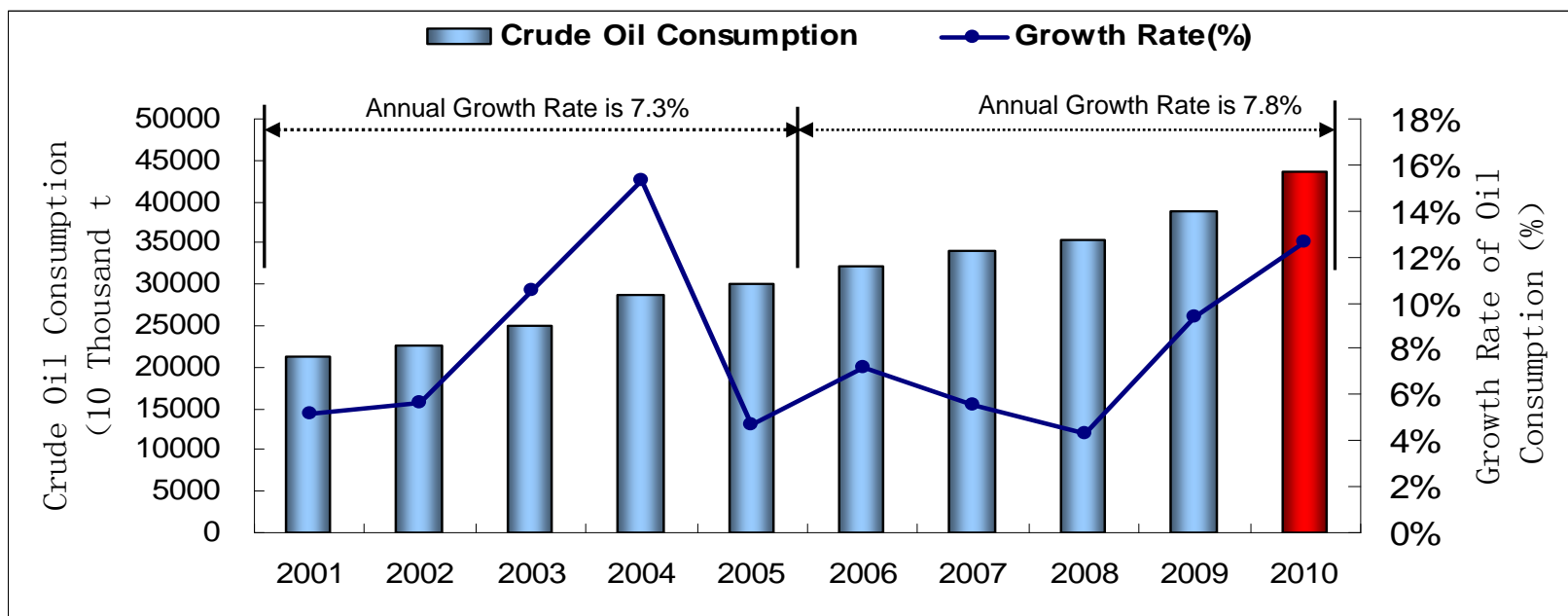
- China's oil demand decreased by 7.2% in the first quarter of 2009 because of financial crisis.
- Following the rapid economic recovery, China's oil consumption rebounded after hitting the bottom and increased quickly. The growth rate is 4.6% in 2009 and is expected to be 10.4% in 2010.



2. Production, consumption and net import of crude oil all create a new record



- China's crude oil production decreased by 0.4% in 2009, and is expected to increase by 5.5% in 2010. The crude oil production will be 200 million for the first time in 2010.
- China's crude oil consumption is estimated to be 437 million tons in 2010, which also exceeds 400 million for the first time.
- China has imported 195 million tons crude oil in the first 10 months of 2010, which is 19.4% higher than the last year, and the external dependence rate is 53.8% now. The net crude oil import export is expected to exceed 200 million for the first time.

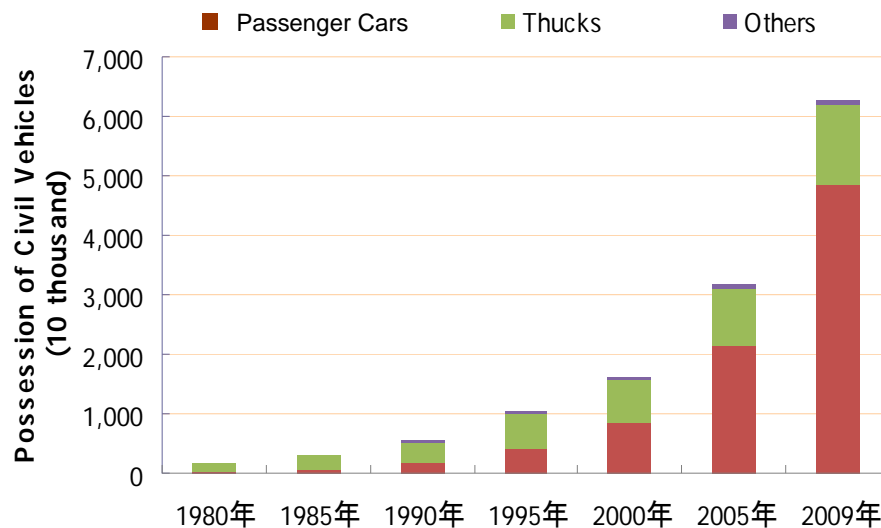


3. Oil products consumption increases quickly

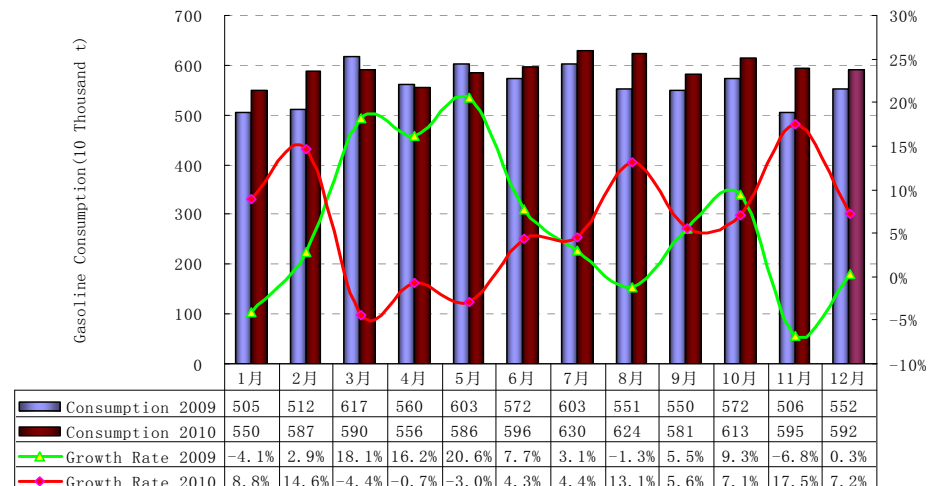


3.1 Car sales increases sharply, which promotes growth of gasoline consumption

- China's gasoline consumption increased by 5.5% in 2009 and is expected to increase by 4.4% in 2010 because of huge car sales; its gasoline consumption is estimated to be 70.9 million tons in 2010.
- The growth rate of gasoline consumption is lower than that of auto possession.



Monthly Changes in Actual Consumption of Gasoline



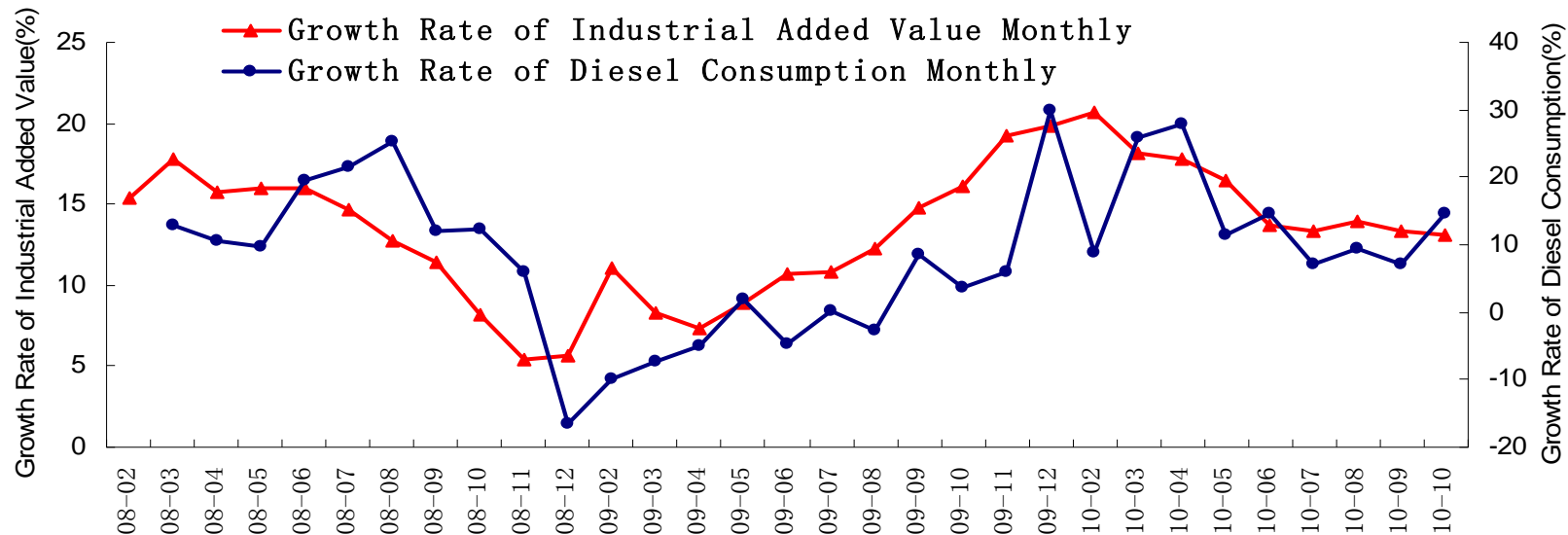
Note: the data of 2010 is actual consumption adjusted according to inventory, month 11,12 are predictive values

3. Oil products consumption increases quickly



3.2 Diesel demand restores growth following the speed up of industrial production

- China's diesel consumption decreased by 0.2% in 2009 because of economic downturn, which is the first time of negative growth in the last 10 years.
- China's diesel demand is estimated to increase by 10.7% because of economic recovery and low base of the last year. The diesel consumption is will be 152 million tons or more .



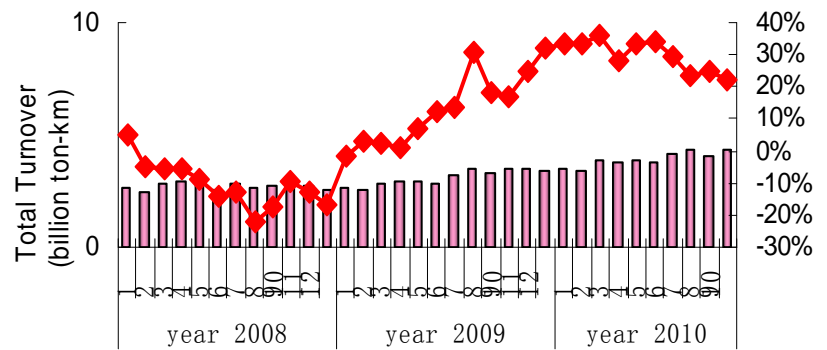
3. Oil products consumption increases quickly



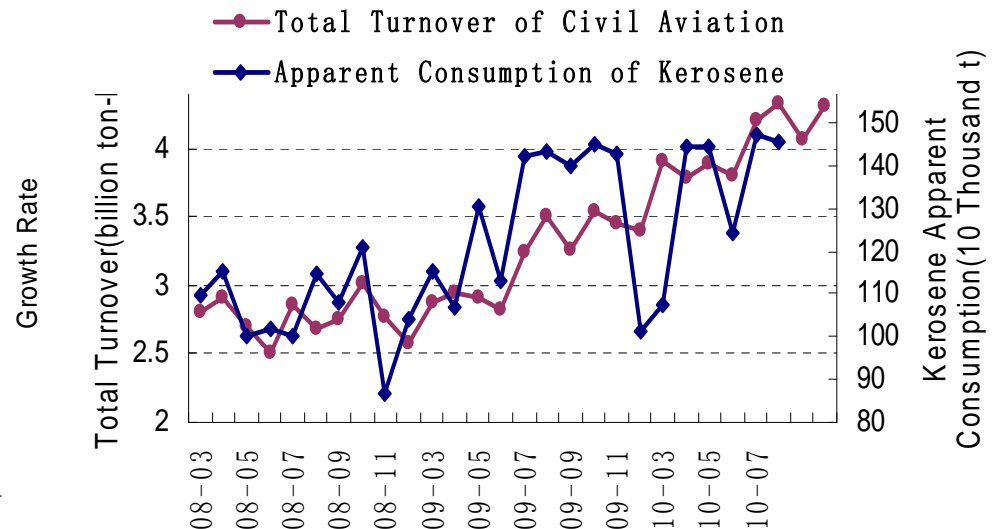
3.3 Air transport keeps growth, kerosene demand increases sharply

- China's civil aviation has been growing rapidly since the end of 2008, and the kerosene demand increases sharply.
- The growth rate of China's kerosene consumption is 17% in 2009, and is estimated to be 13.6% in 2010. The total kerosene consumption in 2010 is 17 million tons.

Total Turnover of Civil Aviation (Freight plus Passenger)



■ Total Turnover of Civil Aviation ◆ Growth Rate Monthly





4. Regional structure of oil consumption is changing

- China's regional economic structure is changing following the rapid growth of central and western economy: Share of north and central areas is rising; share of east and south areas is decreasing.
- China's regional oil products consumption is changing at the same trend: Share of north, northeast, central and southwest areas is rising; share of east, south and northwest is decreasing.

Regional Share of Economy, Vehicle and Oil Consumption

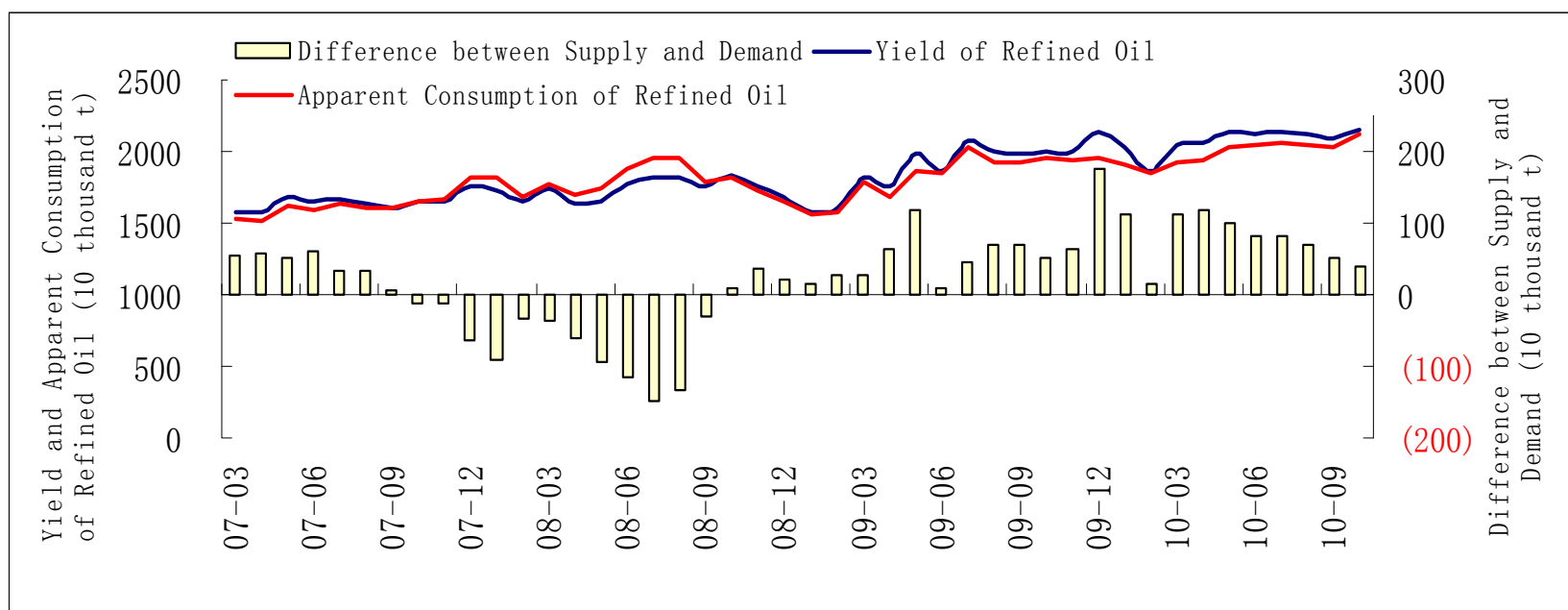
Area	Provinces and Cities
North	Beijing, Tianjin, Hebei, Shanxi, Neimenggu, Shandong, Henan
Northeast	Heilongjiang, Jilin, Liaoning
East	Shanghai, Jiangsu, Zhejiang
Central	Anhui, Jiangxi, Hubei, Hunan
South	Guangdong, Guangxi, Hainan, Fujian
Southwest	Sichuan, Chongqing, Guizhou, Yunnan
Northwest	Xizang, Xinjiang, Ningxia, Qinghai, Shanxi, Gansu

	GDP		Vehicle Possession		Oil Products Consumption	
	2005	2009	2005	2009	2005	2009
North	29.50%	29.70%	33.20%	35.20%	27.10%	27.60%
Northeast	8.50%	8.70%	9.10%	8.50%	9.20%	9.50%
East	20.10%	19.80%	15.50%	15.70%	18.80%	17.90%
Central	11.60%	11.70%	9.30%	10.00%	10.40%	11.10%
South	16.80%	16.70%	16.40%	14.70%	18.20%	17.60%
Southwest	8.30%	8.30%	10.60%	9.90%	7.90%	8.90%
Northwest	5.20%	5.10%	6.00%	5.90%	8.40%	7.40%

5. Domestic refining capacity keeps growth, and the supply ability is enhanced



- China is the world's second largest country of refining. Its refining capacity has increased from 325 million tons per year in 2005 to 501 million tons per year in 2010, the average annual growth rate is 9.04%.
- There are more than 150 refineries in China, 62 of them belong to CNPC and Sinopec, whereas they takes 77% of China's total refining capacity.

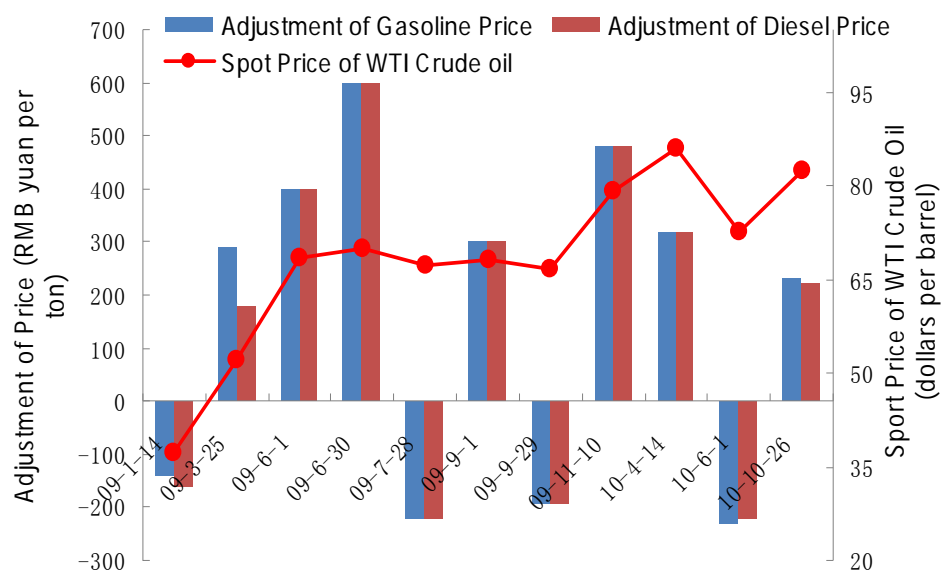


6. Price mechanism and marketization level is improving

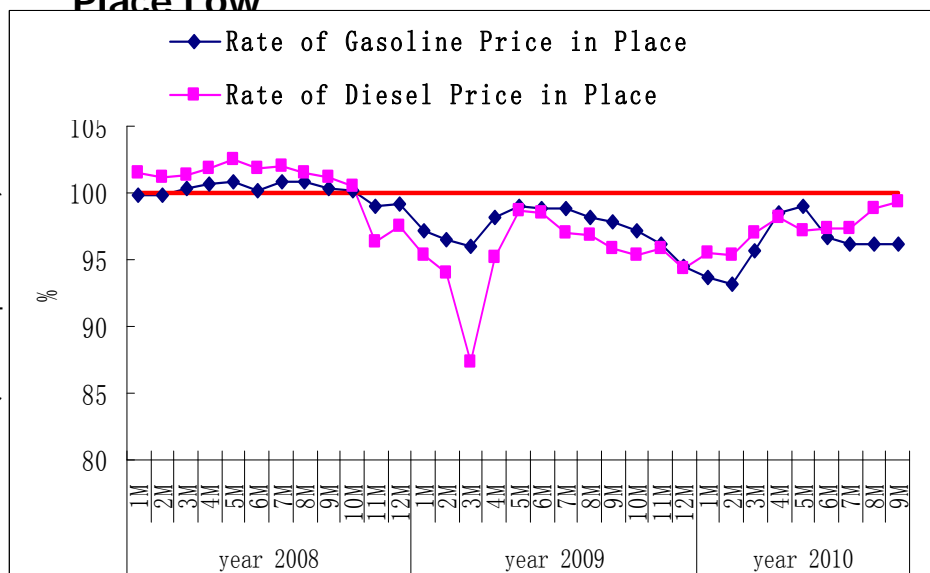


- Chinese government implemented new pricing mechanism in 2009, which reflects both international price and domestic demand & supply.
- China's oil price was adjusted 11 times from Jan. 2009 to Nov. 2010.

the Records of Oil Price Adjustment in 2009-2010



After the Financial Crisis, the Relaxed Supply and Demand Causing the Rate of Prices in Place Low



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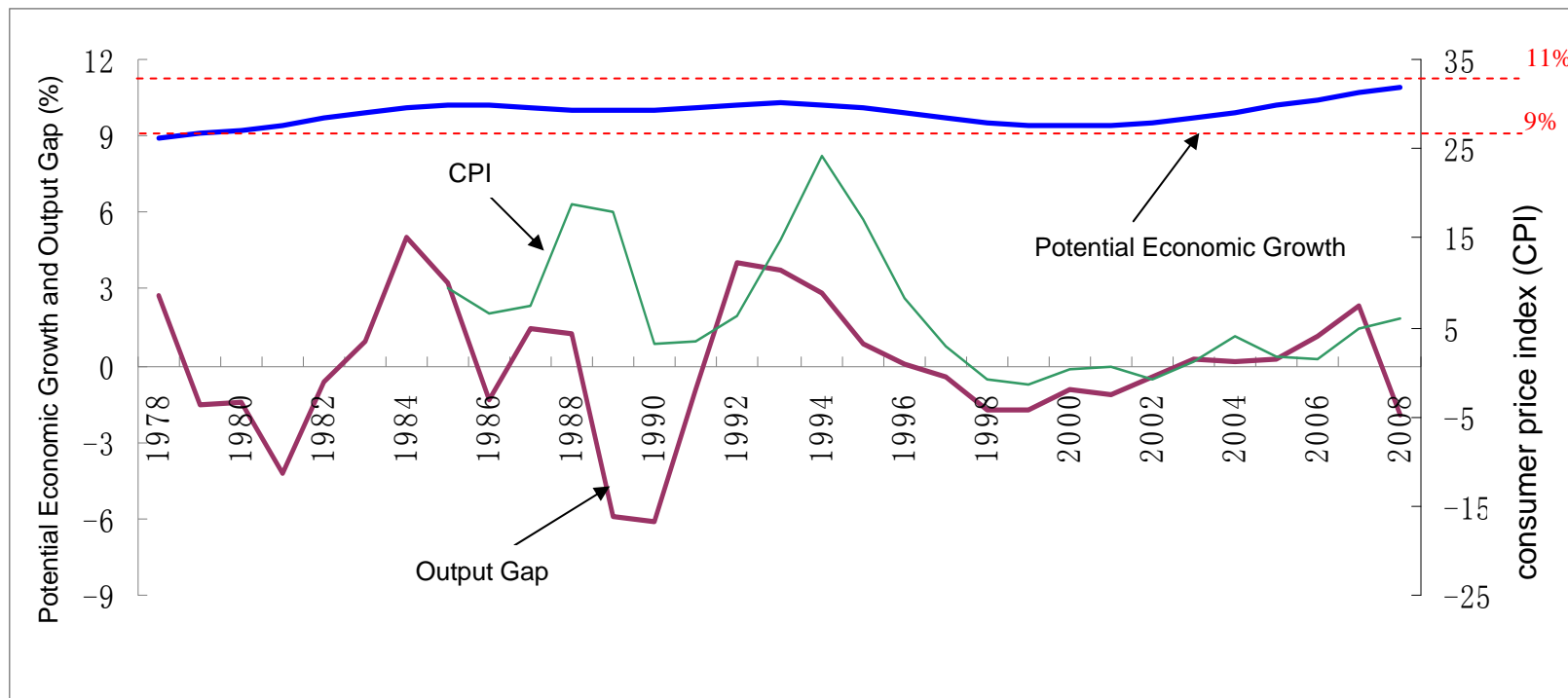
III. Outlook for China's Oil Demand and Supply before 2020

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1. China's economy will keep fast growth in the next decade



- Study finds that China's potential GDP growth rate is 9%-11% in the last 30 years, and the overall trends is stable.
- Considering factors of consumption upgrades and environmental & resources constraints, China's potential GDP growth rate will be 7%-9% in the next 10 years.



2. Characteristics of China's economic development before 2020



External environment change in the next 10 years

- Prevalence of state intervention and trade protection might last in a long period of time.
- Global climate change and resource & environmental problems in related might be important factors of unstable international setup.
- Technological revolution fields will be new economic growth point.
- Contend for resource commodities by countries will be more fierce.
- Multipole international framework will be formed, discourse power of developing countries is rising.

2. Characteristics of China's economic development before 2020



Opportunity for China's economic growth in the next 10 years

- The growth mode transform to consumption driven.
- The process of urbanization will be faster.
- Optimization of industrial structure.
- Support to emerging industry from the government.
- Industrial transfer from coastal to inland areas step by grads.
- Investment on field of people's livelihood.

2. Characteristics of China's economic development before 2020



Challenge of China's economic growth in the next 10 years

- **Export as economic growth pillar is unsustainable.** China will face pressures from environmental depredate of external demand and disappear of parts manufacture advantage because of aging problem in developed countries and emerging young countries in the next 30 years .
- **Heavy industry growth pattern of urgently needs to be changed.** The environment and resources can't support heavy industry, which will also cause excessive export dependence and overcapacity. Hence the development of high energy consuming industries will slow down.
- **The following ten years is an important stage for social change,** social benefit framework and structure will change significantly.

3. Scenario design of the forecasting model



- Based on the Mid & Long-term Forecasting model of China's Oil Demand and Supply, China's macroeconomic development is analyzed and design in three scenarios (Low Growth, BAU and High Growth).

GDP Growth Rate in Three Scenarios

Scenarios	2009-2020	Comment
Low	7%	Steady social development Stable employment
BAU	8%	Adjustment of economic structure Optimization of industrial structure
High	9.5%	High investment Low consumption Heavy Industrialization



4. China's oil demand before 2020

- In the BAU scenario, China's oil products demand will be 314 million tons in 2015 and 396 million tons in 2020.
- Considering effective alternative, China's oil demand will be 501 million tons in 2015 and 593 million tons in 2020, and the average annual growth rate is lower than 4%.

Forecasting of China's oil demand (million tons)

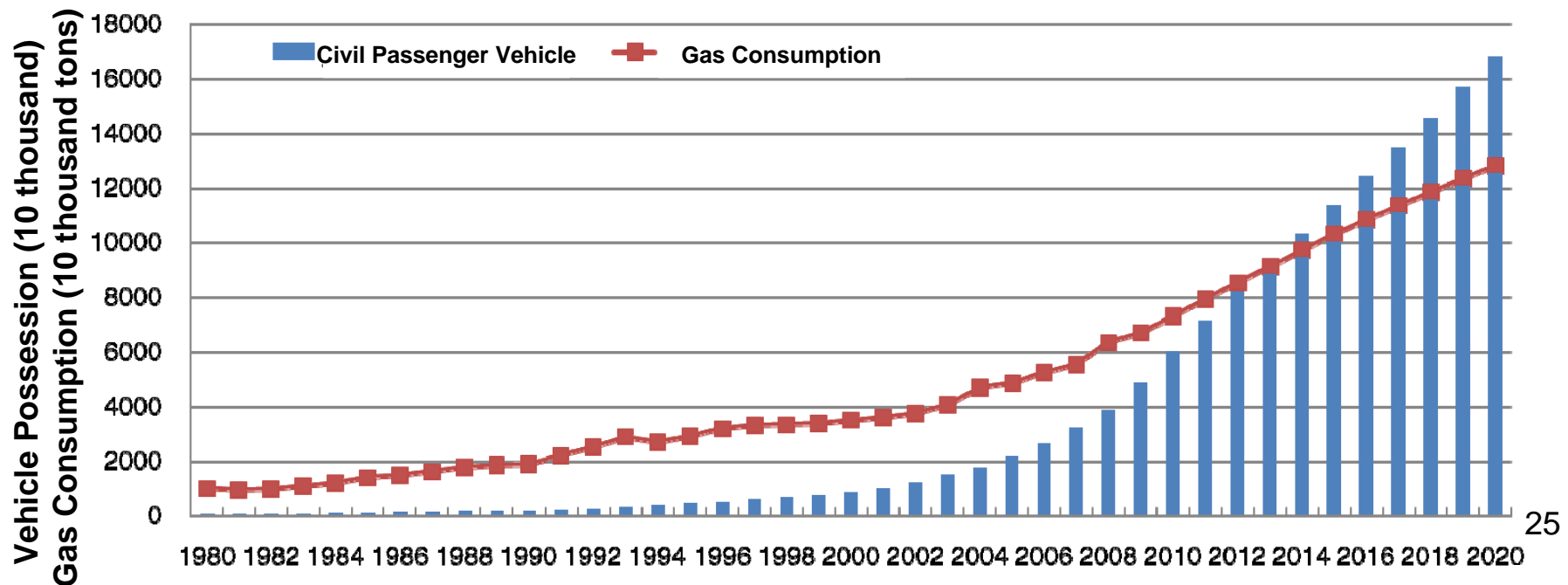
	2009	2015			2020		
		Low	BAU	High	Low	BAU	High
Oil	400	491	501	508	559	593	614
Oil Products	221	307	314	319	370	396	411
Gasoline	67	102	103	103	124	128	130
Kerosene	15	26	26	26	32	34	36
Diesel	139	179	186	189	214	233	245

4. China's oil demand before 2020 — BAU Scenario



4.1 Vehicle possession will increase rapidly, and gasoline demand will keep rising

- China's civil vehicle possession will exceed 200 million in 2020, and civil passenger vehicles will be 1700 million, the average annual growth rate will be more than 10%.
- China's gasoline consumption will exceed 100 million tons in 2015 and 128 million tons 2020, the average annual growth rate is 6.1%.





4. China's oil demand before 2020 — BAU Scenario

4.2 Civil aviation has great potential, and growth speed of kerosene demand will increase

- China's civil aviation will develop rapidly in the next 10 years. There was 166 airports in 2009 in China, which is planned to be 244 in 2020.

- The length of China's high-speed railway is 7531 km now. According to the plan, the length of high-speed railway will exceed 13 thousand km in 2012 and 16 thousand km in 2020, which will substitute for aviation demand in some degree.

- China's kerosene demand will be 25.9 million tons in 2015 and 34.2 million tons in 2020, the average annual growth rate will be 7.8%.

Distribution Plan of China's Civil Airport in 2020



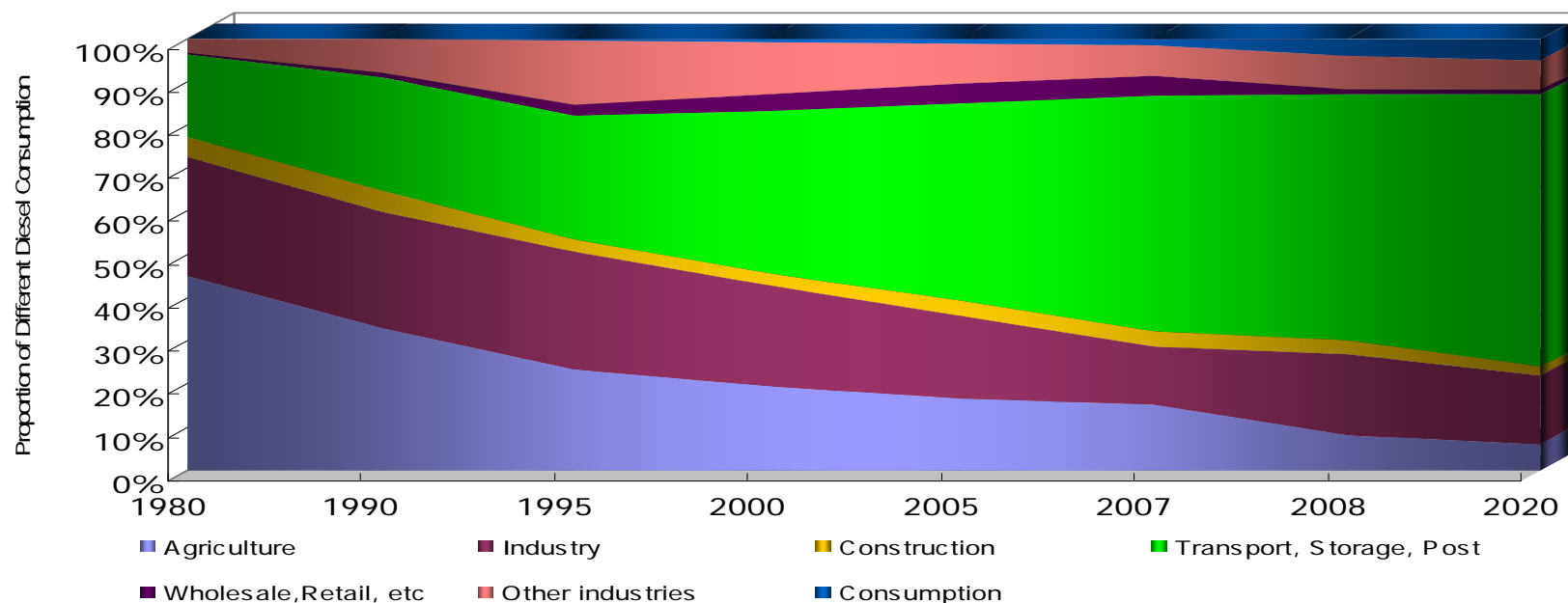


4. China's oil demand before 2020 — BAU Scenario

4.3 Growth speed of diesel will decline, and proportion of transportation will rise

- Growth rate of China's diesel demand will decrease from 8% to 5% because of investment growth slow down and economic structure adjustment. China's diesel consumption will be 230 million tons in 2030, and the ratio of diesel to gasoline consumption will decrease from 2.1 to 1.8.
- More than 60% of China's diesel demand will be from transportation industry in 2020, and the share of industrial diesel demand will decrease to 20%.

Changes of Diesel Consumption Structure





5. Regional oil demand situation will change

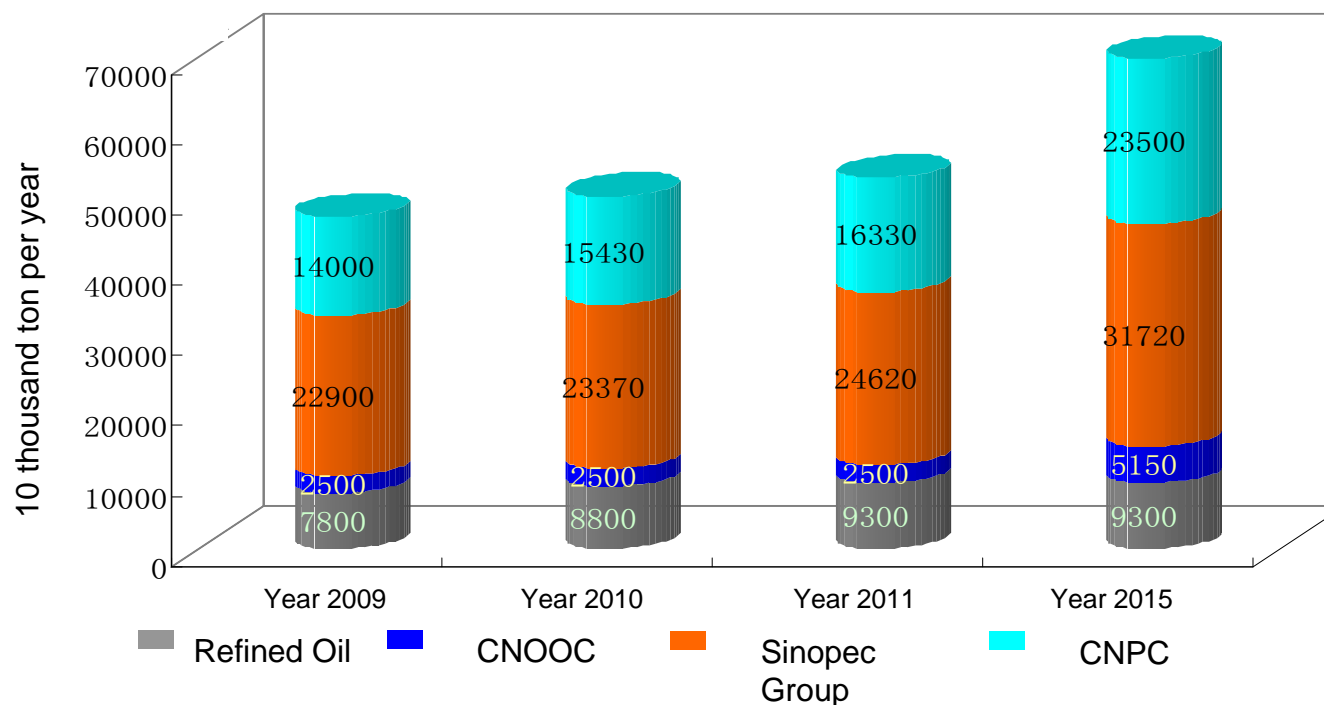
Diesel demand of backward areas will increase quickly, while gasoline demand will mainly comes from developed areas

- Under the process of Western-Develop, Revitalizing Northwest and Central rise, China's regional economic unbalanced will be changed in the future. Diesel demand of Northeast and southwest areas will grow rapidly. Most of the diesel demand increment will come from west and north areas. **Gap of diesel demand between east and west areas will reduce.**
- Although growth rate of gasoline demand in Liaoning, Guangxi, Sichuan, Neimenggu will be more than 7%, north and south areas will still be the main areas of gasoline demand growth. **Gap of gasoline demand between east and west areas will enlarge.**

6. Outlook for China's refining capacity before 2015



- According to the projects that under construction or being planned, China's processing capacity of crude oil could be 697 million tons per year.
- China's refining industry will focus on optimal resources allocation and device structure adjustment. Construction of key projects will also be promoted steadily, especially for oil quality upgrade, energy conservation and emission reduction, so as to increase international competitiveness.



7. China's oil supply will still depend on domestic before 2020



Balance Sheet of China's Oil Products Demand and Supply before 2020

		2009	2015			2020		
10 thousand tons			BAU	High	Low	BAU	High	Low
Crude Oil	Process	37460	55352	56011	54693	68898	71599	64761
Gasoline	Demand	6704	10290	10337	10199	12810	13025	12407
	Domestic Output	7195	10794	10922	10665	13170	13512	12833
	Balance	491	504	585	466	360	487	426
Diesel	Demand	13859	18553	18946	17936	23321	24500	21406
	Domestic Output	14127	18709	18988	18049	23439	24581	21582
	Balance	268	156	42	113	118	81	176
Kerosene	Demand	1497	2589	2625	2550	3423	3611	3225
	Domestic Output	1470	2491	2520	2461	3352	3435	3146
	Balance	-27	-98	-105	-89	-71	-176	-79

□ China's oil supply will still mainly come from domestic before 2020, import and export will play an important role of adjustment.

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1. Natural gas is of obvious price advantage and great potential



- According to the regulation proposed in June 2010 by Chinese government, natural gas price should be no less than 0.75 time of 90# gasoline price. Even though, the price advantage of gas vehicle is still obvious.
- There were more than 450 thousand gas vehicles in China by the end of 2009. Following the growth of supply capacity, gas vehicles in eastern coastal area of China will develop fast.

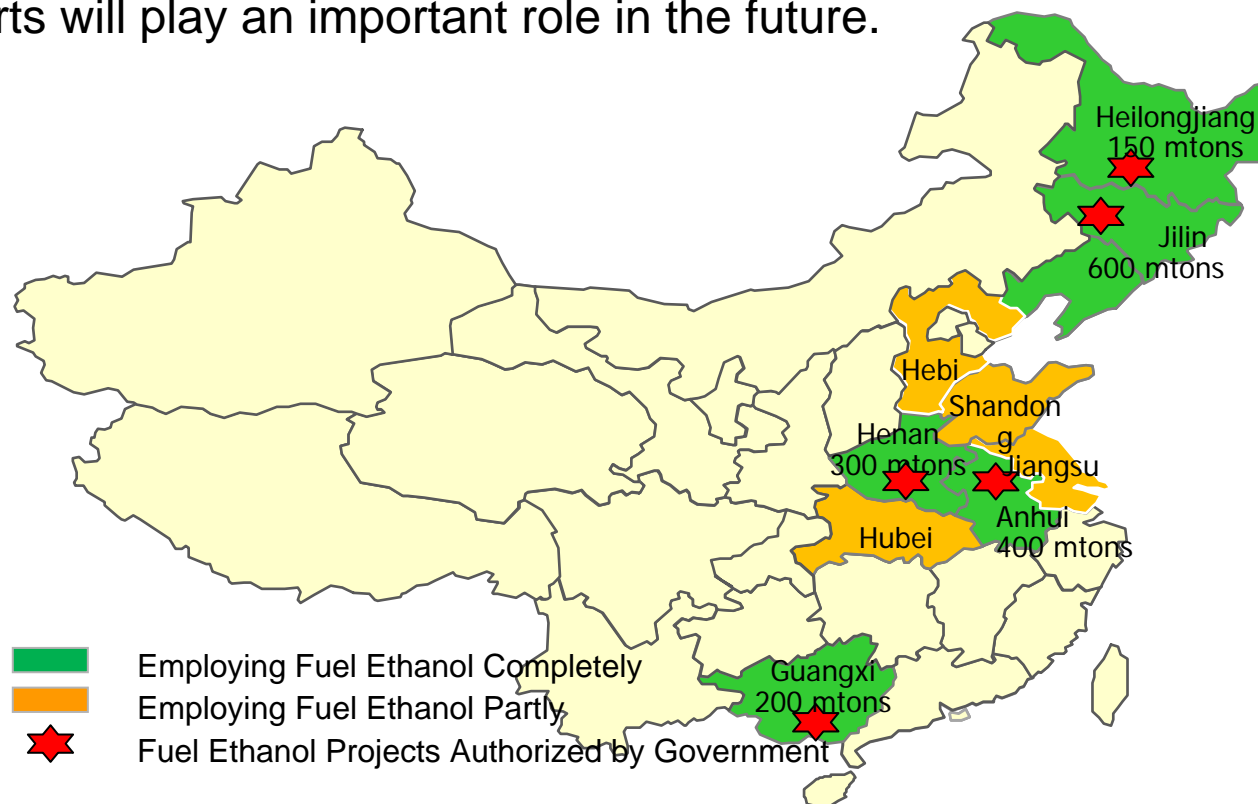
Contrast of China's Oil and Gas Price

Region	90#Gasoline (RMB Yuan/L)	93#Gasoline (RMB Yuan/L)	0#Diesel (RMB Yuan/L)	Vehicle Gas (RMB Yuan/m ³)	NG/Gasoline	NG/Diesel
Shanghai	—	6.61	6.5	4.2	63.5%	64.6%
Sichuan	5.98	6.4	6.27	4	66.9%	63.8%
Chongqing	6.06	6.41	6.23	4.6	75.9%	73.8%
Xinjiang	5.76	6.28	6.07	4.09	71.0%	67.4%

2. Develop of fuel ethanol is facing the problem of raw material supply



- Consumption of ethanol gasoline takes almost 30% of China's total gasoline consumption. According to the plan, China's fuel ethanol consumption will be 10 million tons in 2020.
- China's total production capacity of fuel ethanol is 1.65 million tons now, but its expansion is limited by cultivated land considering food security. Hence imports will play an important role in the future.



3. Electric vehicle has a bright future, but its substitution effect in the short term is small

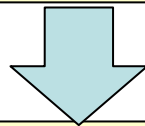


- Electric vehicle is still in the initial stage of develop and demonstration in China, which needs support of the government and technological breakthrough.
- According to the latest plan of Chinese government, the number of electric vehicle in 2020 will be 5 million, and it could save about 4 million of oil products.

Plan

2015

More than 500 thousand pure and plug hybrid electric cars. More than 1 million mid/high-hybrid passenger cars.



2020

More than 5 million pure and plug hybrid electric cars.
More than 50% of the car sales will be mid/high- hybrid cars.

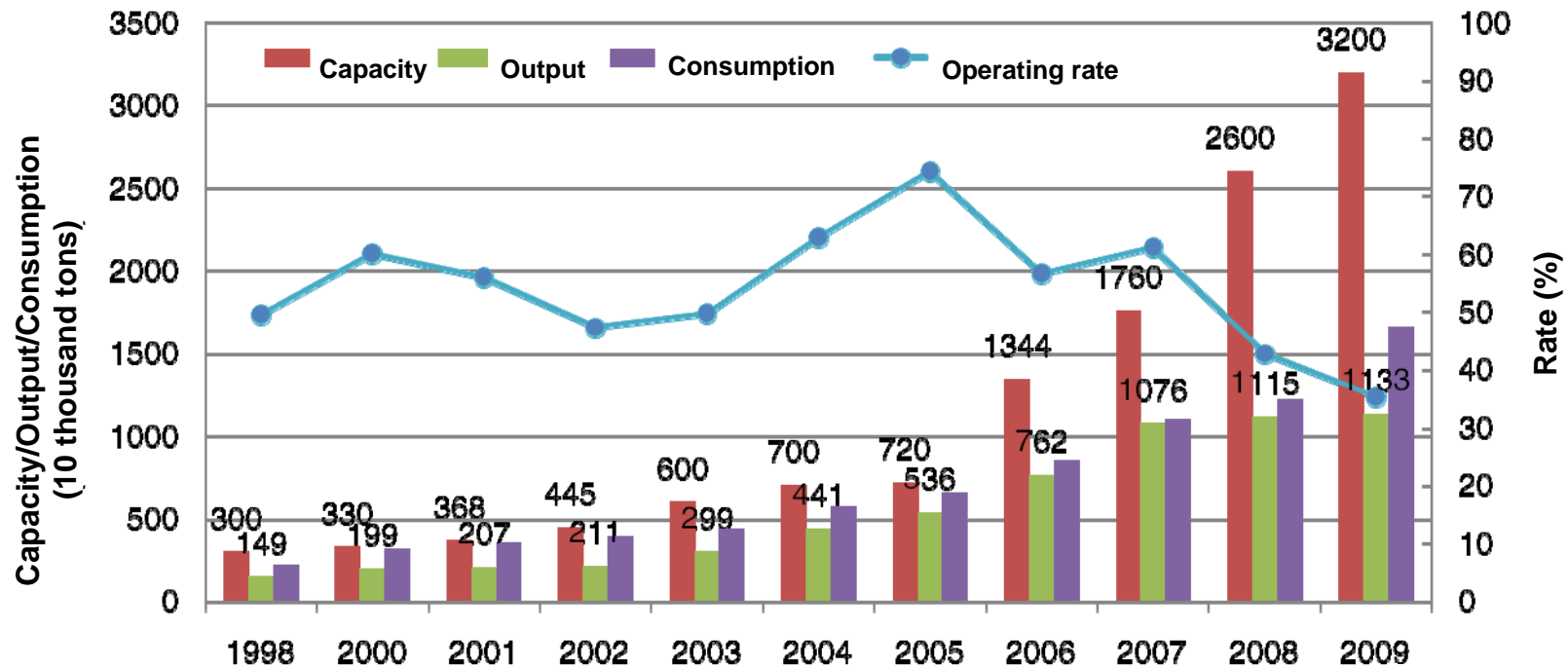
Measure

- 2011-2020, pure and plug hybrid EV will be exempted from the car purchases duty.
- 2011-2015, taxes of mid/high- hybrid cars will be halved.
- 2011-2020, VAT rate of new energy vehicle companies will be decreased to 13%.
- 2015, more than 10% of government procurement cars should be new energy cars.
- 2020, 1-2 auto enterprise groups with production capacity of 1 million new energy cars, 3-5 enterprise groups with production capacity of 500 thousand new energy cars

4. Production capacity of fuel methanol is surplus, but the market condition is not sufficient yet



- China's new capacity of methanol in 2010 was planned to be 8.61 million tons, but the operating rate is only 40% because of market downturns and import impact.
- China's production capacity of methanol gasoline is 7.8 million tons now, and its consumption is 3 million tons around. Since its problems of low-calorie, corrosive and environment have not been solved yet, development of methanol gasoline still needs support of technology, policy and market.



5. Coal to Liquid is still in demonstration stage, its future is uncertain



- Since the technology of coal to liquid is not mature, as well as its environmental impact and high water consumption, Chinese government has stopped new CTL projects twice in Jul. 2006 and Sep. 2008.
- China's capacity of coal to liquid is 1.5 million tons in 2010. Shenhua is the only approved project, and its production is 100 thousand tons in 2009.

Main CTL Projects of China

Projects	Capacity (10 Thousand tons)	Goal (million tons)
Shenhua-Ordos	108	5
NeiMongol-Yitai	16	5.4
Shanxi-Lu'an	21	3.6
Yulin-Yankuang	0.5	1
Shanxi-Jinmei	10	—

Note: The long-term goal is just plan by the companies, which might change under affect of policy and technology.



6. Analysis of alternative energy potential

- It is estimated that 28 million oil consumption could be substitute by alternative energy in 2020, which is about 10% of the total consumption.

Substitution of Alternative Energy

	2009	2015	2020	2020 Substitution of oil products
Possession of Gas Vehicle	0.5 million	1.5 million	3 million	6 million tons
Consumption of Fuel Methanol	3 million tons	6 million tons	9 million tons	5 million tons
Consumption of Fuel Ethanol	1.7 million tons	5 million tons	10 million tons	6 million tons
Possession of Electric Vehicle	—	0.5 million	5 million	4 million tons
Consumption of Coal to Liquid	0.1 million tons	3 million tons	6 million tons	6 million tons
Consumption of Bio-diesel	0.3 million tons	0.5 million tons	1 million tons	1 million tons
Total				2.8 million tons



Main Conclusions

- China's economy recovered quickly by investment and spending stimuli after the financial crisis, which will keep steadily growth in the next 10 years.
- Growth speed of China's oil consumption has restored to pre-crisis level. Regional structure of oil products consumption is changing.
- China's oil demand will keep increasing before 2020, and its average annual growth rate will be among 3.5% to 4.7%. China's oil demand will be 600 million tons in 2020.
- China's refining capacity will also keep rapid growth before 2015. Domestic production will still be the main source of oil supply, import & export will also play an important role of adjustment.
- Alternative energy could substitute 28 million tons of oil products in 2020, which is about 10% of China's total oil products consumption.

Thank you !

