

The 8th IEEJ/CNPC Research Meeting



CNPC

Status and Prospects for China's Oil Demand and Reserve

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Outline



I. Status of China's Oil Demand

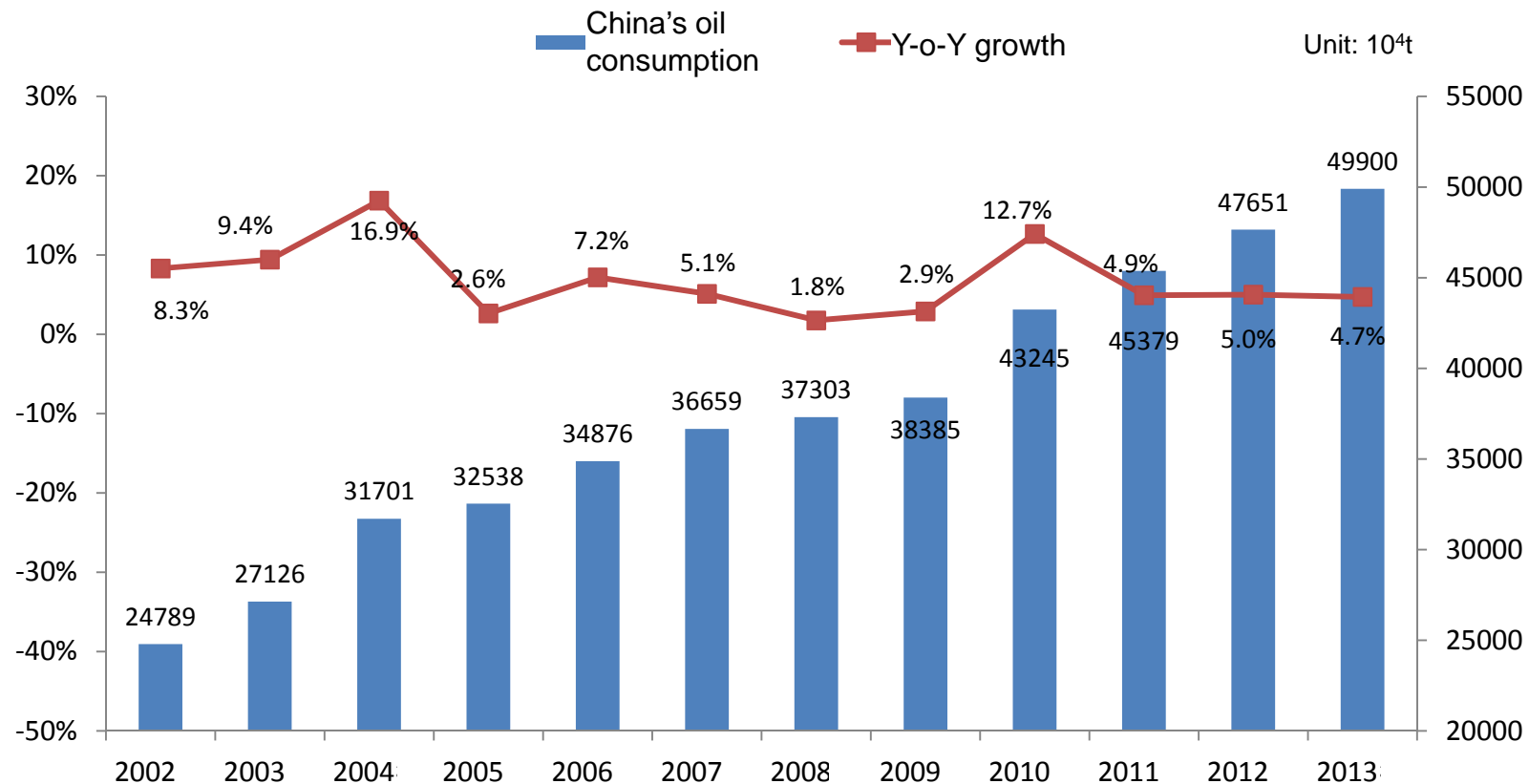
II. Prospects for China's Oil Supply
and Demand

III. Conclusion

1. China's oil consumption growth is slowing down



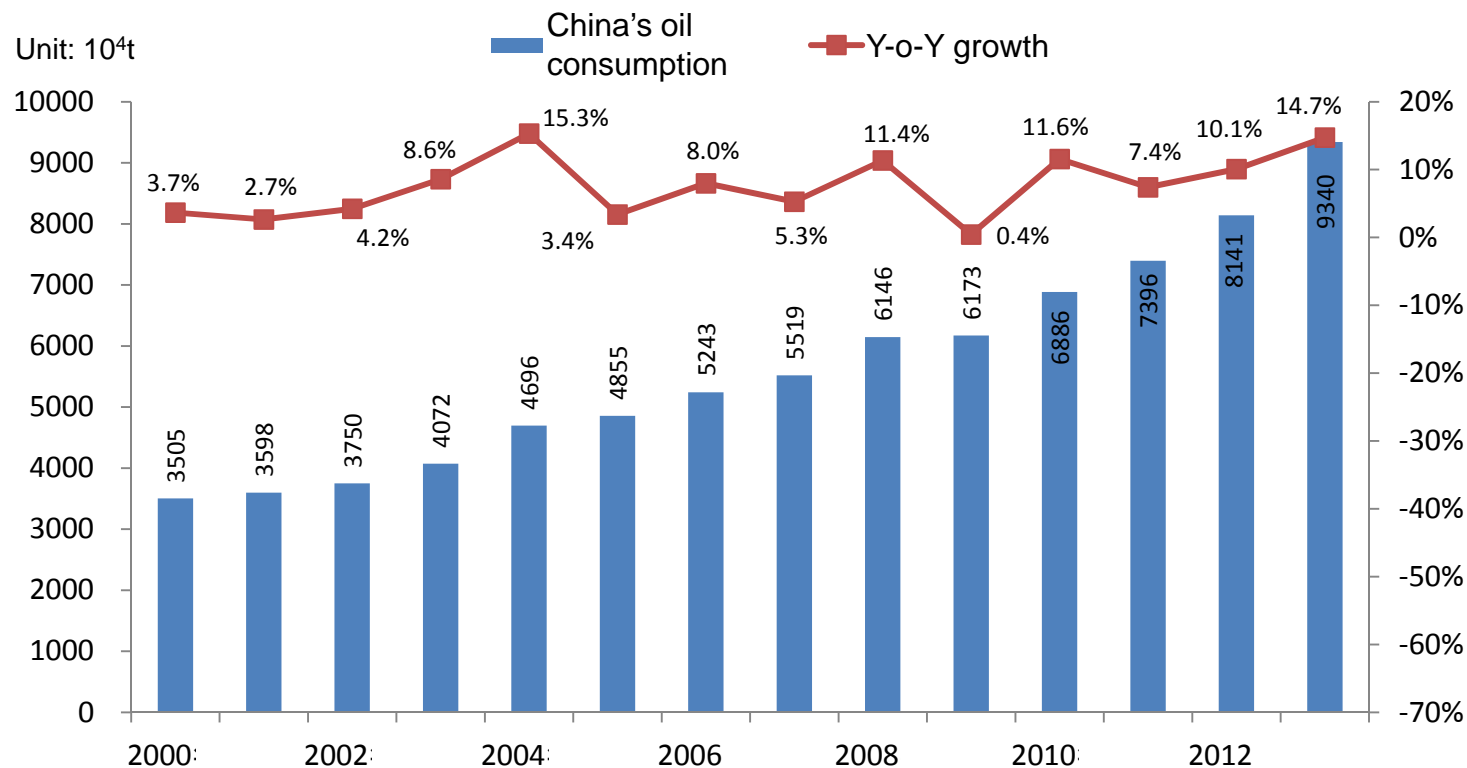
- In recent years, China's total oil consumption has grown relatively slowly, due to the slow global economic recovery, slowdown of China's macroeconomic growth and decreased growth rate of oil demand by China's major oil-consuming industries.
- In 2013, China's total oil consumption was approximately 499mmt, a year-on-year increase of 4.7%. (In the past ten years, the average growth was 7.4%)



2. China's gasoline demand has kept growing at a fast pace.



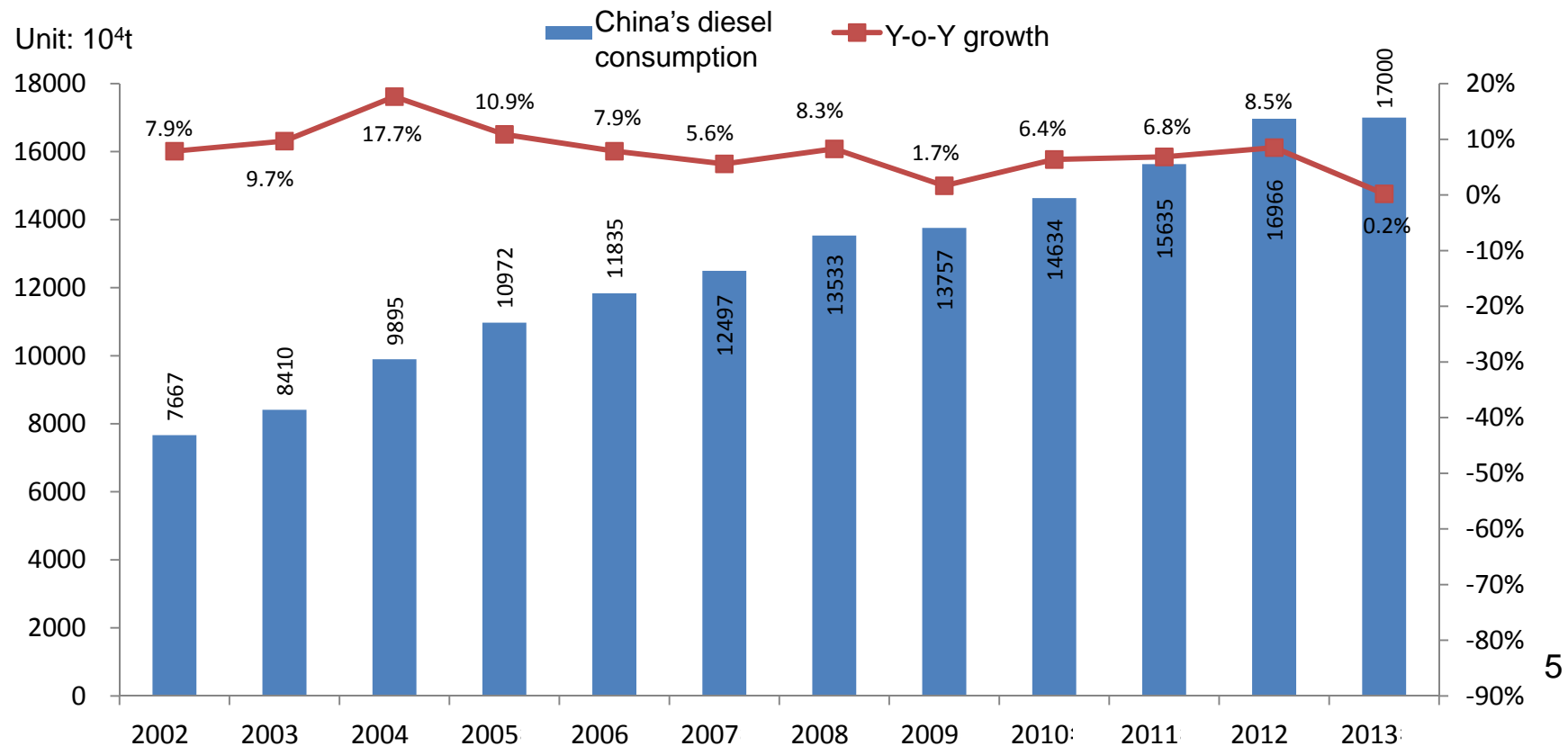
- With the growth of China's economy, rise of national income level and rapid advance of domestic road infrastructure, China's apparent consumption of gasoline increased very fast.
- In 2013, China's apparent consumption of gasoline reached up to 93.4mmt, year-on-year growth was 14.7%, and continue to maintain rapid growth momentum.



3. China's diesel consumption maintained zero growth for the first time



- Due to the slowdown in domestic economic growth and economic restructuring in transition, China's diesel consumption has been in the doldrums in recent years.
- In 2013, China's apparent consumption of diesel was only 170 million tons, essentially flat with the previous year. We predict that China's diesel consumption will reach at 169 million tons in 2014, which is slightly lower than 2013.

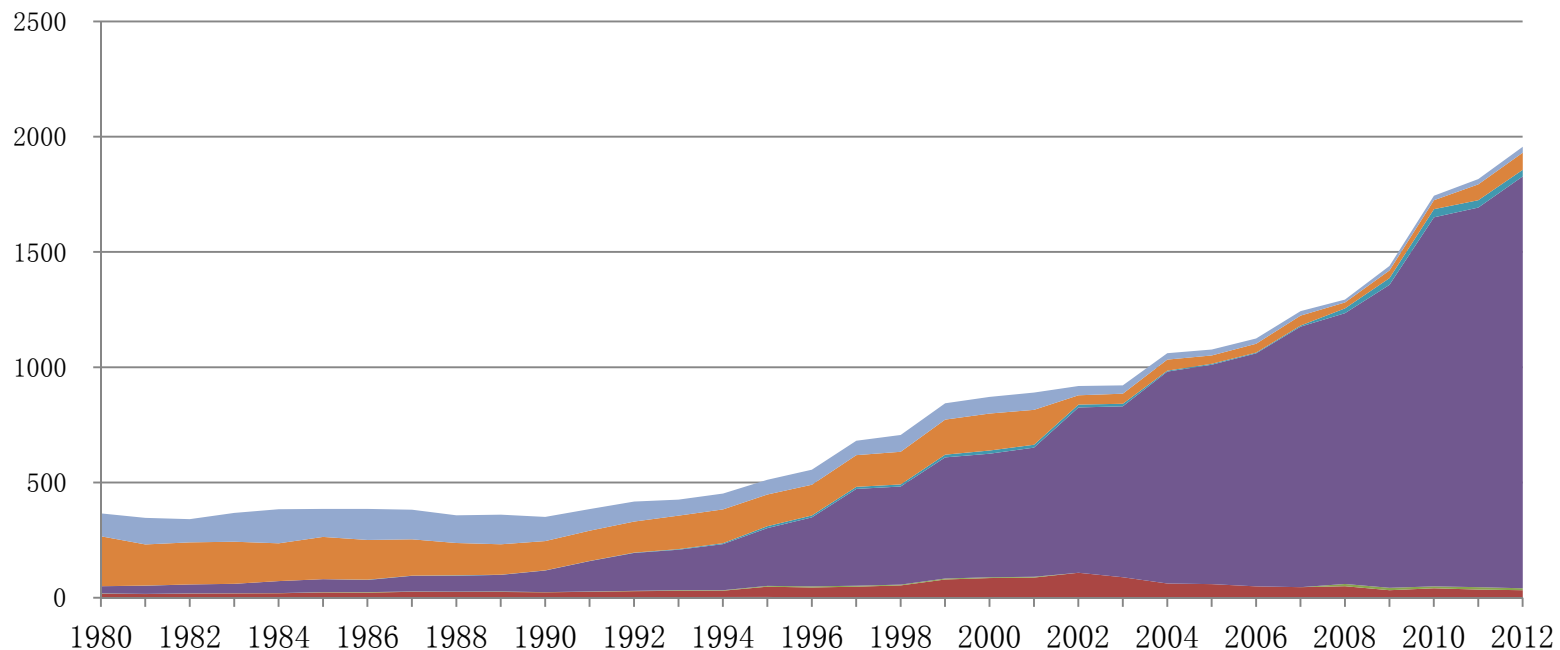


4. China's kerosene consumption growth is stable, meanwhile the consumption structure changes greatly



- Great changes have taken place in the consumption structure of Kerosene. The proportion of transportation、warehousing and postal industry rising rapidly, residents and other industries has fallen sharply. (Currently more than 90% of the kerosene consumption in our country from the civil aviation industry).
- In 2013, China's apparent consumption of kerosene was 22.23 million tons, grew by 10.7% Y-O-Y. We predict that China's kerosene consumption will reach at 25.13 million tons in 2014, grew by 11.2% Y-O-Y.

Kerosene demand structure in 1980-2012



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1. China's oil demand forecast scenarios

Baseline scenario

- China's economy maintains rapid growth, economic reforms are carried out smoothly, the industrial structure is optimizing constantly, consumption promotion compensates for investment downturn, urbanization develops sustainably, the automotive market grows fast, and the real estate market keeps stable development after adjustment. Under the baseline scenario, the average annual growth rate of China's economy will be 6.5% between 2016-2020.

High-speed scenario

- Urbanization develops fast, investment is still dominant in economic growth, the real estate market continues to grow rapidly, emerging industries develops fast, urbanization rate accelerates and becomes a new engine driving economic growth, and rapid recovery in overseas markets drives the resuming of rapid growth of exports. Under the high-speed scenario, the average annual growth rate of China's economy will be 7.5% between 2016-2020.

Low-speed scenario

- Economic restructuring is unsuccessful, China's economy gets stuck in a middle-income trap, the real estate market bubbles, investment growth falls sharply, and slow income growth inhibits consumption growth. Under the low-speed scenario, the average annual growth rate of China's economy will be 5.5% between 2016-2020.

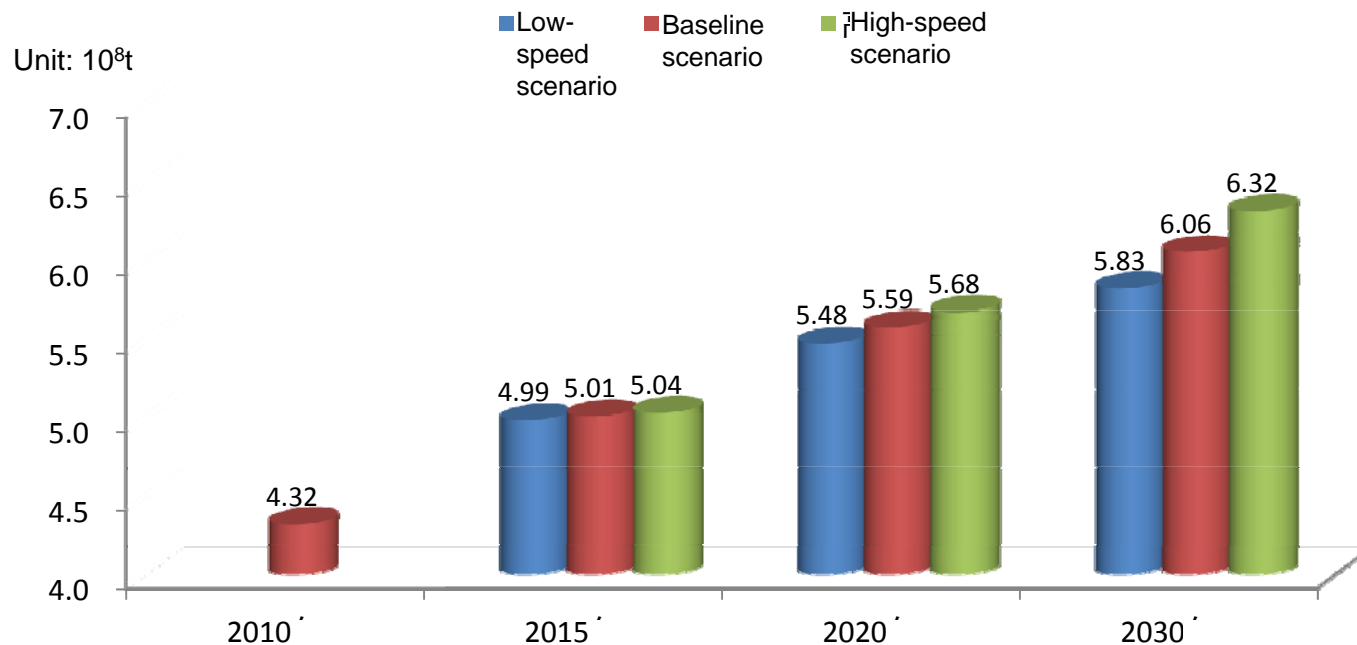
GDP growth rate	2013-2015	2016-2020	2020-2025	2025-2030	2020-2030
High-speed scenario	8%	7.5%	7%	6%	5.5%
Baseline scenario	7.5%	6.5%	6%	5%	4.5%
Low-speed scenario	6.5%	5.5%	5%	4%	3%

2.China's oil demand will maintain low growth by 2030



- China's total oil consumption has grown relatively slowly, due to the slow global economic recovery, slowdown of China's macroeconomic growth and decreased growth rate of oil demand by China's major oil-consuming industries.
- Under the baseline scenario, as predicted by the model and considering the impact of alternative energy sources, China's oil consumption will reach 608 million tons and 680 million tons respectively in 2020 and 2030, and the average annual growth rate will be 2.8% and 1.1% respectively in 2015-2020 and 2020-2030.

China's mid-long term oil demand scenario forecasts (2015-2030)

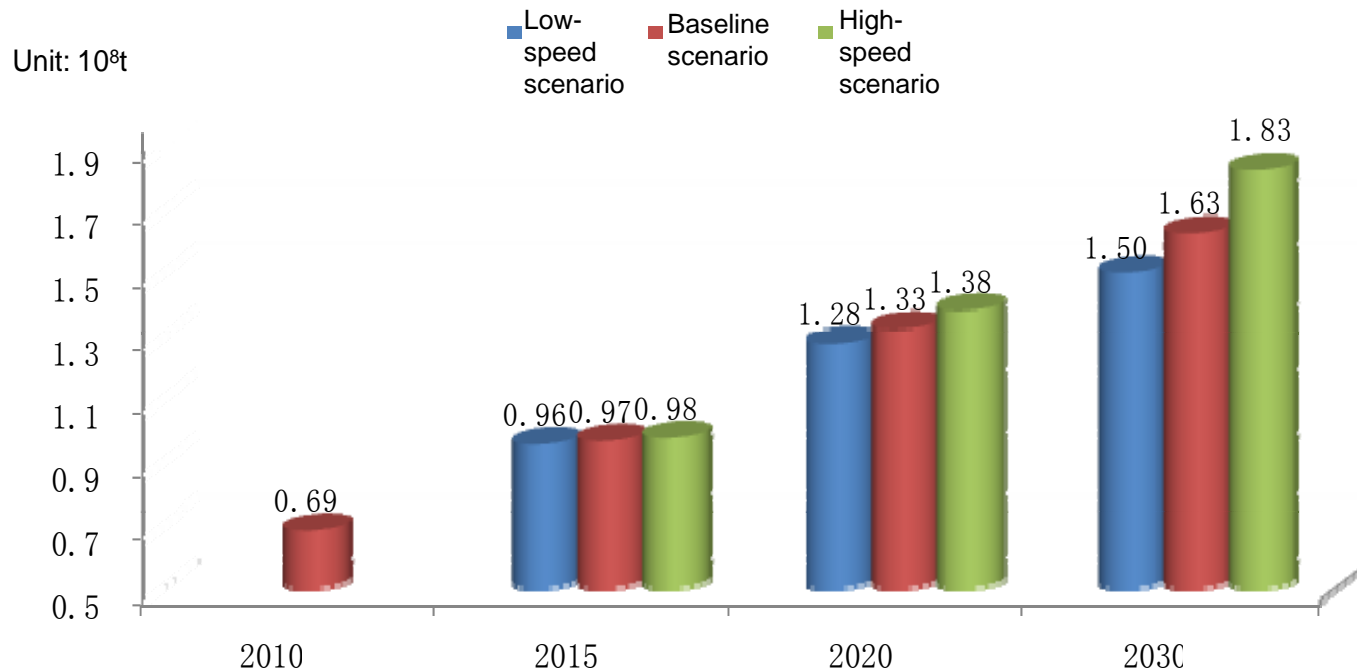


3. China's gasoline demand growth will slow down by 2030



- With the urban traffic congestion and urban environmental pollution problem are getting worse, it is expected after 2020 China's civil motor vehicles will enter the low-and-middle growth phase, and the 2020-2030 average annual growth will fall to around 5%.
- Under the baseline scenario, as predicted by the model and considering the impact of alternative energy sources, China's gasoline consumption will reach 133 million tons and 163 million tons respectively in 2020 and 2030, and the average annual growth rate will be 5.7% and 2.1% respectively in 2015-2020 and 2020-2030.

China's mid-long term gasoline demand scenario forecasts (2015-2030)

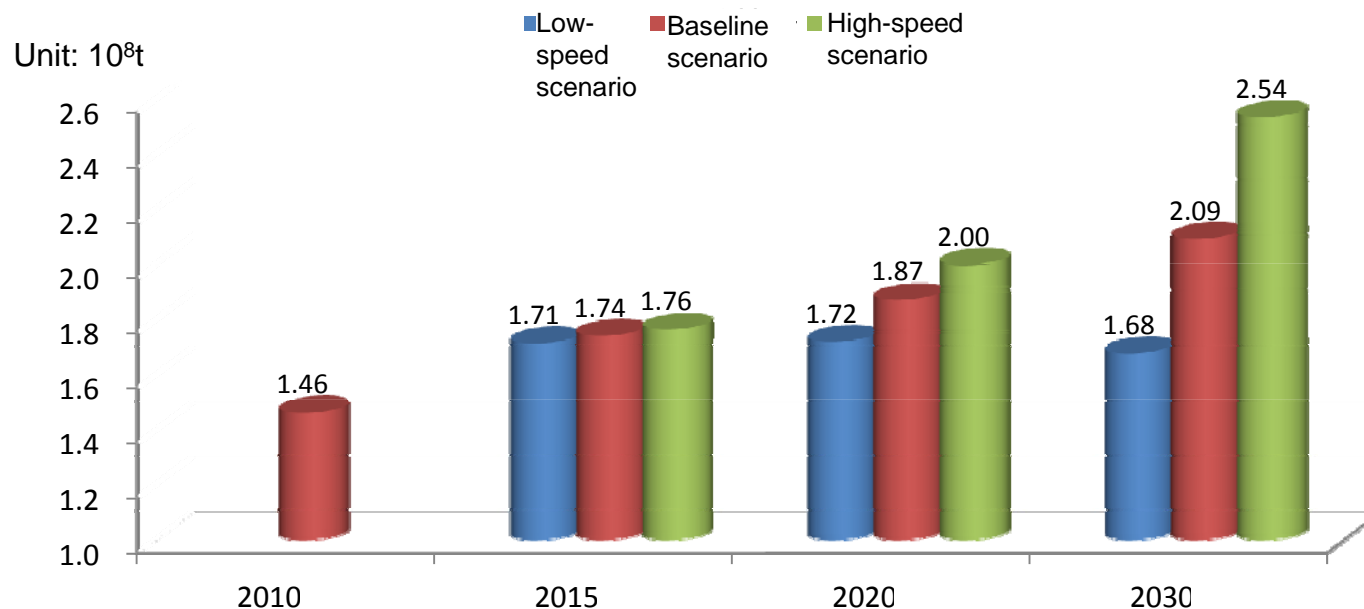


4.China's diesel demand will maintain slow growth by 2030



- In China, diesel as a means of production is closely related to economic growth. With the intensifying of China's economic restructuring, China's economy has gradually fallen into medium-speed growth from high-speed growth, so it is expected that China's diesel consumption growth will also decline.
- Under the baseline scenario, as predicted by the model, China's diesel consumption will reach 187 million tons and 209 million tons respectively in 2020 and 2030, and the average annual growth rate will be 1.5% and 1.1% respectively in 2015-2020 and 2020-2030.

China's mid-long term diesel demand scenario forecasts (2015-2030)

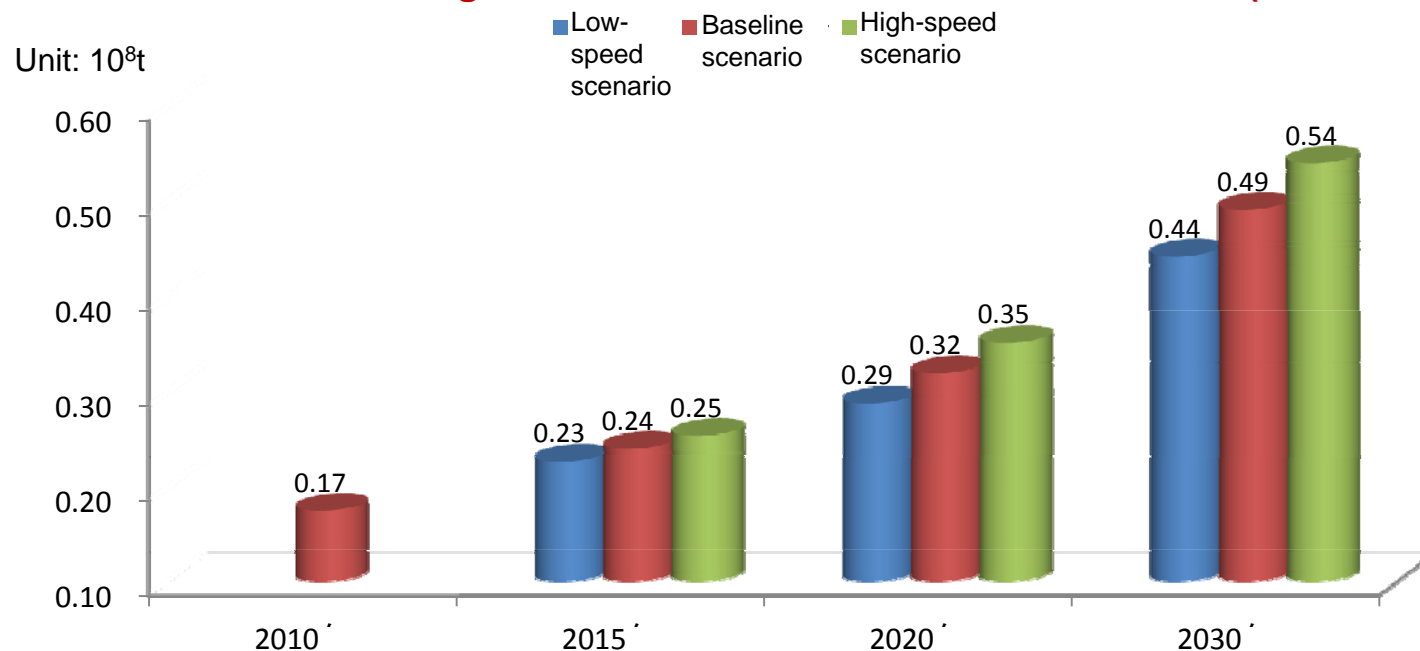


5.China kerosene demand continues to grow steadily by 2030



- With the level of economic and social development continues to improve and rising incomes, the civil aviation market demand will be more vigorous. It is expected that in 2015-2030, the average annual growth rate of China's aviation fuel consumption will be about 5% and will continue to maintain a rapid growth momentum.
- Under the baseline scenario, as predicted by the model, China's kerosene consumption will reach 32 million tons and 49 million tons respectively in 2020 and 2030, and the average annual growth rate will be 6.6% and 4.4% respectively in 2015-2020 and 2020-2030.

China's mid-long term kerosene demand scenario forecasts (2015-2030)



6. Influence on oil products by alternative energy —— natural gas



➔ Natural gas is major alternative fuel by 2020

- Status: By the end of 2013, the number of natural gas car ownership in China is 2 million, and automotive gas consumption is close to 20 billion cubic meters, which is equivalent to about 16 million tons of oil. It replaced about 5% oil consumption, which made it become the biggest alternative fuel.
- Prediction: We expect that the gas used for transportation will reach at 27.8 billion cubic meters in 2015, and 44.5 billion cubic meters in 2020, and 58 billion cubic meters in 2030. This will reduce the oil consumption about 23 million tons, 36.7 million tons and 36.7 million tons respectively.
- Key factors: When the price ratio of natural gas and oil is greater than 0.75:1, CNG and LNG will lose their advantages.

6. Influence on oil products by alternative energy —— electricity



→ Electric car will develop in a faster pace by 2020

- Status: The current demand of electric energy in the transport sector mainly coming from electrified railway instead of electric cars. In 2013, the electricity consumption of trains has replaced more than 15 million tons of diesel . In 2013 China's electric car has been sold for 17600 ,and car ownership number reached 32000.
- Prediction: We expect that electricity will replace consumption of diesel about 32.5 million tons in 2020,and 40million tons in 2030. Under the premise of cutting cost and progressing technology, we expect that electric cars sale number will reach at 0.6million, and the car ownership number is 3.5 million in 2020. This number will rise up to 6.6 million and 35 million respectively in 2030.
- Key factors: Electric cars mainly depends on policy support now. It's future development mainly depends on technical progress and cost reduction.

6. Influence on oil products by alternative energy —— Biofuel



→ Cautiously positive outlook for biofuel

- Status : In 2013, biodiesel production nationwide is about 0.88 million tons ,the input is about 1.7 million tons; the first generation ethanol fuel production (with straw as the main raw material) is 2.02 million tons ,the second generation ethanol fuel production (with grain crops as the main raw material) is 90000 tons .
- Prediction: The demand for biodiesel will be 3 million tons by 2020,and fall back to 2 million tons by 2030; China's fuel ethanol use scale will remain at 2 million tons per year before 2020, once the cellulose ethanol or coal ethanol technology has been a breakthrough, ethanol fuel consumption will reach 500 million tons per year with the national policy permit.
- Key factors: The raw material source of biodiesel is instability and the profit is low ; The technology improvement of the second generation ethanol fuel determines the scale of ethanol fuel in the future.

6. Influence on oil products by alternative energy ——methanol gasoline



A large-scale promotion of the methanol gasoline is less likely

- Methanol gasoline: Methanol gasoline consumption is about 1 million tons in 2013, replace about 0.45 million tons gasoline.
- Prediction: The demand of methanol gasoline will be 4 million tons, replace about 1.8 million tons gasoline in 2015; the demand will be 5 million tons, replace about 2.25 million tons gasoline in 2020; the demand will be 6 million tons, replace about 2.7 million tons gasoline in 2030.
- Key factors: With environmental pollution、 coal resources、 the cost of automobile power system reform for methanol gasoline, a large-scale promotion of the methanol gasoline is less likely.

6. Influence on oil products by alternative energy ——coal-to-liquids



→ Large uncertainty for CTL

- If the planning and on-going CTL projects were all put into implementation, CLT production would be 33 million tons per year. However, only Shenhua Shennong with 4 million tons production one year and Yankuangyulin with 1 million tons production one year has been approved by now. The total production of CTL has been 1.73 million tons per year by the end of 2013.
- Prediction: CTL production will be 1.5 million tons in 2015, and this number will increase to 5 million tons in 2020 and 10 million tons in 2030 respectively.
- Key factors: With the limitations of technology and resources as well as environmental protection, CLT's foreground is uncertain.

6. Influence on oil products by alternative energy —— conclusion



- Base on the existing economic and technical level, oil will still be the main transportation fuel, and other kinds of alternative fuels will also play a role of necessary and useful complement.
- All kinds of alternative fuel consumption in 2012 was equivalent to about 27 million tons oil, and this number will increase to 64 million tons in 2020. Natural gas and electricity have larger proportions, meanwhile the development of fuel methanol and CTL facing greater uncertainty.

Estimates of alternative numbers by alternative fuel (10000 tons)

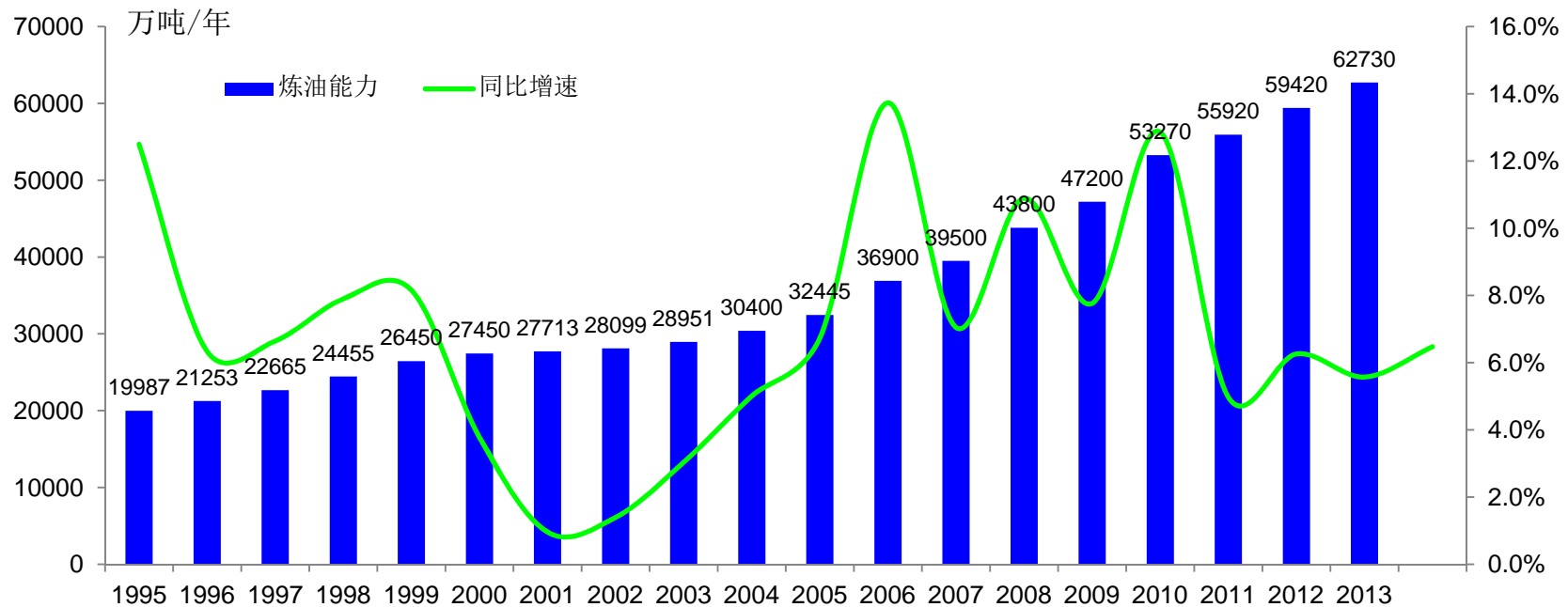
	Natural gas	fuel methanol	Bioethanol	CTL	Biodiesel	Electric locomotive	Electric car	Total
10000tons	million cubic meters	10000 tons	10000 tons	10000 tons	10000 tons	billion kwh	10000	10000
2012 (actual quantity)	155	400	200	100	100	910	3	—
2012 (alternative)	1280	180	120	100	100	2400	2	4182
2015 (actual quantity)	278	400	200	150	300	1060	20	—
2015 (alternative)	2300	180	120	150	300	2800	10	5860
2020 (actual quantity)	445	500	200	500	200	1230	350	—
2020 (alternative)	3670	225	120	500	200	3250	175	8140
2030 (actual quantity)	580	600	200	1000	200	1500	3500	—
2020 (alternative)	4780	270	120	1000	200	4000	1750	12125

10.China's Oil market will stay in a situation which supply is greater than demand

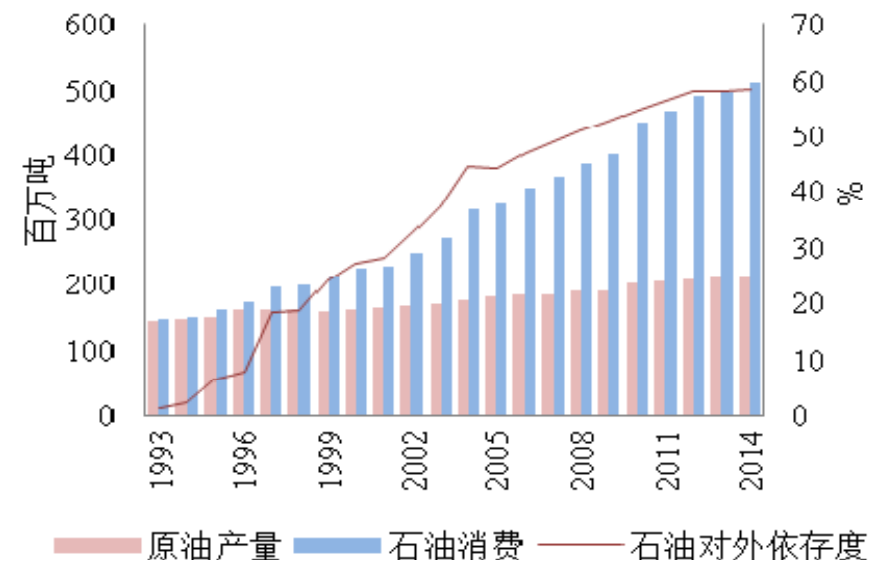
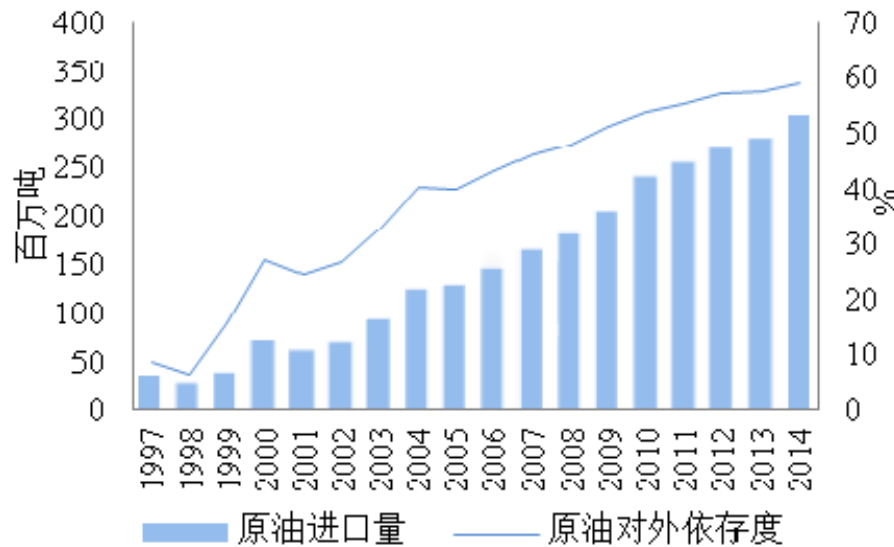


- By the end of August 2014, China's refining capacity was 650 million tons/year. China's refinery capacity will reach 850 million tons in 2020, and crude processing volume rise up to 650 million tons, oil production will be 393 million tons, which will make the supply larger than demand for about 41 million tons.

China's refinery capacity in 1995-2013



9.China's oil external dependence will be controlled at around 65%



- In 2013, China's oil output was 210 million tons, it has a net gain of 3.7 million tons, and growth rate reached at 1.8% from a year earlier. It was also four consecutive years to keep more than 200 million tons, and the external dependence is as high as 58.1%. It is expected that the oil processing volume will be 210 million tons.
- Domestic oil production in 2020 is projected to 230 million tons, and external dependency is as high as 65%.

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Conclusion

China's economy is coming into a transitional period, subject to the impact of economic structural, industrial structural and oil industry adjustment, the oil consumption growth in China will slow down before 2020. The consumption growth of kerosene, gasoline and diesel will present "high, medium and low" respectively.

It's expected that in 2020, China's alternative energy will replace about 81.4 million tons oil. Natural gas will play an important role in the market before 2020, and electricity will gradually become the main alternative energy after 2020, meanwhile other alternative energy sources will face greater uncertainty.

Domestic oil production in 2020 is projected to 230 million tons, and external dependency is as high as 66%. China's refinery capacity will reach 850 million tons in 2020, and crude processing volume rise up to 650 million tons, oil production will be 393 million tons, which will make supply still lager than demand.

