

Current Development Situations of China Coal Industry & Expectation of the “Thirteenth Five-year” Plan

He Youguo, President
China Coal Information Institute
Tel:0086-10-84657818
Email: heyg@coalinfo.net.cn
www.nios.com.cn

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- China Coal Information Institute, founded in 1959, is a national level scientific research institute directly under the State Administration of Work Safety (SAWS).
- It conducts information researches on many fields including coal, energy, work safety, environment, science & technology, laws, and others, and provides important information support, decision-making consulting and technology research and development services for the development of work safety and coal industry all over the country.
- It owns over 30 achievements in scientific research that have won scientific awards in both state and provincial levels.

- The China Coal Industry Publishing House subordinate to the CCII is state-owned first-class publishing houses with more than 500 types of publications and 30 series of audio-video products annually.
- It has edited and published **five periodicals**, that is, *Journal of China Work Safety*, *China Coal*, *Modern Miner*, *China Coalbed Methane*, and *China Coal Vision* and some **in-house magazines** like *Coal Information*, *Legal System in Work Safety* and *Foreign Work Safety Trends*.
- It is **a state-owned first-class sci-tech novelty retrieval consulting institute**, owns the **Coal Digital Library** which is the largest and the most professional one in coal industry and develops a cellphone information platform to provide **customized information service** to its users.

Overview



- ❖ Coal is the fundamental energy in China, and plays an important role in economic and social development
- ❖ The correct analysis on current situations of coal supply & demand, and development trend can lay favorable foundation for future development
- ❖ Challenges and structural problems that China Coal Industry faces: market demand slows down and environmental constraint intensifies
- ❖ Deepen reform, promote coal energy reform, and follow safe, green and sustainable development way during the “Thirteenth Five-year” Plan

Current Situations and Characteristics of Coal Demands



Coal plays a fundamental role in primary energy in China

- ❖ It has been globally proved that coal resource reserve accounts for 55% of total fossil energy reserve while the coal resource reserve accounts for 99% of total fossil energy reserve in China
- ❖ The coal consumption growth in China is the main power driving for the global coal growth; in 2013, the coal consumption in China accounts for 50.7% of total global coal consumption, and nearly 80% of the global coal consumption growth since 1980.

Current Situations and Characteristics of Coal Demands



Coal plays a fundamental role in primary energy in China

- ❖ In view of energy structure, in 2013 the coal consumption in China accounts for 66.0% of primary energy consumption, about 40% higher than world average level
- ❖ The energy occurrence characteristics in China and domestic-oriented energy strategies and policies decide that coal will still be the important fundamental energy in China in a quite long time .

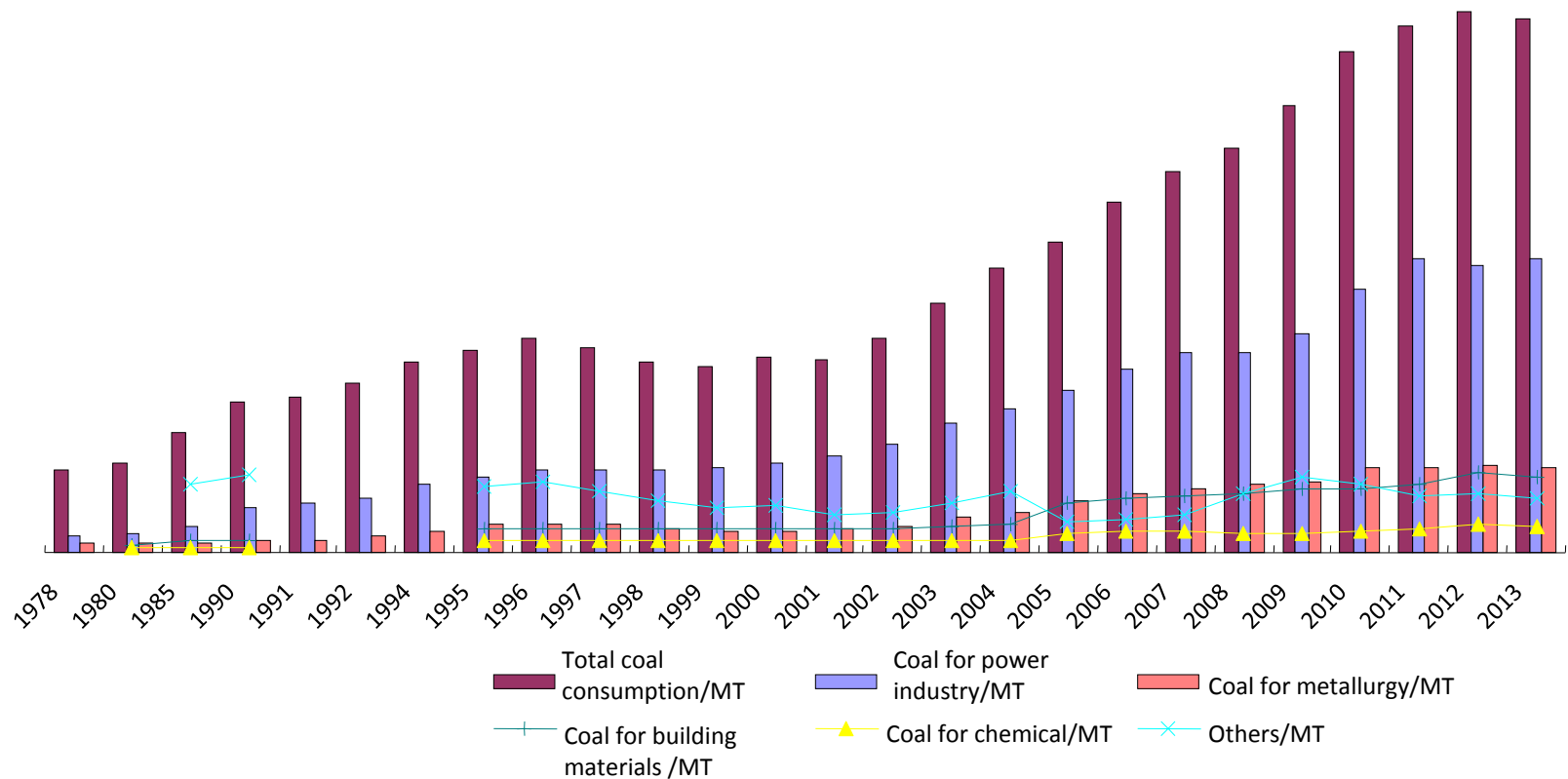
Current Situations and Characteristics of Coal Demands



Power industry is the main factor for coal demand growth

- ❖ Since the 21st Century, China industrialization process keeps developing toward heavy industrialization, and coal consumption concentrates in power, steel, cement and chemical industry, etc..
- ❖ During 2005-2013, the coal consumption in the four industries has increased from 1.88 Billion Ton to 3.37 Billion Ton, and proportion to total domestic coal consumption increased from 81.0% to 92.4%

Current Situations and Characteristics of Coal Demands



The trend of China coal consumption and composition from 1978 to 2013

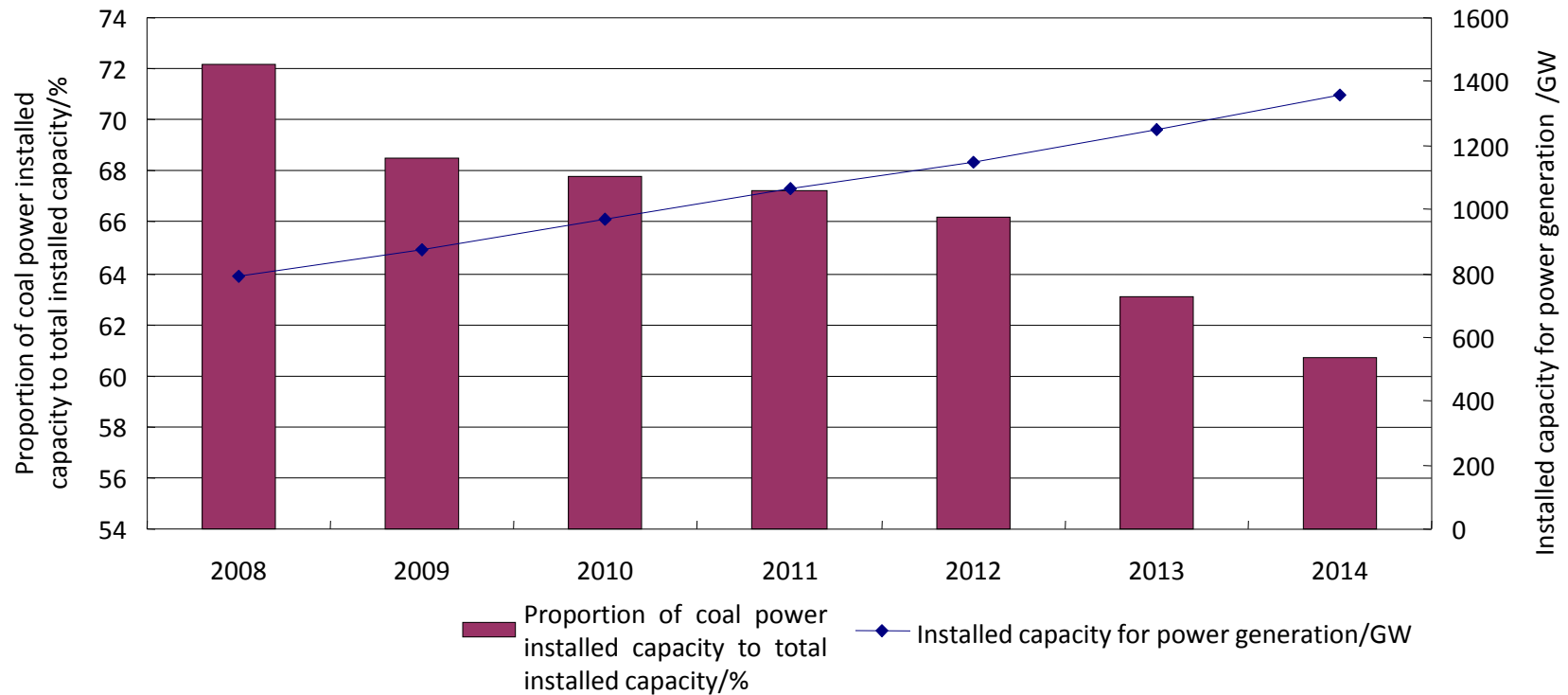
Current Situations and Characteristics of Coal Demands



Power industry is the main factor for coal demand growth

- ❖ As restricted by energy resource structure and distribution, the power development in China relies on coal power for a long time; power industry becomes the main factor driving growth of coal consumption.
- ❖ In 2013, the proportion of coal power installed capacity to total installed capacity in China is 33% higher than that in USA and 46% higher than that in Japan.
- ❖ In 2013, the coal for power generation and heating in China accounts for 55.7% of total domestic coal consumption.

Current Situations and Characteristics of Coal Demands



Changes of Power Installed Capacity and Coal Power Installed Capacity Proportion in China from 2008 to 2014

Current Situations and Characteristics of Coal Demands



Terminal directly consumed coal keeps growing slowly

- ❖ Studies show that the emission of sulfur dioxide, nitric oxide and fine particulate matters generated by coal combustion respectively accounts for 80%, 60% and 70% of the total emission in China
- ❖ In Recent years, although the proportion of terminal directly consumed coal to total coal consumption in China has reduced, the absolute amount keeps increasing slowly.
- ❖ In 2013, the terminal directly consumed coal in China increased 340 million tons than that in 2000, accounting for 24% of total coal consumption, and 10% higher than the world average level.

Current Situations and Characteristics of Coal Demands



Coal consumption transfers to main coal production area in West China

- ❖ Since the “Eleventh Five-year” Plan, the newly increased coal power installed capacity layout has been transferred to west China gradually. The coal chemical projects are mainly in Shanxi, Shaanxi, Inner Mongolia and Ningxia. The coal consumption in west China increases rapidly.
- ❖ From 2005 to 2013, the coal consumption in Shanxi, Shaanxi, Inner Mongolia, Ningxia, Gansu and Xinjiang has increased from 445 million tons to 895 million tons, and the proportion to nationwide coal consumption has improved from 19.2% to 24.5%.
- ❖ During the same period, the current coal consumption to total nationwide consumption in Beijing-Tianjin-Hebei, Northeast and East China regions has dropped 1.6%, 1.0% and 1.2% respectively

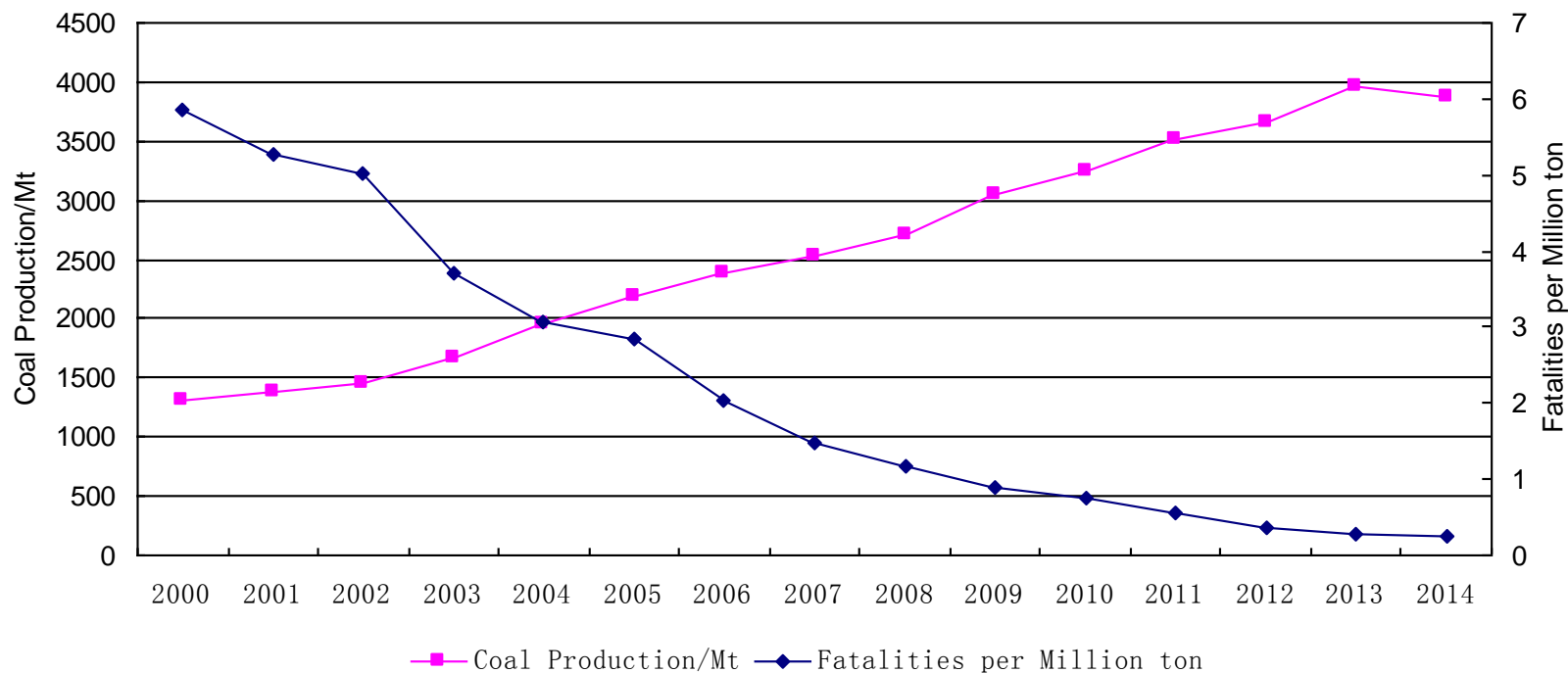
Current Situations and Characteristics of Coal Supply



Coal supply capacity increases greatly

- ❖ During 2000-2010, the average annual growth of China coal output is about 200 million tons, and average annual growth rate is 8.9%;
- ❖ In 2014, the coal output in China is 3870 million tons, accounts for 47.4% of global coal output, and fall 2.5% last year, for the first time in ten years;
- ❖ While coal production scale expands, coal mine safety conditions have improved obviously.

Current Situations and Characteristics of Coal Supply



The trend of China coal production and fatalities per million ton from 2000 to 2014

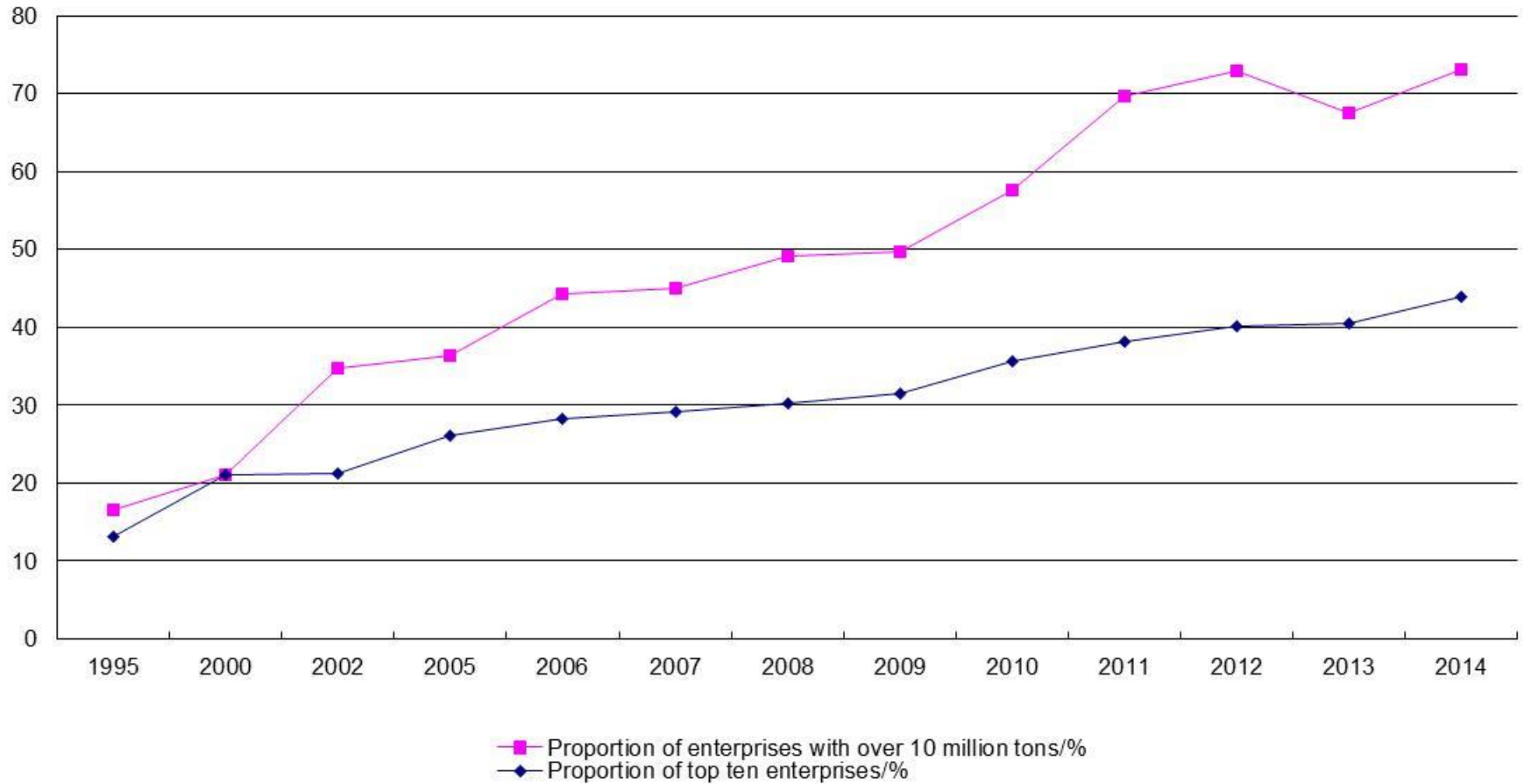
Current Situations and Characteristics of Coal Supply



Coal industry structure improved obviously

- ❖ Since the “Eleventh Five-year” Plan, China promoted industrial structure adjustment by developing large base, large enterprise and large coal mines, and eliminating outdated production facilities;
- ❖ In 2013, the coal output in 14 large-scale coal bases increased 2 Billion tons than that in 2003, and the proportion to total national output increased 14%; the bases became subjects of coal supply in China;
- ❖ In 2014, the annual output of ten million tons coal enterprises accounts for 73% of nationwide output. The sustainable development capacity of coal industry can be further improved.

Current Situations and Characteristics of Coal Supply



Changes in China Coal Industry Concentration from 1995 to 2014

Current Situations and Characteristics of Coal Supply



Coal development layout accelerates moving westwards

- ❖ The coal resources in west China accounts for 80% of total coal resources in China; the newly proved resource reserves in recent decade are almost all in main coal producing provinces in west China;
- ❖ During the “Twelfth Five-year” Plan, the planned output in west China is 540 Million Tons/Year, accounting for 73%;
- ❖ In 2014, the coal output in Shanxi, Inner Mongolia, Shaanxi, Gansu, Ningxia and Xinjiang is about 71% of total coal output in China.

Current Situations and Characteristics of Coal Supply



Coal development layout accelerates moving westwards

- ❖ Since the “Twelfth Five-year” Plan, the coal mine construction has accelerated in west China, and a batch of large-scale and super-huge modern coal mines and strip mines were built successively to improve the productivity rapidly;
- ❖ In 2013, Haerwusu Coal Mine and Heidaigou Coal Mine ranked in world top ten largest coal mines in the world. Haerwusu Coal mine is the largest surface mine in China with annual raw coal output of 20Mt and service life of over 75 years; Heidaigou surface mine is the first mine in China using AC walking dragline excavator with annual designed productivity of 31Mt.

Current Situations and Characteristics of Coal Supply



Haerwusu surface mine

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Under new normal situation, energy demand strength and growth rate reduced, and coal demand growth slowed down

- ❖ After near 30 years' high speed development, Chinese economy enters structural adjustment period;
- ❖ Under new normal situation, the basic characteristic of economy is transferring from high speed growth to medium and high speed growth. The economic growth mode transfers from quantity-oriented growth to quality-oriented growth, and economic growth power transfers from investment-dependent to productivity improvement dependent. The dependence degree of economic growth on energy reduces and energy demand growth rate reduces.

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Under new normal situation, energy demand strength and growth rate reduced, and coal demand growth slowed down

- ❖ In 2013, Chinese economy growth rate dropped from over 9% during the “Eleventh Five-year” Plan to 7.7%, and dropped to 7.4% in 2014;
- ❖ By prediction, during the “Thirteenth Five-year” Plan, the growth rate of Chinese economy will drop to below 7%, and energy demand growth rate will drop to around 3.3%, half of that in the previous decade;
- ❖ By 2020, the energy demand will reach 4.5-4.8 Billion tons of standard coal, in which, the coal demand proportion will drop to below 62% from 66% in 2013

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



High efficiency, cleanness and low carbon are the directions of energy development

- ❖ China actively promotes new energy development, and greatly improves proportion of non-fossil energy power generation
- ❖ With abundant renewable energies, and fund and technology for large-scale development, the power generation cost is gradually approaching to that of traditional energy along with industrialized, scaled and commercial development. The renewable energy has become an important support for power supply in China;

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



High efficiency, cleanness and low carbon are the directions of energy development

- ❖ In accordance with *Energy Development Strategic Action Planning (2014-2020)*, by 2020, the conventional hydropower installed capacity can reach 350million kw, grid connected wind power can reach 200 million kw and photovoltaic power generation can reach 100 million kw;
- ❖ After 2020, the non-coal power generation units can meet newly increased demand of power;
- ❖ The substitution effect of clean energies for coal will appear gradually;

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Clean utilization of coal is urgent

- ❖ Climate change becomes a global issue involving benefits of all countries. The low carbon and no carbon development gradually become the mainstream of future energy development;
- ❖ China promises in *U.S.-China Joint Announcement on Climate Change* that by 2030, the carbon dioxide emission will reach the peak and make best efforts to peak early;
- ❖ In 2013, *Air Pollution Prevention and Control Plan* was published in China to clearly propose to control total coal consumption.

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Coal production and consumption cost will keep improving

- ❖ China submitted *Enhanced Actions on Climate Change: China's Intended Nationally Determined Contributions* to the United Nation on June 30, 2015, and mentioned to lower carbon dioxide emissions per unit of GDP by 60% to 65% of that in 2005 by 2030;
- ❖ Energy saving and low carbon industry is the future development direction, and coal production and consumption cost will keep improving.

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Increase of coal demand in main coal-consuming industries such as power slows down

- ❖ The coal is mainly consumed for power generation in America and Australia with proportion of over 90% and 80% respectively; the proportion in EU countries also reaches about 67%; the power-oriented coal consumption in China only accounts for about 55% of total coal consumption;
- ❖ Existing engineering practices and technologies prove that power generation can realize near-zero emission of conventional pollutants. In the future, power generation is the main orientation of coal utilization, but the growth will slow down; as affected by international oil price and carbon emission, the modern coal chemical development scale is uncertain;

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Increase of coal demand in main coal-consuming industries such as power slows down

- ❖ The accumulative crude steel and cement consumption per capita in China has approached the level of developed countries when the industrialization was finished; during the “Thirteenth Five-year” Plan, the coal demand in steel and building materials industry will gradually reach the peak and reduce step by step;

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



International coal market is in weak demand

- ❖ International coal market is in weak demand and coal price drops continuously;
- ❖ The price of high quality power coal in Newcastle Port, Australia drops from USD100/Ton in May 2012 to USD 60/ton; the price of high quality coking in Hay Point Port, Australia drops from USD 220/ton in May 2012 to USD 80/ton, decreasing 63%;

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Domestic coal market is in weak demand, and coal price drops greatly

- ❖ In recent three years, the domestic coal price has decreased greatly in China. The price of power coal drops about 100 Yuan/ton every year; the 5500 major calorie power coal in Qinhuangdao Port has dropped about 47% from May 2012 to July 2015; the decreasing amplitude in 2015 is 110 Yuan/ton;

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Trend of week change of 5500 major calorie power coal in Qinhuangdao Port from Jan. 5, 2012 to June 18, 2015

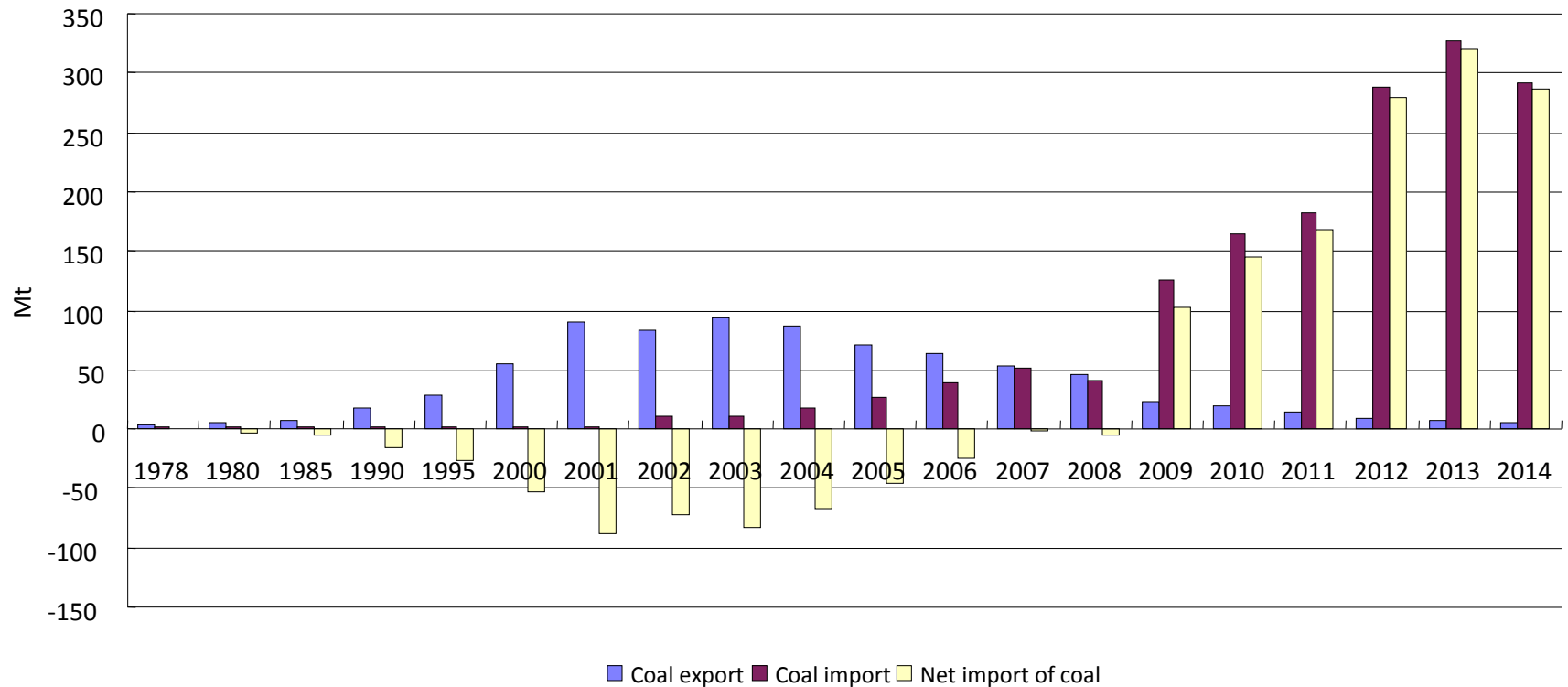
Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Change and influence of coal import in China

- ❖ In 2009, China turned into net coal importer from net coal exporter;
- ❖ In 2013, the coal import in China was 8 times of that in 2008, accounting for 1/4 of international carbon trade; in 2014, China coal import decreased year on year but the absolute value was still large;
- ❖ In September 2014, *Administrative Measures for Commodity Coal Quality* was published in China to reduce import of fault coal;
- ❖ Indonesia and Australia are great importers for Chinese coal. The ASEAN Free Trade Agreement and China-Australia Free Trade Agreement make import tariff affect little on imported coal;
- ❖ In the first half year of 2015, China coal import reduced by 37.5% year on year;

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



The trend of China Coal Import and export from 1978 to 2014

Situations that Coal Industry Faces in the “Thirteenth Five-year” Plan



Excessive coal capacity cannot be changed in a short time

- ❖ During the “Eleventh Five-year” Plan, the investment in coal mine construction is 2.6 times of the sum in the previous 55 years; during the “Twelfth Five-year” Plan, the look-ahead construction capacity and resource integrated capacity was released successively;
- ❖ At present, various coal mine output in China has passed 5 billion tons, and the situation of serious excessive coal capacity has come into being and could not be changed in a short time.

Outlook for Coal Industry during “Thirteenth Five-year” Plan



- ❖ Build safe, green, efficient and large-scale modern coal mine, and promote gas extraction and utilization
- ❖ Close down outdated capacity and mines with serious natural disasters
- ❖ Reduce direct coal combustion, improve processing transformation proportion, and develop ultra-low emission coal-fired power plants
- ❖ Study intelligent mine construction, support technical equipment for unmanned working surface and new coal chemical engineering demonstration and technology
- ❖ Integrate into “one belt and one road” strategy, and deeply blend with development of global coal industry

Outlook for Coal Industry during “Thirteenth Five-year” Plan



Coal production reform

- ❖ Optimize coal production and development layout
- ❖ By 2020, the national safe and green coal mine output will reach up to 3 Billion Tons;
- ❖ Eliminate outdated production facilities: mainly close down coal mine without safety production conditions and with serious natural disasters and exhausted coal mines;
- ❖ Strengthen natural disaster treatment for gas, and promote mining before extraction, conforming extraction and mining;

Outlook for Coal Industry during “Thirteenth Five-year” Plan



Coal consumption reform

- ❖ Replace scattered small and medium boilers by clean energies such as natural gas and power to reduce coal scattered combustion and improve processing transformation proportion;
- ❖ By 2020, the coal used in intermediate consumption such as power and coking will be over 85%, and terminal directly consumed coal shall be reduced to within 600 million tons;
- ❖ Eliminate low-efficient chain boiler, and promote high efficient coal-powder boiler;
- ❖ Develop ultra-low emission coal-fired power plants, and reach natural gas power generation emission standards;
- ❖ Coal consumption further concentrates to key industries such as electrical power;

Outlook for Coal Industry during “Thirteenth Five-year” Plan



Coal technology reform

- ❖ In the aspect of coal production, promote intelligent mine construction by high and new technology and study on supporting technical equipment of unmanned working surface, accelerate deep integration of new generation information technology and modern mining technology, and strengthen CBM efficient mining, coal and gas integrated mining technology and equipment;
- ❖ In the aspect of coal consumption, mainly study coal-fired pollution control, clean power generation technology, power plant coal combustion efficiency improvement technology and power plant carbon dioxide reduction technology, promote research and application of supercritical circulating fluidized bed and energy-saving circulating fluidized bed, and carry out zero release technology research;
- ❖ In the aspect of coal transformation, promote new coal chemical upgrade demonstration engineering and core technology study such as coal liquefaction, gasification and coal to olefin;

Outlook for Coal Industry during “Thirteenth Five-year” Plan



Coal system reform

- ❖ Improve industrial concentration; by 2020, the output of large-scaled coal enterprise over 50 million tons shall account for over 75% of total coal output in China;
- ❖ Transform government function from pre-event management to middle (post) market supervision;
- ❖ Implement resource tax collection by price, and form coal price mechanism decided by market;
- ❖ Coal enterprises pursuit turns to quality and technical innovation from output scale;

Outlook for Coal Industry during “Thirteenth Five-year” Plan



International cooperation for coal

- ❖ Carry out coal transaction from south to north, and encourage imported high quality coal;
- ❖ For resources development, advantageous coal enterprises shall follow national “one belt and one road” strategy to carry out overseas coal resources exploration and development, and invest in infrastructure;
- ❖ For technology exchange and services, actively carry out technical exchange activities with developed countries; meanwhile provide technical services to countries required, undertake overseas coal mine construction, technical transformation and operation management, and drive export of advanced technology services and equipment;

Thank You!