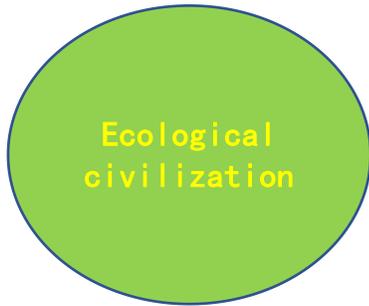


Carbon market for energy-efficient technologies application

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October 25, 2018,
Changsha



The 18th CPC National Congress incorporated ecological civilization into 5-in-1 layout of socialism with Chinese characteristics

The 19th CPC National Congress highlights conservation, protection and natural restoration so as to create space, industrial structure, production mode, and lifestyle featured by resource conservation and environment protection.

Essential for ecological civilization

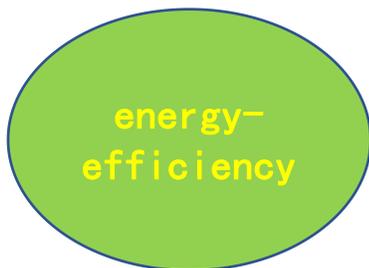
Important for industrial restructuring

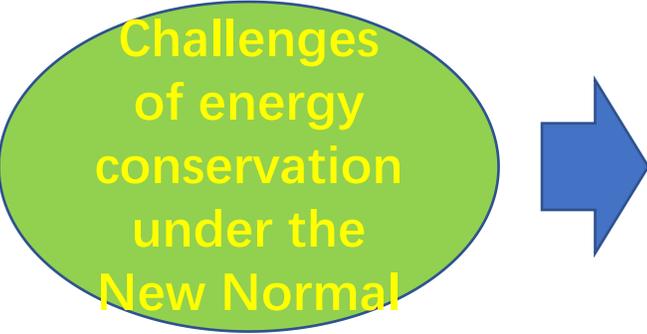
An important measure to optimize energy structure

Strategic for international cooperation

Conducive to resources conservation, environment protection, and to low carbon and sustainable development in China.

Energy-efficient technology develops rapidly, and has broad market prospects and huge potential





**Challenges
of energy
conservation
under the
New Normal**

High-consuming In 2012, China became the world's largest energy consumer. In 2017, the total energy consumption was 4.49 billion tons of standard coal, of which coal consumption accounted for 62.7%.

High proportion of fossil fuel The use of fossil energy has led to fragile ecological environment in China. In some places, air pollution is serious and smog is frequent. China is the world's largest emitter both in terms of the total amount of GHG emissions and new emissions.

Climate pledge China is committed to cutting CO₂ emissions per unit of GDP by about 40-45% by 2020 compared with the 2005 level, peaking around 2030 and striving for early peaking, and raising the ratio of non-fossil energy to about 20% of primary energy consumption by 2030. As a responsible major country, to combat climate change, China assumes an international obligation consistent with its responsibilities and capabilities.

Energy-inefficient At the end of the 12th FYP, China's energy consumption per unit of GDP was about 1.5 times of the world average, and two to four times that of advanced countries, e.g. China's energy consumption per ton of steel and other high-consuming products are much higher than the level of advanced countries.

Low industrial level The energy-efficient technology of Chinese enterprises is lagging behind with serious inadequacy of pollutants and GHG emission control. The automation and intelligence of energy efficiency management are rather low.

Poor fundamental work Energy-saving awareness needs to be further improved, energy-saving management and legal system and institutional development need to be further strengthened.

Critical 13th FYP

2 targets By 2020, the national energy consumption per 10,000 yuan of GDP will be 15% lower than that of 2015, and the total energy consumption will be cut to lower than 5 billion tons of standard coal.

Carbon target By 2020, the carbon emissions per unit of GDP will be 40%-45% lower than that of 2005, laying the foundation for China's peaking around 2030.

Policy Strengthen national guidance, incentivize corporate endogenous energy saving and promote market operation.

Investment and financing Increase investment, guide private capital, diversify investment and financing channels, develop green finance, and promote international financing cooperation

Pricing Pro-energy efficiency price mechanism

Regulation Strengthen the legal system and relevant systems, and improve the system for evaluation, auditing, and verification management

Market operation A nationwide emissions trading scheme

Domestic and international cooperation mechanism

Publicity prompt and dynamic publicity home and abroad

Standardization standard-setting for higher energy efficiency

Enhance the application and penetration rate of major energy-efficient processes, equipment, and products.

2 innovations for energy conservation

institutional innovation

technological innovation



emissions
trading
scheme



In December 2017, China's emissions trading scheme was officially launched, which is a major institutional innovation that demonstrates China's resolution to green and low-carbon development.

Use the market mechanism for emission capping

Essential for ecological institutional reform

Conducive to reducing the abatement cost, transformation to low carbon development, and promoting innovation and the advanced technology while eliminating the backward.

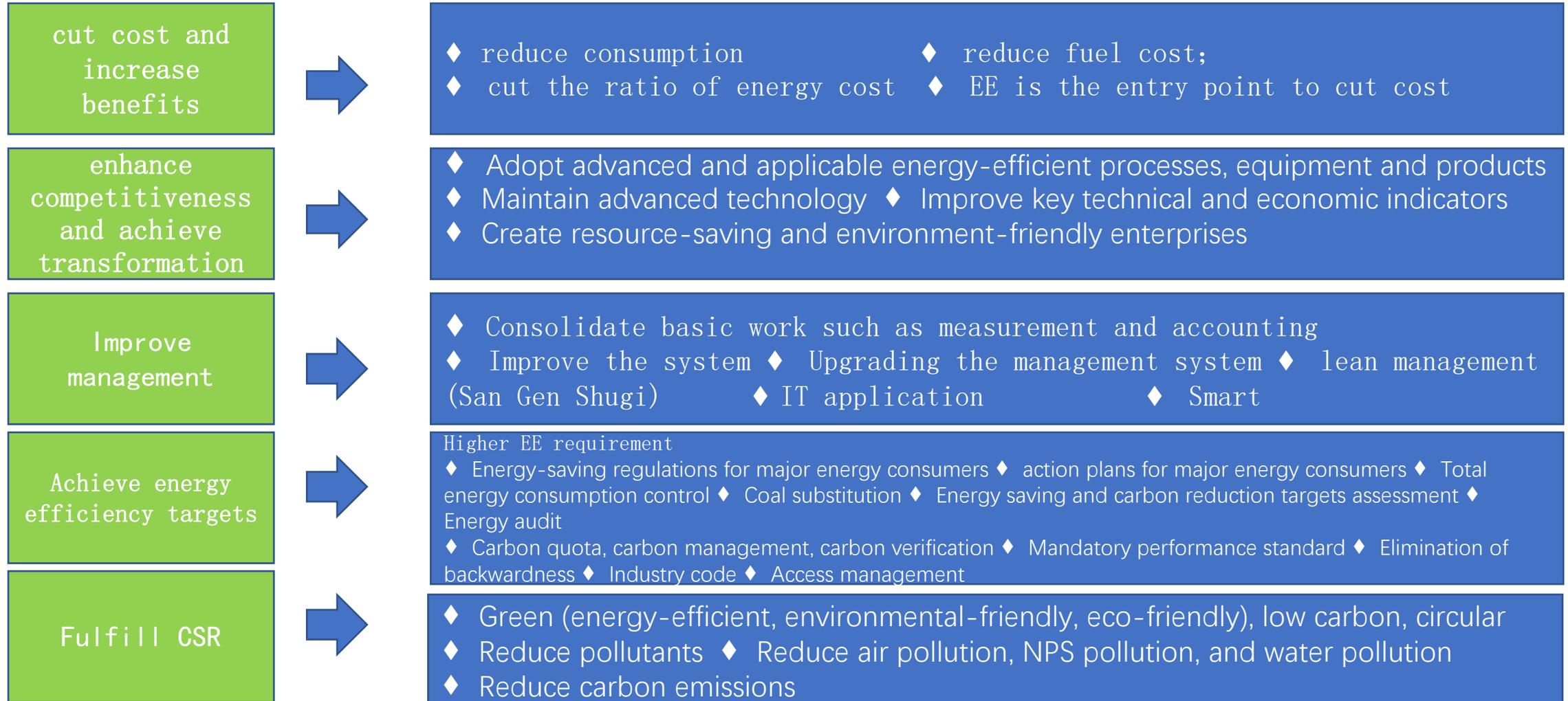
Carbon market is an important means of global governance.

Upgrading the industrial structure and breaking resource constraints through the carbon market has become the consensus and development goal of the Chinese government and its people.

The emissions trading scheme is an important driving force for enterprises to achieve green and low carbon transformation.

Incentivize the independent upgrading and transformation of the enterprise through the emissions trading scheme

► Significance of energy efficiency revamping



► Case Study

- **Case 1:** Beijing Metro had an operating mileage of 450 km in 2015 and an annual energy consumption of 185,758 tons of standard coal (mainly electricity and natural gas). Its annual emissions totaled 821,895 tons. In 2013, it was listed as a general emitter on the Beijing carbon market and implemented voluntary carbon emission trading. In 2014, it was listed as the city's key emitter, and implemented a carbon emission (fixed sources) quota management and trading. In 2015, mobile sources were included in accounting. Thanks to the supervision and incentives of the carbon market, Beijing Metro strengthened management and made its lighting, air conditioning, and heating more energy-efficient. During the 12th FYP period, it has delivered quota surplus and good carbon assessment indicators and has saved 100 million kWh.

Case 2: Anhui Debang Chemical invested 28.93 million yuan in lithium bromide-based new technology for soda ash production. The annual electricity saving is 26.88 million kWh (about 16.128 million yuan), or 3303 tce, equivalent to emission reduction of 26880 tons. If the technology is used by 40% of the country's soda ash producers, the annual electricity saving can reach 240 million kWh, or 29,496 tce, equivalent to emission reduction of 240,000 tons (about 144 million yuan per year).

Government support, market interest, and cutting-edge technology

Government support

National guidance; regularly update and publish the “National Key Energy-efficient Technology Promotion Catalogue”; special funds to support R&D, demonstration, and implementation of key projects; market-based mechanisms such as contract energy management; tiered-price mechanism; fiscal and tax incentives; mandatory standards; more stringent regulatory systems; international cooperation and exchange; market-oriented reform

Energy-efficient technology

Energy efficiency has become a consensus; the U.S. proposed to reshape the energy concept; accelerating the construction of energy-efficient power plants factories; develop energy-efficient technology for major processes, equipment, products, and terminal energy consumption; replacing coal for electricity

Waste heat and residual pressure recovery

Waste heat for heating, steam supply and power generation; low-grade waste heat recovery; sensible heat recovery; residual pressure recovery from blast furnace top and water pipe

IT application

Energy management center; energy Internet 2.0; intelligent; real-time and dynamic optimization and control

Heat pump application

Clear water source; sewage source; seawater source; air source; shallow geothermal energy; medium and deep geothermal energy, CO2 source, etc.

Products

Motor (five directions), transformers (amorphous, new silicon, three-dimensional triangular cores, etc.), air conditioners (inverter, smart, refrigerant replacement, etc.), automobiles (hydrogen, etc.), LED lighting (beyond lighting), etc.

energy-efficient technology mainstreaming

For your reference

Thank you