China Low Carbon Development Side Event

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China's Initiatives for Energy Conservation and CO2 Mitigation during the 11th FYP and Outlook for the 12th FYP

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About I3E

General Information

- Founded in 1980
- Research scientists:25 faculty &15 postdoctoral fellows
- Graduate Program: 40 doctoral and master students
- A cross-university imitative for energy and climate change policy research at Tsinghua University
- Main partners:

  - National government agencies: NDRC, MOST, NEA, MIIT, MOFA
  - National Science Foundation of China (NSFC)
  - Local governments: Beijing Municipality
  - International organizations and governments: World Bank, Asian Development Bank, EU
  - GM,BP, Ford, Shenhua, SAIC, etc.

Mission

- Create, develop and disseminate innovative knowledge, ideas and methodologies needed for establishing sustainable energy system and addressing climate change
- Provide scientific solutions to sustainable energy system transformation and low carbon development in China and the world.

Research Groups

- Energy & climate systems modeling
- Energy Strategy and Planning
- Low carbon development theory and policy
- International regimes & mechanisms for climate change
- Energy efficiency & conservation
- New & renewable energy
- Energy for sustainable mobility

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Selected Research Projects Completed

- Integrated Assessment of Social and Economic Impacts of CO2 emission mitigation (2001-2005), a key state research project/Ministry of Science and Technology;
- Drafting of China Renewable Energy Law (2003-2005), sponsored by Environment and Resources Protection Committee of China People's Congress;
- China National Climate Change Assessment Report (Mitigation)
- Drafting of National Programs on Addressing Climate Change (2007-2008), sponsored by NDRC;
- Fundamentals for CO2 Control Technologies and Policy, a key research grant of National Natural Science Foundation of China in collaboration with CAS (2006-2009)

Selected Research Projects Completed (Continued)

- Modeling the complexity of energy development and utilization in West China, a key research grant of National Natural Science Foundation of China
- China Energy Demand Forecast, Energy Supply-Demand Analysis, and Energy Supply Mix Optimization during the 12th Five Year Plan, a research project sponsored by National Energy Administration (2010-2011)
- National Global Environment Research Program during the 11th Five Year Plan tasked by MOST

  -Mitigation technology & Policy

  -CDM

  -Integrated approaches

Selected On-going Research Projects

- National Research Program 973 on Addressing Climate Change of MOST with the Support of NDRC (2010-2011)

  - Decomposing national Carbon intensity targets of 2020 by province and industry;
  - MRV;
  - Carbon market and tax
  - Scientific and technology collaborations among BASIC countries

- Outlook of China Automotive Energy, a research program organized jointly by NEA and MIIT and supported by GM (2008-2013)
- Key scientific issues for climate policy making, a key research project of National Social Science Foundation (2009-2012)

Cooperation with Foreign Institutions

- Global integrated assessment model
  -MIT, IIASA,PNNL & Stanford
- Life Circle Analysis (LCA)
  -ANL
- Energy efficiency policy
  -LBNL
- Climate Policy
  - WRI
- Technology transfer
  -Oxford & Sussex

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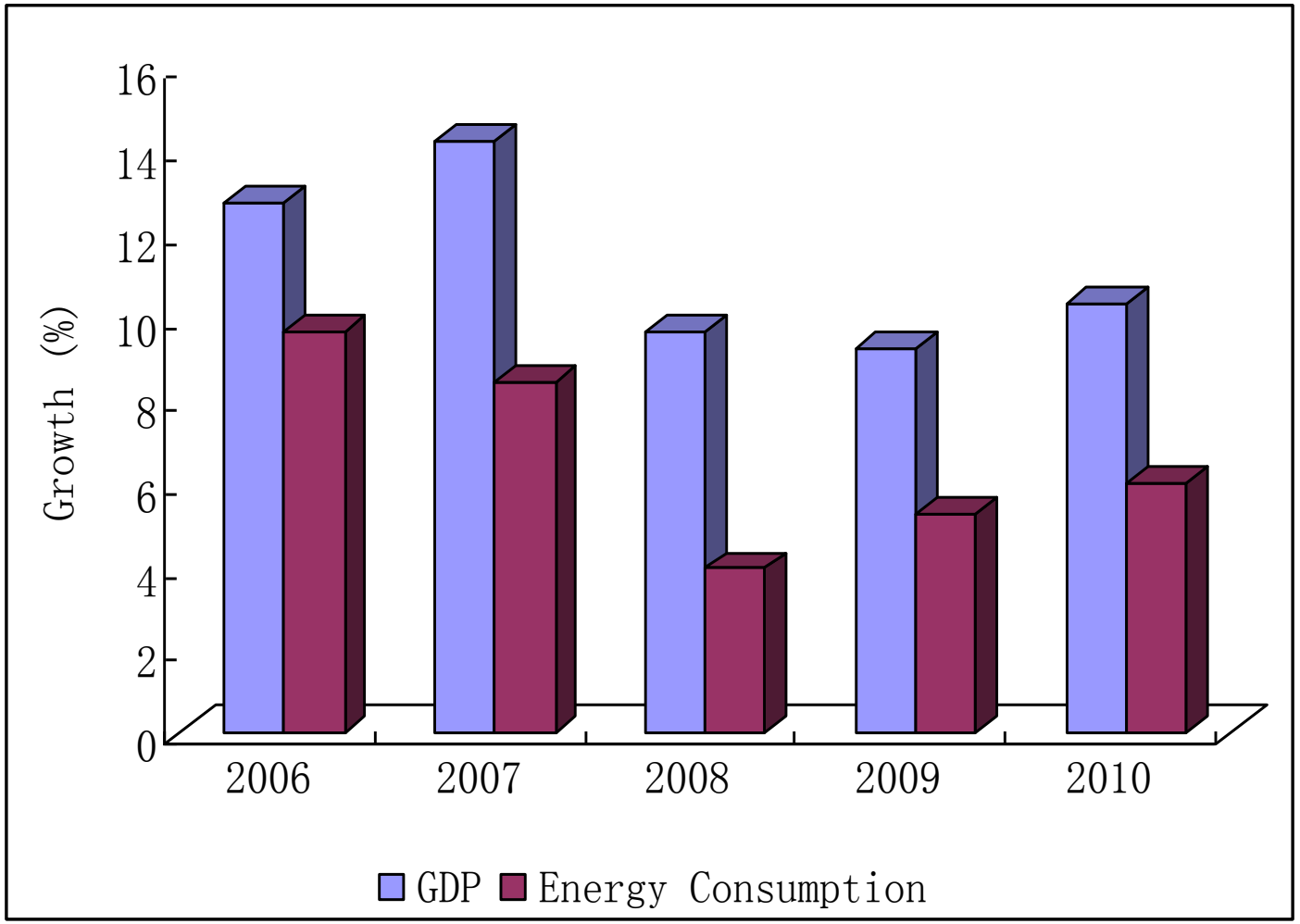
China's Energy Conservation Target for the 11th FYP

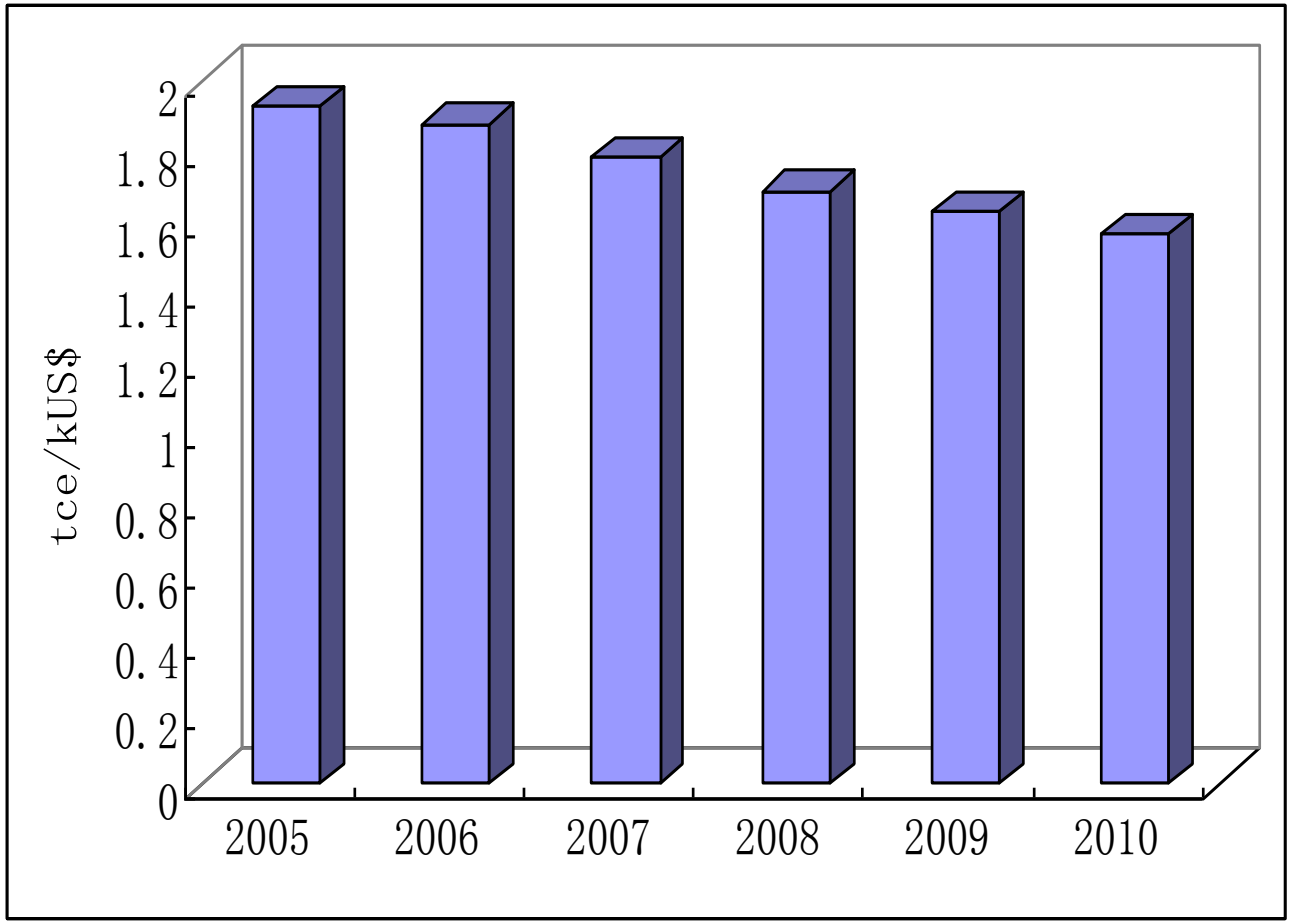
Reducing China's Energy intensity by 20 percent from 2005 to 2010!

- Proposed by the State Council and Ratified by National Peoples Congress in 2006

Decoupling Economy Growth and Energy Consumption

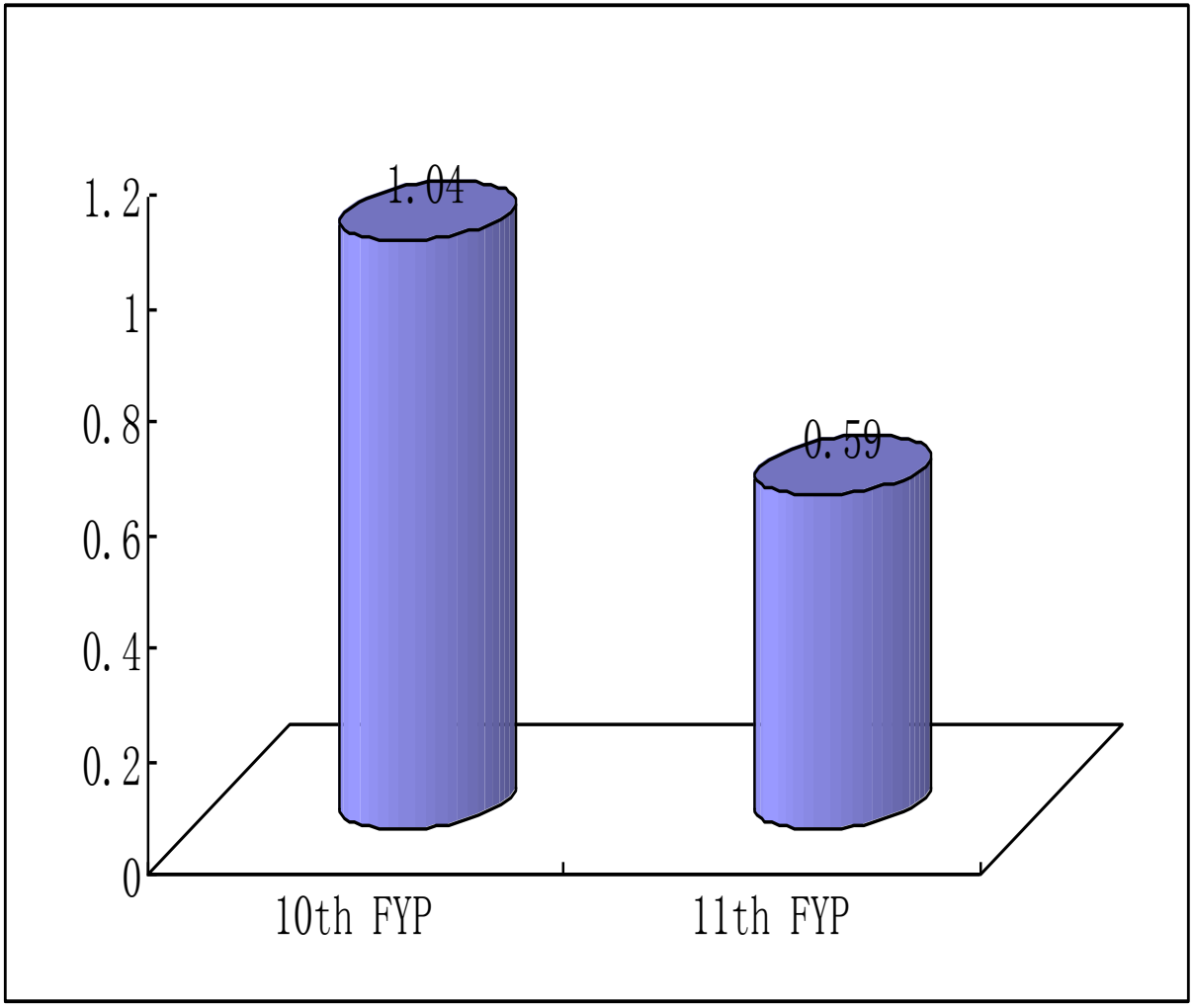


Energy Intensity of GDP during the 11th FYP



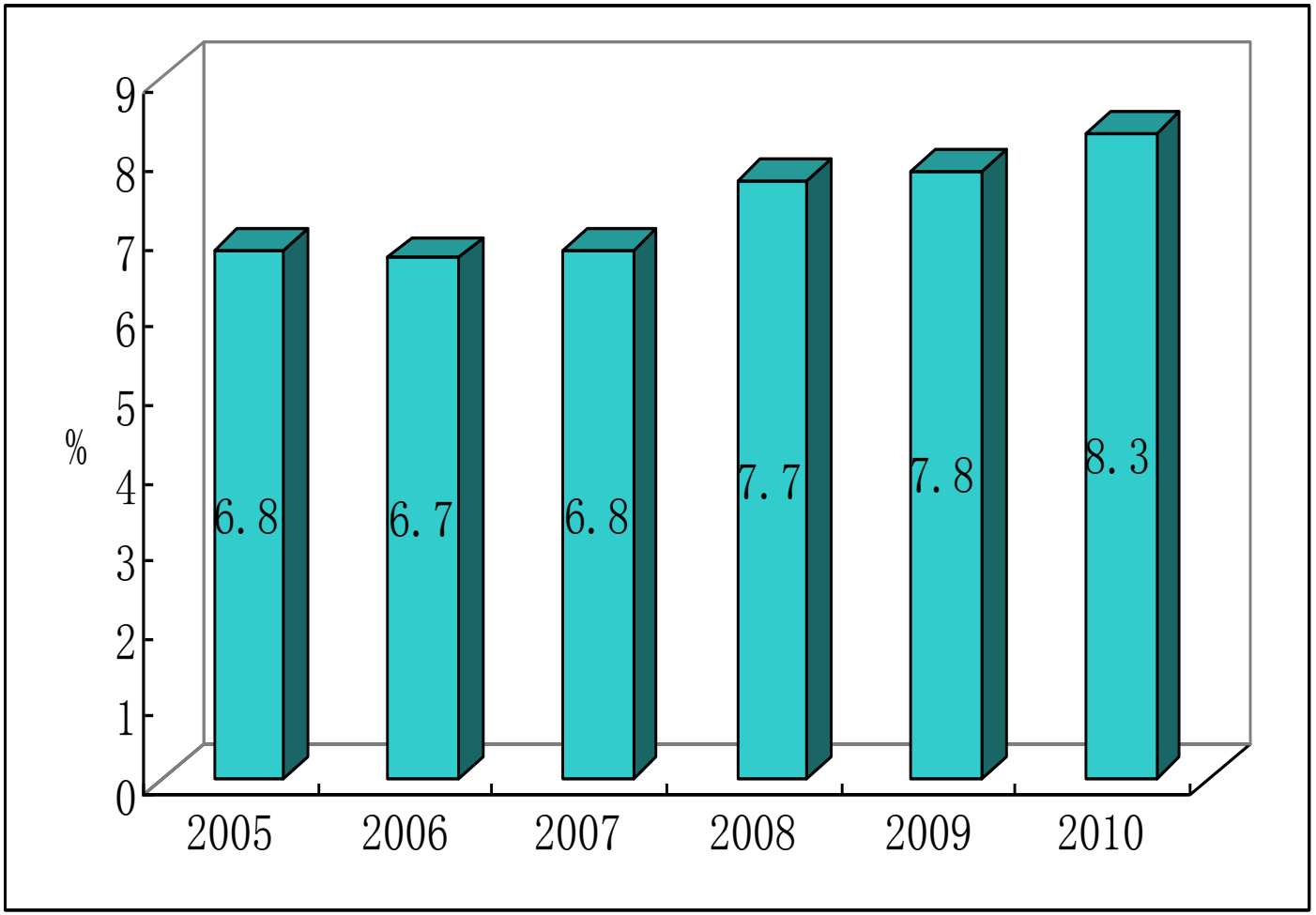
Approximately 19.1% reduced during 11th FYP

Energy Consumption Elasticity of GDP

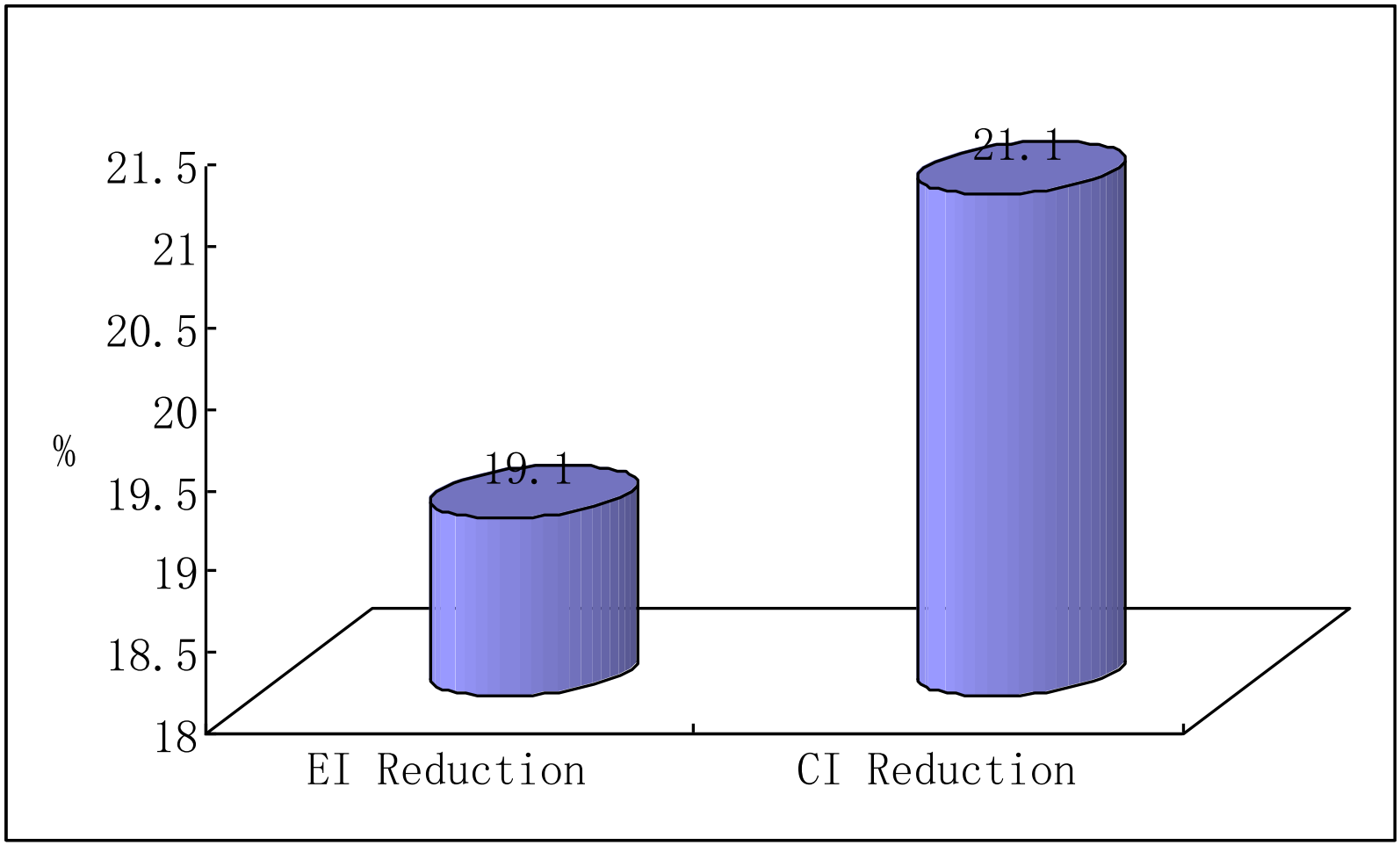


Achieving 11.1% of GDP growth with 6.6% of energy consumption growth during 11th FYP

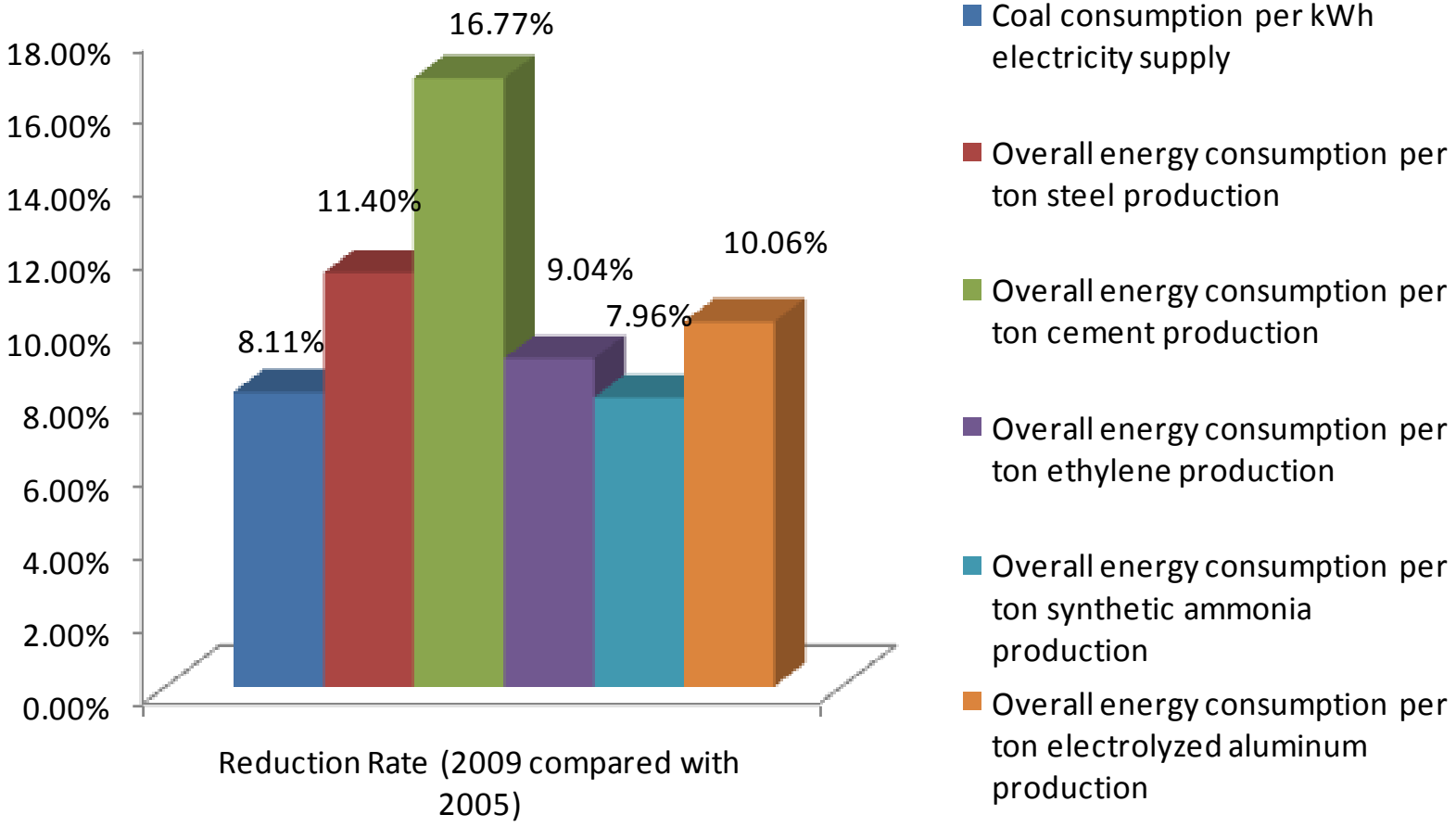
Contribution of Non-Fossil Fuels to Primary Energy Supply



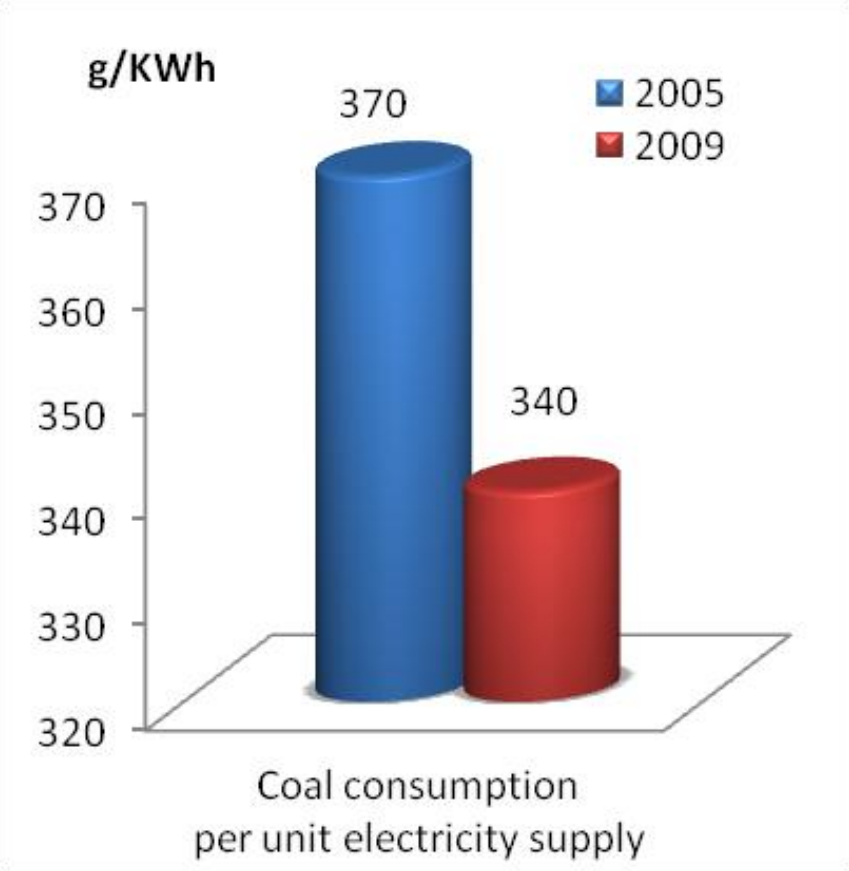
Reductions in Energy Intensity and Carbon Intensity during the 11th FYP



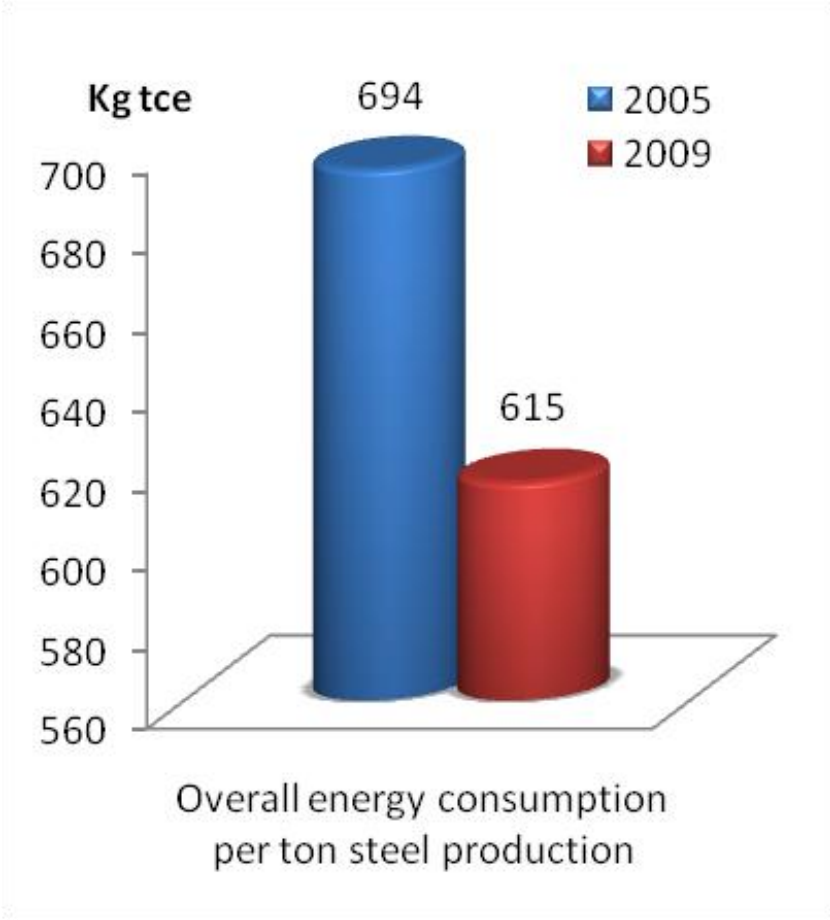
Reduction in Energy Consumption per Unit Product of the Major Energy Intensive Industries during the 11th FYP



Improvements in Energy Efficiency

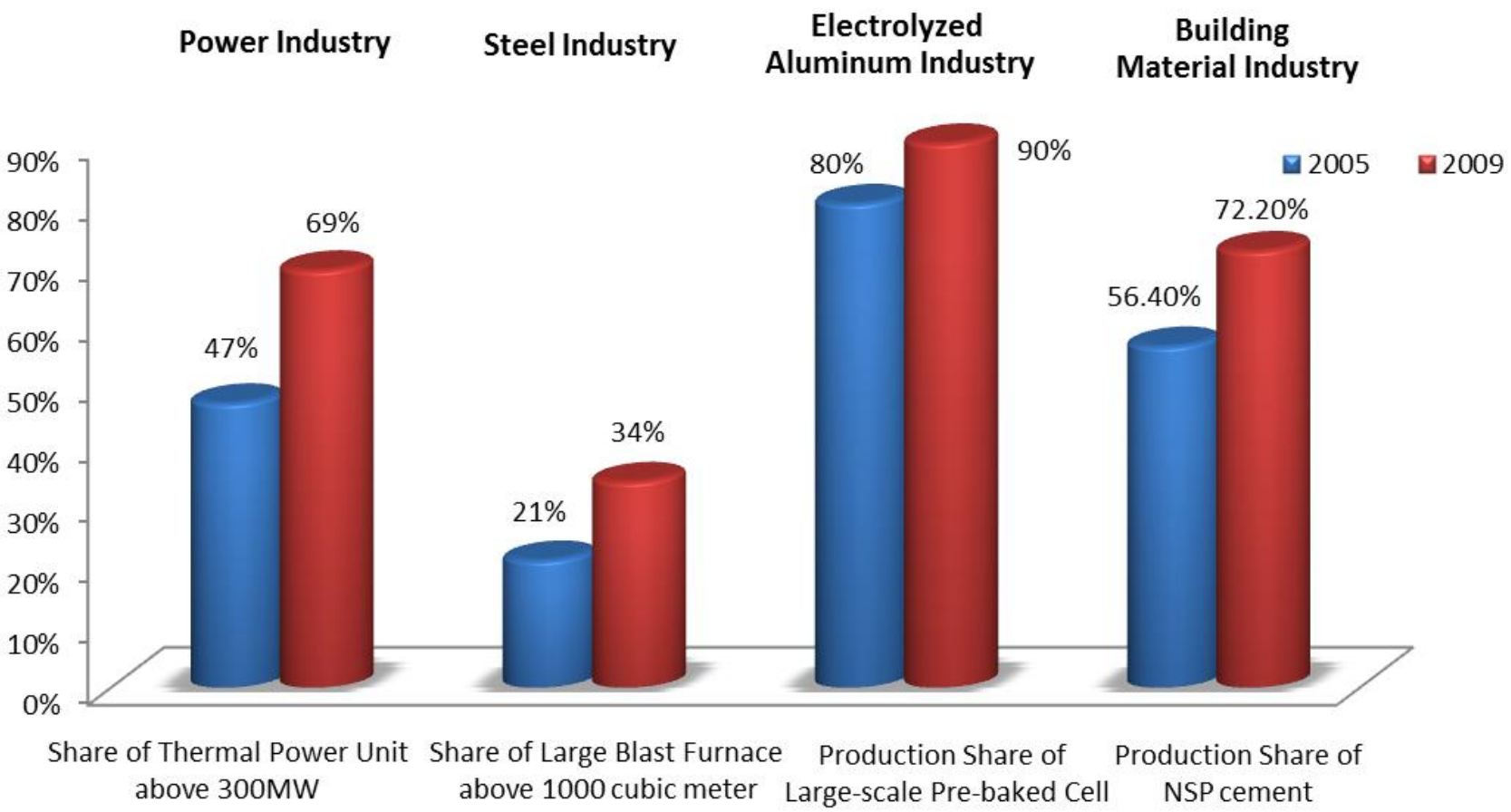


Coal consumption
per unit electricity supply



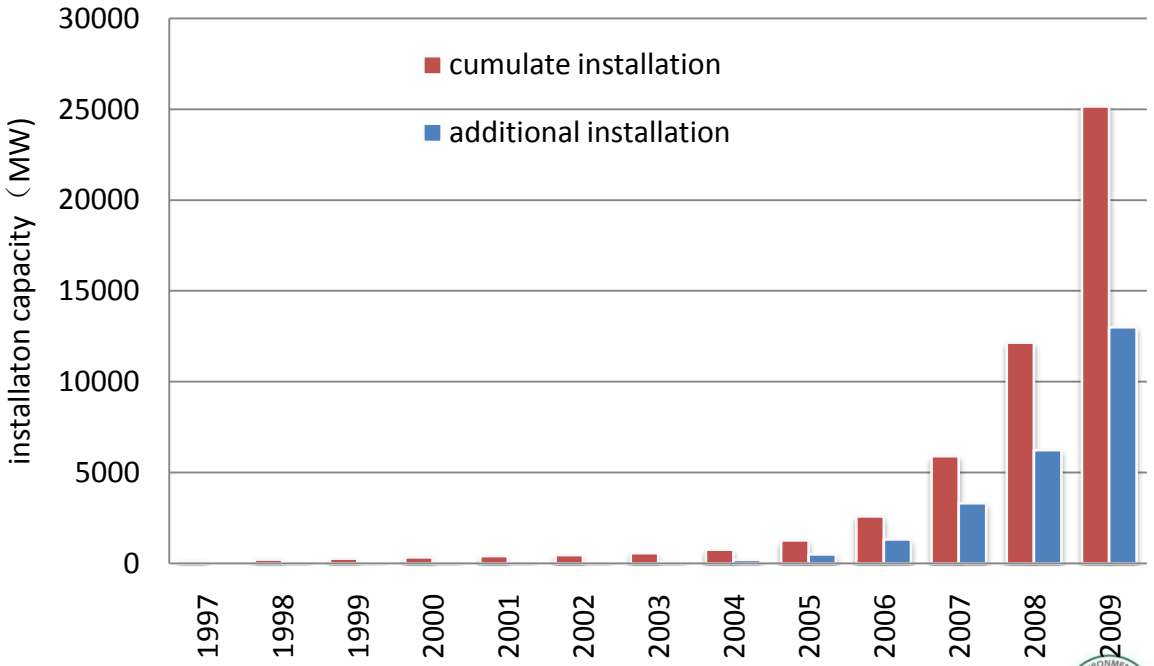
Overall energy consumption
per ton steel production

Technology Upgrade



Wind Power

- Wind power experienced rapid growth during the last few year. And the cumulate installation increased to 25 GW in 2009 from 1.3 GW in 2005.
- The annual growth rate had reached about 100% for 4 years already.



Institutional Innovation & Capacity Building

- Disaggregating the energy conservation target to provinces and major enterprisers
- Provincial Governors and managers of enterprises are primarily responsible for achieving the energy conservation targets
- Energy conservation agreements of enterprises with the government
- Energy Conservation Reporting and Verification Systems
- Evaluation system for energy conservation performance of provinces & enterprises

Command-and-Control Measures

- Enforced retirement of low energy efficiency production capacity during the 11th FYP

  - 70GW of coal-fired power plants
  - more than 100 million tons of iron & steel production capacities
  - 260 million tons of cement production capacities
- Energy efficiency requirements for new investment project approval & the market entrance of new products
- Energy efficiency requirements for new buildings
- Government purchase of energy efficiency products

Economic Incentives

- Tax and levy
  - Surcharge of electricity for RE
  - Import & Export tax and tariff
- Subsidy & Bonus
  - Energy conservation projects (215 billion yuan)
  - Consumption of energy efficiency products (14 billion yuan)
- Policy loan
- Pricing
  - Differentiated electricity tariff
  - Feed-in tariffs for RE electricity

Deficiencies & Challenges

- China's energy consumption kept growing associated with economic growth in spite of significant reduction in energy intensity;
- China's energy intensity is still much higher than that of developed countries;
- There is also a larger potential for technological efficiency improvement in China compared to developed countries
- The contribution of renewable energies to primary energy supply is small in spite of high growth rate during the 11th FYP

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Outlook for the 12th FYP

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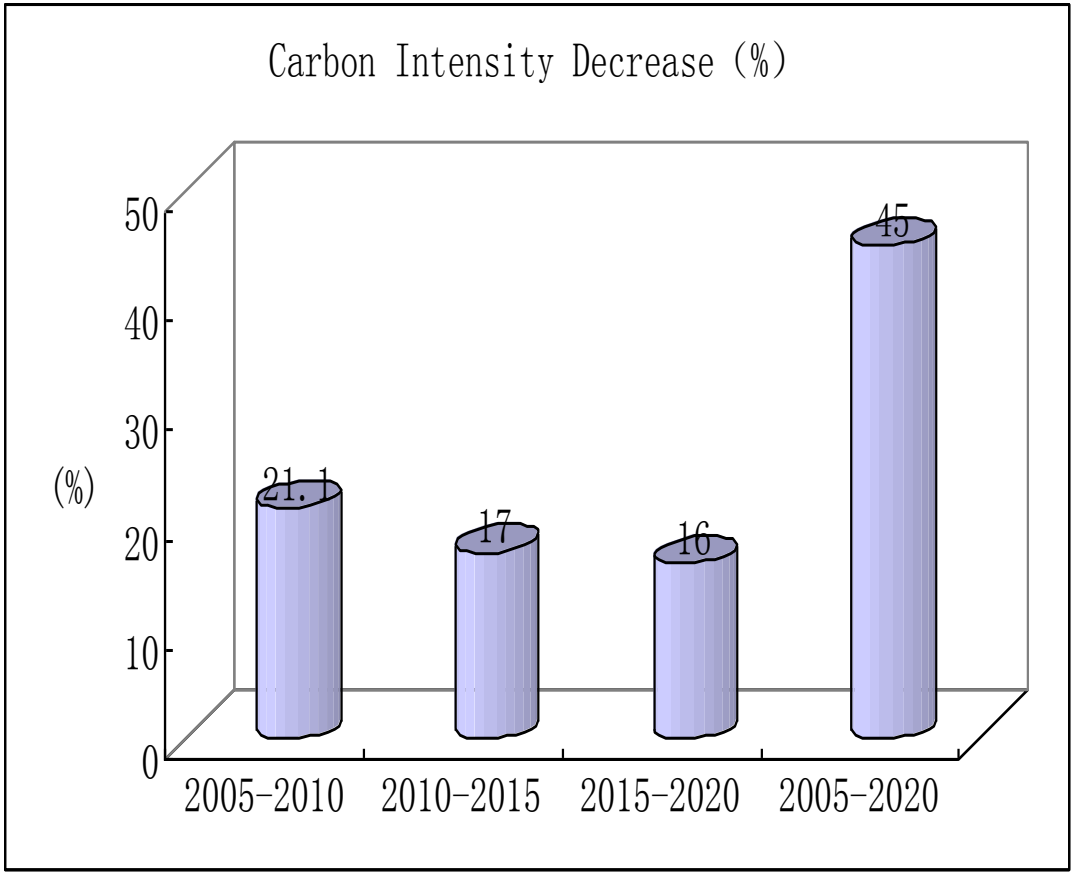
Legally Binding Energy and Climate Change Mitigation Targets for the 12th FYP

- Reducing China's energy intensity by 16 percent from 2010 to 2015.
- Reducing China's carbon intensity by 17 percent from 2010 to 2015.
- The contribution of non-fossil fuels to primary energy supply should be reaching 11.4% by 2015.

Implications of the Carbon Intensity Reduction Target during 12th FYP



The setting of the carbon intensity reduction target during the 12th FYP has been oriented to achieving a 45% reduction in carbon intensity from 2005 to 2020 which is the utmost that China committed to international community before Copenhagen Climate Summit.

Implications of the Carbon Intensity Reduction Target during 12th FYP

- China will be staying in the stage of rapid industrialization and urbanization during 12th FYP.
- Developed countries have never experienced such a high reduction in carbon intensity during their industrialization.
- Readjustment of the structure of economy and increase the contribution of less energy intensive industries will be difficult in China
- The forced retirement of low energy efficient production capacity will be less efficient and more expensive in China during the 12th FYP due to the substantial work done during the 11th FYP.

Achieving the carbon intensity reduction target of the 12th FYP will be even difficult and more challengeable compared to the 11th FYP!

New Policy Measures for the 12th FYP

- Inducing the carbon intensity reduction as a legally binding target
- Disaggregating the carbon intensity reduction target by province
- Starting to control the absolute size of energy consumption, and to consider disaggregating national energy consumption quota by province
- Pilot & demonstration provinces & cities for low carbon development
- Pilot & demonstration for cap and trade practice
- Intensified structure readjustment for low carbon economy
- Intensified efforts in promoting development and utilization of non-fossil fuels
  - 70GW wind & 5 GW solar PV added during the 12th FYP
  - 40 GW nuclear & 120GW hydro power under construction

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Thank you for your attention!

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