



- 能源与环境发展专家
- Solution on Energy and Environment Development

China's Experience of Financing in Energy Efficiency

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改善全球环境质量 提高人类生活水平 推动可持续发展

Committed Improve the Global Environment · Increase Human's Living Standards · Promote Sustainable Development



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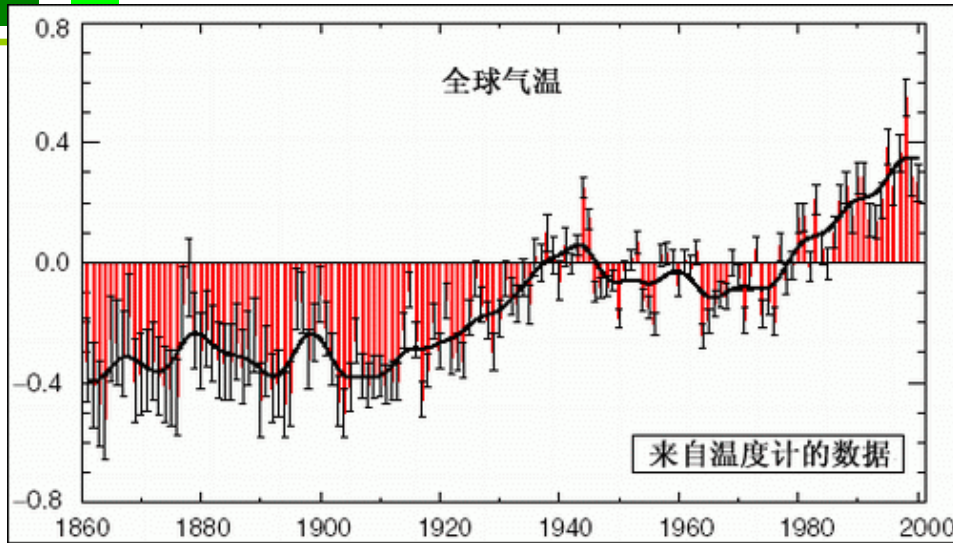




1. China's EC&ER situation

- **Global climate change situation**
- **China's energy consumption situation**
- **China's current EC&ER policies**
- **The trend of China's EC&ER policy development**

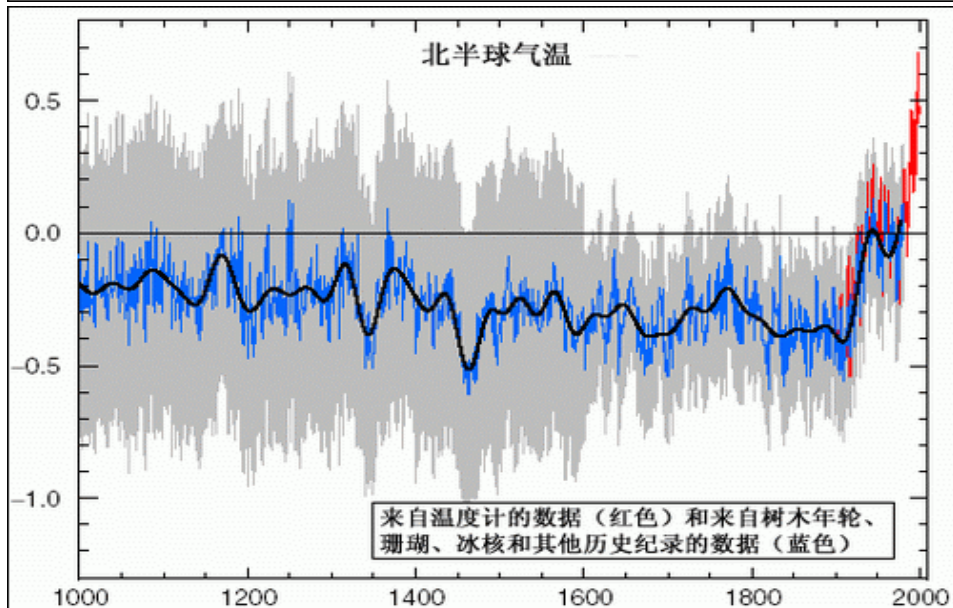
1.1 Global climate change situation



Global climate is warming, as the main characteristics of the climate changes—IPCC



Global temperatures change since 1860. X is year, Y is temperature(°C)



Over the past 10 years of climate change in the northern hemisphere. X is year, Y is temperature(°C)

Impacts of climate change



2 °C of warming is a "risk threshold"



deglaciation



sea level rise



drought



biodiversity
reduced



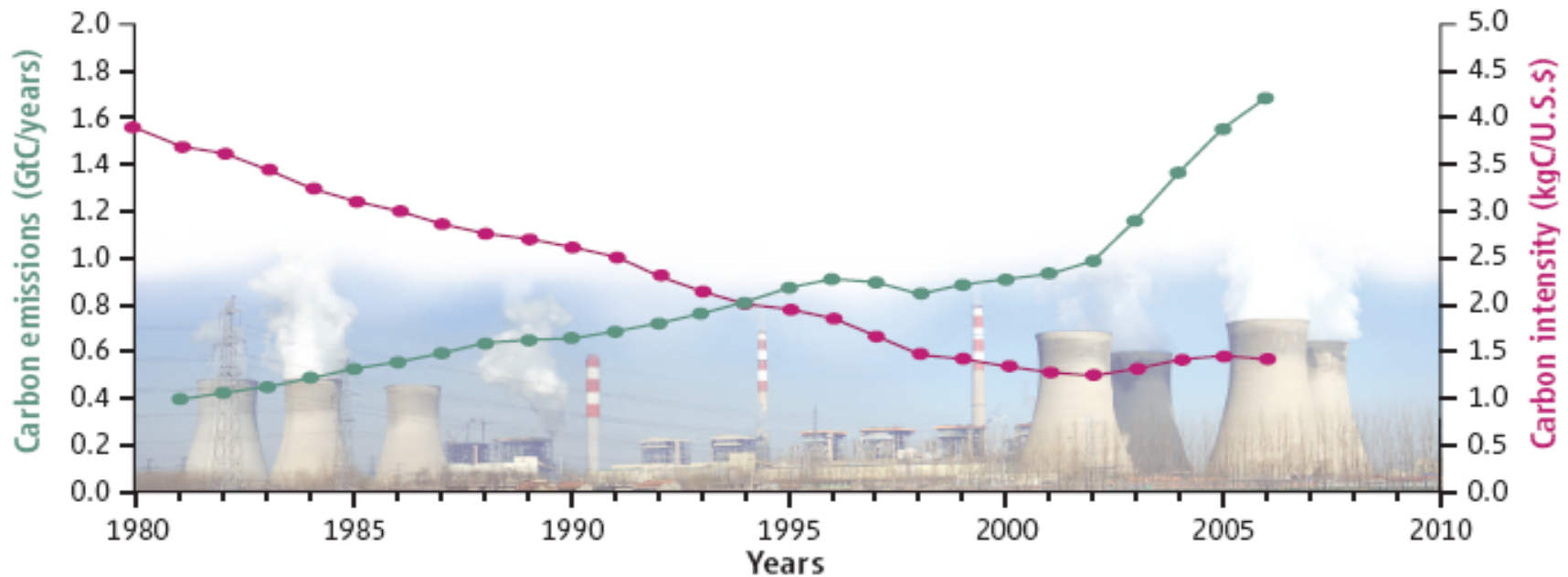
desertification



disastrous weather



China's CO₂ emissions

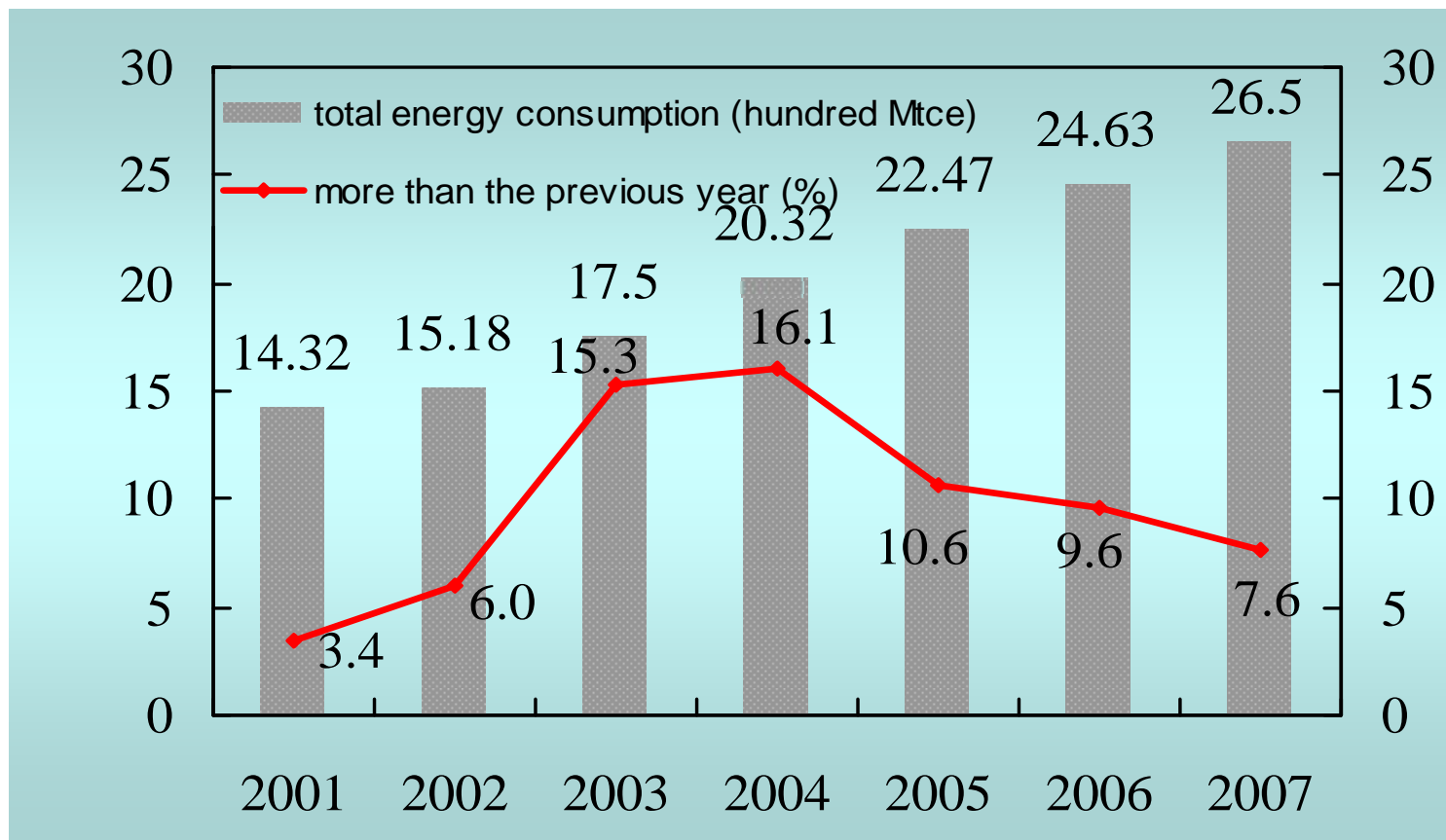


China's **GDP growth** is about **10%** of the world, while the growth of energy consumption over the same period accounts for **27%** of the world and the growth of greenhouse gas emissions accounts for **34%** of the world.



1.2 China's energy consumption situation

China's total energy consumption and its growth rate (2001-2007)





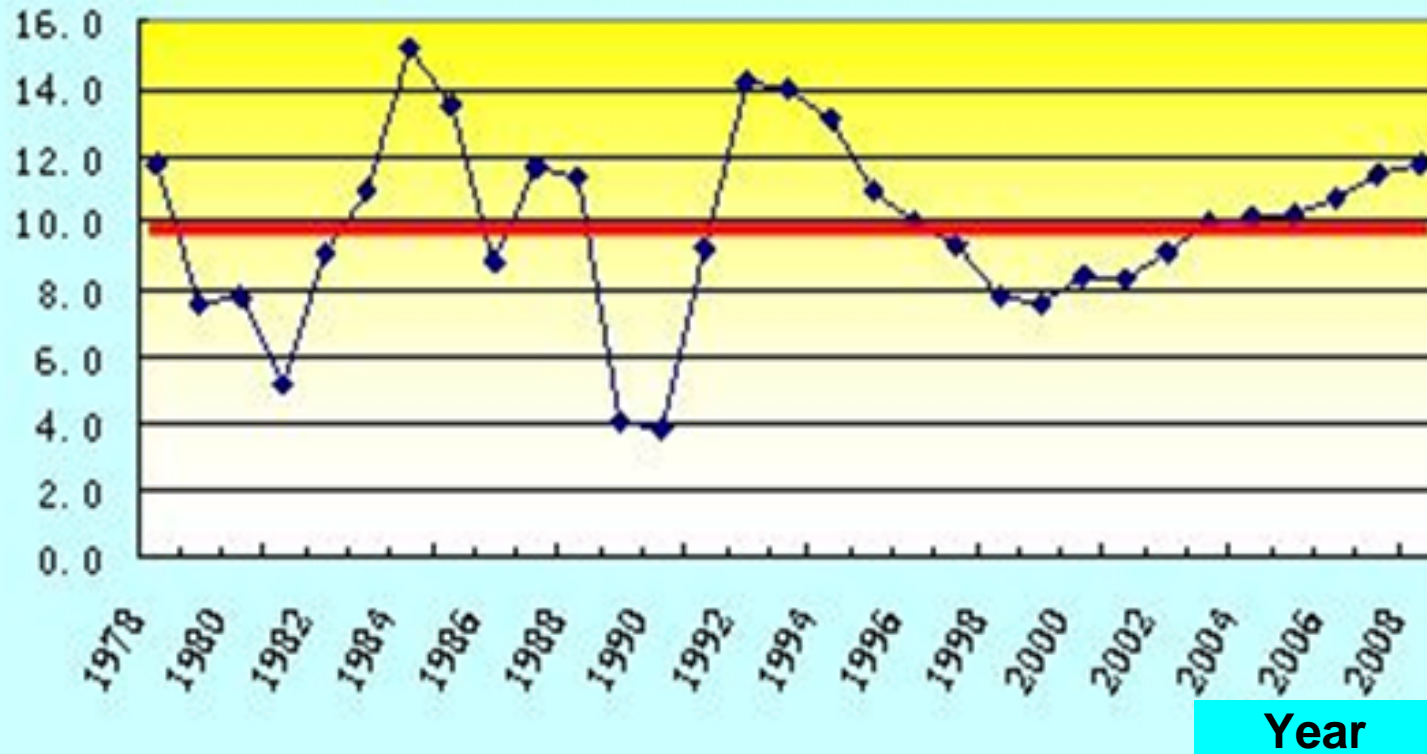
Industrial, building and transportation sectors are dominant in energy use, accounting for more than **90%** of the nation's total energy consumption.

- The building materials, metallurgical and chemicals industries alone consume **40%** of the nation's energy and 60% of the total industrial energy use.
- In the last 5-years, the total building energy use increased **11%** per year. Every year during that period, 1.6~1.9 billion m² of new building area were added.
- The transportation energy use increased every year and consume **20%** of the nation's energy.

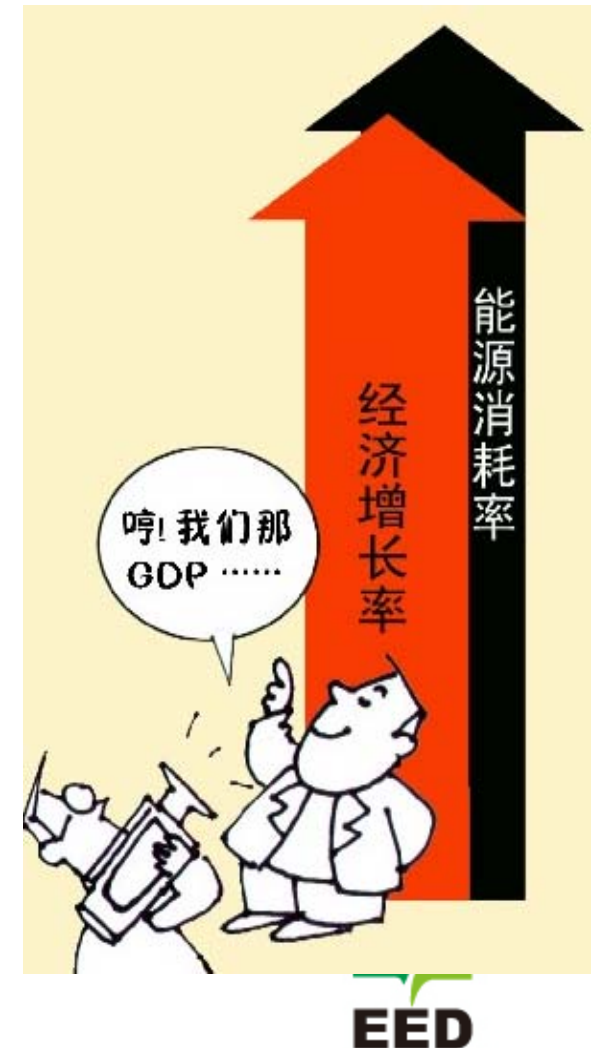


China's GDP growth rate (%) from 1978 to 2008

Average growth rate: 9.8%



- Compared with 2005, the per unit GDP energy consumption dropped by 10.1% in 2008, and declined every year, about 2.9 Mtce of energy saving, 660 million tons of CO₂ emissions from 2005 to 2008. The SO₂ and COD emissions dropped 8.95% and 6.61%, respectively.
- **China's 2009 total GDP was 335,353 billion Yuan, increased by 8.7% compared with last year**
 - ✓ Total energy consumption was 3.1 billion tons, increased by 6.3%
 - ✓ Total coal consumption was 30.2 tons, increased by 9.2%
 - ✓ Total crude oil consumption was 380 Mtons, increased by 7.1%
 - ✓ Total Natural gas consumption was 88.7 billion m³, increased by 9.1%
 - ✓ Total power consumption was 3697.3 billion kWh, increased by 6.2%
- **The per unit GDP energy consumption was 0.924 tce / million Yuan in 2009, declined by 2.2%**



1.3 China's current EC&ER policies

During the 30 years of reform and opening, Government of China (GoC) has stepped up its efforts to improve energy efficiency.

- **Early 80's:** the general energy development outline to “**uphold development and conservation, conservation is the first priority**”.
- **Mid-80's:** established a complete **energy conservation management system** and **energy service system**.





- **80's and early 90's:** formulated and enforced a series of **energy conservation economic policies** :
 - energy saving investment policies
 - national special energy savings funds for energy savings infrastructure and technology renovation projects
 - favorable interest rates for loans to enterprises that saved energy
 - special enterprise energy savings reward programs
 - tax exemptions
- **90's:** adopted **market instruments** to promote energy savings:
 - Integrated Resource Planning (IRP)
 - Demand Side Management (DSM)
 - Energy Performance Contracting mode (EPC)





- **21 century:** the new "Energy Conservation Law"(2007) proposed to take resources saving as China's basic national policy and State Council has set up a national leading group responsible for response to climate change and EC&ER and the head of the group is Premier Wen Jiabao.
 - “The Medium and Long-Term Special Plan for Energy Conservation” (2004)
 - “China’s Eleventh Five-Year Plan (FYP) (2006-2010) for Economic and Social Development”(2006)
 - “Comprehensive Working Scheme on Energy Conservation and Emission Reduction“ (2007)
 - “China National Climate Change Programme”(2007)
 - “China’s Eleventh Five-Year Plan (FYP) (2006-2010) for renewable energy” (2008)



China's recent policies of Financing Energy Efficiency



April 14, 2010, the Ministry of Industry and Information Technology issued a "Guidance of Further Strengthening SMEs Energy Conservation and Emission Reduction," which pointed out that:

- the unit energy consumption of SMEs in key energy-intensive industry will decrease by 25 % or so in the next 3-5 years;
- to increase support for financial resources;
- **to establish and improve energy efficiency financing mechanism for SMEs;**
- **to implement tax incentive policies of EC&ER for SMEs.**





April 19, 2010, NDRC, People's Bank of China, Banking Regulatory Commission and Securities Regulatory Commission jointly issued the **"Notice on Investment and Financing Policies and Measures of Support for Development of Circular Economy "**, which proposed

- some specific measures of planning, investment, industry, price, credit, debt financing products, equity funds, venture capital, public finance, the use of foreign funds to support the development of circular economy,
- aimed to promote the circular economy and building a resource-saving and environment-friendly society.





May 28, 2010, the Central Bank and China Banking Regulatory Commission jointly issued the "**Views of the Financial Services of Further Improving Support for EC&ER and Elimination of Backward Productivity**", which required to :

- support the EC&ER and eliminate the backward productivity credit strictly
- receive and award reasonable credit authority on the surplus productivity, outmoded production and EC&ER control industry.





July 8, 2010, MoF and NDRC jointly issued a “**Notice on the Interim Management Measures of Financial Incentives on EMC**” which proposed:

- to arrange two billion Yuan in 2010 to support EMCos to implement technology renovation in industry, construction, transportation and other fields, as well as public institutions by EPC
- Central financial incentives standard of 240 Yuan / tce, the provincial financial incentives standards of not less than 60 Yuan / tce



Special EC&ER funds



- Special funding arrangements by GoC in recent years:
 - 2007: 23.5 billion Yuan
 - 2008: 27.0 billion Yuan
 - 2009: 30.0 billion Yuan
 - 2010: 50.0 billion Yuan
- In 2010, the total special funds of EC&ER and new energy development arranged by central government is up to **70.9 billion Yuan**, including **10.9 billion Yuan** for renewable energy development, **100 million Yuan** for electricity price additional income of renewable energy.
- Meanwhile, it is also arranged **33.3 billion Yuan** of GoC's budget for **investment of EC&ER** in 2010
- **The total funds for EC&ER allocated by GoC has reached 104.2 billion Yuan in 2010!**



China's recent energy efficiency goals

- **China's Eleventh Five-Year Plan (FYP) (2006-2010) for Economic and Social Development:** the energy intensity as a function of the gross domestic product (GDP) is set to improve by **20%** from 2005 to 2010 equivalent to avoided energy consumption of over **560 Mtce** annually by 2010
- **Comprehensive Working Scheme on Energy Conservation and Emission Reduction (2007):** to reduce carbon intensity of its GDP in 2010 by **20%** compared with 2005 level, which reduced from 1.22 tce in 2005 to 1 tce.
- **Climate change conference in Copenhagen (2009),** China has announced to reduce carbon intensity of its GDP in 2020 by **40%-45%** compared with 2005 level. **This is the first time the GoC formally announced the action targets of greenhouse gas emissions.**



1.4 The trend of China's EC&ER policy development



- NDRC has identified to take the compilation of emerging strategic industries as a keystone in the "12th Five-Year" plan preparation. The emerging strategic industries include **new energy, energy saving, electric cars**, new materials, new medicines, bio-breeding and information industry.
- the Ministry of Industry and Information Technology is actively implementing **energy-saving technology renovation** to improve the energy consumption level of key industrial sectors. The introduction of policies will **enhance cooperation between EMCo and industrial enterprises**, and promote the development of industrial energy saving.
- During the "12th Five-Year" plan, it will **enlarge financing channels and innovative investment and financing mode** to promote industrial energy saving.



2. China's financing energy efficiency situation

- China's Energy Efficiency Financing Situation
- China's Energy Efficiency Financing Mode
- China's Energy Efficiency Financing Channel
- China's Energy Efficiency Financing Obstacles

2.1 China's Energy Efficiency Financing Situation



According to the statistics from National Statistics Bureau, the enterprise's investment in technical innovation:

- the scale of investment for energy saving from 471 billion Yuan in 1980 to 22.928 billion Yuan in 2002, an increase of tens times during the 20 years .
- the proportion of the investment for energy-saving technology renovation projects in total investment in technical innovation accounted for 3% - 4%, in some years more than 5%.

Scale and Trend of Financing Energy Efficiency:

- Since 2002, enterprise's investment for energy-saving technological transformation driven by national debt fund reflects the scale and trend of financing energy efficiency in the whole society to a certain extent.
- In 2006, the total number was reached to 68.2966 billion Yuan, which increased by 1.8 times compared to 2005, increased by 7 times compared to 2004.



2.2 China's Energy Efficiency Financing Mode



1. Energy Performance Contracting mode (EPC)
2. External circulation of balance sheet mode
3. Third-party guarantee program mortgage of guarantee agencies mode
4. Project company independent operation mode
5. Funds entrusted investment mode
6. Carbon reduction trade financing mode
7. Quasi-stock investment mode
8. Industry energy saving fund mode
9. Industry mutual aid & cooperation financial institutions mode



2.3 China's Energy Efficiency Financing Channel (especially EMCo)

1. Domestic commercial bank
2. SME credit guarantee loans
3. EPC credit guarantee loans
4. Foreign bank loans
5. International financial institutions loans
6. Finance lease
7. Commercial credit
8. Early termination of contract
9. Accounts receivable discounted
10. Credit-stock conversion



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2.4 China's Energy Efficiency Financing Obstacles

1. barriers of energy-intensive enterprise

- ① backwardness of management conception
- ② lack of investment and financing mode
- ③ imperfect statistical evaluation system
- ④ shortage of fund
- ⑤ energy-saving products and technologies information asymmetry

2. barriers of EMCo

- ① most of the EMCos are SMEs
- ② uneven qualities of energy-saving products and technologies
- ③ lack of integrated energy-saving service capabilities
- ④ the implemented projects are small ones
- ⑤ a pattern of capital operation hasn't been formed

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3. barriers of bank/financial institutions indirect financing

- ① information asymmetry
- ② no better risk control mode
- ③ small scale and high cost of financing
- ④ shackles of the traditional banking mode
- ⑤ ambiguity legal property

4. barriers of investment and financing for non-bank/financial institutions

- ① information asymmetry
- ② lack of funding security
- ③ imperfect financial system, tax system, property system corporate governance structure of EMCo
- ④ the profit mode for suitable investment hasn't been formed

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3. China's energy efficiency financing projects



- China Energy Conservation Project
- China Energy Efficiency Financing Project
- China's End-use Energy Efficiency Program
- Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China, and India



3.1 China Energy Conservation Project



"**China Energy Conservation Project**" is a energy project co-developed by the GoC and WB/GEF from December 1998.

- **Phase I:** supported the establishment of three EMCos for demonstration and a energy conservation information dissemination center and introduced a new market-based mechanism--EPC, which formally ended in 2006.
- **Phase II:** successful implemented the EMCo Loan Guarantee Scheme and had promoting the development of energy services industry in China, which started in June 2003 and formally completed in June 30, 2010.



3.2 China Energy Efficiency Financing Project



China Energy Efficiency Financing Project (CHEEF) is the third energy efficiency project in China financed by WB and GEF. (2009.01—2014.01)

- **Objective:** (1)to promote energy efficiency and GHG emission reduction, (2)to improve energy efficiency financing market mechanism and system, (3)to improve the energy efficiency of large and medium-sized industrial enterprises in China and the governmental capability of policy-making and implementation.
- \$100 million WB loan + Local Matching Funds in RMB with the minimum amount equivalent to \$100 million + \$1.87million GEF Grant for capacity building
- the biggest loan/grant project in the energy conservation sector of China.



3.3 China's End-use Energy Efficiency Program

- **Chinese end-use energy efficiency projects (EUEEP)** is a four-phased, 12-year program by NDRC, UNDP and the GEF co-sponsored. **Phase I** started in June 2005 and completed by July 2010, **Phase II** is under designing.
- **Objective:** to remove barriers to the widespread application and practice of EE&ER in the major energy consuming sectors (buildings and industrial) in China.
- **Budget:** US\$ 80,375,000, including UNDP/GEF Grant US\$17,375,000 and Co-Financing US\$ 63,000,000.
- The implementation of the project will help China to improve economic productivity, reduce greenhouse gas emissions, improving the global environment.



3.4 Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China, and India



- **Objective:** to overcome barriers to financing energy efficiency projects, and to identify financial mechanisms adapted to each country's conditions.
- **Sponsored** by the UN Foundation (UNF) and ESMAP and coordinated by the World Bank and the United Nations Environment Program (UNEP) through the Risø Center (URC).
- **Duration:** 2002.11 - 2007
- Activities included **technical assistance, training, and applied research**, as well as **cross-country cooperation** activities:
 - Development of commercial banking windows for energy efficiency projects
 - Support for ESCOs
 - Guarantee funds for energy efficiency
 - Equity funding for ESCOs/energy efficiency projects



4. Suggestion on China's financing energy efficiency development



1. increase government's support

I. Fiscal policy support.

- a. build tax system to support for energy saving;
- b. give full play to the leverage of funds discount.

II. Expand direct financing channels.

- a. The government should support EMCo to expand direct financing channels for multi-angle;
- b. support EC&ER projects financing through the capital market

III. Establishment of a multi-level financing energy efficiency mechanisms.





2. Credit support from financial institutions

- I. **Increase financial innovation** and changes the credit accountability mechanisms.
- II. **Strengthen cooperation among financial institutions** and play their respective advantages to provide credit support for key energy saving projects through co-financing, transfer credit, bill financing, integrated credit and other forms of cooperation.
- III. **Improve the small loans efficiency of banks.** Reduce the tax rates of financing energy efficiency for commercial banks and increase their lending efficiency.
- IV. **Strengthen the communication and cooperation** between financial institutions and environmental protection departments.





3. Enterprise engaged in EC&ER positively

- I. Enterprises should **change their concepts** and integrate the EC&ER into their enterprise culture.
- II. **Strengthen the study of national EC&ER policies.** To reduce financial pressure and promote EC&ER by comprehensive utilization of national taxes, subsidies, green credit and other encourage policies.
- III. **Promote the change of production methods** to green environment protection and achieve sustainable development, except for fulfill the social responsibility.





Thank you !



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