

China: Building Energy Efficiency Situation and Incentive Policy

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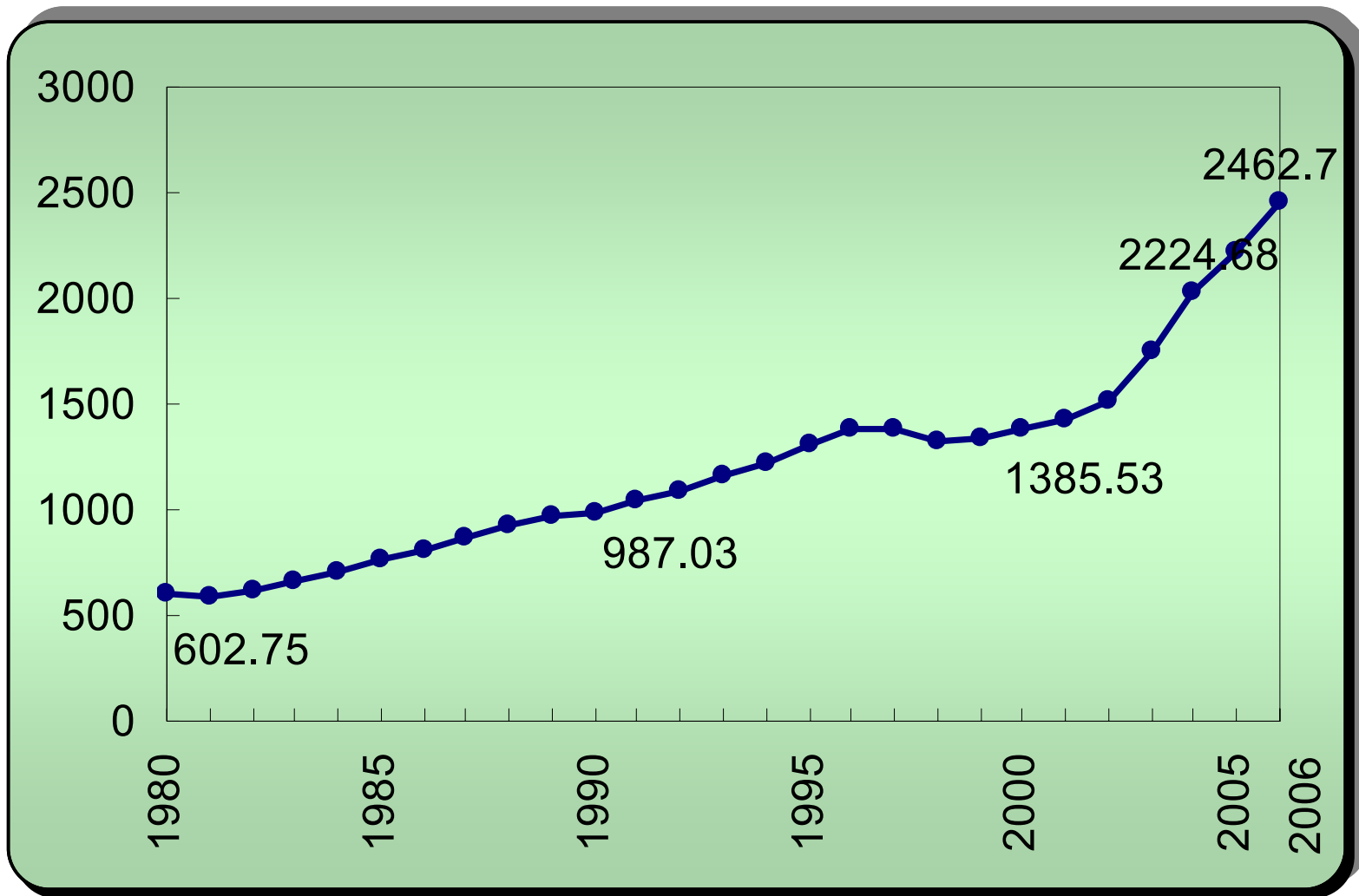
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Outline

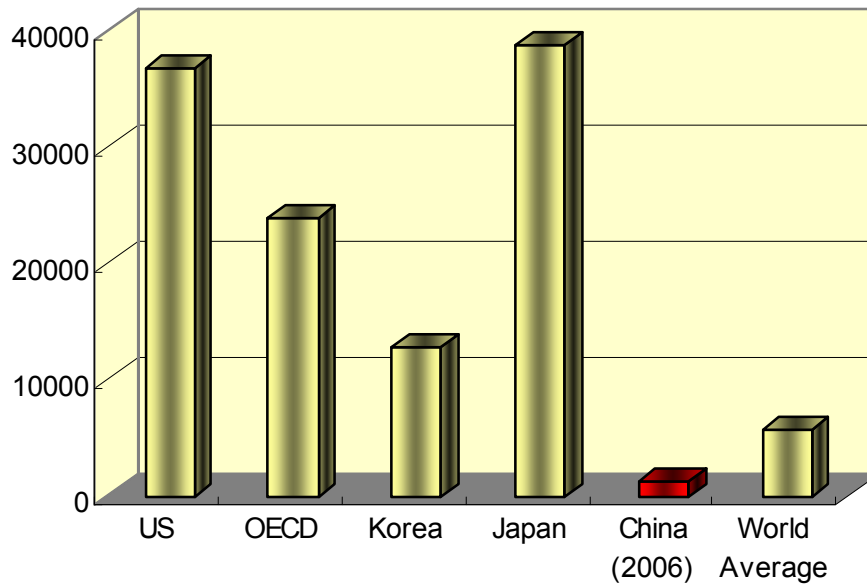
- China's Energy Conservation Situation
- Current Status of China's Building Energy Efficiency
- China's Building Energy Efficiency Policy
 - Mandatory policy
 - Incentive policy
- Recommendations

China's Energy Conservation Situation

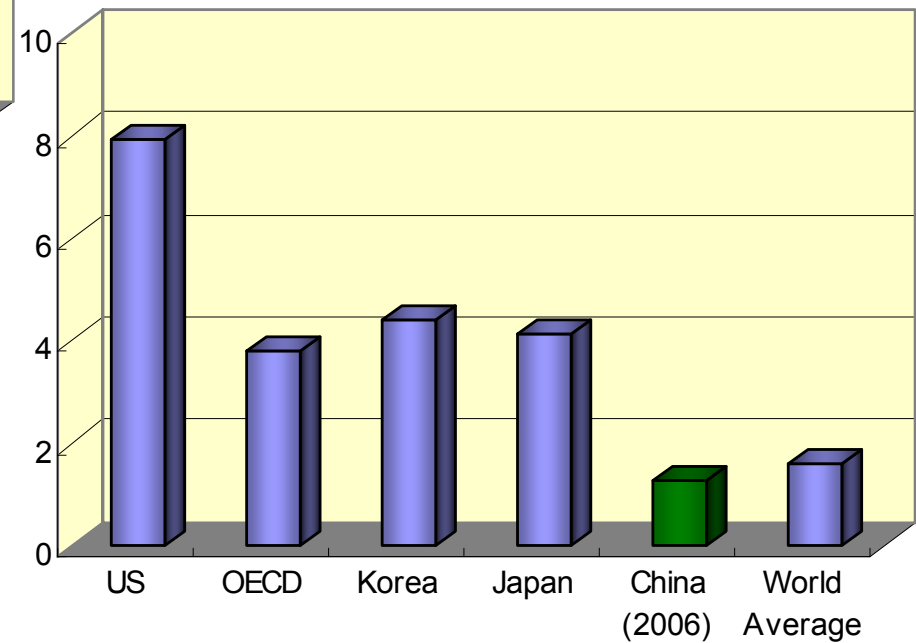


More Challenges in the Future

Per-capita GDP in 2004 (US \$)



Per-capita Energy Consumption in 2004 (TOE)



More Challenges in the Future

- More challenges in the future
 - Energy Resource Limitation, Energy Safety
 - Environmental Pressure
 - Regional Environment
 - Global Climate Change
- To fulfill the governmental goal in 2020 and 2050, China should CREATE a more sustainable pathway than Japan

Energy Efficiency and Conservation Goal

- Primary National Policy
- Governmental Goal in 11th-5 year (2005~2010) :
 - Reduce Energy Density by GDP about 20%
 - Reduce Waste Emission by 10%
- Performance Assessment Indicator for the Government Official and Enterprises
- New Concepts
 - Scientific Developing
 - Energy Saving & Environment Friendly
 - Recycling Economics
 - Clean Production
 - Sustainable Development
 -

Current Status of China's Building Energy Efficiency

Building Area

- Annual added: 1.6~2.1 Billion m²
- 2005, 42 Billion m² (except industrial buildings)
 - Residential: 36.5 Billion m²
 - Urban: 14.5 Billion m²
 - Rural: 22 Billion m²
 - Commercial: 5.5 Billion m²
 - Large commercial building: 0.6 Billion m²
 - Per-capita living area
 - Urban: 26.1 m²
 - Rural: 29.7 m²

Building Energy Service

● Heating

- From North Yellow River to South Changjiang River
- Comfort level

● Cooling

- From commercial to residential, from urban to rural
- Residence air-conditioner ownership of 100 family:
 - Urban: 8.09(1995) 87.8 (2006)
 - Rural: 0.18(1995) 7.3(2006)

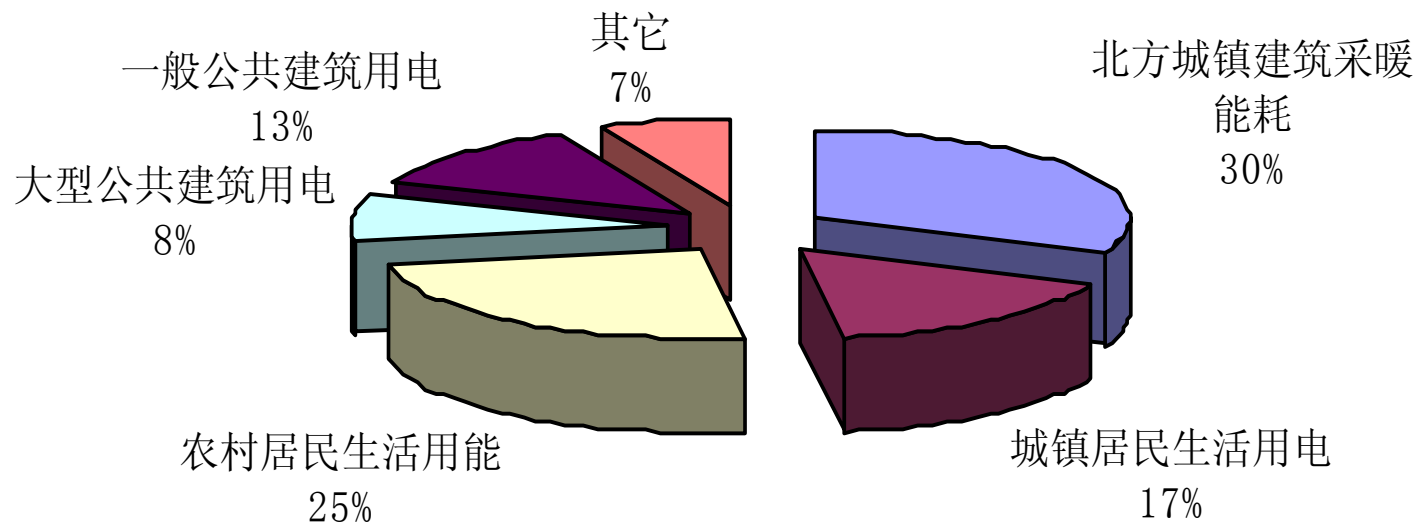
● Lighting

● Hot water

● Appliances: increasing fast

Building Energy Consumption

- Building energy consumption in 2005
 - 400 Mtce (primary energy, except unproductive energy consumption in industries)
 - Share 18%~20% of national energy consumption (2240Mtce)



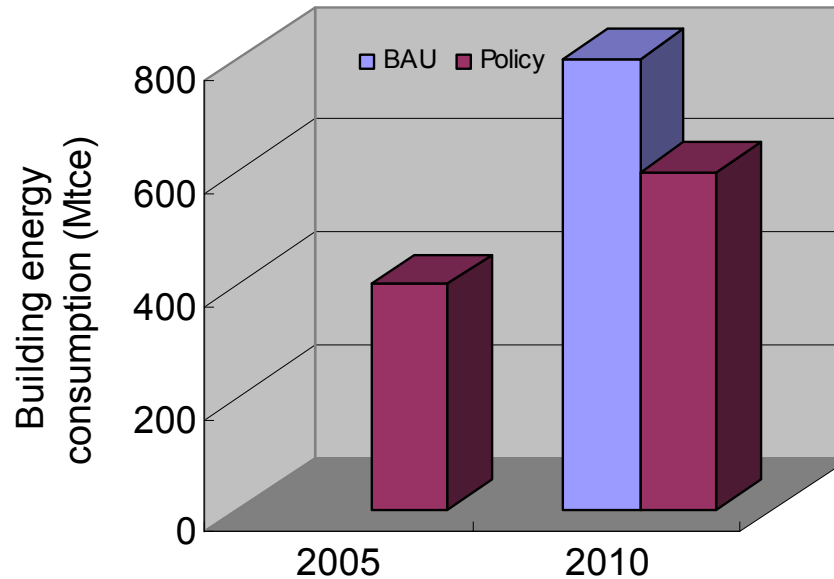
Building Energy Consumption

- Seasonal
 - Heating peak load: coal, gas
 - Cooling peak load: 30%~40% Summer Power Peak Load
- Clean energy utilization
 - Electricity
 - Natural gas
 - Rural: biomass—coal, electricity
- Future developing trend: quickly

Building Energy Efficiency Potential

- Standards and policy: badly implemented
- In north urban region, the seasonal **heating energy consumption** based on building area is 2~3 times of the developed countries with similar climate
 - Beijing: 20 kgce/m²
 - Berlin: 8 kgce/m²
- In many cases, the operating energy efficiency of heating **boilers** is about 60%: 15%~20% lower than developed countries
- In large **commercial buildings**, the annual electricity consumption per building area exists 3~4 times of difference from **AC and lighting** operating energy efficiency

Building Energy Efficiency Potential



- In 2010, **200Mtce** of BEE potential
 - New building & end-use energy equipments: 80 Mtce
 - Energy conservation retrofit on energy system (heating, cooling, lighting): 90 Mtce
 - Energy saving lifestyle: 30 Mtce

China's Building Energy Efficiency Policy

Mandatory and Administrative Policy

● Laws

- Energy Conservation Law (approved on Oct.28,2007 and will be implemented from Apr.1, 2008)
- Renewable Energy Law (2006)

● Building energy efficiency standard

- Residential: cut 30% --50%--65%
- Commercial

● Energy end-use facilities energy efficiency standard

- AC, lighting, refrigerator,...

● Energy label

- Air conditioner, refrigerator, window, building

Mandatory and Administrative Policy

● Regulations

- Building energy efficiency regulation (will be issued)
- Management rules on residential building energy efficiency (2005)
- Middle-Term and Long-Term Energy Conservation Plan (2004)
- Decision of State Council to Enhance Energy Efficiency and Conservation (2006)
- Comprehensive Scheme of Energy Conservation and Waste Reduction (2007)
- National Ten Key Energy Conservation Programs
- Guideline on Energy Conservation Technology Policy

Incentive Policy

- Energy Conservation Special Capital
 - Energy Conservation Special Capital (national and local)
 - Innovative building material special fund
 - Renewable special fund----solar and geothermal
 - Governmental and large-scale public building energy conservation special Capital ----renewable energy
 - Special Capital to promote energy conservation retrofit in North urban cities

- Price policy
 - City heating price management scheme (2007)
 - Energy price formulating mechanism to promote energy conservation (under study)

Incentive Policy

- Subsidy, tax, accelerating depreciation, etc
 - Most for projects
 - Some for energy auditing
 - Less for technologies and products
 - Water-source heat pump
 - Boiler
 - Lighting (under study)
 - LESS or NO incentive policy
 - Less incentive for energy efficiency technologies
 - End-use appliances : AC, refrigerator, heat water supply, ...
 - Efficient buildings (beyond standards)

Incentive Policy

● ESCOs in China

- NDRC/WB/GEF China Energy Conservation Project: Guaranty fund for ESCOs to implement energy conservation retrofit projects
- About 300
- 60% of energy conservation projects focus on AC system, lighting, optimum control and operation, boiler

Problems on BEE Incentive Policy

Macro Problems

- Need better policy implementation mechanism
 - Mandatory and incentive
- Incentive policy on BEE is much less than Industrial sector
 - Capital
 - Preferential/incentive policy
- Lack of overall plan to promote BEE among the governments
 - Overlap incentive
 - Lack of incentive

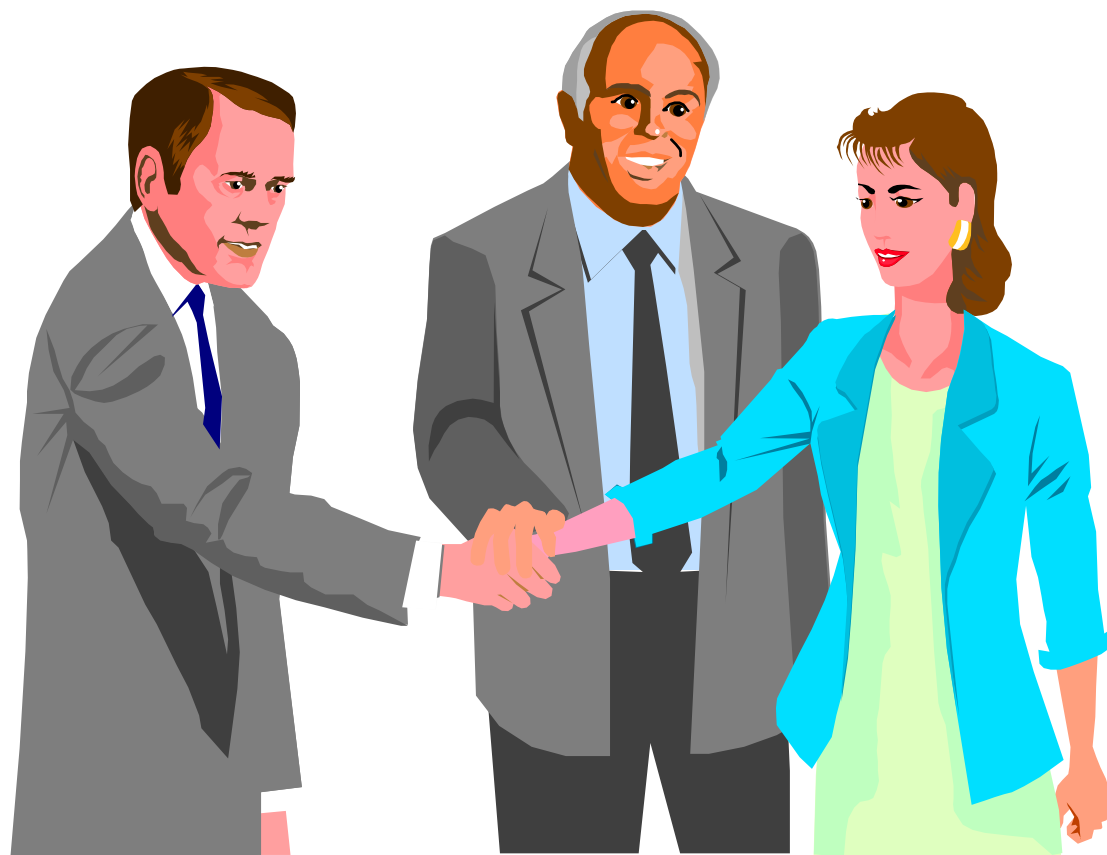
Micro Problems

- Projects and technologies/products
 - How to promote Market Transfer & Application of the efficient technologies
 - Less incentive for efficient technologies & products
- Fields
 - Incentive: central governmental buildings, north urban cities
 - NO: others like commercial buildings, other regions...
- Incentive principle
 - Based on cost, performance, or both
 - Evaluation on the energy conservation performance
 - Cost-benefit and technical-economical analysis

Suggestions on BEE Incentive Policy

Suggestions

- Pay high attention to BEE
 - More capital and more preferential/incentive policy
 - Incentive for a wider range
- Work together to promote BEE
 - Overall plan on BEE policy to establish China's overall BEE incentive policy system
 - Capital, price policy, preferential policy, ESCO policy
 - Work together to improve policy implementation
 - Incentive principle
 - Cost-benefit and technical-economical evaluation
 - Implementation mechanism
- Study on the promotion & application mechanism of efficient technologies
- Learn from the international experiences on the BEE incentive policies and policy implementation mechanism
- CDM projects in the future



Thanks!