

# Advancing more banks entering into the field of Energy Conservation by using New Energy Conservation Mechanism



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**Shen Longhai**, Director of  
EMCo Committee of China Energy  
Conservation Association  
May, 2006, Paris



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# 1. The situation of energy conservation in China

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1.1 Over the two decades since its Opening and Reform, China has realized and will maintain its rapid economic growth

- The average annual GDP growth was **9.6%** from 1979 to 2004
- The average annual GDP growth was **9.5%** from 2001 to 2005
- The GDP growth approximately reached **9.9%** in 2005
- The target average annual GDP growth is expected to be **7.5%** from 2006 to 2010



# 1. The situation of energy conservation in China

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1.2 China's social and economic development has greatly increased the demands for energy, which amplified energy constrains. And now China is confronted with enormous environmental pressure.

—China has set up the target of quadrupling its GDP (based on the figure of 2000) by 2020. To achieve this, energy demand will reach more than **4 billion tce** by 2020 if the trend of energy consumption growth in the past three years continues.



# 1. The situation of energy conservation in China

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- In the light of *National Middle-and Long-term Energy development Plan*, and taking full consideration of the energy conservation factors, the total energy consumption sum will reach **3 billion tce** by 2020;
- The total primary energy consumption was **2.22 billion tce** in 2005, increased by 9.5% compared with previous year;
- Increasing domestic energy supply or/and utilizing overseas resources will help to meet the rapid growth of energy demands. But both will result to an extensive pattern of energy consumption, which will bring serious damages to the environment. And currently, China is confronted with immense environmental pressure.



# 1. The situation of energy conservation in China

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- 1.3 Prioritizing energy conservation, greatly improving energy utilization efficiency and accelerating the building up of an energy saving society are imperative tasks that helps to maintain the sustainable social and economic development.
- Set energy saving as a basic national policy, develop circular (recycling) economy; protect environment and speed up the building of a resource-conserving and environmental friendly society;
  - China formulated and promulgated the first <China Medium and Long Term Energy Conservation Plan> in 2004;
  - For the first time restrictive index was set in the ‘Eleventh Five-year Plan’ (2006-2010): energy consumption per unit GDP will be decreased by 20%.




## 2. The main achievements of the project ‘Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China and India’ in China

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2.1 A platform of communication has been set up, facilitating the exchanging of ideas among bankers and energy conservation experts. It also prompted some banks to set up loan windows for energy conservation project.


- 8 banks has participated in this project, including China Development Bank, China Construction Bank, Huaxia Bank, Shenzhen Development Bank, China Everbright Bank, The Export-Import Bank of China, China Minsheng Bank and Shanghai Bank;
- Representatives from China’s Banking industry were sent to attend four international workshops. Ideas and experiences were exchanged with the bankers and energy conservation experts from India’s and Brazil’s.



## 2. The main achievements of the project ‘Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China and India’ in China

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- Has helped the banking industry acquiring a better understanding of energy conservation through activities including training and technical assistance;
- Huaxia Bank has set up an internal loan window for energy conservation projects. It has provided loans for energy conservation projects with the support of EMCo Loan and Guarantee Program.

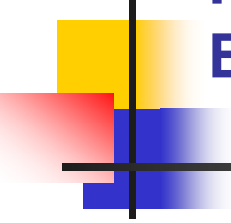


## 2. The main achievements of the project 'Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China and India' in China

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2.2 Has established EMCo Loan and Guarantee Program and Special Fund in China, integrating Project Phase II of the WB/GEF China Energy Conservation Project.

has provided guarantees for 23 EMCos and 52 energy conservation projects from 2004 to 2005, obtaining initial achievements. (Please see the details hereinafter)



## **2. The main achievements of the project ‘Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China and India’ in China**

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2.3 Integrating Project Phase II of the WB/GEF China Energy Conservation Project, the project has supported EMCo Committee of China Energy Conservation Association (EMCA) and EMCos in their efforts to promote the development of EMCo and the financing of energy conservation projects. (Please see the details hereinafter)



## 2. The main achievements of the project ‘Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China and India’ in China

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2.4 Has helped EMCos to explore and understand Equity Financing. Has assisted EMCos implementing energy conservation projects through EPC mode.

- Beijing Poweru Technology Corporation is an EMCo with its own energy conservation technology. In 2002 China’s Environmental Protection Fund managed by Tsinghua Venture Capital Company planned to invest 2 million US dollars to purchase 37% of Poweru’s stocks, and by now the actually paid-in investment is 1.2 million US dollars.



### 3. The establishment and implementation of the Loan and Guarantee Program of China's EMCos

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#### 3.1 The establishment of EMCo Loan and Guarantee Program

---A special fund for guarantee was set up.

GEF put 22 million US dollars into the Guarantee Fund Account with the Ministry of Finance of PRC as the special fund for EMCo Loan and Guarantee Program;

---The Guaranteed party

To provide financing guarantee for EMCo's energy conservation projects which will be implemented through EPC;

### 3. The establishment and implementation of the Loan and Guarantee Program of China's EMCos

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- The implementing agency of this Guarantee Program: China National Investment & Guarantee Co., Ltd (hereinafter for short 'I & G')
- The Guaranteed amount : no more than 90% of the loan
- The Guarantee charge : 1.1% of the Guaranteed amount

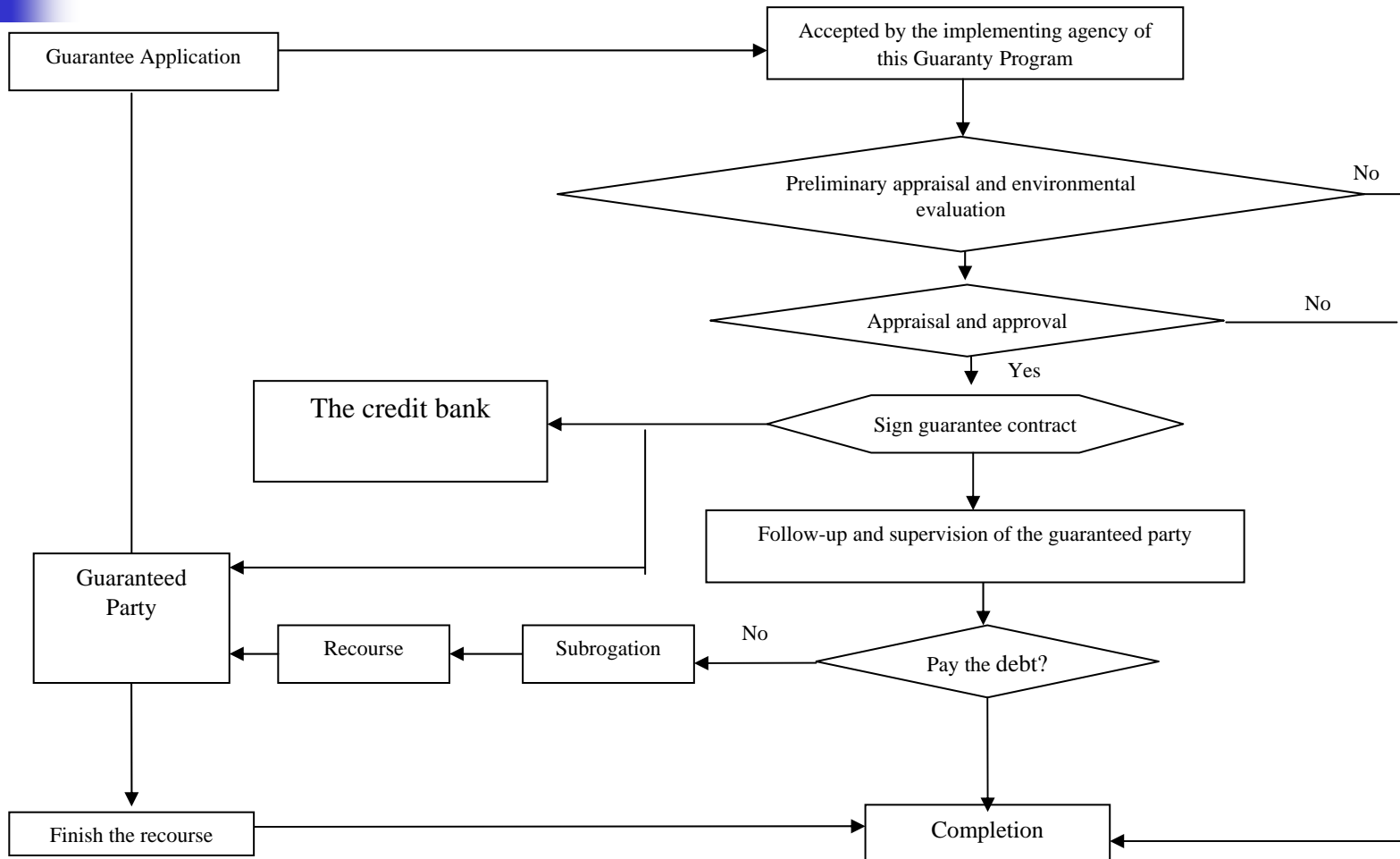


### 3. The establishment and implementation of the Loan and Guarantee Program of China's EMCos

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- - - **The objectives of the Guarantee Program:** Through the establishment of the EMCo Loan and Guarantee mechanism , enhance EMCos' credit in order to obtain more loans from banks, and gradually achieve borrowing from banks without the support of the guarantee fund to implement energy conservation projects;
- **The duration of this Guarantee Program :** From 2004 to 2009. It is expected to leverage nearly 10 times bank loan in 5 years. When this Guarantee Program expires, the residual fund will be utilized as capitals for China's energy conservation cause in the future.

## 3.2 Flow chart of EMCo Loan and Guarantee Procedure



### 3.3 The situation of I & G implementing Guaranty Program from 2004 to 2005

	<b>Planned</b>	<b>Actual</b>
Guaranteed Projects	50	52
Guaranteed sum	174.9 million RMB	162.7 million RMB
Average guaranteed amount/project	3.5 million RMB	3.13 million RMB



## 3.3 I & G's implementation of the Loan and Guarantee Program 2004-2005

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3.3.2 52 projects have been guaranteed:

Total investment : 295.05 million RMB ( 36.4 million US\$ )

Principal amount of loans: 180.9 million RMB ( 22.3 million US\$ )

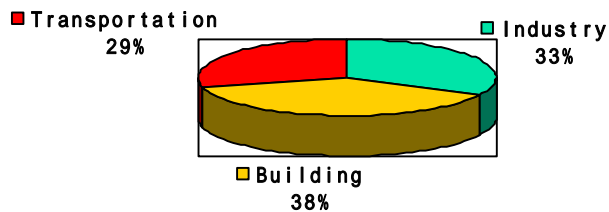
Total guaranteed amount : 162.71 million RMB ( 20.1 million US\$ )

Annual TCE savings : 157,900 TCE

Annual co<sub>2</sub> emission reduction: 102,700 tons

## 3.3.2 52 projects have been guaranteed:

- 17 projects in industries, which accounts for 33%;
- 20 projects in building area, which accounts for 38%;
- 15 projects in transportation area, which accounts for 29%





### 3.3.3 52 projects have been guaranteed:

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- Distributed in 11 energy conservation project lines including Waste Gas Electricity Generation, Kiln Renovation, and AC Renovation;
- In terms of project numbers: AC Renovation projects account for 24%, which is the largest proportion; Boiler renovation and variable frequency/variable-speed drive projects take the second place, accounting for 15% respectively;
- In terms of loan amounts: Waste Gas Electricity Generation projects account for 24%, which is the largest proportion; Kiln Renovation projects are in the next place, accounting for 22%.



### 3. The establishment and implementation of the Loan and Guarantee Program of China's EMCos

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3.3.4 Of the 52 projects guaranteed,

Size of the loans : 0.5~22 million RMB (61,700 US\$~2.7 million US\$);

**Loan term** : one-year term : 75% ;

two-year term : 25% ;

3.3.5 The 52 projects have involved 11 banks. Among which, 21 projects were lended by The Beijing Bank and the loan amounts reached 119.3 million RMB (14.9 million US\$).



## 3. The establishment and implementation of the Loan and Guarantee Program of China's EMCos

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3.3.6 Among the 52 projects that have been guaranteed, the guaranteed liability of 21 projects have been released, with total released guarantee liability amounting to 50.75 million RMB (6.3 million US\$).

3.3.7 Among the 52 projects that have been guaranteed, there was 1 project whose debt was not paid on time. The loan was already subrogated by I & G and it is now under recourse.



## 4. The formation and development of China's EMCo Industry

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### 4.1 WB/GEF China Energy Conservation Project

- **China Energy Conservation Project** is a momentous international cooperative project overseen by the Chinese government and the World Bank/GEF. This project falls into **two phases**.
- The objectives of this project are to introduce overseas energy conservation mechanism of **Energy Performance Contracting** (EPC) which is market-oriented; develop EMCos and build EMCo industry through pilot projects demonstration and promotion; achieve sustainable energy saving and CO<sub>2</sub> emission reduction, which will contribute to the reduction of greenhouse gas emission and the improvement of regional and global environment.



## 4. The formation and development of China's EMCo Industry

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4.2 The Project Phase I was officially started in 1998

- Set up three Pilot Energy Management Companies (EMCo): **Beijing, Liaoning and Shandong;**
- Set up an national-level Energy Conservation Information Dissemination Center;

## 4. The formation and development of China's EMCo Industry



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4.2.1 By the end of 2005, the three pilot EMCos of Beijing, Liaoning and Shandong had implemented **423** energy conservation projects for **361** customers, accumulated energy conservation investment reaching **1.17 billion RMB (150 million US\$)**.

# 4. The formation and development of China's EMCo Industry



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4.3. The Project Phase II was officially started on June, 2003

## The two Implementing Agencies of Project Phase II :

- EMCo Committee of China Energy Conservation Association (EMCA)
- China National Investment & Guaranty Co., LTD (I&G)



## 4. The formation and development of China's EMCo Industry

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4.3.1 EMCA was officially approved in Dec. 2003, with EMCA Launching Ceremony held in April 2004 in Beijing.

**EMCA's mission :** Energy Conservation Service and Sustainable Development

Providing services for EMCos and related government agencies;

Promoting the establishment of China's EMCos and the establishment of EMCo industry, and realizing sustainable development.

# 4. The formation and development of China's EMCo Industry

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## 4.3.2 Membership situation of EMCA

- Apr. 2004, **59 members**
- Dec. 2004, **89 members**
- Dec. 2005, **158 members**, among which, **106** members have implemented energy conservation projects using EPC mode; **20** equipment suppliers, **7** energy conservation centers, and **7** others such as bank, accounting firm, law firm and publishing company.



# 4. The formation and development of China's EMCo Industry

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4.3.3 The number of EMCos implementing energy conservation projects using EPC mode is increasing rapidly

- 3 Pilot EMCos in 1998 ;
- 40 EMCos when EMCA was setup in April, 2004;
- 60 EMCos in Dec. 2004;
- 106 EMCos in Dec. 2005;

Note: The above-mentioned EMCos refer to the companies having implemented energy conservation projects using EPC mode; Currently there is no criteria in EMCo's accreditation.



## 4. The formation and development of China's EMCo Industry

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4.4.1 From 2004 to 2005, a total of **503** energy conservation projects were implemented by EMCos using EPC mode, and the total investment was **2.9 billion** RMB.

Among which : In 2005, a total of **327** energy conservation projects were implemented by 106 EMCos, and the total investment was **1.98 billion** RMB.

# 4. The formation and development of China's EMCo Industry



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4.4.2 The **503** projects implemented from 2004 to 2005 were mainly in three areas: industry, building and transportation.

- **Industry : 194 projects**; the total investment was **2.216 billion** RMB; and the average project investment was **11.42 million** RMB ;
- **Building : 294 projects**; the total investment was **668 million** RMB; and the average project investment was **2.27 million** RMB ;
- **Transportation : 15 projects**; the total investment was **18.92 million** RMB; and the average project investment was **1.26 million** RMB ;

# 4. The formation and development of China's EMCo Industry

## 4.4.3 The EPC energy conservation project lines implemented by EMCo

The 3 Pilot EMCos of Project Phase I	The EMCos in Project Phase II (including 3 Pilot EMCos)	
Industrial boiler renovation	Green lighting	industrial process
Steam network renovation	Heating network	Variable frequency/ variable-speed drive
Motor driving system renovation	boiler renovation	Combustion of gas for electricity production
Renovation of electricity distribution system	Central Air Conditioning	Waste heat recovery
Industrial Kiln and furnace renovation	Optimization of Electricity network	Heat and cold storage
Steam (air) hammer renovation	The technology of heat pump	Energy Substitute
Recovery and utilization of industrial waste energy		Automation
Building renovation		

Illustration : Among the EPC energy conservation projects of Project Phase II, the projects of central AC, industrial process, and heat and cold storage account for the most proportion.



# 5. The prospect

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5.1 Lacking of capital is one of the main barriers of implementing energy conservation projects. Practical solutions need to be found.

- At present, China's EMCos mainly are not state-owned. They mostly use their own capital to implement energy conservation projects;
- With the support of the EMCo Loan and Guarantee Program, obtaining loans from banks is just a start. The amount of capital obtained is comparatively small and it will increase gradually in the future;
- Currently, most of Chinese banks lack experience and have not entered into the energy conservation area; Some of the existing credit regulations and rules do not favor energy conservation projects; There still lacks an effective mechanism to reduce risks related to large-scale energy conservation projects.



# 5. The prospect

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## 5.2 Attracting more loans from banks for energy conservation project

**5.2.1** It is necessary to disseminate the experiences of energy conservation project financing and experiences from the Indian and Brazilian banks learned from this workshop, so as to help the Chinese banks to have a better understanding of energy conservation, enhancing their awareness of energy conservation and environmental protection, in an effort to contribute to the sustainable social and economic development of China.



# 5. The prospect

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## 5.2.2 The on-lending project of WB/GEF

- In order to encourage and assist Chinese banks establishing loan windows for energy conservation projects, and to seek effective mechanism for risk reduction of large-scale energy conservation projects, the Chinese government is working with WB/GEF on an energy conservation on-lending project. The initial preparation work has already started.
- The objective of energy conservation on-lending project: to assist Chinese banks in establishing a sustainable loan business for energy conservation project.



# 5. The prospect

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## 5.2.3 WB/GEF Energy Conservation On-lending Project is tentatively divided into 5 sections

- On-lending the loan of World Bank into large-scale energy conservation projects via Chinese banks (the project start-up investment is no less than **5 million** US\$, and at least **50%** of the project's economic benefits results from energy conservation) in order to demonstrate the business feasibility of providing energy conservation loan for large-scale energy conservation project;
- Providing technical assistance to Chinese banks and assisting them in establishing financing business of energy conservation projects and developing channels for energy conservation projects;



## 5. The prospect

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- Providing technical assistance for **2 or 3** highly energy-intensive industries, such as steel and building materials; preparing for the implementation of **2 or 3** demonstration projects;
- Providing technical assistance for government, building a favorable environment for large-scale energy conservation project financing;
- Project management, supervision and report;



## 5. The prospect

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5.2.4 If the WB/GEF Energy Conservation On-lending Project is implemented successfully, it will accelerate the rapid development of Chinese banks' loan to energy conservation project.

- Raising at least **300 million** US\$ in 5 years, **3 million** tce could be saved annually;
- Suppose the life expectancy of each energy conservation project is **15 years**, then **45 million** tce could be saved, which is equivalent to **105 million tons** of CO<sub>2</sub> emission reduction.



# 5. The prospect

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5.3 The capital sources of energy conservation projects should be diversified including:

- Bank lending;
- The WB/GEF on-lending fund;
- The energy conservation fund;
- Capital from public debt;
- Overseas venture capital investment;
- Funds owned by enterprises;
- Domestic and overseas private funds