



China makes remarkable progress in energy saving and emission reduction, and the development and utilization of renewable energy obtain gratifying achievements.

Shen Longhai

Senior Advisor, Energy Research Institute of NDRC

Director, ESCO Committee of China Energy Conservation Association (EMCA)

Korea, August 2009



Contents

- I. Energy saving is the key measure to cope with climate change.
- II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years.
- III. China vigorously develops and utilizes renewable energy and has obtained gratifying achievements.
- IV. To strengthen the cooperation among Northeast Asia in energy saving and emission reduction and renewable energy fields.



I. Energy saving is the key measure to cope with climate change

Climate Change has become the hot topic concerned by international community.

- The fact that GHG emission results in global warming is indisputable already.
- Global warming has resulted in serious consequence on natural ecosystem, and the environment for human survival and development.
- Climate change is closely related with the CO₂ emitted during our human making use of fossil fuel.
- Climate change is the common challenge to our human society.

I. Energy saving is the key measure to cope with climate change

----From the last century since the late 80's, the international community had been making unremitting efforts to cope with climate change, and **《the United Nations Framework Convention on Climate Change》** and **《the Kyoto Protocol》** established the basic principle and effective framework of international cooperation to deal with climate change.

----In December 2007, **《the Bali roadmap》** was passed on the conference by the parties of UN Climate Change in Bali, Indonesia, in which reaffirmed the principle of “common but differentiated responsibilities” that developed and developing countries addressing climate change issue.



I. Energy saving is the key measure to cope with climate change

Chinese government attaches great importance to climate change.

In June 2007, 《 the China's National Climate Change》 was officially released to public, which is China's first comprehensive climate change policy paper, and is the first national program enacted by developing country to address climate change as well.

In June 2007, the Chinese government set up a national leading group to address climate change, with Premier Wen Jiabao as head of the leading group.

I. Energy saving is the key measure to cope with climate change

----Chinese government put forward the 20% reduction of energy consumption per GDP and 10% reduction of major pollutant emissions as binding targets in the 11th Five-Year plan (2006 ~ 2010);

----In September 2007, the Chinese government promulgated the **《China Medium and Long Term Renewable Energy Development Plan》** and brought forward that by 2010 the total renewable energy consumption will account for 10% of total energy consumption and by 2020 this proportion will reach around 15%.



I. Energy saving is the key measure to cope with climate change

Energy Saving is the largest emission reduction.

Energy consumption, especially the fossil fuel consumption, is the main source of CO₂, accounting for 75% of the CO₂ emissions. In this sense, energy saving is the largest emission reduction and it reduces the emissions of CO₂ correspondingly.



I. Energy saving is the key measure to cope with climate change

Energy saving is the fundamental measures to reduce GHG emissions and to solve energy environment issue.

China's rapid economic development and resource of environment is becoming increasingly acute, and our climate change issue concerns international community. It may substantially reduce CO₂ emissions through saving and reducing the utilization of fossil energy, improving energy efficiency, and developing and making use of new energy including renewable energy. Energy saving is the urgent need to cope with global climate change and is the responsibility for China to assume.

I. Energy saving is the key measure to cope with climate change

Energy saving is one of the effective measures for fulfilling the sustainable development of economic society.

- Largely making use of fossil energy leads to the severe damage to ecological environment and it goes against the sustainable development of economic society.
- Energy saving is the important hand grab for adjusting structure and changing the extensive economic growth mode of “high energy consumption and high pollution”.
- Energy saving is the certain choice for China building the resource-saving and environment-friendly society and is the inevitable way to promote economic restructuring and transform our economic growth mode.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

Chinese government attaches great importance to energy saving work and has brought forward and enforced a series of laws/regulations and polices/measures to strengthen our energy saving work.

----On October 28, 2007, 《**the China Energy Conservation Law**》 was amended and passed, and was put in force on April 1, 2008;

There are 7 chapters and 87 articles in the amended 《**The China Energy Conservation Law**》 ;

In the Article 4, it says, Resource Saving is our basic national policy. China implements the energy development strategy of placing stress on conservation and development and giving priority to energy conservation.



II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

----In 2004, China issued 《the China Medium and Long Term Energy Conservation Plan》 for the first time;

----In 2006, Our State Council made 《the Resolution on Strengthening Energy Conservation Work》 ;

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

---China's industrial energy consumption accounts for 70% of total energy consumption. Among the energy-intensity industries, the energy consumed by these thousands enterprises are the major energy consumers, which accounts for about one half of the total industrial energy consumption. Therefore, NDRC issued **《the 1000 Enterprises' Energy Saving Action》** and determined to conduct the energy saving action towards 1000 enterprises (the enterprises with annual energy consumption of 180,000 tce or more) in 9 energy-intensity industries, including iron and steel, non-ferrous metal, coal, power, oil and petrochemical, chemical, paper making and textile industries.

During the 11th Five-Year Plan, these 1000 energy-intensity enterprises will save about 100 million tce.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

– In July, 2006, NDRC issued the Notice on Printing and Distributing the Suggestions for Implementing **《The Ten Key Energy Conservation Projects》**, which regulated the principle, target, contents and guaranteed measurements of these ten key energy conservation projects. These ten key energy conservation projects are as follows:

- 1. Coal-fired industrial boiler (kiln) retrofit projects
- 2. District Cogeneration Projects
- 3. Residual Heat and Pressure Utilization Projects
- 4. Petroleum Saving and Substituting Projects
- 5. Motor System Energy Saving Projects

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

- 6. Energy System Optimization Projects
- 7. Building Energy Conservation Projects
- 8. Green Lighting Projects
- 9. Government Agency Energy Conservation Projects
- 10. Energy Saving Monitoring and Testing, and Technology Service System Building Projects.

By implementing Ten Key Energy Saving Projects, during the 11th Five-year Plan, it is expected that 240 million tce will be saved which contributes about 40% to fulfilling the target of 20% reduction of energy consumption per GDP for the 11th Five-year Plan.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

In 2006 and 2007, there were 681 key energy saving projects financed by central government budget, forming the energy saving capacity of 25.5 million tce; And through all-level governments lead enterprises to conduct energy saving renovation, 60 million tce of energy saving capacity was formed.

In 2006 and 2007, 150 million energy-saving lights were promoted and applied in China to replace incandescent lights;

In 2008 50 million were applied and 120 million for 2009, and it is possible to accomplish the three-year target in advance.



II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

----On July 23, 2008, Premier Wen Jiabao chaired a State Council Executive Meeting to study and deploy how to strengthen the work of saving oil and power and conduct the Energy Saving Actions for All, deliberated and approved in principle 《The ordinance of civil building energy saving (draft)》 and 《The ordinance of public organization energy saving(draft)》 . (On August 1, 2008 the State Council Order No. 531 and 530 had been announced and these two Ordinances had been implemented since October 1, 2008) .



II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

---For the first time, 20% reduction of energy consumption per GDP was set to be the binding target regulated in the 11th Five-Year Plan, which is by 2010, energy consumption per 10,000 Yuan GDP (constant price in 2005) is expected to drop from 1.22 tce in 2005 to 0.98 tce, which will be 20% reduction compared with the end of the 10th Five-Year Plan and 10% emission reduction of the major pollutants compared with the end of the 10th Five-Year Plan.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

---- From 2006 to 2008, our energy consumption per GDP unit accumulatively decreased by 10.1%. Since 2006, China's energy consumption elasticity coefficient has been down to 0.66, which reversed the situation of higher than 1 several years in a row.

Through the implementation of positive energy saving policies, in 2006 and 2007, the accumulated saved energy reached 147 million tce in China, which is equivalent to 3.35 million tons of CO₂ emission reduction.

----From 2006 to 2008, the total emission reduction of SO₂ and the chemical oxygen demand in the first were reduced by 8.59% and 6.61% respectively.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

- In 2006, the energy consumption unit GDP of China was 1.21 tce (constant price in 2005), 1.79% lower than that of previous year, and for the first time fulfilled the first decrease in recent years;
- In 2007, the energy consumption unit GDP of China was decreased by 4.04% compared with previous year, and the total emission reduction of SO₂ and chemical oxygen demand were reduced by 4.66% and 3.14% respectively, which for the first time fulfilled the both decline;

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

- In 2008, the energy consumption unit GDP was decreased by 4.59% compared with previous year, and the total emission reduction of SO₂ and chemical oxygen demand were reduced by 5.95% and 6.61% respectively.
- For a half of 2009, the energy consumption unit GDP was decreased by 3.35% compared with the 0.47 percentage points increase of the descent depth.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

In recent years, China conducts substantial work in adjusting industrial structure and eliminating outdated production capacity and makes remarkable progress;

Between 2006 and 2008, 38.26 million kilowatts of small thermal power units was shut down, 60.59 million tons of outdated iron smelting capacity, 43.47 million tons of outdated steel production capacity, and 140 million tons of outdated cement production capacity respectively were eliminated, completing the target of 76.5%, 60.1%, 79.0% and 56.0%, respectively for the 11th Five-year Plan's eliminating outdated production capacity.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

Only a year in 2007, 14.38 million kilowatts of small thermal power units was shut down, 46.59 million tons of outdated iron smelting capacity, 37.47 million tons of outdated steel production capacity, and 52 million tons of outdated cement production capacity respectively were eliminated.



II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

In recent years, China is increasingly strengthening its energy saving work in the fields of industry, building and transportation, and strives for improving energy efficiency and achieves remarkable progress;

The energy consumption per unit of product declined to different degree. For instance, in 2000 the coal consumption for thermal power supply was 392 gce/kWh and in 2008, the target of 360 gce/kWh for the year of 2010 was accomplished in advance.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

In recent years, China's building energy saving and emission reduction achieved breakthrough progress. The implementation rate of implementing mandatory energy efficiency standard for our new building design was increased from 53% in 2005 to 97% in 2007, and the implementation rate of implementing mandatory energy efficiency standard for building construction was increased from 21% in 2005 to 71% in 2007.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

This year, China officially launched **《The Energy Saving Products Patronizing Public Project》**. This project is that through financial subsidies to promote ten kinds of high-efficient energy saving products including air conditioner, refrigerator, flat-panel TV, washing machine and motor with the 1st or 2nd EE rating, and the high-efficient lighting energy production and energy saving and new energy automobile are also included.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

Implementing 《The Energy Saving Products Patronizing Public Project》 may drive 400-500 billion RMB's needs per year, which may make the market share of high-efficient energy saving products improve 10-20 percentage points and reach to 30% above, which may save 75 billion kWh electricity per year, equivalent to less construction of 15 coal-fired power plant of one million kilowatts level of coal-fired power plant level, 75 million tons of CO₂ emission reduction.

II. China attaches great importance to energy saving and emission reduction and has made remarkable progress in recent years

The year of 2009 is the decisive year for fulfilling the energy saving and emission reduction target of the 11th Five-year Plan. In order to achieve the binding target of 20% reduction of energy consumption per GDP regulated in the 11th Five-Year Plan, 5% should be reduced in this year and next year, and we should increase the utilization rate of high-efficient energy saving products including air conditioner, refrigerator, and automobile from 5% to 30%, and increase the proportion of renewable energy to primary energy to 10% in the year of 2010, clearly we have limited time but arduous task.

III. China vigorously develops and utilizes renewable energy and has achieved satisfied results

- The target set in 《The Medium and Long Term Renewable Energy Development Plan》 :

	2010	2020
• Hydropower	190 million kw	300 million kw
• Wind power	5 million kw	30 million kw
• Biomass power generation	5.5 million kw	30 million kw
• Fuel Ethanol	2 million tons	10 million tons
• Bio-diesel	0.2 million tons	2 million tons
• Solar energy power generation	0.3 million kw	1.8 million kw



III. China vigorously develops and utilizes renewable energy and has achieved satisfied results

The target set in 《The 11th Five-Year Plan Development Planning for Renewable Energy》 :

	2010
Hydro power	190 million kw
Wind power	10 million kw
Biomass power generation	5.5 million tons
Fuel Ethanol	3 million tons
Bio-diesel	0.2 million tons
Solar energy power generation	0.3 million kw



III. China vigorously develops and utilizes renewable energy and has achieved satisfied results

By the end of 2007, the amount of utilized renewable energy was about 220 million tce, equivalent to 500 million tons of CO₂ emission reduction, and it was up to 8.5% of the total amount of consumed primary energy.

III. China vigorously develops and utilizes renewable energy and has achieved satisfied results

China owns rich hydropower resources, about 540 million kilowatts could be developed. Chinese government takes supporting attitude towards hydropower, including the development of small hydropower. From 2000 to 2008, China's hydropower installed capacity increased from 79.35 million kilowatts to 163 million kilowatts, and it is expected that in 2020, China's hydropower installed capacity will reach 300 million kilowatts;

In 2007, China's hydropower installed capacity arrived at 145 million kilowatts, ranking first in the world and the power generation by hydropower accounting for 15% of the total power generation of China, equivalent to 480 million tons of CO₂ emission reduction.

III. China vigorously develops and utilizes renewable energy and has achieved satisfied results

In recent years, the size of wind power has been doubling increased. In 2000, the installed capacity of wind power was 0.34 million kw. In 2006 and 2007, the added new installed capacity was 3.05 million kw, with the annual average increase rate of 148%. And in 2007, the installed capacity of wind power reached 6.05 million kw, fifth in the world. By the end of 2008, the installed capacity of wind power reached 10 million kw, which had accomplished the target of wind power development regulated in the 11th Five-Year Renewable Energy Development Plan in advance.

III. China vigorously develops and utilizes renewable energy and has achieved satisfied results

Now China is building dozens of large-scale wind power projects of 100 thousands or million kw level and will focus on the construction of three great wind power plant with 10 million kw level in Hexi Corridor in Gansu, Inner Mongolia and northern Jiangsu coastal. Developing at this speeding rate, it is expected to arrive at 20 million kw in 2010, 100 million kw in 2020, which will greatly exceed the targeted number of 30 million kw.



III. China vigorously develops and utilizes renewable energy and has achieved satisfied results

Actively developing solar energy power generation and solar thermal utilization.

By the end of 2007, the collector area of solar water heater reached 120 million square meters and has been ranking first in the world many years. In 2005, China issued the Solar Water Heater System Technical Specifications and the integration of solar water heater and building will be comprehensively applied in the future.



III. China vigorously develops and utilizes renewable energy and has achieved satisfied results

Presently, the key technology for solar energy power generation is photovoltaic power generation. In 2007, the solar photovoltaic power generation reached 0.1 million kw, the annual production capacity of photovoltaic cells reached 1 million kw, and is the world's largest producer of photovoltaic cells. In 2009, Chinese government issued the Implementation Opinion on Accelerating the Application of Solar Photovoltaic in Building, implemented 《The Plan for Solar Energy Roof》 《The Golden Solar Plan》 , which will further advance the application of solar energy photovoltaic technology to urban and rural construction.



III. China vigorously develops and utilizes renewable energy and has achieved satisfied results

Actively developing nuclear power.

In 2000, the installed capacity of nuclear power was 2.1 million kw, and in 2008, this number increased to 9.1 million kw, accounting for 1.3% of the total installed capacity of power in China, far lower than the average rate of 16% of the total power generation of the nuclear power plants around the world. We will strive for the target of over 5% that nuclear power accounts for total installed capacity of power in 2020. And it is expected that by 2010, our installed capacity of nuclear power will reach 12 million kw, which is equivalent to 80 million tons of CO₂ emission reduction .

III. China vigorously develops and utilizes renewable energy and has obtained gratifying achievements

Focusing on biomass power generation, methane, biomass solid forming fuel and liquid fuel, vigorously promoting the development and utilization of biomass energy.

Presently, China's biomass power generation mainly includes agricultural and forestry waste power generation, waste generation and methane power generation. By the end of 2007, the installed capacity of biomass power generation was about 3 million kw.

III. China vigorously develops and utilizes renewable energy and has obtained gratifying achievements

Biomass liquid fuel is an important substitute for oil, including fuel ethanol and bio-diesel. In 2005, the output of fuel ethanol ranked third in the world, second only to Brazil and the United States. In 2006, our annual fuel ethanol production capacity reached 1.32 million tons and it is expected that in 2010, the number will reach 5.22 million tons, which will exceed the 3 million tons' target regulated in the 11th Five-Year Renewable Energy Development Plan.

III. China vigorously develops and utilizes renewable energy and has obtained gratifying achievements

Vigorously developing methane in rural area, promoting rural renewable energy technologies, such as solar energy and the stoves which consumes less firewood and coal. By the end of 2007, there were over 5000 medium and large scale bio-digesters in China, more than 27 million household biogas digesters, which were mainly used as fuel by farmers, each year it may replace 16 million tce, equivalent to 44 million tons of CO₂ emission reduction; there were 26.6 thousands farm biogas projects in China, the area of using solar water heaters in rural had reached 42.86 million square meters, the area of using solar house arrived at 14.68 million square meters, and 1.12 million solar stoves had been used, the cumulative promotion of stove which consumes less firewood and coal reached 151 million households and the energy-saving stoves of 34.71 million households.



III. China vigorously develops and utilizes renewable energy and has obtained gratifying achievements

China now is studying to draw up **《The Development Planning for New Energy》** , including wind power, solar energy, biomass energy etc , and reforming traditional energy into new energy ,such as clean coal technology application, smart grid etc, and is vigorously developing and utilizing green energy and promoting the development of cyclic economy and low-carbon economy.

IV. To strengthen the cooperation among Northeast Asia in energy saving and emission reduction and renewable energy fields

1. To strengthen the energy saving and emission reduction cooperation in Northeast Asia.

China owns large market with tremendous energy saving potential and China will to enhance comprehensive cooperation with the nations in Northeast Asia in the aspects of EE technology and energy saving service to explore the energy saving potentials. The main energy in China is coal, therefore, the R&D and cooperation in the technology of clean coal is extremely significant.

In recent years, China's ESCO industry got rapid growth. China expects to promote the ESCO cooperation among all nations in Northeast Asia, support and assist small and medium-size ESCOs in implementing more EE projects and achieving more CO₂ emission reduction.



IV. To strengthen the cooperation among Northeast Asia in energy saving and emission reduction and renewable energy fields

2. To strengthen the cooperation in R&D and utilization of new energy and renewable energy in Northeast Asia.

In order to cope with global climate change, Chinese government actively develops and utilizes new energy , including wind energy, solar energy, geothermal energy, biomass and nuclear energy etc. China would like to strengthen the cooperation in new energy and renewable energy R&D and utilization with other nations in Northeast Asia.

IV. To strengthen the cooperation among Northeast Asia in energy saving and emission reduction and renewable energy fields

3. In order to cope with climate change, all nations in Northeast Asia should strengthen the technology cooperation in mitigation and adaptation

Technological progress plays decisive role in mitigating and adapting climate change. Developed nations should provide supports including finance, technology and capacity for developing countries in coping with climate change. All nations of Northeast Asia should strengthen the R&D and innovative cooperation in energy saving and emission reduction and renewable energy technology, especially in technological promotion and application.



IV. To strengthen the cooperation among Northeast Asia in energy saving and emission reduction and renewable energy fields

Improving the energy efficiency of energy-intensity industries is the important and active measure for all nations to accomplish energy saving and emission reduction task. The nations in Northeast Asia should conduct the cooperation in this field and the key point is to promote energy saving and environmental protection technology transfer in key industries.



Contact

ESCO Committee of China
Energy Conservation
Association (EMCA)

Address: Rm 518 SINOCEM
Tower, A2 Fuxingmenwai St,
Beijing, P.R. China(100045)

Tel: 63600182 Fax: 63600459

Email: slh@emca.cn

Website: www.emca.cn



Thank you!