

# China's energy policies

Improving energy efficiency and developing renewable energies are identified as the two main parts of the development pathway to the energy [r]evolution. This chapter looks at how China is doing in these two areas.

## Energy efficiency

According to China's 11th Five Year Plan of National Economic Development, for the period from 2006 to 2010, the energy consumption per unit of GDP shall decrease by 20 percent. Also, according to China's Mid-to-long-term Energy Efficiency Plan, the energy intensity shall reduce by 45% between 2006 and 2020. Besides setting targets for improving energy efficiency, a package of supportive policies is also introduced. For example, to achieve structural energy saving through optimizing industry structure, especially through reducing the percentage of energy-intensive industry; to achieve technical energy saving through developing and marketing energy efficiency technology; to achieve better energy consumption management through strengthening the monitoring system of energy production, transportation and consumption. The focus of efforts is on the energy-intensive industries. Moreover, there are policies aiming to encourage energy saving, such as to perform energy audit for energy-intensive industries, to phase out aging equipments compulsorily, and to introduce mandatory labelling system for energy efficiency products. However, in 2006, the energy intensity decreased by 1.2%, which missed the yearly national target of 4%. The Chinese government attributed such failure to the slowness of the industrial structural reform, the rapid growth of heavy industries, and the difficulties with phasing out aging polluting technologies or equipments. Poor local execution is another important reason, while it does take time for policies to show effects on the local level. The central government has showed determination to achieve the 20% targets, and also pointed out the focus of the future work as follows: Improve and implement the standards of energy efficiency stringently. All new project application has to be evaluated based on the energy efficiency audit. Projects that cannot follow the energy efficiency standards will not get the approval.

Existing industries that cannot improve their energy efficiency performance to meet the standards will be shut down.

Phase out aging facilities with low efficiency. For example, shut down small-scale coal-fired plants with a total installed capacity of 50GW. Phase out 55 million tons of production capacity of steel and 100 million tons of production capacity of iron. Significantly improve the energy efficiency of some target industries and corporations.

Better the policy of energy efficiency and environmental protection. Make use of economic mechanisms such as pricing, financing and loaning to help achieve the environmental goals. Speed up the growth of energy efficiency technologies. Promote the equipment improvement and technological advancement, which aim at improving energy efficiency and reducing the emissions. Guide the industries to adopt more advanced equipments, procedures and techniques.

- Strengthen the legal supervisory framework, build up and improve monitoring system of the implementation of the relevant targets and policies and impose penalties.
- Identify clearly the responsible entities for each energy efficiency targets and improve the system to inspect, examine and evaluate the relevant targets.

## **Renewable energy law**

On January 1st 2006, the Chinese Renewable Energy Law came into effect, which put forward a comprehensive renewable energy policy framework. The law institutionalizes a number of policies and instruments for China's renewable energy development and utilization, which cover indicative renewable energy targets, renewable energy planning, entry of renewable energy products to the market, grid connection of renewable power generation project, feed-in-tariff of renewable power generation, fiscal and taxation measures, renewable energy technology R&D and diffusion, and renewable energy education and training.

## **Feed-in tariff**

The China Renewable Energy Law has defined the guiding principles of China's Feed-in Tariff approach, and requested the government to formulate concrete measures to implement the approach. Some directives regarding feed-in tariff implementation have already been enacted in China, such as Directive on Renewable Energy Power Generation and Directive on Renewable Power Pricing and Incremental Cost Sharing. A premium of 0.25Yuan/kWh is now available for biomass power generation projects. So far wind power generation projects are not eligible to enjoy the incentive, and the pricing of wind power is still decided through public bidding.

## **Special fund for renewable energy development**

A Special Fund for renewable energy development has been endorsed by the Renewable Energy Law. The Special Fiscal Fund is a very important financial facility for the development and deployment of renewable energy technologies in China. The Ministry of Finance issued the Management Method on Special Fund for Renewable Energy Development in June 2006, making the Fund be available for renewable energy projects. The Fund supports investments in renewable energy projects by providing grand or subsidizing low interests.

## **Taxation measures**

The Renewable Energy Law has recognized the importance of these measures, and requested the relevant government departments to formulate concrete fiscal and taxation measures such as tax and/or tariff relief and preferential loans to support China's renewable energy industry development. Now wind farms enjoy a 50% reduction in Value Added Tax. Other taxation measures in favor of renewable energy investment and use are under formulation or investigation.

## **Grid access**

The Renewable Energy Law has several provisions targeting the removal of barriers of the entrance of renewable energy power to the energy markets. Directive on Renewable Energy Power Generation, issued by NDRC, is the Law's implementing regulation which states that the grid has to give priority to the access of renewable energy sources. The Ministry of Construction has also issued regulations on installation of solar heating in buildings.

## **Government targets**

Today, modern renewable energy sources account for 7.5% of China's primary energy demand. Besides modern renewable energy, traditional biomass also plays an important role in the China's energy mix, which makes up about 12%. The share of renewable energy in electricity generation is 15%, with hydro power plants the largest technology. About 80% of Chinese primary energy supply still comes from fossil fuels. The Chinese government has set a target that by Year 2020, renewable energy sources will make up 16% of the total primary energy mix. Among those, decentralised renewable energy systems, where power and heat are produced close to the point of final use, plays an important role in supplying electricity to rural population in remote areas.

## **Hydro**

The commercially exploitative hydro resources in China amount to 400GW. By the end of 2005, the installed capacity of hydro power reached 110GW with the annual generation of about 400TWh. The development targets for hydro power are to reach 180GW by 2010 and 300GW by 2020. China has mastered advanced technologies of designing and constructing hydro power projects, as well as manufacturing the equipments. However, the bottlenecks for developing hydro power are the concerns over the local ecology and the human displacement.

## **Biomass**

Biomass includes agricultural and forestry residues, oil plants, methane and other organic wastes. Traditional biomass refers to agricultural and forestry residues burned directly for cooking and space heating in rural households. Traditional biomass is still the main source of energy supply for the 15 million of Chinese rural population, who do not yet have access to electricity. By the end of 2005, the installed capacity of modern biomass power was 2GW. The annual production of ethanol and methane was 1.02 million tons and 8,000 million m<sup>3</sup>, respectively. The governmental targets are to have modern biomass plants with installed capacity of 5,500MW by 2010 and 30,000MW by 2020. For methane, the targets are 19,000 million m<sup>3</sup> and 44,000 million m<sup>3</sup>, respectively.

## **Wind**

Based on the assessment of the Chinese Metrological Bureau, the total exploitative wind resources in China is about 1,000GW, with 250GW of onshore and 750GW of offshore. By the end of 2005, over 60 wind farms were built with a total installed

capacity of 1.26GW. The total installed capacity increased by 65% in 2005 and then 80% in 2006. China plans to install 5GW wind power by 2010 and 30GW wind power by 2020. In order to facilitate the localization of wind energy equipment manufacturing, which is key to the wind energy development in China, the NDRC has set a 70% wind turbine localization requirement for any new wind farms since July, 2005.

## **Solar**

Two thirds of the land in China has a yearly sunshine duration over 2,200 hours. By 2005, the installed capacity of solar photovoltaic was 70MW. High price of solar PV is still making this technology prohibitive. On solar heating, the yearly production capacity has reached 15 million m and the total coverage has reached 80 million m ; both are ranked No.1 in the world. Also, solar power plays a very important role in decentralized system, which supplies electricity to rural population in remote areas. The targets are by 2010, China will have 300MW installed capacity of solar power and the figure will rise to 1,800MW by 2020.

## **Greenpeace demands:**

- Introduce policies to internalize the external costs of the consumption of fossil fuels;
- Implement the government target of decreasing energy consumption per unit of GDP by 20% by 2010;
- Strengthen the promotion of renewable energies, especially wind and solar PV;

Besides, the negative impacts of developing renewable energies on the environment and society should not be neglected. When developing hydro power, its impacts on local environment and human displacement have to be properly assessed. The use of biomass should avoid deforestation or competition with food production.

Conventional energy sources receive an estimated \$250 - 300 billion subsidy per year worldwide, resulting in heavily distorted markets. Subsidies artificially reduce the price of power, keep renewable energy out of the market place and prop up non-competitive technologies and fuels. Eliminating direct and indirect subsidies to fossil fuels and nuclear power would help move us towards a level playing field across the energy sector. The 2001 report of the G8 Renewable Energy Task Force argued that "re-addressing them [subsidies] and making even a minor re-direction of these considerable financial flows toward renewables, provides an opportunity to bring consistency to new public goals and to include social and environmental costs in prices. "The Task Force recommended that "G8 countries should take steps to remove incentives and other supports for environmentally harmful energy technologies, and develop and implement market-based mechanisms that address externalities, enabling renewable energy technologies to compete in the market on a more equal and fairer basis."