

Green Solutions Special

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2050 energy plan revealed

By ZHANG YU'AN

China's top energy think-tank chief has outlined a three-step strategic roadmap for the development of the country's renewable energy resources through to 2050.

Han Wenke, director-general of the Energy Research Institute under the National Development and Reform Commission, said: "By 2050, over one third of the country's total primary energy consumption should come from renewable energy. This is in line with the country's goal of fundamentally changing its energy consumption structure. This will contribute a great deal to environmental protection and help combat climate change."

Han outlined three steps for achieving this 2050 target.

► By 2020, the country, through vigorously developing its renewable energy resources, should be able to supply the renewable energy equivalent of more than 600 million tons of standard coal to fuel its robust economic growth. This renewable energy should account for about 15 percent of the country's total primary energy consumption. By then, renewable energy will become an efficient supplementary energy source to the country's energy supply system. At the same time, the country will have developed mature renewable energy technologies and have created even greater scope for the further development of the sector.

► By 2030, renewable energy will hold an important position in the country's energy supply system and supply the equivalent to 1 billion tons of standard



Han Wenke

coal, accounting for about 20 percent of the country's primary energy consumption.

► By 2050, due to a dwindling supply of fossil energy resources, renewable energy will have further increased its share of the country's total primary energy consumption. Han foresees that, by this point, the country will be able to supply the renewable energy equivalent of over 2 billion tons of standard coal, accounting for more than one third of the country's total primary energy consumption. This will be a major boost for the country's bid to develop a sustainable energy supply system.

Han is upbeat about the fulfillment of this strategic goal. On the one hand, China has a great potential for the large-scale development of renewable energy resources, he said. Of various renewable energy resources available, the country's estimated wind power resource could reach several hundred million kilo-

watts, whilst excellent solar power resource exists in almost every area of the country.

Han said: "The solar energy absorbed by the land surfaces of the country is equal to about 1.7 trillion tons of standard coal each year."

On the other hand, he said: "The country's continuous high economic growth and rise of the comprehensive power of the country, plus the opening up policy and substantial improvements to the manufacturing industry, have laid a solid foundation for us to catch up with the world renewable energy development trend. These factors have brought our development onto the fast track."

Implementation of the country's renewable energy law has provided a legal guarantee for vigorous development of the industry. In the process of renewable energy development, wind power, solar power and bio-energy will play an important role, Han believes.

Between 2000 and 2008, China's wind power industry had witnessed an average annual growth of 52 percent, whilst its installed wind power capacity increased from only 350,000 kilowatts to 12.17 million kilowatts. This has made the country the world's fourth largest wind power producer, following the United States, Germany and Spain.

Over the coming years, the country is committed to building large-capacity wind farms in the northwest, north, northeast regions and the southeast coastal regions, where wind power resources are most abundant.

Since 2008, the country has worked on plans to build 10-mil-

lion-kilowatt level wind farms in the Inner Mongolia and Xinjiang Uygur autonomous region and the provinces of Gansu, Hebei and Jiangsu.

Solar energy composes of both solar photovoltaic energy and solar heating. The country should promote the use of solar heating technology in its constructions whilst balancing the development of solar photovoltaic industry chain, Han recommends.

Between 2000 and 2008, China's solar photovoltaic battery module production capacity rose from less than 10,000 kilowatts to 2.6 million kilowatts, the largest such capacity in the world. Of the 30 leading global photovoltaic battery module producers, China has nearly half, with 10 on the mainland and four in Taiwan.

Although the installed capacity of solar photovoltaic energy facilities was only about 140,000 kilowatts last year, China plans to build large-scale photovoltaic energy facilities in the northwest and north China regions in the near future, substantially boosting the development of the photovoltaic energy industry.

By 2008, China had installed around 130 million sq m of solar water heaters, accounting for more than half of the world's total. The country's goal is to increase the figure to 1.3 billion sq m or one sq m per person in the near future.

With regard to bio-energy, Han said the plan was to develop non-grain-based bio-ethanol and bio-diesel projects in the short-term, whilst vigorously developing second-generation bio-fuels in the mid- and long-term.



Officials from the National Reform and Development Commission, the Chinese Ministry of Finance and the UN attend a signing ceremony for the promotion of energy-saving lamps in Beijing in July.

China-wide green lighting initiative green-lit by UN

By ZHANG YU'AN

Replacing one standard bulb with an electricity-saving one may only save a small amount of electricity per year but, if millions are replaced, the cumulative effort can help save billions of kilowatt-hours of electricity and reduce millions of tons of CO2 emissions.

China has undertaken just such a project, now part of the country's UN-backed strategy for combating climate change. According to officials from the Phasing-out of Incandescent Lamps and Energy-Saving Lamps Promotion Project, China will replace at least 120 million incandescent bulbs with compact fluorescent lamps (CFL) this year, doubling the number replaced last year.

CFL bulbs use 60 to 80 percent less electricity compared to standard bulbs and usually have a longer service life.

In 1996, the Chinese government launched a "green lighting" program, aiming to replace energy-consuming bulbs with energy-saving ones.

To promote the program, the

government has been providing financial incentives to encourage more individuals and public facilities to join the campaign.

Currently, the government provides 30 to 50 percent subsidies on CFL bulbs so that consumers can afford these premium products. This heavy subsidy is also an incentive for many public facilities and enterprises.

On top of the financial subsidies from the central government, many local governments also provide financial subsidies for the program. The Beijing municipality, for instance, provides an additional 40 percent subsidy to bring the total subsidy to 90 percent. Due to this high level of subsidy, a large volume of CFL bulbs are sold to its residents at a price as low as just one yuan per bulb. In some communities, the local government even provides CFL bulbs free of charge.

In 2008, financial subsidy for CFL bulbs from the central government reached 280 million yuan, resulting in the replacement of 62 million energy-consuming bulbs and purchases totaling 650 million yuan. This will help the

country save 3.2 billion kilowatt-hours of electricity and cut 320 million tons of CO2 emissions.

This year's target of replacing 120 million energy-consuming bulbs will enable the country to further reduce its CO2 emissions and save even more electricity.

The country's green lighting program has also won support from the United Nation's Development Program and Global Environment Facility (GEF). As a result, the GEF granted \$14 million to a three-year-program for China's green lighting project.

The project has an ambitious goal of saving a volume of 160 billion to 216 billion kilowatt-hours of electricity and reducing CO2 emissions by 175 million to 237 million tons within 10 years.

China is both the world's largest lighting product producing and consuming country. In 2008, the country produced 4.3 billion incandescent bulbs and 3.2 billion CFL bulbs. If all the incandescent bulbs are replaced with CFL ones, the country will save 48 billion kilowatt-hours of electricity each year, equivalent to a reduction of 48 million tons of CO2 emission.

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