

Will China be the new renewable superpower?



Photo: Bloomberg

By John Goss

In recent years, China's Central Government has recognised that the country's renewable energy resources are indispensable assets for China's sustainable development.

Recently these energy resources have played a significant role in meeting China's ever increasing energy demands, improving energy infrastructure and reducing environmental pollution, plus promoting the country's economic development.

In order to advance the development of

China's renewable energy resources of energy and to satisfy the requirements for sustained social and economical development that draws from China's own resources and technologies as they are today, China has introduced the "Plan for Middle and Long Time Development of Renewable Resources of Energy".

The plan consists of strategies and development goals, and the key fields of definite measures to be taken from the present day to 2020. It also identifies how to embrace the

industrialization of renewable energy in China while accessing international experience for the future of China's renewable energy sector.

With reference to developing renewable energy in China, the "Compendium of 11th Five Year Plan for National Economy and Social Development" adopted by the fourth session of 10th People's Congress notes that China will implement to accelerate the use of renewable energy in China.

These steps include; preferential laws on finance, taxation and investment and a compulsory market share to encourage production and consumption of renewable resources of energy with a view to raising their proportions in the primary energy consumption mix. The "11th Five Year Plan for Development of Renewable Resources of Energy" is in line with the goals and tasks introduced by the "Plan for Middle and Long Time Development of Renewable Resources of Energy". The plan aims to optimise the exploitation of renewable resources of energy, and to put into effect the aims of the 11th five years plan.

Its guidelines set out conditions, tasks, ideology, goals, key fields and security measures, and policies for further developing renewable energy in China. This plan serves as the principal basis of guiding the exploitation of renewable resources of energy in the country as well as developing the renewable energy industry. China has abundant renewable energy resources with many successful achievements in water power, methane and solar energy heat utilization. In recent years the country has stepped-up the development of generating electrical power by wind power, biological liquid fuel and solar energy resources.

The development and utilization of renewable resources have become significant methods for China to alleviate increased energy demands, relieve environmental pollution, adjust energy structure, transform economic growth mode as well as promote construction of a new countryside for the people. In the 11th five year plan, China will continue to vigorously develop power generation based on water power, accelerate the development of wind

power, biological liquid fuel and solar energy, and strengthen the development and utilization of renewable sources of energy in rural areas. The country will increase gradually the proportions of the renewable sources of energy in the country's



total energy supply mix.

Guiding ideology

Looking ahead, China aims to build an energy-saving and environmental friendly society by implementing measures to develop its renewable energy resources.

Measures will be taken to build a reasonably well-off society and harmonious community and to further realize sustained development across the country. China will accelerate development of renewable energy resources such as hydropower, solar heat and methane gas which have been successful and competitive.

The development of basically mature technologies for renewable resources of energy as wind power, biomass, and solar energy generation as well as biological fuel, and others will be encouraged to realise their full potential.

Currently the main goals are to speed up their development and utilization, and to raise their proportions in energy structure, to resolve the problems of power supply to the non-powered population and with fuel shortages in rural areas, to promote the technologies for renewable resources of energy and their technological and industrial development. This will improve the abilities to conduct research into the further development of these technologies as well as the level of industrialization.

By the year of 2010, the proportion of renewable energy will have reached 10 percent of annual power capacity. This figure represents the energy equivalent of 300 million tons of standard coal.

Water Power

China is planning for a re-energized hydropower future that is based on development through science and technology, the plan says that it will pay equal attention to design, construction, resettlement of population and environmental protection. As part of the strategy, the country will strengthen the planning for reservoir population and the long-term as well as the early project stage.

The plan aims to develop water power in an orderly manner on the basis of ecological

protection, with a view to promoting the harmonious development between man and nature as well as sustained economical and social development. The plan's development goals are that in the 11th five year period, the increase of the installed hydropower generating capacity will be 73 million kilowatts across China. This target figure includes 3 million kilowatts from pumped storage power plants.

By the year 2010 the total hydropower capacity will have reached 190 million kilowatts across the country. This figure includes 120 million kilowatts of conventional hydropower capacity from large and middle sized projects, 50 million kilowatts of mini hydropower capacity and 20 million kilowatts from pumped storage power plants. These total hydropower figures represent 31 percent of China's exploitable installed power capacity across the whole country.

Biomass Energy

The new renewable energy plan aims to develop clean and efficient utilization technologies for biomass energy; these include biomass power generation, biogas ponds, liquid bio-fuel and solid compressed biomass pallets. China is aiming to promote the industrialization and commercialization of biomass energy, speed up the construction of the biomass energy industry system and marketing cultivation.

The aim is to drive rural economic development of biomass that will effectively increase the income of farmers, alleviate the



environment pollution caused by agricultural, forest residues and organic wastes of urban and rural areas.

China aims to develop and utilize the country's marginal land resources, grow energy crops and energy plants effectively without any competition or conflict with people for food, without competition with food for land, without damaging the environment, and without attending to one side while neglecting the other. This approach to potential problems in the future will create a properly balanced biomass energy utilization and other for the other uses of biomass.

Thus biomass energy commercialization and utilization in large scale can be materialized preliminarily, and a group of enterprises engaged in biomass utilization and equipment manufacture established. It is planned that by 2010, biomass installed power generation capacity will reach 5.5GW.

Wind Power

The renewable energy plan emphasises the urgent need for the industrialised development of wind power in China. This will be achieved by the construction of large scale wind farms, the promotion in the technical growth of wind power and significantly enhance the manufacturing capacity of domestic equipment makers.

Also, China needs to take steps to lower the cost of wind power so that it will improve the competitiveness of wind power in the market. The plan states that China should swiftly add 9 GW more wind power generation capacity and make the total wind power capacity reach 10 GW by 2010. China's power equipment manufactures need to annually make the capacity of complete units produced reach 5 GW and the capacity of parts manufactured must reach 8 GW.

The power companies must embrace new technologies and partnerships for cooperative designs, independent innovation and develop technology for 1.5 MW and above wind power generation equipment aimed at developing 3 MW offshore wind power generation machines. Wind power companies must partner with global wind power equipment and parts producers

with high technical level and competitive abilities. This planned growth will create a solid foundation for the strong development of wind power after 2010.

Solar Energy

The renewable energy plan emphasises that steps must be taken to speed up the usage of solar water heaters by establishing compulsory measures to install solar water heater on civil buildings in both urban and rural areas with good solar utilization conditions. The use of solar heating and solar cooking in rural areas must also be promoted.

Proactive actions are needed to develop solar PV power generation by establishing a stable market for generation, power purchase and supply, and will carry out necessary R&D on solar thermal power generation technology and a pilot demonstration plant.

The aim of the plan is to carry out solar power generation construction in areas with no power by utilizing small household PV power generation systems and small solar PV power plants to solve problems on basic household power demands in rural areas.

The energy plan's target is to install solar power generation capacity totalling 0.3 GW, carry out experiments and pilot work on a series of solar power generation demonstration pilot projects of MW level solar PV power generation capability and to establish effective grid connection systems so as to fully utilize this inexhaustible and free energy resource.

Rural Renewable Energy

The plans are to increase investment into renewable energy exploitation in rural areas to keep enlarging the scope of this resource. Work needs to be carried out with the use of such materials as straws and manure as fuel resources in order to promote biogas in the rural areas. Other renewable energy sources must be encouraged such as, utilization of solar, the construction of green energy pilot projects to demonstrate the benefits.

The need is to intensify technical innovation in power generation and supply

system construction, whilst optimizing existing rural energy structures, protect ecological environment, develop recycling economy, promote agricultural efficiency, increase income of farmers, and enhance the productive and living conditions of farmers.

The 2010 targets are to have 40 million households using biogas, 4700 mass biogas projects in poultry and livestock farms. Utilize renewable technologies such as small hydro power, wind power, and solar energy to solve the power supply problems in areas without power. In areas with rich small -hydro power resources build hydropower plants, small solar PV power plants and wind PV stations. In dry areas promote small sized wind power, household solar power and wind-PV power generation system. Take steps alone solve power supply problems for 1 million households without power.

Summary

The “Plan for Middle and Long Time Development of Renewable Resources of Energy” says that because the use of renewable resources, such as hydro power, wind power, solar power and solar thermal utilization does not produce or discharge polluting material and greenhouse gases, the increased use of renewable energy resources in China must be encouraged.

This increase in the utilization of renewable resources for energy purposes will assist in reducing ecological damage caused by fossil fuels consumption and mining in China and around the world.

So development and utilization of renewable energy play an important role in environment protection. The renewable energy resources plan is aimed at speeding up technology advancement and industry system

construction for renewable energy. China clearly regards the technologies of renewable energy development and utilization as an important part of the national scientific and technological development strategy.

The country is prioritising domestic development of technologies that address China’s clean energy and environmental needs. The plan’s aim is to encourage the growth of China’s technology and industrialization works for liquid bio-fuel, wind power, biomass power generation, hydropower and solar power generation. The plan is for the country’s authorities to set up national administrative bodies for renewable energy research and development to integrate the current technology resources, improve service system on technology and industry.

China will support renewable energy technology integration and production ability, provide support for technological and industrial supports for speeding up renewable energy development and utilization. These steps will accelerate basic education of renewable energy to develop new facilities and talents for renewable energy and will promote technological advancements and manufacturing industry development for future use of renewable energy resources in China.

