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**Training center in Gansu Province, People's Republic of China.**

# Renewable Energy in China

## China's Plan for Renewable Energy

China's Tenth Five-Year Plan (2001-2005) states: "The production capacity of solar energy, wind energy, and geothermal energy should be increased." Although the plan does not set forth specific development objectives, the focus on renewable energy is clear and the concept of sustainable development plays a key role. The principal objectives of the plan include:

1. Sufficient utilization of clean energies like natural gas, hydropower and nuclear power
2. Promoting new energy and renewable energy
3. Advancing clean coal technology
4. Diminishing the proportion of coal directly used for terminal consumption
5. Achieving sustainable development of energy, the economy and the environment.

### China's Energy Development Program

China's Energy Development Program is designed to increase the development of China's renewable energy resources. The program consists of four parts:

1. Restructuring the energy industry and its institutions
2. Creating an energy development strategy and identifying objectives
3. Developing energy technologies and infrastructure
4. Summarizing and measuring achievements.

### Energy Restructuring

The first part of the Energy Development Program involves energy restructuring. The National Development and Reform Commission (NDRC) has implemented several renewable energy initiatives such as the Brightness Program, which is an international effort to bring electricity to rural areas, and the Ride the Wind Program, which supports the development of domestic manufacturing of wind turbine components. Both efforts have made initial progress under the Program. In addition, larger projects—such as electric power grid retrofits and the construction of natural gas pipelines from Shanxi to Beijing—continue to make progress.

***The potential to increase renewable energy production in China is vast. China's governmental policies support the development of renewable resources, and renewable energy policy is highlighted in each of the four branches of China's Energy Development Program.***

### Energy Development Strategy and Objectives

The second part of China's Energy Development Program concerns creating an energy development strategy and identifying objectives. According to the Tenth Five-Year Plan, "It is essential to improve energy efficiency, protect the natural environment and accelerate the development of China's western region."

China's Tenth Five-Year Plan also highlights new and renewable energies in the power industry's development strategy: "New energy development should be a long-term strategy in energy industry implementation," the plan says, emphasizing that in the areas with abundant resources and combined-grid conditions, large grid-connected wind, solar, thermal, and PV power should be exploited. Finally, the Tenth Five-Year Plan emphasizes the commercialization of PV and wind technologies, diesel and battery systems, bioelectricity, geothermal energy, and fuel forests in rural areas. The plan states that small hydropower, wind, and solar energy projects should be dispersed in these areas.

### Energy Development

The third part of the Energy Development Program focuses on developing energy technologies and the necessary accompanying infrastructure. In the electricity industry,

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the phrase "Keep on implementing—ride the wind," is often repeated in reference to new and renewable energies and the goal of expediting the localization of wind turbines. Wind farms are planned for Xinjiang, Inner Mongolia, Hebei, Jilin, Liaoning, Hubei, and Guangdong provinces with a combined capacity of 500 MW.

China plans to build large wind farms in areas with proper conditions, invite international tenders, and develop large wind farm pilot projects. Meanwhile, as the Ride the Wind project is carried out, significant efforts need to be made to enhance China's ability to develop and manufacture large wind turbines. The goal is to reduce production costs and increase the localization percentage of wind turbines from 40% to 70% by the end of the Tenth Five-Year Plan period.

China's Brightness Program is working concurrently to supply power to areas without access to electricity. During the Tenth Five-Year Plan period, wind and solar equipment is to be installed to provide 100W of electricity per capita to eight million people, as part of the Central Government Poverty Alleviation Meeting.

## Policy and Measurement

The fourth part of the Program provides a brief summary of the main policies and measures of success in the Tenth Five-Year Plan. Here, the plan states that "higher grid connection prices should be offered to new and renewable energy providers, and renewable energy portfolio standards should be established in a timely manner, with full support." Most renewable energy electricity has been developed according to this guideline.

The plan also sets forth a tax and subsidization policy. This section of the plan states that "tax policy must embody the spirit of national industry policy and promote economic structural adjustment. The tax and subsidization policy should be designed to promote hydropower and new energy industries. For instance, production value-added tax (VAT) will be changed to consumption VAT."

The Tenth Five-Year Plan recommends some practical programs for renewable energy development, consisting of supplying power in rural areas without access to electricity, developing small decentralized hydro-electricity stations, advancing PV and wind power, and building electricity equipment. Another part involves accelerating local uses of wind

turbines, attracting international tender for pilot projects, and continuing the Ride the Wind project, which emphasizes the importance of wind turbines for electricity production.

China's Eleventh Five-Year Plan (2006-2010) is still under development, but renewables will likely hold a prominent place in the plan. Below are several trends influencing the next Plan:

- The government is attaching more importance to renewable energy development.
- The Renewable Energy Promotion Law will be included in this plan, if it is not already put into effect during the Tenth Five-Year Plan. For more information on this new law, please see the fact sheet "Renewable Energy Policy in China" at [www.nrel.gov/china](http://www.nrel.gov/china).
- Three more wind concession projects, with a capacity of 100 MW each, are now underway, which indicates the government's continuing commitment to wind energy.

## For more information, contact:

Energy Research Institute  
Guohong Mansion  
Jia No.11 Muxidibeili, Xicheng District,  
Beijing 100038, P. R. China  
Tel: +86 10 68002615  
Fax: +86 10 68002674  
Email: [lijf@public.bta.net.cn](mailto:lijf@public.bta.net.cn)

The following fact sheets on renewable energy in China are available on the National Renewable Energy Laboratory's China Web site ([www.nrel.gov/china](http://www.nrel.gov/china)).

- WB/GEF Renewable Energy Development Project
- Grid Connected Wind Power in China
- Renewable Energy Policy in China: Overview
- Renewable Energy Policy: Financial Incentives
- China's Township Electrification Program
- China's Plan for Renewable Energy
- China's Brightness Program
- Renewable Energy Business Partnerships in China

These fact sheets were prepared by DOE/NREL and the China Renewable Energy Industries Association under the US/China Protocol for Cooperation in the Fields of Energy Efficiency and Renewable Energy Technology Development and Utilization.

PIX04305 Credit: William Wallace



**Training center for solar systems in Lanzhou, China.**

## National Renewable Energy Laboratory

1617 Cole Boulevard  
Golden, Colorado 80401-3393  
303-275-3000 • [www.nrel.gov](http://www.nrel.gov)

Operated for the U.S. Department of Energy Office of Energy Efficiency and Renewable Energy by Midwest Research Institute • Battelle

NREL/FS-710-35787 • April 2004

Printed with biodegradable ink on paper containing at least 50% wastepaper, including 20% post consumer waste.