



Photo: Debra Lew

Inner Mongolia Hybrid Household Project — The University of Delaware (UDE) and DOE/NREL completed case studies on household and village power systems, including technical performance and economic analyses of 41 households and three villages in 1997.

In a pilot project DOE/NREL and the Inner Mongolia New Energy Office have installed 402 household PV/wind systems in eight counties. This has led to plans for another 4000 systems in one county, and pioneered technologies that will now be used for 50,000-60,000 systems over the next five years.

Renewable Energy in China

WB/GEF Renewable Energy Development Project

Launched in December 2001, China's Renewable Energy Development Project is using state-of-the-art photovoltaic and wind technologies to supply electricity to rural households and institutions. The project is funded by the Global Environment Facility (GEF) and the World Bank (WB).

Photovoltaic (PV) Component

The goals of the PV portion of the Renewable Energy Development Project are:

- Improved PV product quality
- Improved warranties and after-sales service
- Strengthened business capabilities
- Increased marketing efforts.

To accomplish these objectives, the project will focus on investment, market development, and institutional strengthening approaches.

A direct grant will be offered to PV companies in Qinghai, Gansu, Inner Mongolia, Xinjiang, Tibet, western Sichuan and adjacent areas for the purpose of assisting them with marketing, sales, and maintenance of a total of 10 megawatts (MW) in 300,000 to 400,000 PV systems. Eligible commercial PV companies include private enterprises, joint ventures, companies wholly or partially owned by research institutes, or state-owned enterprises.

These companies will produce PV systems or components, assemble, install, and maintain the systems, and enter into sales contracts with customers. The systems are expected to be purchased primarily by households and institutions in isolated, rural areas without access to electricity. Companies contracted for this purpose will receive a GEF grant of \$1.50 per peak watt of PV capacity, per system with a capacity of 10 peak watts or greater.

Participation—The Project Management Office (PMO) is encouraging participation from qualified companies around the world to supply components and systems including solar modules, inverters, controllers, batteries,

and lights. You can find technical standards and procedures for the PV systems and components on the project's Web site: www.ndrcrdp.com.

In their inquiries, interested suppliers should provide a product description and specifications, contact information, and proof that their products meet the technical specifications of the project (either a certificate by an internationally recognized testing institute—institutes with ISO 25 certification are acceptable—or a certificate from a testing organization in China acceptable to the Project Management Office).

Wind Energy Component

Wind turbines with a combined capacity of 20 MW will be installed at Chongmingdao and Nanhui, near Shanghai (14 MW and 6 MW, respectively), to promote the technology in locations with high public visibility. Technical assistance from the GEF as well as capacity-building assistance will be provided to wind farm companies willing to overcome barriers to developing wind resources in these areas.

Technology Improvement

Financial assistance is available to companies producing small-scale wind for wind/PV hybrid systems or PV equipment for developing technological innovations related to improving the cost effectiveness and performance of high quality products. The technology improvement program has three elements:

■ Grant-Assisted Technology Improvement Projects

Grants will be available for up to 50% of the costs of investment projects. Beneficiaries will be selected competitively each year, based on proposals submitted by companies or institutions in response to yearly invitations that are issued by the PMO. Proposals will be evaluated and ranked by technical experts (including international experts), and selected by the PMO based on the ranking, subject to the GEF/World Bank's agreement.

WB/GEF Renewable Energy Development Project

■ Grant-Assisted Small Technology Improvement Projects

The PMO will administer a quick response fund with limited-budget grant money for small and urgent cost-shared projects. Grants from this fund will provide up to \$10,000 per project.

■ Production Investment Projects Assisted by Loans

Loans will be available to companies through commercial banks for purchasing production equipment, follow-up investments to grant-financed activities, or other investment activities.

Additional Support

The World Bank will provide additional support for managing the Renewable Energy Development Project—including monitoring, evaluating, and preparing the annual plan. Institutional strengthening activities for manufacturing companies will also be supported. These activities include resolving issues surrounding contracting, determining the legality of technology transfer agreements, and supporting special studies needed for better project implementation.

Budget

The total budget for China's Renewable Energy Development Project is 139 million U.S. dollars (USD), or 1150 million Chinese yuan (CNY).

- International Bank for Reconstruction and Development (World Bank) loan: 13 million USD, or 108 million CNY
- GEF grant: 27 million USD, or 224 million CNY
- Chinese co-financing: 102 million USD, or 840 million CNY

Schedule

The project will be implemented over five years, from 2001 to 2006.

Project Coordination

The PMO is responsible for the PV and Technology Improvement components. Shanghai Power Corporation is responsible for coordinating and implementing the Wind Energy component.

Additional Information

For additional information about this project, including a list of PV companies located in China, visit the Project Management Office Web site at www.ndrcrdp.com or, visit the National Renewable Energy Laboratory's China Web site at www.nrel.gov/china.

The following Web sites also provide valuable information:

- The World Bank (www.worldbank.org)
- The Global Environment Facility (www.gefweb.org)
- Chinese Renewable Energy Industries Association (CREIA) (www.creia.net/home.asp)

Contacts

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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).

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



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Great Wall PV demonstration site — NREL implemented a PV school and home demonstration project near Beijing in October 1999 to educate local people on solar energy and to demonstrate examples of the US/China bilateral cooperation pilot projects in remote areas around the country. The demonstration system on the school consists of both crystalline and amorphous silicon modules.

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