

Geothermal Production and Use

Cooperative Activities

**between
the Department of Energy of the United States of America
and
the State Science and Technology Commission of the People's Republic of China**

ANNEX VI

**under
The Protocol for Cooperation in the Fields of
Energy Efficiency and Renewable Energy Technology Development and Utilization
between
The Department of Energy of the United States of America
and
The State Science and Technology Commission of the People's Republic of China**

The Department of Energy of the United States of America (USDOE) and the State Science and Technology Commission (SSTC) of the People's Republic of China (PRC), hereinafter referred to as the Parties:

Noting the Agreement between the Government of the United States of America and the Government of the PRC on Cooperation in Science and Technology signed at Washington on January 31, 1979, as amended and extended, hereinafter referred to as the "Umbrella Agreement;"

Noting that under the Umbrella Agreement the USDOE and the State Science and Technology Commission (SSTC) signed a Protocol for Cooperation in the Fields of Energy Efficiency and Renewable Energy Technology Development and Utilization on February 23, 1995, hereinafter referred to as the "Protocol;"

Noting that Article 2 of the Protocol identifies a number of areas for potential cooperation in the field of renewable energy technology and that Article 6 of the Protocol provides that the USDOE and the SSTC may invite other organizations to participate in Annexes under the Protocol;

Desiring to establish bilateral cooperation between the United States and PRC for geothermal electricity production, and direct use and geothermal heatpump applications in order to enhance the commercialization potential of such technologies for the benefit of the Parties;

Have agreed as follows:

ARTICLE I - OBJECTIVES

The objectives of this Annex are to promote sustainable development in the People's Republic of China by accelerating the deployment of geothermal electricity generation and direct use with the support of the U.S. geothermal industry, and to show the technical and economic feasibility of this technology. The implementation of this Annex will assist China in meeting its energy demand in the near future and to promote and accelerate the utilization of geothermal resources in China.

ARTICLE II - AREAS FOR COOPERATION

Cooperation under this Annex may include, but is not limited to, the following areas:

1. Geothermal electricity generation plant technologies; and
2. Geothermal direct use, and geothermal heatpump infrastructure development.

ARTICLE III - PARTICIPATING ORGANIZATIONS

- A. The principal organization responsible for conducting the cooperative activities under this Annex in the United States shall be the USDOE.
- B. The principal organization responsible for conducting the cooperative activities under this Annex in the People's Republic of China (PRC) shall be the State Science and Technology Commission (SSTC).
- C. Each Party may invite other government agencies and organizations and private organizations in their respective countries to participate in cooperative activities under this Annex, at their own expense, and subject to such terms and conditions as the Parties may specify. For the PRC, such agencies and organizations may include the China Geothermal Commission and the Chinese Academy of Engineering, and for the USDOE this may include its geothermal research facilities.

ARTICLE IV - FORMS OF COOPERATION

Cooperative activities undertaken pursuant to this Annex may include the following:

- A. Analysis of Geothermal Applications

The Parties agree to cooperate in the planning and analysis of the technical and economic aspects of geothermal plants, direct use systems and geothermal heatpump systems planned for installation by provincial and regional electric utilities in the People's Republic of China using

advanced commercial geothermal equipment substantially manufactured in the United States. The responsibilities of the Parties are as follows:

1. The Parties and other participants will conduct geothermal analyses and verification in up to three provinces where geothermal power plants or direct use systems are planned. The Parties shall cooperate to collect geothermal resource and geologic data to produce regional geothermal resource maps. Field measurements will be conducted to verify the accuracy of the geothermal resource estimates.
2. The Parties will collect electric utility system characteristics data needed for analysis of geothermal power plants, and heat pump applications for up to three specific sites. The Chinese participants will define the technical characteristics of existing and projected electric utility equipment and loads at these planned sites. The USDOE, through its research facilities, will make available computer models and tools to conduct analysis studies.
3. The USDOE will provide training on the latest methods for conducting geothermal projects technical and economic analysis. Up to two specialists from China will visit USDOE's geothermal R&D facilities and U.S. industrial sites for up to six months to be trained and to use the computer models and to conduct detailed project analysis.
4. It is understood the People's Republic of China will acquire and use equipment substantially manufactured in the United States to carry out activities under this Annex.

B. Information Exchanges and Visits

The Parties shall exchange technical information and experiences and arrange collaborative visits supporting implementation of projects being developed in China by firms established in the United States. These exchanges and visits between the Parties may address technical, economic, business development, project planning, geothermal turbine development and testing, and commercialization in the area of geothermal energy.

ARTICLE V - MANAGEMENT

Each Party shall designate one Project Coordinator who shall jointly plan the technical approach for accomplishing the objectives of this Annex, and who shall be responsible for the program, schedule, coordination and reports. A Project Coordination Meeting shall be held at a mutually agreed site, preferably annually.

ARTICLE VI - COSTS AND LEGAL PROVISIONS

Except when otherwise specifically agreed, all costs including travel and lodging expenses, resulting from cooperation under this Annex shall be borne by the Party that incurs them. The implementation of this Annex is subject to the availability of appropriated funds and personnel, and subject to applicable laws and regulations of the countries of the Parties.

ARTICLE VII - INTELLECTUAL PROPERTY RIGHTS

Article 8 of the Protocol and Annex I of the Umbrella Agreement govern the dissemination, use and protection of information used or generated in the course of activities conducted under this Annex, and the allocation of intellectual property rights arising from this activity.

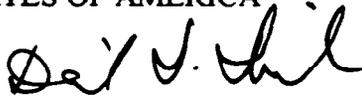
ARTICLE VIII - ENTRY INTO FORCE AND TERMINATION

A. This Annex shall enter into force upon signature by the Parties and remain in force for five (5) years or until termination of the Protocol, whichever occurs first. This Annex may be amended or extended by mutual written agreement of the Parties.

B. At the discretion of either Party, this Annex may be terminated upon six (6) months advance notice in writing to the other Party.

SIGNED at Beijing, this 18th day of November, 1997, in duplicate, in the English language.

FOR THE DEPARTMENT OF
ENERGY OF THE UNITED
STATES OF AMERICA



FOR THE STATE SCIENCE AND
TECHNOLOGY COMMISSION OF THE
PEOPLES REPUBLIC OF CHINA

