



## PROMOTING THE DEVELOPMENT OF RENEWABLE ENERGY RESOURCES

Energy sector development in developing and middle-income countries is a strategic priority for USTDA. The agency works closely with the U.S. private sector to identify and support activities that generate measurable commercial and developmental results across a wide range of activities, including diversification of energy sources and development of renewable and alternative fuels. USTDA also focuses on deploying commercially viable U.S. technologies that promote energy efficiency; power generation, transmission, and distribution; transport to market of new oil and gas reserves; and refining capacity and quality.

Since 2003, USTDA has invested in 28 activities designed to support renewable energy projects. The following is an illustrative list of USTDA-supported projects:

### Sub-Saharan Africa

**Botswana CO<sub>2</sub> Sequestration for Enhanced Coal Bed Methane (CBM)** - USTDA is providing a \$435,970 grant to the Ministry of Minerals, Energy, and Water Affairs in Botswana to study the possibility of utilizing CO<sub>2</sub> sequestration to enhance the capture of CBM. The study will evaluate the economic and environmental costs and benefits, including a strategy for addressing the issue of carbon credit financing. The study will also assess the regulatory issues and legislative requirements required to facilitate project implementation.

**Botswana CBM Feasibility Study** - In 2003, USTDA provided a \$525,000 grant to the Botswana Development Corporation for a study on CBM development. The study resulted in an investment by Covalent Energy (Virginia) in the Kalahari Gas Company of Botswana to undertake a pilot drilling and development CBM project. Covalent Energy and the Kalahari Gas Company have received an Overseas Private Investment Corporation loan guarantee to support the implementation of the pilot project.

**Cameroon Warak à Bini Hydroelectric Power Plant** - USTDA has approved a \$662,000 grant to assess the viability of a 75 megawatt (MW) hydroelectric power plant on the Bini River. The study will also examine the necessary transmission lines and transformer stations to bring the electricity into rural areas of northern Cameroon, and to export surplus production to Chad and potentially Nigeria.

**Democratic Republic of the Congo Nzilo 2 Hydropower Plant** - USTDA is providing \$553,534 for a study on the viability of constructing the Nzilo 2 hydropower facility. Implementation of the project would provide Katanga Province with a reliable energy source to enable the re-development of the region's mining industry.

**Tanzania Waste Stream Commercialization** - A \$299,780 grant to the Kilombero Sugar Factory is funding a study to determine the viability of producing ethanol and electricity. The study will review the possibility of installing a distillation plant and will include a technical design; the development of an optimal technical approach for the plant; an assessment of the local and international market for potable alcohol and fuel ethanol; and an assessment of the viability of selling 40 MW of excess power to the national grid.

**Liberia Mount Coffee Hydropower Plant** - USTDA provided \$531,500 to assess the feasibility of rehabilitating the Mt. Coffee hydropower facility on the St. Paul River. The study will identify optimum unit sizes and include technical, economic and financial analyses in order to prepare a bankable document for the Government of Liberia to seek financing either through international donors or an Independent Power Producer (IPP) tender. Stanley Consultants was the competitively selected contractor to conduct the study. In August 2008, the completed was presented to Liberian President Ellen Johnson-Sirleaf.

### Latin America and the Caribbean

**Chile Renewable Energy** - USTDA brought officials from the National Energy Commission and the Chilean private sector to the United States to evaluate U.S. experiences in solar, wind, and cellulosic technologies. The visit supported Chile's efforts to evaluate technologies, legal and regulatory frameworks, and research and development in the renewable energy field.

**Colombia Geothermal Power Generation** - USTDA is providing \$599,310 to ISAGEN S.A. E.S.P., a leading Colombian power company, to assess the feasibility of developing a 50 MW geothermal power generation project. In order to diversify Colombia's energy supply and limit the emissions from carbon-intensive gas and

coal electricity generation plants, ISAGEN is committed to developing geothermal power sources.

**Colombia Civil Aviation Renewable Energy** - USTDA is funding a \$700,000 study for the Unidad Administrativa Especial de Aeronáutica Civil on the conversion of power supplies for its remote air traffic control and weather monitoring facilities in Colombia from diesel generators to renewable energy sources. The project will improve the reliability of Aerocivil's remote power supply infrastructure and reduce costs.

#### **East Asia**

**China CBM/Coal Mine Methane (CMM) Power Plant** - USTDA funded a \$502,850 technical assistance program for Shanxi Jincheng Anthracite Coal Mining Group (JMG) to support the early project design, engineering and procurement decisions on a 120 MW power plant. As one of the first projects under the Methane-to-Market Partnership, the project promoted clean energy use and lower greenhouse gas emissions. A \$56 million contract between JMG and Caterpillar, Inc., based in Peoria, IL, was signed to implement the project.

#### **Europe and Eurasia**

**Turkey Germencik Geothermal Plant** - USTDA provided a \$259,621 grant to Gurmat Energy Investment and Trade Company to partially fund a feasibility study on a proposed geothermal power plant. Stone & Webster of Stoughton, MA, conducted the study. Construction of the power plant is underway and has already led to more than \$23 million in US exports.

**Turkey Soma Wind Farm** - USTDA is providing a \$245,780 grant to Bilgin Elektrik for a feasibility study on the development of a 30-90MW wind farm in Soma, western Turkey. If implemented, the facility would buttress power output in a high-demand energy market while helping to satisfy renewable energy use requirements. Electric Power Engineers of Waco, TX, is conducting the study.

**Georgia CBM/CMM Feasibility Study** - USTDA is providing a \$540,000 grant to the Georgian International Energy Corporation to partially fund a feasibility study on recovering methane from coal seams, active coal mines, and abandoned coal mines in the Tkibuli-Shaori Coal Basin. Advanced Resources International of Fairfax, VA, is conducting the study.

#### **South and Southeast Asia**

**Indonesia CBM Development** - USTDA provided a \$476,276 grant to PT Perusahaan Gas Negara (PGN), a state-owned gas distributor, to partially fund technical assistance and project pre-feasibility analysis to accelerate the development of Indonesia's CBM resources. The grant will be used to provide funding for project preparation analysis at several priority sites on the islands of Sumatra and Kalimantan. The assistance will also include an analysis of existing regulations and provide recommendations, based on best practices in CBM development in other countries, to meet government requirements in a manner that will attract investment. Pendawa U.S.A. was selected to perform the technical assistance.

**Indonesia Biofuels Sector Orientation Visit** - USTDA funded an orientation visit to the United States for senior-level government and industry representatives from the Indonesian biofuels sector. The itinerary encouraged environmentally sustainable mechanisms for biofuels development and promoted U.S. commercial involvement as Indonesia develops this industry. The visit included stops in Washington, D.C. for a policy forum and business briefing, Colorado for a visit to the National Renewable Energy Laboratory, and California for meetings and plant visits.

**Pakistan Waste-to-Energy (WTE) Power Plant** - USTDA's \$325,000 feasibility study grant to Pakistan's Alternative Energy Development Board will assist in evaluating the technical and financial merits of establishing a 5-10 MW WTE power plant near Karachi. The plant will address the environmental issues associated with municipal solid waste disposal, as well as the critical power shortages facing Pakistan.

**Thailand Biodiesel and Gasohol Production Technology Orientation Visit** - USTDA provided \$130,000 to fund a visit to the United States to introduce Thai government and private-sector delegates to U.S. production process, logistics management, technologies and vendors. The delegates represented entities that play a critical role in setting policy or have had project procurement plans to ensure that Thailand's alternative fuels demand and supply are met.