

Conference “Integration of Central Asia into the World economy: Role of Energy and Infrastructure”

22 October 2007, Washington D.C.

Renewable Energy Development in Uzbekistan



TECHNOLOGY TRANSFER AGENCY, UZBEKISTAN

“Renewable Energy Development in Uzbekistan”

Technology Transfer Agency is a self sustained company owned by the Government of the Republic of Uzbekistan.

Founded in **1996** at Committee for **Science and Technology of Uzbekistan**

TTA mission: To promote technology for facilitating trade and improving the quality of life.

TTA focus: dissemination of technology research to industry and commercialization.

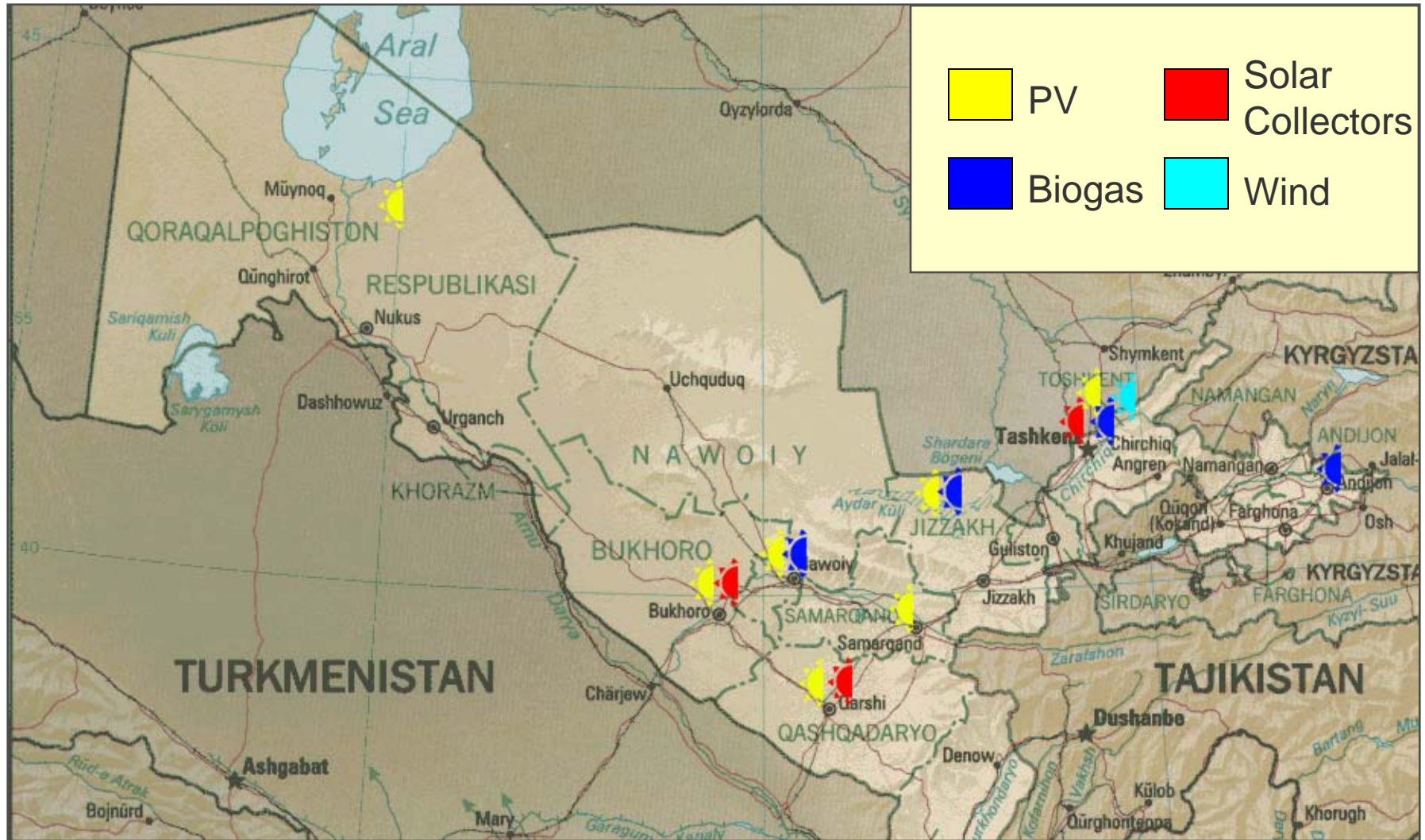
TTA works with: industry partners, universities, associations, private companies, governmental and international agencies.



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Renewable Energy Projects 2000-2007 TTA Uzbekistan



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- Uzbekistan is one of the major net energy exporters in Central Asia;
- By 2010 demand for electricity may exceed projected production by 10%;
- 84.4% of electricity within our energy system is generated from natural gas, oil and coal;
- Proven hydro carbon resources could be exhausted with the current level of extraction:
Gas – 30 years;
Oil – 21 years;
- In 2010 Carbon dioxide emissions in the air may exceed levels 1990 by 16 %.



Advancing Renewable Energy Sources

Starting in 1996 TTA began to research industrial Production/Assembly of PV Modules within conversion projects at military related production plants in Uzbekistan.



In 2000 industrial production and design of **Photovoltaic System Components** was transferred to the Foton Electronics Plant in Tashkent. Today Foton produces 100 WT-1.5 KWT Photovoltaic Systems. Further localization of PV components and energy saving equipment production planned in order to establish **regional market**. Annual production of Projected Solar Stations could reach 1.5 MW.

Solar Powered stations installed at TransGas Utilities. Further expansion of PV use in Gas and Oil Industry is planned this year.



Advancing Renewable Energy Sources

Renewable Energy technology and commercialization projects realized since 2000:

Technology Transfer for Local Production of solar Panel for water heating



The local manufacturing of solar panels for water heating based on the transfer of European technology in 2002 is unique for Central Asia and contributes to the further development of the national production capacities as well as development of a market for renewable energy in the region. Projected annual production of solar collectors could reach 12 thousand square meters.

- Up today in total 40 thousand square meters solar panels were installed in Uzbekistan.



RE Capacity Growth



Development of Biogas Technology in Uzbekistan

A pilot demonstration biogas plant was set up at a cattle farm in the Tashkent region and a “Training Centre for Biogas Technologies” established to disseminate the project’ results. Since the potential volume of biogas that can be produced from waste materials from poultry and pig farms was defined as $0.623 \cdot 10^9 \text{ m}^3$, the total technical potential for biogas that can be obtained from national livestock-breeding amounts to **4.43 milliard m³**, which constitutes 51% of gross potential.



The total technical potential for biogas production from livestock-breeding wastes and MSW is **8.9 milliard m³**, which is equivalent to **6.3 milliard m³** of natural gas or to **7.2 mil tons of standard coal**. This means that the estimated biogas potential could secure more than 10% of country’s annual energy consumption.



Biomass Technologies

Uzbekistan is one of the leading countries in the world in cultivation of cotton and production of cotton fiber.

More than 4 million tons of cotton is manufactured annually in the Republic, which constitutes about 15 % of world production of cotton. As a result of this, Uzbekistan produces over 7-10 million of cotton cellulose waste products. This is a sufficient cellulose raw-material base, which can be used further to produce glucose and reducing sugars or finally bioethanol. Implementation of the project for processing cotton waste products is of practical importance for RE development and is perspective commercialization.



Developing Use of Renewable Energy in Uzbekistan

Renewable Energy technology used for Rural Development:



Clean Energy for Rural Communities in Karakalpakstan

Stand alone PV stations installed in remote rural communities in Karakalpakstan for the household purposes and for water pumping; trainings in operation and maintenance carried out.

- positive social benefits;
- technology acceptance at high level by Rural Communities;
- Solar and hybrid PV wind stations – ideal tech solution for remote areas and are least-cost options to increase energy access.



Developing Use of Renewable Energy in Uzbekistan

Renewable Energy technology used for Rural Development:

Socio Technical Approach can be a key issue for developing use of Renewable Energy in Uzbekistan:

Rural population is 60% from total population;

Share of agriculture in GDP (2004) – 26,8%;

1.5 mln of total population is not grid connected;



RE Capacity Growth

RE technology is an instrument for Environmental Protection/Fulfillment of international requirements under Kyoto Protocol :



Use of solar energy for heating greenhouses in Tashkent province

Solar water heater installed at greenhouses with the area of 375 sq.m. for heating and maintaining temperature during fall-winter, greenhouse gas emissions from burning gas reduced.

Uzbekistan joined Kyoto Protocol in 1999.

CDM National Body founded at Ministry of Economics of Uzbekistan in December 2006.

RE Market in Uzbekistan is attractive for CDM projects:

Solar Energy (PV, water heating systems)

Biogas

Biomass Technology



CDM projects for RE development in Uzbekistan:

Uzbek Gas & Oil Industry is the most energy producing industry and is one of our largest energy consuming industries, has the most potential today for CDM projects to decrease energy consumption within the oil and gas production and transportation sectors:

Decreasing gas and oil usage for internal industrial needs;
Decreasing energy consumption from energy system;
Providing smooth energy supply for remote industrial units.



RE Development Lessons Learned

Advancement of RE Sources and use of energy saving equipment does not itself guarantee RE development.

A “Micro Project” approach does not allow us to plan significant RE development. RE capacity growth could be developed through Development Programs. Clean Development Mechanism (CDM) could promote growth in RE Capacity.

Further development of RE Market today requires balanced involvement of the Government, Private Sector and Public Society.



RE Development Perspectives In Uzbekistan

Renewable Energy Sources Advancement:

Industrial production of affordable RE Systems (solar collectors, PV, biogas);
Adaptation of Biomass technologies; Commercialization.

RES capacity growth and usage development:

Oil and Gas Industry;
Rural Development projects;
Implementing programs using RES technologies;
CDM projects; RE market development
(regional market can reach about 8,000 kWp next decade).

Institutional Development of RE:

Renewable Energy Development Strategy;
Institutional and Financial Mechanisms;

Renewable Energy Action Plan should be targeted at reaching Renewables share of **3 to 5 % from total energy production**, Renewable Sources should be integrated into National Energy System.



Renewable Energy Development Needs:

Local level:

Support from Governmental Institutions and business entities in project dissemination; Financial and Institutional Mechanisms for RE development and Energy Market Efficiency.

Regional level:

Energy Security Policy;

Regional cooperation on Central Asia Energy Market and common standards for RES in order to disseminate best practices of renewable energy projects. Cross Regional exchange of information and lessons. Methodological work on the economic, social and environmental evaluation of RE Sector in the region should be developed.

International Level:

Support from Donors community and International Organizations in Implementing programs using RE and technology transfer.



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THANK YOU FOR YOUR ATTENTION

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