UNECE
United Nations Economic Commission for Europe

Development of renewable power sector in Uzbekistan

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### Production and consumption of fuel-energy resources in the Uzbekistan (2006)

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>production</th>
<th>consuming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal, million ton</td>
<td>3.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Oil, billion ton</td>
<td>5.5</td>
<td>5.9</td>
</tr>
<tr>
<td>Gas, billion m3</td>
<td>62.7</td>
<td>49.4</td>
</tr>
<tr>
<td>Elec.energy, GWh</td>
<td>49.3</td>
<td>49</td>
</tr>
<tr>
<td>Elec.energy on hydroelectric power station,GWh</td>
<td>5.2</td>
<td>5.2</td>
</tr>
</tbody>
</table>
The structure of installed capacities of Power stations of Uzbekistan

- **Hydro Power Stations**: 11.5%
- **Thermo Power Stations**: 85.9%
- **Block Stations**: 2.6%
According to the concept of development of power of the country became:

- At the first stage - development gas and oil branches, with the purpose of maintenance of fuel self-sufficiency of republic and stable, reliable work of an electro power system of the country; maintenance with fuel, raw material and thermal energy of all branches of economy with expansion of export of hydrocarbon raw material;

- At the second stage - development of coal branch, with the purpose of maintenance of increase its share in fuel and energy balance with stage-by-stage replacement of a part of the natural gas used for manufacture electric and thermal energy;

- At subsequent stages - large-scale use of renewable power resources, in process of development of technologies and creation energy effective means, transforming renewable energy sources in electric, thermal, chemical, mechanical and other kinds of energy.
# RESOURCES OF RENEWABLE ENERGY SOURCES OF UZBEKISTAN

<table>
<thead>
<tr>
<th>Potential</th>
<th>Total (million toe)</th>
<th>Kinds of energy (million toe)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>geothermal</td>
</tr>
<tr>
<td>Total</td>
<td>6750986.7</td>
<td>6700 000.0</td>
</tr>
<tr>
<td>Technical</td>
<td>179.407</td>
<td>It was not estimated</td>
</tr>
<tr>
<td>Mastered</td>
<td>0.6</td>
<td></td>
</tr>
</tbody>
</table>
The potential of hydropower resources of Uzbekistan is estimated in view of:

- Operating, under construction and designed water basins with full volumes of each water basin from 6.0 mln.m³ up to 1902.0 mln.m³; had pressures from 10.5 up to 145m;

- The main irrigation canals and the main collectors with charges from 50.0 m³/c up to 158 m³/c on which there are possible overfalls from 2.0 up to 120m.

- The technical potential of hydropower resources is estimated in 21.09 billion kWh, including 6.85 billion kWh on operating hydroelectric power stations; 3.06 billion kWh - on overfalls of channels; 1.36 billion kWh - at irrigational water basins, 9.82 billion kWh - on the rivers.

- Construction on the large and average rivers of 250 large and average hydroelectric power stations is possible; and also small hydroelectric power stations: 1100 on the small rivers, 42 - at water basins, 98 - on the main channels and collectors.

- According to the Program of development of small water-power engineering in system of Minselvodhoz, programs of development of water-power engineering of “Uzbekenergo” and other interested organizations there will be creation in the nearest 10-15 years of 19 new hydroelectric power stations: Pskem’s hydroelectric power station (the installed capacity, 400,0 thous.kW), hydroelectric power station at Tupolang’s water basin 175,0 thous. kW) , etc.
ENERGY OF A BIOMASS

Only 3% of territory of Uzbekistan it is covered by woods. All territories with woods are carried to 1-th group; in this territory commercial cutting down is forbidden.

Firm household waste of settlements of Uzbekistan can be considered as possible energy source only in case of the organization of separate gathering household dust.

The total potential of a biomass vegetative origin - stalks of a cotton is estimated in 1.1÷2.2 million toe annually.

Pilot installation on processing waste of animal industries of the farm, realized in conditions of the Tashkent area, has shown its efficiency first of all as source of reception of fertilizers with passing reception of biogas.
Clause 4 “State policy in the field of electric energy” runs that it (the state policy) is aimed at:

- the development of renewable sources of electric energy».

Clause 5 “Enterprises producing electric energy” states that enterprises producing electric energy are stationary electric power plants (thermal, heat and power plants, hydraulic as well as other electric power plants using renewable sources of energy connected to the power grid. Chapter 6 “State regulation in the field of electric energy” points out (clause 24) that the Chamber of Ministers of the Republic of Uzbekistan:

- organizes the development of programmes of electric energy sector development;

- determines the rules of construction, financing, commissioning and decommissioning of the objects of electric energy production” implying those based on renewable energy sources as well.

Specially Authorized Body in the Field of Electric Energy

- “is responsible for the renewable electric energy sources development». 
Projects in Uzbekistan with attraction of foreign investments

- Project of European commission ICOP-DEMO 4068-98 «the Experimental combined солнечно-wind station capacity of 5 kw for electrosupply of a television retransmitter » (2000) in settlement Charvak of the Tashkent area;
- Project UNDP UZB/02/M01 «The clean energy for rural communities of Karakalpakstan» (2005);
SOLAR-WIND COMBINED INSTALLATION, CAPACITY 15 kW.
The big Solar furnace in mountains near Parkent, the Tashkent region, Uzbekistan

View of the Big Solar furnace with a heliostat field
Ceramic wares, produced on Big Solar Furnace
Micro Hydro Power Station
Biogas installation
PHOTOELECTRIC FACILITY IN
AYOZKALA-TOUR (KARAKALPAKISTAN)

In 2005 within the framework of the project financed by UNESCO, the Institute of Applied Physics, the RUz AS, in cooperation with the Institute of Nuclear Physics of the RUz AS developed, produced and commissioned an autonomous complex photoelectric system of energy supply and water purification at the remote holiday camp A yo zkala-Tour (Karakalpakistan). The capacity of photoelectric facility of the system of energy supply and water purification was 300 W. For the purposes of the project the components available at the local market were used. The energy was supplied to the lighting system of 8-10 yurtas and 3-4 auxiliary rooms (toilets, shower cubicles, a kitchen, etc.), to household appliances (refrigerator, TV set), a water pump and a device for water purification.
PV installation for shepherd family.
In the course of the project implementation expert specialists from European countries developed the “Long-term Strategy of Renewable Energy Sources Use” taking into consideration technical and economic situation in the Republic of Uzbekistan and basing on the analysis of the existing problems and barriers impeding the use of RES. In addition, within the framework of the project a pilot project on introduction of solar-heat collectors manufactured by different producers (including local producers) with the total area of 820 m² for preliminary heating of make-up water in boiler house “Vodnik” in Bektemir district of Tashkent was realized.
Solar collector’s field for preliminary heating of water for boiler-house "VODNIK“, Tashkent.
The list of necessary measures in a view of world tendencies of development RES

- Realization of special programs and demonstration projects;
- Subsidizing of investments into renewed power;
- Preferential loans for purchase of equipment RE;
- Clearing of payment of taxes, establishment of the tax to mineral kinds of fuel in view of issue CO2;
- Access to power supply systems for the installations working on RE;
- Establishment of the special guaranteed tariffs for purchase of the electric power made from RES, and also obligations for power net to buy this electric power;
- Definition in a power balance supplying and consuming the organizations of an obligatory share of the energy made from RES;
- Attraction of private investments;
- Use of the Mechanism of clean development within the limits of the Kioto protocol.
Prime actions for Uzbekistan.

- Development and put into action of the Law on RES;
- Development and realization of the National program on development RES.
- Creation of interdepartmental Council on RES.
- Definition of the department responsible for development RES in the country.
- Creation of special Fund on stimulation of the newest development in the field of RES;
THANK YOU FOR ATTENTION!
RENEWABLE ENERGY SAVES THE WORLD!