



The Ministry of Economy of Uzbekistan

Sustainable Energy Development in Uzbekistan: outlook and possibilities

Brussels, November 6, 2014

Content

- **Uzbekistan: General Information**
- **Energy efficiency policy**
- **Introduction and Development of Renewable energy resources (RES)**

Uzbekistan – general information

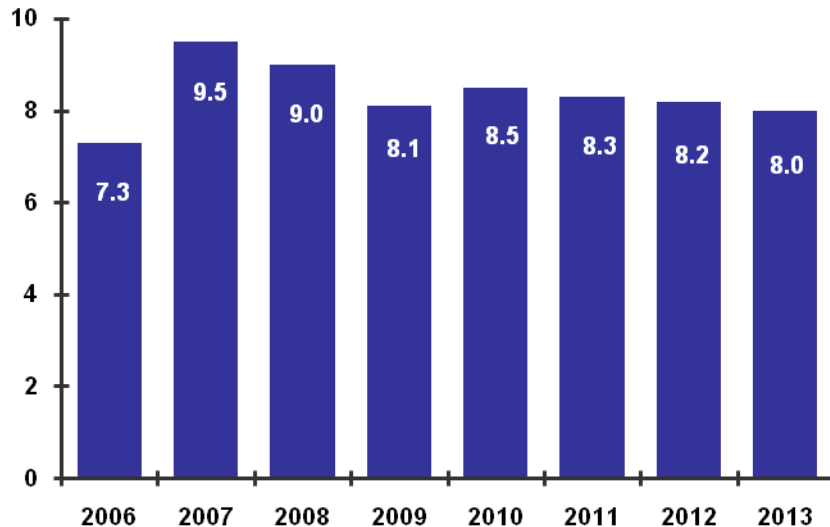
Area: 447.8 thous.sq.km
Population: above 30 mln.



Main trends of social & economic development

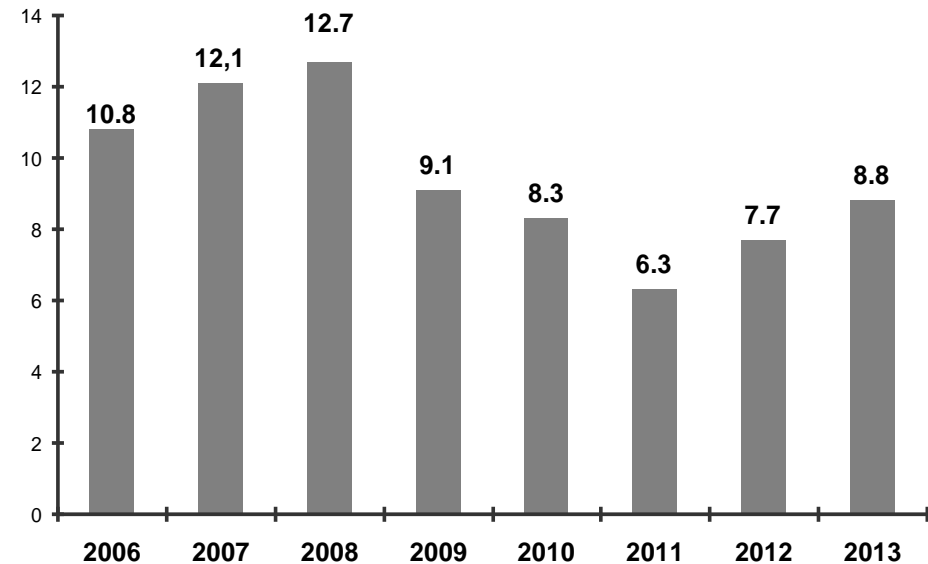
Sustained high rates of economic growth (7-9% per annum on average)

GDP growth rate
(in % to the previous year)



- for the period of independence, the development of GDP based on purchase power parity has increased 3.5 times

Growth rate of industry production
(in % to the previous year)



- volume of industrial production has grown more than 3 times during 1990-2012

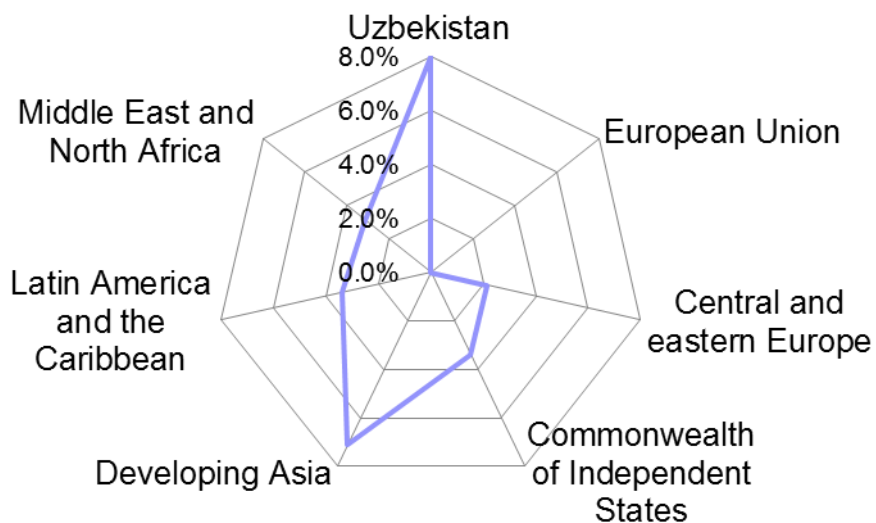
Main trends of social & economic development

(in % to previous year)

#	Indicators	2013	Forecast	
			2014	Average rates until 2020
1.	GDP growth rate	108.0	108.1	107.0-108.0
2.	Inflation rate (end of period)	6.8	6-7	5-6
3.	Industry production growth rate	108.8	108.3	108-109
4.	Agriculture production growth rate	106.0	105.8	105-106
5.	Investment growth rate	109.3	109.5	109-112
6.	Decreasing of Energy intensity of Economy	15.3	115.0	110-115

Main Economic Indicators of World countries

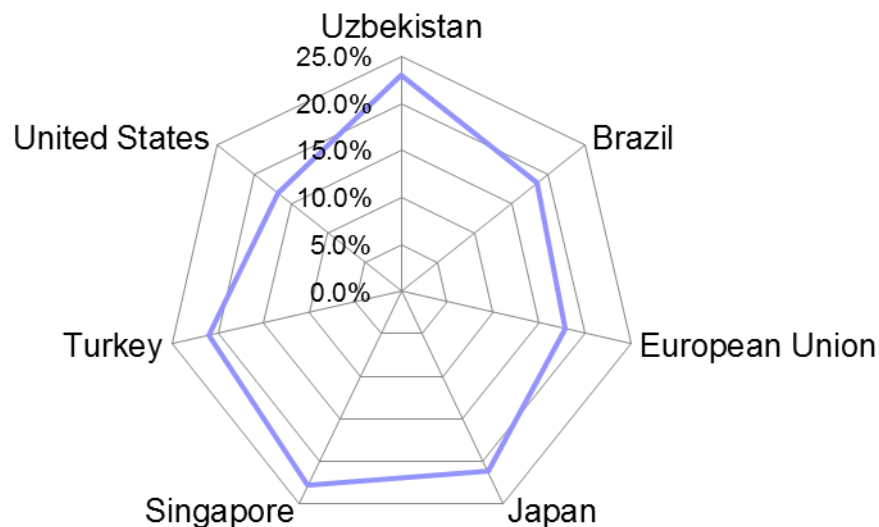
GDP Growth Rate by Regions



Uzbekistan	8.0%
European Union	0.0%
Central and eastern Europe	2.2%
CIS	3.4%
Developing Asia	7.1%
Latin America & the Caribbean	3.4%
Middle East and North Africa	3.1%

Uzbekistan	23.0%
Brazil	18.5%
European Union	17.9%
Japan	21.2%
Singapore	22.9%
Turkey	21.0%
United States	16.8%

Investment share in GDP

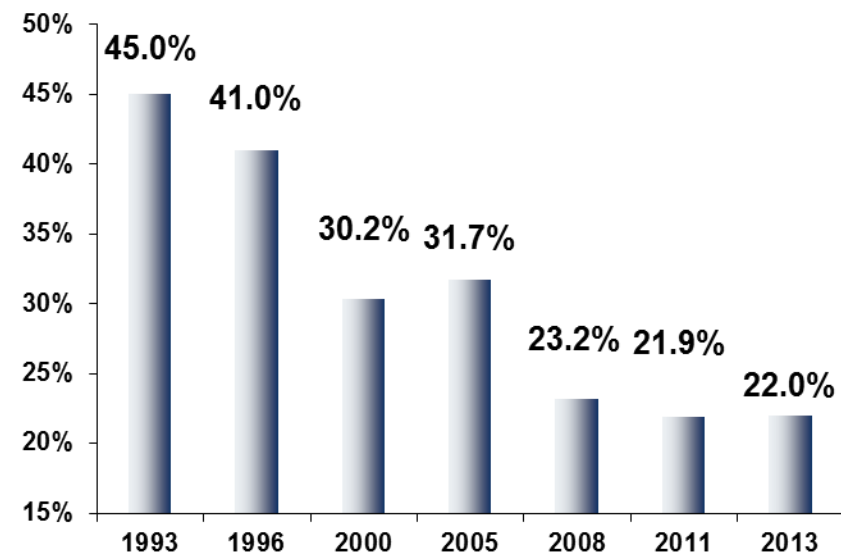


Government support for the development of national economy

For the years of Independence the aggregate tax burden decreased by almost 3 times. Moreover the Government provides additional tax incentives for exporters, small business enterprises and companies engaged in new investments and starting production of new goods and products

Taxes	Tax rates in 1992-2009	Tax rates in 2013
Legal entities income tax	45%	9%
Individual income tax	13%-60%	8%-22%
Value added tax	30%	20%
Single social payment	40%	25%
Single tax payment for small enterprises	15,2%	6% (in industry - 5%)

Dynamics of tax burden in 1993-2013
(in % to GDP)



Factors assuring sustainable economic development during 2014-2020

1. Retaining macroeconomic stability, domestic and external balance of the economy;
2. Active industrial policy, aimed for structural changes, rapid growth of the share of processing industry with the production of high value added goods;
3. **Implementation of modern innovative technologies, including environment-friendly and energy-saving;**
4. Modernization and development of the industrial infrastructure, particularly transport, power industry, water use and sewer systems, as well as means of communication;

Energy efficiency policy

Energy sector development stages

1-stage: (1991-1996) – Energy independence and reorientation of the fuel-energy market to achieve society's priority social goals.

2-stage: (1997-2002) - Introduction of market management mechanisms; incentives for domestic and foreign investment into sector.

3-stage: (2003-present) – Raising energy efficiency and introduction of renewable energy sources

Government strategy in the energy sector

- Forcing the energy efficiency policy
- Development of technology based on ecologically friendly energy;
- Energy efficiency as a part of national forecasts;
- Priority to the development of solar and wind energy
- Growth of energy resources' commercial export

Legal framework

- Article 20 of the Law “On rational energy usage” (1997)
- Decree of the President of the Republic of Uzbekistan dated March 01, 2013 no. 4512 "On measures for further development of alternative energy sources"
- The Resolution of the President of the Republic of Uzbekistan March 01, 2013 no. 1929 "On creation of the International Institute for Solar Energy"
- Draft Law of the Republic of Uzbekistan “On renewable energy sources” - presented to the Parliament.
- Annual program of expenses decreasing and cost reduction in industrial enterprises

Main measures on Energy Efficiency

- Program of expenses decreasing and cost reduction in industrial enterprises
- UzEEF Project by International Development Association (WB)
- Preferential loans and incentives on tax and customs payments for modernization and re-equipment production by new energy-efficient technology
- Incentives for organizing the domestic production energy-efficient goods
- Works on gradually equipping (starting from 2015) households and new constructing houses (ADB) with energy-efficient devices and boilers of domestic production (Ariston, Uz-kor Lighting, Egl-Nur and etc.)

(1) Program of expenses decreasing and cost reduction in industrial enterprises

- Being adopted every year from 2009 by the Government Resolutions
- 8 directions of cost reduction:
 - energy consumption;
 - raw materials;
 - increasing productivity;
 - overhead expenses;
 - staff reduction and other items
- priority in 2014 cost reduction predominantly by decreasing energy consumption

(1) Program of expenses decreasing and cost reduction in industrial enterprises (cont.)

#	Indicators	Unit	2013	2014 (forecast) *
1	Overall cost reduction	%	11.2	10.0
	<i>due to:</i>			
1.1.	Energy consumption decrease	%	1.1	1.2
2	Introduction of new energy-effective technology by utilizing current old machines	units	more than 5 000	4 700

*) Decree of Cabinet of Ministers of Uzbekistan on January 8, 2014 No. 5

(2) UzEEF Project

Legal framework: Decrees of the Cabinet of Ministers on July 25, 2011 no. 211 and on June 12, 2013 no. 168

Objectives: increase the energy efficiency of industrial enterprises through financial support of implementation of projects in energy efficiency.

Financial and technical support: International Development Agency (World bank)

Priority projects: modernization and replacement of obsolescent and physically old technical equipments by the new energy-efficient ones which allow to ensure energy efficiency by more than 20 percent in comparison with old ones.

Portfolio: about 60 projects for more than \$130.0 mln. in energy-intensive industries such as mining, chemical, power, oil-gas approved/financed

Expected results: ensure savings of more than 300 million kWh of electricity and 200 million cubic meters of natural gas.

Other measures on Energy Efficiency

- (3) Preferential loans and incentives on tax and customs payments for modernization and re-equipment production by new energy-efficient technology
- (4) Incentives for organizing the production of solar panels and energy-efficient devices and goods
(Free industrial-economic zones – FIEZ)
- (5) Works on gradually equipping (starting from 2015) households and new constructing houses with energy-efficient devices and boilers of domestic production.

Introduction and Development of Renewable energy resources (RES)

Preconditions and questions (1/2)

- Hydrocarbon-based economy:
(electricity generation by gas – 79%, hydro power – 11%, coal – 6% and oil – 4%)
- Gross potential of RES – 51 bln. tons of oil equivalent (toe), technical – 179 mln. toe
- Only 0.6 mln. toe (0,3%) from technical potential is used thanks to hydro energy
- Measures and projects to develop and expand the use of RES

Preconditions and questions (2/2)

The most potential directions in terms of Uzbekistan:

- Solar
- Biomass
- Wind
- Small hydro power plants
- Geothermal



Draft Law “On renewable energy sources”

- Concepts and kinds of RES
- Stimulation mechanisms of RES usage
- Control over their usage
- Protection of national interests
- Scientific and financial management
- Realization and monitoring of RES-related projects
- Tax benefits and customs facilities
- International cooperation

Draft Law “On renewable energy sources”

Outcomes:

- Broader use of RES
- Legislative control of RES production and usage
- Involving of up-to-date technologies into local market
- FDI involvement
- Development of RES-oriented SME
- Decrease of CO₂ emission
- New working places

RES development

Potential of Uzbekistan:

- Rich industrial reserves of silicon
- At least 330 sunny days a year
- Well-developed agriculture as a basis for biomass fuels
- Appropriate wind resources in selected regions
- Hydro generation potential
- Wide scientific and research possibilities

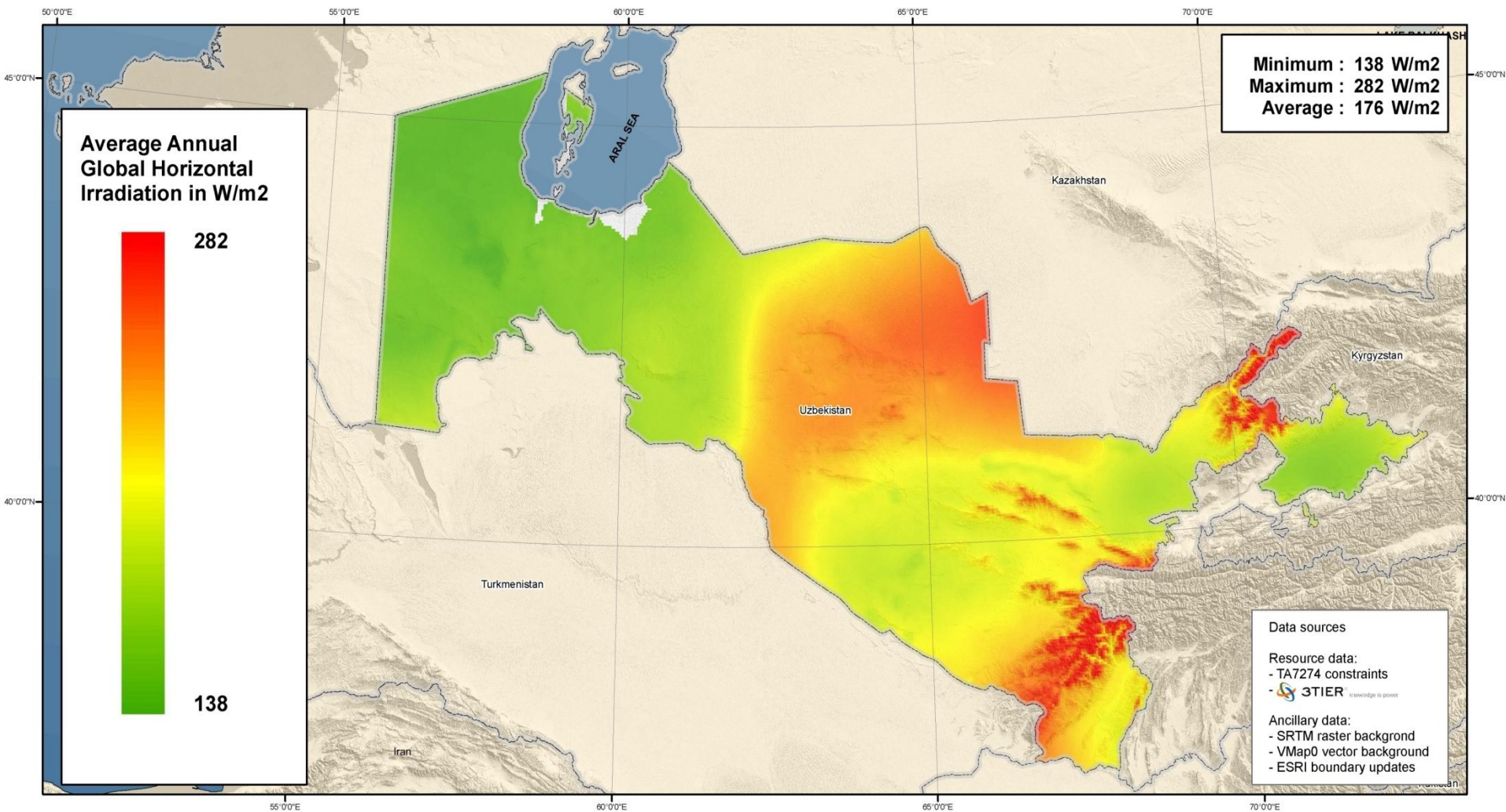
Development of Solar Energy

- March 1, 2013 – the Resolution of the President of Uzbekistan no. 1929 "On creation of the International Institute for Solar Energy"



- November 2013 – International Solar Energy Forum was held in Tashkent

The Intensity of Solar radiation



The gross potential of solar radiation is estimated to be in the range from 525 billion kWh up to 760 billion kWh (reference: irsolav.com)

Actinometrical survey in last 30 years

Regions	DNI, KWt.h./sq.m.	Number of sunny days
• North (Karakalpakistan, Khorezm and north of Navoi)	1900-2100	2900-3000
• South (Kashkadarya & Surkhandarya)	1900-1960	2950-3050
• Ferghana valley (Ferghana, Andijan & Namangan)	1500-1550	2650-2700
• Zarafshan valley (Samarkand, Djizzah, Bukhara and south of Navoi)	1910-1980	2930-3000
• Tashkent city	1943	2852 ₂₆

Development of Wind Energy

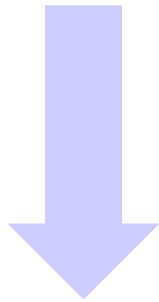
“GOPA-International Energy Consultants GmbH” and
“GEO-NET Umweltconsulting GmbH” research results:
- 2 preliminary sites chosen – Navoi region (Zarafshan) and
Karakalpakstan (Nukus)

Approx. gross production of electricity	Zarafshan	Nukus
100 MWt wind farm	239.7 GWt/year	251.7 GWt/year
350 MWt	733.3 GWt/year	TBD
500 MWt	Not enough space	1028.5 GWt/year
1000 MWt	Not enough space	2019.2 GWt/year

Potential of biogas

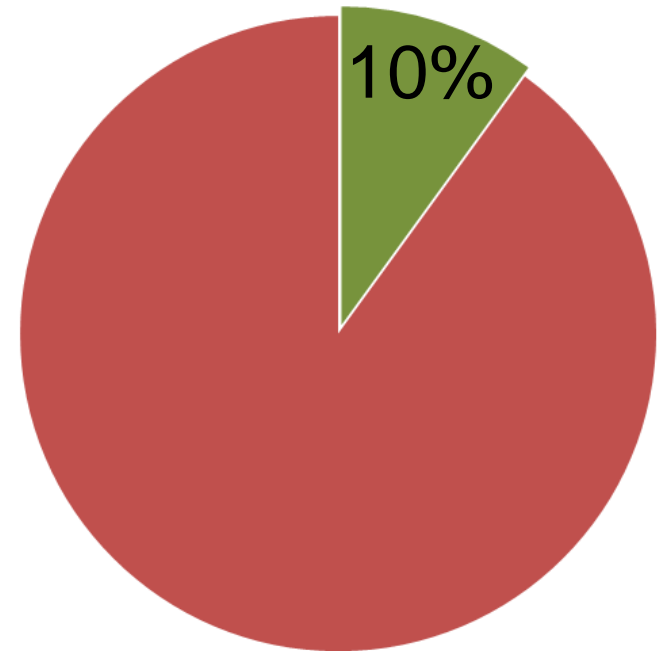
Technical potential of biogas production
In Uzbekistan

8,9 bln. cubic. m. / year



6 bln. cubic. m. / year
methane

Resource of biogas in comparison with
the production of natural gas in the republic



60-65 bln. cubic. m./year
methane production in the republic

Major projects on the introduction and development of RES (1/2)

- Construction of 100 MW Solar Photovoltaic Power Plant in Samarkand region – international bidding announced
- Silicon production in “Navoi” and “Angren” FIEZ jointly with South Korean companies
- Solar panels production in “Navoi” FIEZ – investors are invited
- Production of solar water-heating systems in “Jizzakh” FIZ – jointly with Chinese company

Major projects on the introduction and development of RES (2/2)

- Reconstruction of midget power plants & construction of new ones – to be discussed in terms of joint use of transboundary rivers
- The List of pilot projects on the implementation of solar and biogas energy sources during 2013-2018 (approved by Government on July 23, 2013) includes projects on installation of:
 - biogas units in amount of more than \$14 mln.;
 - PV panels for about \$100 mln. (mainly in social sector)

Thank you.



**MINISTRY OF ECONOMY
REPUBLIC OF UZBEKISTAN**

Khurshid Kh. Rakhmatullaev

*Head of Department
of Fuel & Energy Sector Development*

45a, Uzbekistan Ave.,
Tashkent, 100003
Republic of Uzbekistan

Tel.: (998 71) 232-65-05
hrakhmatullaev@mineconomy.uz