



# Tariff (Pricing) Council of the Republic of Azerbaijan

## **Current situation and perspectives for renewable energy sources**

**K. Mamishov**

**Senior advisor of Secretariat of Tariff (Pricing) Council of  
The Republic of Azerbaijan**

- Depletion of traditional energy sources and significant harm for environment while their usage force to look for and find other alternatives
- Specific role of regulatory authority, its principles and functions are very important to resolve this global problem

- Since 2004 “State Programme on usage of renewable and alternative energy sources in Azerbaijan Republic” has been approved. Ministry of Industry and Energy was in charge of its implementation.
- On 19<sup>th</sup> July 2009 “Agency on renewable and alternative energy sources” has been established under the Ministry of Industry and Energy and the Ministry is defined as coordinator of the Programme.

# On the basis of the Law on electricity

- If the large share of delivered energy to the regions is produced (more than own consumption) by industrial enterprises, combined (electricity and heat) plants and **renewable energy sources**, then certain trade-off is done according to energy system of the region;
- Tariffs on electricity and heat together with compensation of the costs of energy enterprises should provide profitability and development of energy industry in the country.



# On the basis of the Law “On efficient use of energy sources”

- The measures should be taken to assign the funds and provide incentive for scientific, technical and economical activity, directed on efficient use of RES
- Off-budget funds should be established to sponsor the programmes on rational use of energy sources. This fund is established at the expense of the means indicated in tariffs and prices for energy sources, payments for violation of the law on energy sources use, income from production and financial activity of the fund, voluntary contributions from individual persons and legal entities, etc.

The Fund can be financed at the expense of price difference between internal and external trade with the saved gas and other fuel as a result of RES use

# On the basis of the Law on electricity and heat plants

- Any individual or legal entity, using the property, owned by him or given by another person for use, has a right to build, reconstruct and use the power plant;
- Subsidies from the state can be assigned to build power plants, which operate with RES;
- Purchase of electricity, generated at such plants is guaranteed by the state without any restrictions;



# It is provided by the state

- Capital assets (equipment or its parts) are completely free from taxes and import duties , when they are required for construction of the private plants;
- Delivery of electricity to any customer on the basis of contract, signed between independent power plant, supplier and distribution company;
- Bringing electricity generated by private power plants to the open market without any restrictions and discrimination ;
- Complete or partial export of electricity, generated by independent power plants without any restrictions and special license;
- Complete usage or transfer abroad by investor of his income share in freely convertible currency and any monetary resources received from the sale of his capital assets brought to Azerbaijan Republic.

# Classification of the small power plants



- ⦿ Solar plants that generate heat and electricity
- ⦿ Wind power plants with 10-100 kW capacity.
- ⦿ Hydro plants with 50-10000 kW capacity, which are located in natural conditions and return the water to the course after usage
- ⦿ Plants using gas or other fuel 80% of which is received from biomass.
- ⦿ Emergency plants, which operate on fuel during supply failures (temporary, force majeure situations)

Power plants that do not refer to this category - industrial





# Renewable energy sources



- Solar radiation
- Wind energy
- Hydro energy
- Biomass energy

as well as,  
geothermal energy of the  
wave

# Wind energy

Azerbaijan has 800 MW of annual wind energy potential.

- That means -2,4 bln kWh of electricity, 1 mln t of equivalent fuel savings and reduction of emissions and environmental pollution.
- Speed of the long term wind on Apsheron peninsula is more than 6 m/sec that set conditions for the profitable technical and economic potential for the wind energy.
- Currently there is only one plant with 1,7 MW capacity of Caspian Technology company.

# Advantageous locations

- Apsheron peninsula, coastal islands and North-West area of Caspian Sea: average wind speed more than 6 m/sec.
- Gobustan district: potential of the wind energy is referred to the 4<sup>th</sup> class category.
- Gyandja-Dashkesan, Nakhchivan AR, including Sherur-Djulfa: average annual speed 3-5 m/sec





# Solar energy

Average annual number of the solar days:

- In the USA 2500-3000 hours
- In Russia 500-2000 hours
- In Central Asia 2500-3000 hours
- In Azerbaijan 2400-3200 hours



Volume of the solar energy reaching 1 sq m of an earth surface during a year:

Azerbaijan- 1500-2000 kWh,

USA - 1500-2000 kWh,

Russia - 800-1600 kWh,

France - 1200-1400 kWh,

China - 1800-2000 kWh.

# Small hydro plants



10% of electricity in the country is generated by hydro power plants

Potential of the rivers - 40 bln kWh, profitable technical potential - 16 bln kWh, 35% of which is the share of small hydro power plants.

There are 6 large and 5 small hydro power plants.

Total capacity of the small plants - 16,5 MW.




# Biomass



- Biomass can be used for production of electricity and heat.
- Using industrial, forestry, wood processing, agricultural, municipal and utility waste, etc it is necessary to build plants and turbine generators, which will provide with electricity and heat



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- Municipal waste volume in Baku and outskirts amounts to 1 mln tons per year. Treatment capability of the plant is 500 thousand tons.
  - Construction by the project will be carried out by the French company, which will be operator during the period of 20 years. For waste collection and placement according to the current technology JSC “Təmiz Şəhər” had been established.
  - Total project cost is approx. 346 mln Euro, for preparation of the general feasibility study 41 mln USD was required, 29 mln of those are assigned by the World Bank.



# Geothermal sources



Economic application of geothermal sources is widely spread in Iceland and New Zealand, Italy, Lithuania, Mexico, Japan, Indonesia...

The territory of Azerbaijanis rich in geothermal waters:

Greater and Lesser Caucasus mountains, Apsheron peninsula, Kura depression, slopes of Talysh hills.

# Regulation objective

- Determine the principles for functional energy operation and supply
- Develop optimal schemes of energy consumption, legal frames for investments and simplification of new technologies expansion
- Consolidate interests of consumers, state and private sector
- Energy efficiency in the network operation and in the consumption
- Regulation and legislative stability

# Requirements of regulatory authority

- Energy systems should be planned and used efficiently
- Minimization of energy losses, introduction of the “smart” energy systems, which provide higher accuracy and flexibility in real time
- Define the models and solutions of the main tasks taking into account infrastructure, facilitate adaptation to the climate changes
- Provide incentive for investments into energy systems that are done by implementing new technologies

# Cooperation between regulatory authorities

- Share the best policy and practice of efficient energy usage
- Develop new approaches to regulation issues, which are important for resolution of the common energy problems
- Incentive for efficient and timely new investments into energy systems infrastructure



# The main priority for energy sector

- Efficient energy use
- Increasing dependence on electricity as a driving force for our economies
- Advanced knowledge level and increased understanding of consumers
- Development of tariff structures and frames that will reward suppliers for their efforts
- Support of information events and campaigns on benefits of efficient energy use.

## Current generation capacities

Types:	Installed capacity, MW	Actual capacity, MW
Thermal, traditional	3450,0	2960,0
Gas-turbine (CHP, thermal)	1154,0	556,0
Modular	752,0	400
Hydro	915,7	814,5
Total:	6271,7	4730,5

## CURRENT TARIFFS

For households, commercial and industrial customers  
7,55 US\$, c/ kWh.

For industrial consumers (chemical and aluminium enterprises, steel industry on the base of iron ore) within consumption of more than 5 mln kWh day tariff - 5,3 US\$, c/kWh , night tariff -2,5 US\$, c/kWh . Transmission rate - 0,25 US\$, c/ kWh.

Electricity prices	(US\$,c/kWh)
Average electricity price	7,55
Wind energy	5,7
Hydro plants	3,1
VAT	18%



# Restrictions – location and connection



- Location – Visual perceptibility of the wind turbines

Aesthetic reasons

- Connection to the grid

It's profitable, but when the customers are located not too far away

All the above mentioned allows customers and producers not only to receive profitable and high quality energy, but it is also an important step in environmental protection.





The background of the slide features a green grid pattern. In the upper right, there is a faint, smiling face. In the lower left, there is an illustration of two hands holding a single green leaf.

# Thank you for your attention!