



PERSPECTIVES ON POTENTIAL OF RENEWABLE ENERGY IN KAZAKHSTAN

Kazakhstan is an energy rich country, both in fossil fuels and in renewable energy sources, such as hydropower, wind energy, solar radiation, geothermal energy and bio-fuels. However, for today, most of these green energy resources are left untapped. In 2014 renewable energy accounted for 0.6% of electricity generation, not including hydropower. Meanwhile, as of 2014, the share of hydropower in energy production in Kazakhstan was 8.1%, not including small hydropower stations, 73.1% of electricity generated came from coal fired power plants and 18.2% from gas turbine power plants. Energy consumption in Kazakhstan in 2014 reached 91.6 billion kWh per year and this number is constantly increasing. Thus, the predicted energy consumption by 2030 is to reach about 130 billion kWh per year, which is a 42% increase. It is important for Kazakhstan to develop renewable energy sector as the energy demand is growing and the green energy is one of the ways of meeting the energy need of the country.

Hydropower in Kazakhstan is the most developed of all green energy types. At present there are three major hydropower districts spread out throughout the country: the Irtysh river basin and its main tributaries, namely, the South-Eastern and the Southern zones and the Ili river basin.

As of 2012, only 7.4 billion kWh per year of this potential was being used, however, the country has even greater potential of about 170 billion kWh per year, 62 billion kWh per year of which is possible to implement. While, small hydropower plants have a potential of 7.5 billion kWh per year.

In addition, climate in Kazakhstan is favorable for wind farm constructions due to existence of wind corridors with wind speed above 5 meters per second, which is essential for the opera-

tion of wind turbines. Based on those locations a wind atlas has been developed and those locations can be used for electricity generation of 0.929 to 1.82 billion kWh per year. There are several wind farms in operation and construction. The first wind power plant in Kazakhstan, Korday wind power plant, started its operation in 2011 in Zhambul region with an energy capacity of 1500 kW. In 2013 construction of a new wind power plant in Yereimentau in Akmola region with an energy capacity of 45 MW was started.

Overall, large scaled wind power plants were planned to be constructed on 10 sites selected by the Ministry of Industry and New Technologies of Kazakhstan: Astana city, Arkalik city, Djungar Gate, Ft. Shevchenko, Yereimentau city, Karkalinks city, Zhuzhymdik village, Korday village, Karabatan village and Shelek Corridor.

Solar power also has a great potential as a renewable energy source due to climatic conditions, especially in southern Kazakhstan with an annual sunshine of 2200 to 3000 hours. Annual potential of solar energy is estimated to reach 2.5 billion kWh. Kazakhstan is developing solar energy technologies, namely, production of photovoltaic modules using local silicon.

In 2012 the first solar power station, "Otar," that generates 0.5 MW of energy, was also built in Zhambul Region. In 2013 a construction of a new solar power plant in Kapshagay, Almaty region was started. The plant is planned to generate 2 MW of electricity. Moreover, Kazakhstan possesses geothermal resources. Thermal waters (80°C) in the Kaplanbek field near Shymkent meets heat demand in the area. Likewise, the geothermal resources near Almaty (80°C

to 120°C) meet the greenhouse heat demand.

Even though not being widely used, bio-fuels also have a potential of 35 billion kWh per year.

The main obstacle to the development of renewable energy is the necessity of investments and high cost of construction, and as a result, high energy tariffs. In 2014 tariffs for the renewable energy were set as follows: 22.6 KZT per kWh for wind energy, 16.7 KZT per kWh for energy generated by small scaled hydropower plants, 34.6 KZT per kWh for solar energy and 70 KZT for solar energy generated at solar power plants using photovoltaic modules using local silicon. Meanwhile, electricity produced by a coal-fired power plant is much less expensive (5.6 KZT per kWh at Ekibastuz state district power plant). Even though the "green tariffs" are high, fixed tariffs instead of individual tariffs for renewables were established in order to encourage investors to optimize project costs and to ensure return of investments.

Nevertheless, Kazakhstan has set a goal to develop renewable energy and in the recent years adopted numerous legislations and government programs, the main one being the "Law on Supporting the Use of Renewable Energy Sources" that was adopted in 2009. The long term Strategy until 2050 was also adopted in 2012, and according to the strategy, Kazakhstan aims to generate 50% of the energy using alternative energy sources. Thus, with the support of the government Kazakhstan is taking steps towards the development of renewable energy sector.

To conclude, development of renewable energy generation as a whole gives an opportunity for Kazakhstan to build a strong economy and to meet its own energy demand.

Politics, Foreign Affairs and Security

- The meeting of the Commonwealth of Independent States (CIS) and the Eurasian Intergovernmental Council (EIC) Heads of Government were held in Borovoe (Kazakhstan). During the consultations, the CIS member-states considered over 20 draft documents on the various areas of cooperation and approved the Concept of interregional and cross-border cooperation until 2020. In addition, after the EIC meeting Prime Ministers of the countries of the Eurasian Economic Union (EAEU) adopted a range of strategic documents including basic guidelines for economic development of the EAEU. They also signed the Agreement on creation of a free trade zone between the EAEU and Vietnam.
- Parliaments of Kazakhstan and Turkmenistan reviewed and approved a decree on ratification of the Agreement of Turkmenistan and Kazakhstan on Caspian Sea's delimitation. The Agreement, which was signed on November 7, 2014, would ensure favorable conditions for realization of sovereign rights on the development and use of resources of the bottom and subsoil of the Caspian Sea.
- Representatives of the Syrian opposition held mediating talks in Astana on the civil war in Syria. As a result of joint consultations Syrian opposition figures issued a joint statement in Arabic titled "Astana Declaration for a Political Solution in Syria".
- President of Ukraine Petro Poroshenko signed a decree to approve the country's new national security strategy, which mentions Kiev's plans to join NATO.
- The State Council Information Office of China issued its first white paper on military policy titled "China's Military Strategy". The Strategy outlined a strategy unifying strategic defense and operational and tactical offense stressing "active defense" and pledging

closer international security cooperation.

- Turkey, Azerbaijan and Georgia have started joint military exercises dubbed the "Caucasian Eagle". Earlier, in May the Azerbaijani capital of Baku hosted tactical drills of the armed forces of Azerbaijan and Turkey.
- Chinese guided-missile frigates Linyi and Weifang and the supply ship Weishanhu have visited Istanbul while a Turkish frigate the TCG Gediz made a stop at the Chinese port of Qingdao.

Economy, Finance and Energy

- The President of Uzbekistan Islam Karimov approved the Program of measures for structural reforms, modernization and diversification of production for 2015-2019, according to which Uzbekistan would begin development of hydrocarbon fields in the Uzbek part of the Aral Sea in 2017. An international consortium consisting of the Uzbekneftegaz National Holding Company, Russian Lukoil and China's CNPC would carry out the project with total cost of \$300 million.
- Turkmenistan and Afghanistan have reached an agreement on supplying electricity from Turkmenistan in 2018-2027 and increasing the electricity export volume by 4 times during the mentioned period. According to the Ministry of Energy of Turkmenistan, the country would increase the electricity production and export to 21.9 billion kWh and 2.89 billion kWh in 2015, respectively.
- During the President of Uzbekistan Islam Karimov's official visit to South Korea, Uzbekistan and South Korea inked a wide range of trade, economic, investment and financial agreements for a total amount of \$7.7 billion. The documents included a Memorandum of Understanding (MoU) with Korean GS Engineering & Construction Corporation, as well as a MoU between the Uzbek National Bank of Foreign Economic Activities and the Korean Export-Import Bank.

- Turkey's Akbank allocated a loan of \$212 million to Petlim Port Corporation where the Turkish petrochemical holding, Petkim, held a 70% share. The loan has allocated for a period of 13 years to finance the company's projects.
- The Ministry of Energy of Georgia announced its plans to build 91 new small hydropower plants. Among those planned the Khaishi, Tobarı and Pari Hydropower Plants, as well as a cascade of hydropower plants on the Tskhenistskali River would be the largest ones. Georgia would put into operation the hydropower plants with a total installed capacity of 120-130 MW in 2015.
- The Government of Turkmenistan started the harvesting campaign in the country. Turkmenistan announced its plans to provide a wheat crop of 1.6 million metric tons in 2015. Turkmenistan first started to export surplus of harvested wheat in 2011.

Society and Culture

- The XIII Kazakh Kurultai took place in Amsterdam. About 2000 Kazakh from 40 different countries as Denmark, Sweden, UK, Netherlands, Austria, Norway, Germany, Turkey, took part in this event, which included competitions on knowledge of the Kazakh language, history and culture.
- The Russian Navy has prepared for a six-month expedition to the Antarctica. The "Admiral Vladimirsky" oceanographic ship has completed repairs at a St. Petersburg shipyard as part of ongoing preparations for an Antarctic expedition.
- The Turkish Cooperation and Coordination Agency have provided food and tents to 31 flood-affected families in northeastern Afghanistan's Takhar province.
- The 28th Russian humanitarian convoy for residents of crisis-hit areas of Ukraine have left to Donetsk and Lugansk, carrying over 1000 metric tons of aid.