

## Kazakhstan solar storage

By 2050, the government anticipates that non-thermal sources will generate at least half of Kazakhstan's energy needs. This plan requires the start of a domestic nuclear energy program and significant growth in non-hydro renewables. Kazakhstan will remain open to foreign investment as a means to import the capital and expertise to realize its objectives, although investor uncertainty about the operating environment will further militate against the government achieving its targets.

Overall, power plants of Kazakhstan in January 2019 produced 9 944.4 million kWh of electricity. In January 2019, compared to the same period of 2018, electricity production increased significantly (growth of 20% and above) in the Turkestan region. At the same time, more than 5% decrease in electricity production was observed in Almaty, Zhambyl, Kostanay and Pavlodar regions.

Hydropower accounts for approximately 12.3% of Kazakhstan's total generating capacity. Kazakhstan has abundant hydro resources, which are mainly concentrated in the eastern and southern parts of the country on the Irtysh, Ili and Syrdarya rivers (73 % of the total capacity of hydro resources). Hydropower plants on the Irtysh River constitutes of the Bukhtyrma (750MW), Shulbinsk (702MW) and Ust-Kamenogorsk (315MW), the Kapshagai (364MW) plant on the Ili River, and the Shardarinskaya (104MW) plant on the Syrdarya River.

According to the estimates of Kazakhstani experts, theoretically the capacity of all the country's hydroresources is about 170 billion kWh per year. 62 billion kWh production per year is technologically feasible, and for 27 billion kWh per year refer to the economic potential. However, it is important to note that as of today hydro resources provide no more than 2% of total electricity generation, while the share of their installed capacity is 12.3%.

Kazakhstan is rich in wind energy resources. In some regions, the average wind speed at an altitude of 15 m is 27-36 m / s. there are at least 10 areas with a large wind potential with an average wind speed of 8 -10 m/s. The most significant are the wind energy resources of the Dzungarian Gate (17,000 kWh / m<sup>2</sup>). Other promising areas include Yerementau (Akmola region), Fort Shevchenko (Caspian Sea coast), Korda (Zhambyl region).

The Asian Development Bank announced an EUR27mn loan to support construction of the 100MW plant in southern Zhambyl. Germany's Green Energy 3000 broke ground on a 50MW plant at Chulakkurgan in southern Kazakhstan, with the facility set to be linked to the grid thanks to a new 110kV line, according to PVTECH. Building work was underway for the 100MW Nura solar plant in the Akmola region, with construction undertaken by Russia's Hevel Group.

Kazakhstan is committed to moving forward rapidly on setting up biodiesel, small hydro, and solar plants as well as continued investments in wind energy. There are opportunities in the development of transmission

lines that Kazakhstan has been working on during the last ten years. There are the following best prospects on Kazakhstan for the renewable energy equipment manufacturers:

July 4, 2020, is the 11th anniversary of the adoption of the Law of the Republic of Kazakhstan "On support of the use of renewable energy sources" No 165-IV ZRK ("Law on RES"). While being ranked ninth in coal reserves, 12th in oil reserves and first in uranium mining, Kazakhstan supports the development of renewable energy sources ("RES") and plans to bring the production of electric energy by RES up to 50% by 2050. The initial RES projects were implemented through a scheme of development of a feasibility study indicating the price, payback period and etc.

The investor needs to conclude an agreement with the organizer of the auction and submit documents confirming compliance with the qualification requirements. If the investor wins at the auction, the authorized body includes it into the RES location plan and the list of RES objects. After that, the investor and the FSCenter into a PPA.

Not all projects indicated in the schedule of auctions have reserved land plots and connection points, but only small ones (up to 30 MW). Accordingly, for large RES projects, investors should independently find the land.

There are fixed deadlines for the start of construction and commissioning of power installations (failure to meet deadline leads to "automatic" termination of the PPA); in respect to auction PPAs, a grace period of one year for commissioning is provided, in the event that proof of completion of construction and installation works in the amount of at least 70% of the total scope of work is provided; Tariffs are set in tenge (indexation is not available to everyone, and also does not cover the entire exchange rate fluctuation); The FSC has limited financial capabilities.

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