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KAZAKHSTAN RENEWABLE ENERGY AUCTIONS CASE STUDY

Kazakhstan has large reserves of oil, gas, coal, and uranium, and produces electricity primarily from coal, gas, and water. It also has great wind and solar potential that is attractive to renewable energy developers.

Despite being a fossil fuel-based economy with a surplus of energy for domestic consumption, the Government of Kazakhstan chose to support renewable energy and capitalize on its rich wind, solar, and water resources.

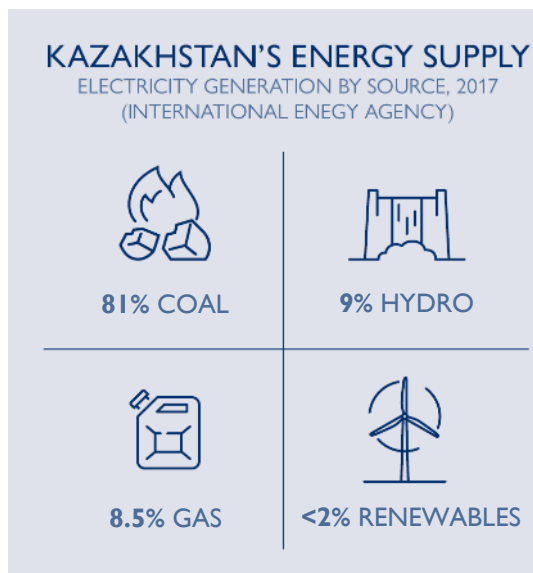


In May 2013, Kazakhstan adopted a policy to transition to a “green economy” and set an ambitious goal—to generate 50 percent of its electricity from alternative and renewable energy sources by 2050. The Green Economy Concept sets the following renewable energy sector development targets:

- 3 percent share of renewable energy in total electricity production by 2020;
- 10 percent share of renewable energy in total electricity production by 2030; and
- 50 percent share of low-carbon alternative and renewable energy sources by 2050.

In addition, the 2025 Republic of Kazakhstan Strategic Development Plan, approved by the Decree of the President of the Republic of Kazakhstan No. 636 on February 15, 2018, sets a target of achieving 6 percent share of renewable energy in total electricity production by 2025.

The government aims to achieve the renewable energy targets through a gradual decommissioning of aging thermal plants, increased use of alternative fuels, installation of energy-efficient equipment, compliance with higher environmental standards, and increased renewable generation capacity. In 2014, Kazakhstan attracted investment in renewable energy through feed-in tariffs (FiT). While the FiT program advanced new renewable generation projects in Kazakhstan, it did not benefit from rapidly falling costs for solar and wind technologies.



The U.S. Agency for International Development (USAID) has helped Kazakhstan diversify its energy mix through a successful renewable energy auction program that has added more than 1,070.81 megawatts of renewable energy projects in Kazakhstan in 2018 and 2019. A third set of auctions will be carried out in late 2020.



The auction design process was careful and deliberate. It took two years for renewable energy proponents to cultivate the political will in the energy ministry, parliament, and eventually the presidency and to design a program that systematically scales up renewables. Many stakeholders opposed holding auctions because there was no immediate need for the additional generation capacity, and the price would be higher than existing coal generation prices. However, others argued that decades-old coal plants would eventually need replacing, necessitating new generation capacity in the near future.

Kazakhstan’s leadership ultimately made the strategic choice to add low-cost renewables, positioning itself favorably for the time when new capacity will be needed. Already known as an energy economy, Kazakhstan expanded this leadership to include the next generation of clean energy technologies, especially the increased use of renewable energy.

LAYING A FOUNDATION FOR A GREEN ECONOMY

Over the last several years, auctions have emerged as a best practice to facilitate competitive renewable energy price setting, lower costs, expanded access to affordable and sustainable energy, and increased transparency of energy procurement. In 2017, the GoK replaced FiT procurement with auctions to accelerate its progress to meeting its renewable energy targets and capitalize on falling prices.

The Government of Kazakhstan (GoK) established an inclusive process for deciding on the auction program, involving the national transmission company, Kazakhstan Electricity Grid Operating Company (KEGOC), and its system operator, the Renewable Energy Financial Settlement Center (FSC); various divisions of the Ministry of Energy (MoE); the national electricity market operator, Kazakhstan Electricity and Power Market Operator (KOREM); investors; and the generation industry. The GoK sought advice from several donor agencies, including USAID and the Asian Development Bank. **The inclusive approach to auction program design helped ensure consensus on critical decisions**, including bidding rules, duration of power purchase agreements (PPAs), auction quotas, and the location of new renewable plants. **It also fostered an enabling environment for reform** by cultivating champions who built the political will to take smart risks and test new innovations to advance renewable energy in Kazakhstan.

KEY FEATURES OF INNOVATION AND SUCCESS

In February 2018, the MoE announced the first auctions by releasing the auction schedule, capacity limits, assigned land plots, grid connection points, type of renewable energy technology, auction ceiling prices, and other parameters. The price ceilings were set at the level of the FiT that was adopted by government resolution in 2014.

Kazakhstan planned 20 auctions divided by land plots: 11 for small renewable energy projects and 9 for large ones. Due to the FiT program, there was a healthy pipeline of renewable projects that were in development and could compete in an upcoming auction. Following are key features that helped test the market, limit exposure, increase competition, and reduce prices.



FEED-IN TARIFFS

WIND	6 US cents/kWh
SOLAR	9.2 US cents/kWh
HYDRO	4.4 US cents/kWh
BIO	8.6 US cents/kWh

CAREFUL SETTING OF CAPACITY CAPS

The choice to keep the capacity quota small for each technology is an important feature of Kazakhstan's auction program. The GoK reduced the quota to 255 megawatt (MW) in 2019 and is expected to maintain a low quota in 2020. This enabled the GoK to test the approach with limited risk before committing to larger investments. In addition, sector stakeholders had the opportunity to discover prices, bidders could prepare projects, and KEGOC could work on grid integration.

The program signed PPAs for only 1,070.81 MW during the first two years. This relatively low quota reflected several concerns, including a desire in the MoE and at KEGOC to protect the wholesale electricity price from a high cost burden, KEGOC's interest in experimenting with grid integration issues and solutions, and concern about investor demand in the early stages of the program.

LOCATION AND GRID INTEGRATION

Kazakhstan introduced site-specific auctions in 2019 to ensure that bidders had access to land and that KEGOC would be able to confirm the interconnection points and capacities. This not only addressed land rights issues and other location challenges, but it also helped the GoK direct development and investment in selected regions. The GoK chose plots based on the quality of renewable resources, the willingness of the local or national government agency to lease or sell the land to a developer, and the capacity of the interconnection substation and related transmission line to absorb the energy produced by the renewable energy plant. The table below shows the 2019 auctions with land and connection points, illustrating the diversity over just one year (technology specific, region specific, with or without land and connection point, with or without documentation).

TABLE 1. 2019 AUCTION SCHEDULE

RES TYPE	HPP	HPP	BioPP	WPP	WPP	SPP	HPP	SPP
AUCTION DATE	16.09.19	17.09.19	18.09.19	19.09.19	23.09.19	24.09.19	25.09.19	27.11.19
AUCTIONED CAPACITY (MW)	5	10	10	20	80	30	50	50
CEILING AUCTION PRICE (KZT/kWh)	15.48	15.48	32.15	22.66	22.66	29	15.48	29
PROJECT SIZE	Small	Small	Small	Small	Large	Large	Large	Large
AUCTION TYPE (WITH OR WITHOUT DOCUMENTATION)	Without	Without	Without	Without	Without	Without	Without	With
ROK UPS ZONE	North South	North South	All zones	All zones	North	All zones	North South	South
LAND	-	-	-	✓	✓	✓	-	✓
CONNECTION POINT	-	-	-	✓	✓	✓	-	✓

The MoE offered three different types of auctions in the North, West, and South of the country:

- The auction participant chooses a land plot that is identified by the GoK and local governments. The information on available grid connection points is provided for each predefined land plot.
- The participant proposes their own land as long as the project fits the total capacity available in that auction, and provides grid interconnection information.
- The government designates a land plot and provides complete project documentation, including resource assessments, land plot location and cost, grid connection specifications, preliminary environmental impact assessments, and results of public hearings.

In all cases, the project developer must build the transmission connection to inject their energy into the national grid.

REDUCED CONCESSIONS TO INVESTORS

Although some investors asked for international arbitration and a sovereign guarantee for the PPAs, they were not offered in the 2018 auction. **Notably, the auctions were still able to award projects at low prices, demonstrating that these features are not always necessary.**

However, arbitration through the Astana International Financial Center (AIFC) was included as a right in the 2019 auction. The AIFC regulations allow use of International Arbitration Commission rules, United Nations Commission on International Trade Law (UNCITRAL) model rules, or ad hoc rules.

DEALING WITH FOREIGN EXCHANGE INDEXATION

Given the risks of a devaluation of the Kazakhstani tenge (KZT), the coverage of currency risk is crucial to attracting investors. However, the national government also has a stated policy of “de-dollarization” or conducting as much business as possible in the local currency. **The designers of Kazakhstan’s auctions sought to strike a balance between de-dollarization and the desire to attract strong competition.**

Since a large portion of the equipment for renewable energy projects must be imported during the early auction years, the majority of investor debt is in hard currency. To avoid exposing independent power producers to unacceptable currency risk, the government decided to index part of the tariff to U.S. dollars.

Seventy percent of the tariff was indexed to the U.S. dollar, and 30 percent to inflation. This partial indexation aligns with international best practices and is expected to have a positive impact on upcoming renewable energy auctions, reducing currency risks to investors, while fairly sharing this risk.

Foreign currency (FX) indexation is applied starting from the date the renewable energy plant commences operation, exposing investors to FX fluctuations during construction. During the construction period, the indexation of 70 percent of the tariff, and 30 percent to inflation remains effective.

ATTRACTING NONTRADITIONAL DEVELOPERS

The participation of investors from the oil and gas sector, including Eni and Shell, was an interesting feature of the Kazakhstani auctions. These companies have been doing business in Kazakhstan for many years. For example, the Badamsha wind farm was Eni's first large-scale wind investment and GE's first wind onshore plant in Kazakhstan. Eni plans to invest 1.2 billion euros over the next four years on its renewable energy portfolio, which includes worldwide solar, wind and hybrid projects.

In 2019, Eni was awarded another 48 MW wind project as the second stage of the Badamsha project expansion, as well as a 50 MW solar power project in the Turkestan region of southern Kazakhstan. These initiatives are in line with Eni’s strategy of combining economic and environmental sustainability and **enabling the company to move beyond hydrocarbons.**



AUCTION RESULTS

With USAID assistance, the GoK added over 1,000 MW of renewable energy projects in Kazakhstan through competitive auctions, with bid prices coming in between 15 and 66 percent below previous renewable tariff ceilings.

As a result of the 2018 auctions, the MoE offered PPAs to 36 projects with a total capacity of 857.93 MW, including 500.85 MW for wind, 270 MW for solar PV, 82.08 MW for small hydro, and 5 MW for biomass. Participants included 113 local and international companies from nine countries: Bulgaria, China, France, Italy, Kazakhstan, Netherlands, Russia, Turkey, and the United Arab Emirates. In the end, the MoE actually contracted 815 MW due to problems faced by several developers. Annex I presents the results of Kazakhstan’s first auction in 2018.

The 2019 auctions resulted in 13 renewable energy projects with a total capacity of 212.89 MW, including 108.99 MW of wind; 86.5 MW of solar; 7 MW of hydro; and 10.4 MW of biomass. Auction participants included 32 local and international companies from eight countries: China, Germany, Italy, Kazakhstan, Malaysia, Netherlands, Russia, and Spain. Annex II provides a summary of the 2019 auction results.

Altogether, Kazakhstan saw a total of 28 auctions in 2018 and 2019 with a total capacity of 1,255 MW offered and a total capacity of 1070.82 MW contracted, including 356.5 MW of solar (Figure 1), 609.84 MW of wind (Figure 2), 89.08 MW of hydro, and 15.4 MW of biomass. Figure 1 below shows the price dynamics for solar bids in 2018 and wind bids in 2019 respectively. The wind bid price can be seen creeping upward in the 2019 auction which may be a result of wind prices dropping at a lower rate than the devaluation of the tenge. During this period the tenge went from to under 326 to 387. Project sizes offered in the 2019 auctions were also smaller.

Fluctuation in prices throughout auction rounds is a common feature of auctions since they reflect broader trends in the domestic and global economy.

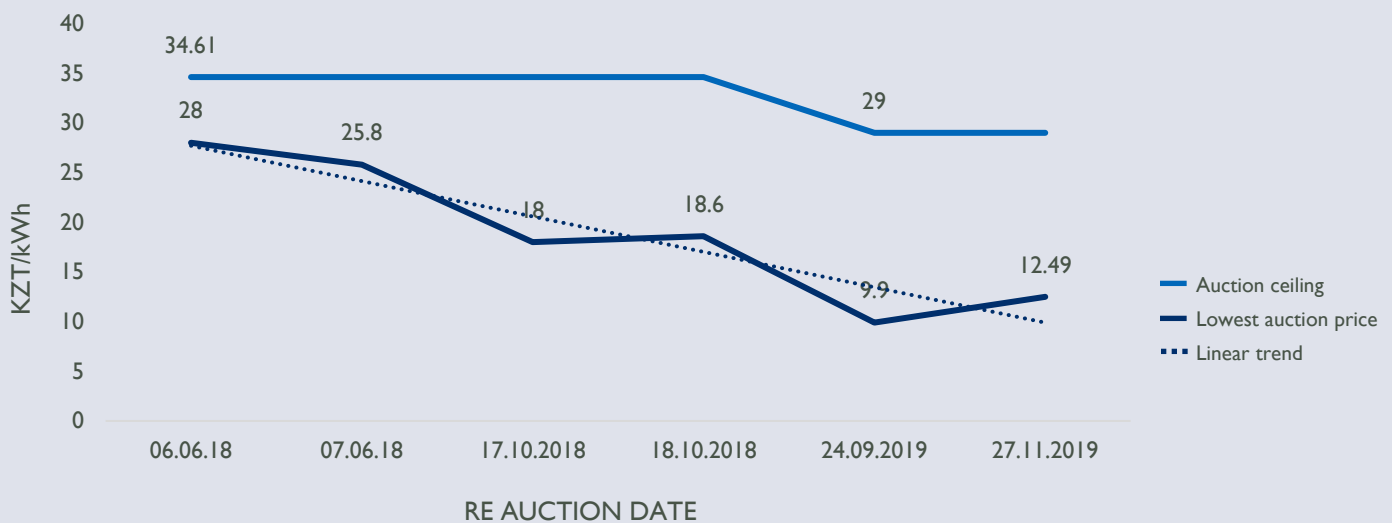


Figure 1. Solar price dynamics in 2018-2019 auctions

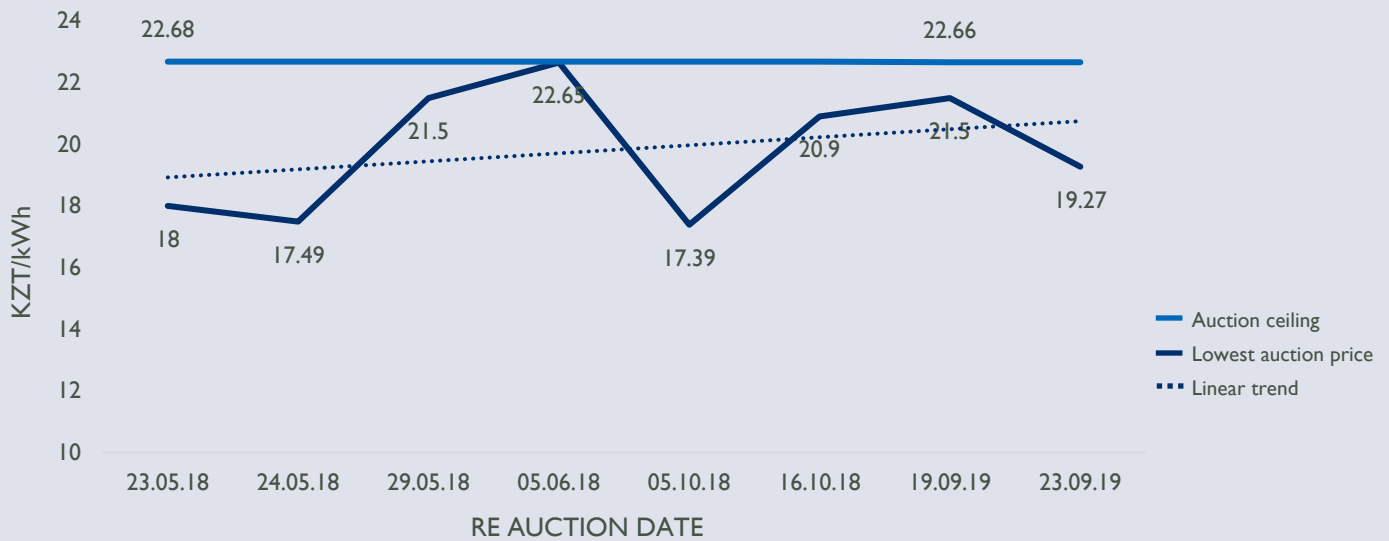


Figure 2. Wind price dynamics in 2018-2019 auctions

CONCLUSION

Kazakhstan was the first Central Asian country to use auctions to contract renewable energy projects. In 2019, Uzbekistan followed suit and announced it would pursue auctions. **Kazakhstan’s successful 2018–2019 auction results show the effectiveness of moving from feed-in tariffs to auctions using a transparent and inclusive process and systematic tailoring to local context.**

The auctions made it possible to create competitive conditions, attract international investors, and significantly reduce renewable energy prices. At the same time, **Kazakhstan’s experience illustrates the critical importance of working on grid integration and location issues while pursuing a successful auction program.**

Following two years of auctions, the GoK is working to further improve regulations concerning renewable energy investments, including ensuring financial stability of the FSC. By considering an extension of PPA duration from 15 to 20 years and potentially allowing the cost of renewable energy to pass directly to the bills of consumers, the GoK has demonstrated willingness to modify renewable procurement arrangements as the market evolves.



USAID Power the Future project staff at a solar park site visit in Kazakhstan. Photo: Tetra Tech

ANNEX 1

TABLE 2. RESULTS OF 2018 RENEWABLE ENERGY AUCTIONS

RENEWABLE ENERGY TECHNOLOGY	AUCTIONS CAPACITY (MW)	CAPACITY PROPOSED BY BIDDERS (MW)	CAPACITY SUCCESSFULLY AUCTIONED (MW)	NUMBER OF PROJECTS SELECTED	STARTING AUCTION CEILING PRICE (KZT/KWH) / (USD/KWH) ¹	LOWEST AUCTION CEILING PRICE (KZT/KWH) / (USD/KWH)
WIND	620	1235.85	500.85	16	22.68 / 0.06	17.39 / 0.046
SOLAR	290	2023.10	270	12	34.61 / 0.092	18 / 0.04.8
SMALL HYDROPOWER	75	152.50	82.08	7	16.71 / 0.044	12.80 / 0.034
BIOGAS	15	10.90	5	1	32.23 / 0.086	32.15 / 0.085
TOTAL	1,000	3,422	857.93	36	-	-

ANNEX 2

TABLE 3. RESULTS OF 2019 RENEWABLE ENERGY AUCTIONS

RENEWABLE ENERGY TECHNOLOGY	AUCTIONS CAPACITY (MW)	CAPACITY PROPOSED BY BIDDERS (MW)	CAPACITY SUCCESSFULLY AUCTIONED (MW)	NUMBER OF PROJECTS SELECTED	STARTING AUCTION CEILING PRICE (KZT/KWH) / (USD/KWH)	LOWEST AUCTION CEILING PRICE (KZT/KWH) / (USD/KWH)
WIND	100	278.99	108.99	5	22.66 / 0.06	19.27 / 0.051
SOLAR	80	522.6	86.5	3	29 / 0.077	9.9 / 0.026
SMALL HYDROPOWER	65	7	7	2	15.48 / 0.041	15.43 / 0.04
BIOGAS	10	10.4	10.4	3	32.15 / 0.085	32.13 / 0.085
TOTAL	255	818.99	212.89	13	-	-

¹ The KZT/USD exchange rate used is the rate effective on the date of the auction.