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RENEWABLE ENERGY AUCTIONS IN KAZAKHSTAN

2018-2021 RESULTS

Nur-Sultan, 2021

Abbreviations

AIFC	Astana International Financial Center
BioPP	Biofuel power plant
FSC	Financial Settlement Center of Renewable Energy, LLP
HPP	Hydroelectric power plant
KOREM	Kazakhstan Electricity and Power Market Operator, JSC
MoE RK	Ministry of Energy of the Republic of Kazakhstan
MW	Megawatt
PPA	Power purchase agreement
RES	Renewable energy sources
SPP	Solar power plant
UES RK	Unified Energy System of the Republic of Kazakhstan
USAID	US Agency for International Development
WPP	Wind power plant

Introduction

The Report on Renewable Energy Auctions in Kazakhstan, Results for 2018–2021 provides brief information about the development of renewable energy (RE) in Kazakhstan. In addition, the *Report* reviews the government's strategic goals, policies and regulations in the field of RE, as well as statistical information and results of RE auctions conducted in 2018, 2019, 2020 and 2021. This *Report* includes the following chapters:

1. Goals of RE Development in Kazakhstan.
2. Current RE Development Statistics.
3. State Regulation of RE Development.
4. RE Auction Mechanism.
5. 2018 Auction Results.
6. 2019 Auction Results.
7. The First Project-Specific Auction - 50 MW SPP in Shaulder Village, Turkestan region.
8. 2020 Auction Results.
9. 2021 Auction Results.
10. Conclusion.
11. Annexes

This *Report* was prepared jointly by the Kazakhstan Electricity and Power Market Operator JSC (KOREM JSC) and the USAID Power the Future Regional Activity, implemented by Tetra Tech ESI.[1]

[1] The Power the Future Activity was launched by the US Agency for International Development (USAID) to help accelerate the transition of the five Central Asian countries to cost-effective, low-carbon and sustainable economies by expanding the use of renewable energy sources (RES) and increasing energy efficiency (EE). It aims to accelerate the development of RE in the region by helping the countries improve regulatory conditions and create effective enabling environments for private investments in RE sector.

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1. Goals of RE Development in Kazakhstan

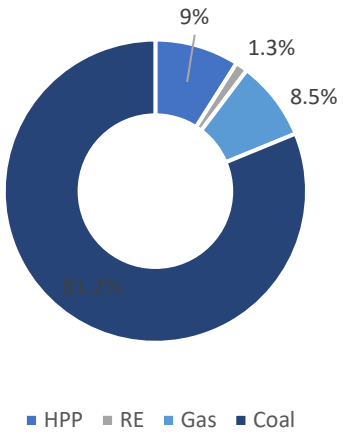

Figure 1. Electricity generation in Kazakhstan (2018)

Kazakhstan has significant reserves of energy resources, such as oil, gas, coal, and uranium. In Kazakhstan, electricity is produced primarily from coal, gas, hydro resources and, to a lesser extent, from renewable energy sources (RES) (Figure 1).

At the same time, Kazakhstan has great RES potential. The most significant potential is from wind power – wind speeds of 4-5 miles per second (m/s) at an elevation of 30 meters (m) is typical for approximately 50% of the territory of Kazakhstan. The country also has great solar power potential – the number of solar hours is 2,200-3,000 per year.

In May 2013, following international trends for low-carbon development, Kazakhstan adopted the Concept for the country-wide transition to a "Green Economy" and approved the following ambitious goal: by 2050, 50% of electricity should be generated from alternative and RES.

According to the *Concept for Transition of the Republic of Kazakhstan to Green Economy* and the 2025 Strategic Development Plan for the Republic of Kazakhstan, the share of RE in total electricity generation should reach 3% by 2020, 6% by 2025, 15% by 2030 and 50% (alternative and RES) by 2050 (Figure 2).

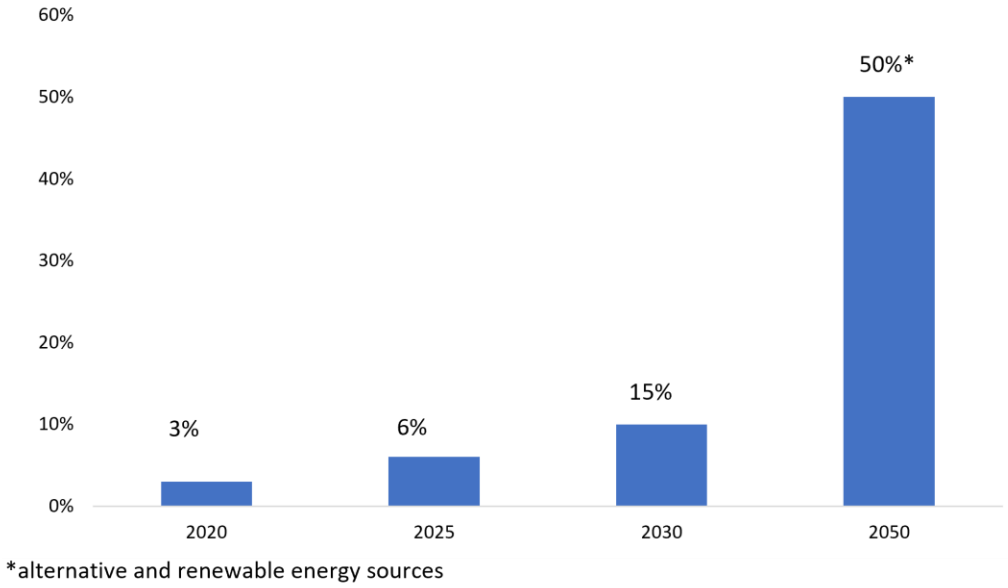

Figure 2. RE Development targets in Kazakhstan

2. *Current RE Development Statistics*

Since the introduction of a feed-in tariff for RE in 2014 and over the past six years, the number of RE projects has grown significantly. As of December 2021, 134 RE facilities were operating in Kazakhstan with a total installed capacity of 2010 megawatt (MW), including: WPP – 684 MW; SPP – 1037.6 MW; small HPP – 280 MW; BioPP – 8 MW (Figure 3).

By 2025, the total installed RE capacity is projected to be no less than 3,000 MW. As of December 2021, power purchase agreements (PPAs) for 3000 MW have already been signed with an off-taker (the Financial Settlement Center (FSC)), including 6 PPAs for a total installed capacity of 100.8 MW selected as a result of auctions for the selection of waste-to-energy projects.

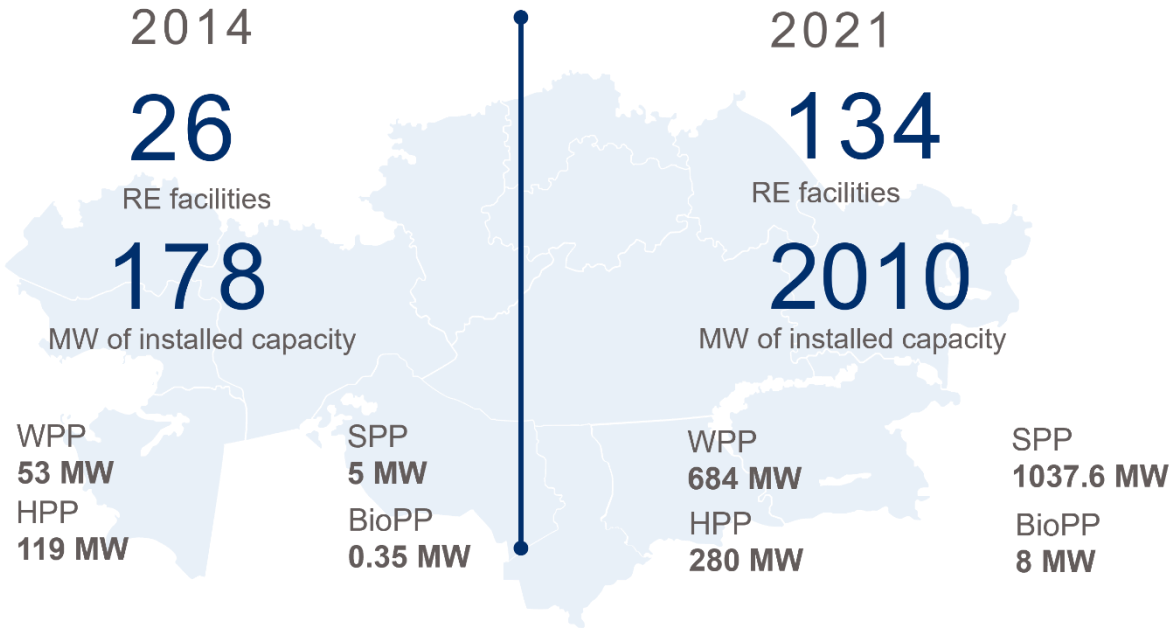

Figure 3. RE development statistics in Kazakhstan [2]

Current Major RE projects

- First WPP - 45 MW.
- Astana EXPO-2017 WPP - 100 MW.
- WPP ArmWind WPP - 48 MW.
- Burnoye Solar SPP - 100 MW.
- Saran SPP - 100 MW.
- Nurgisa SPP - 100 MW[3].

[2] Statistical data is provided by the Ministry of Energy (MoE) of Kazakhstan.

[3] An interactive map of RE projects in Kazakhstan is available via the FSC website at https://rfc.kegoc.kz/en/vie/yamaps/index.

Figure 4. Burnoye Solar SPP - 100 MW and Astana EXPO-2017 WPP - 100 MW

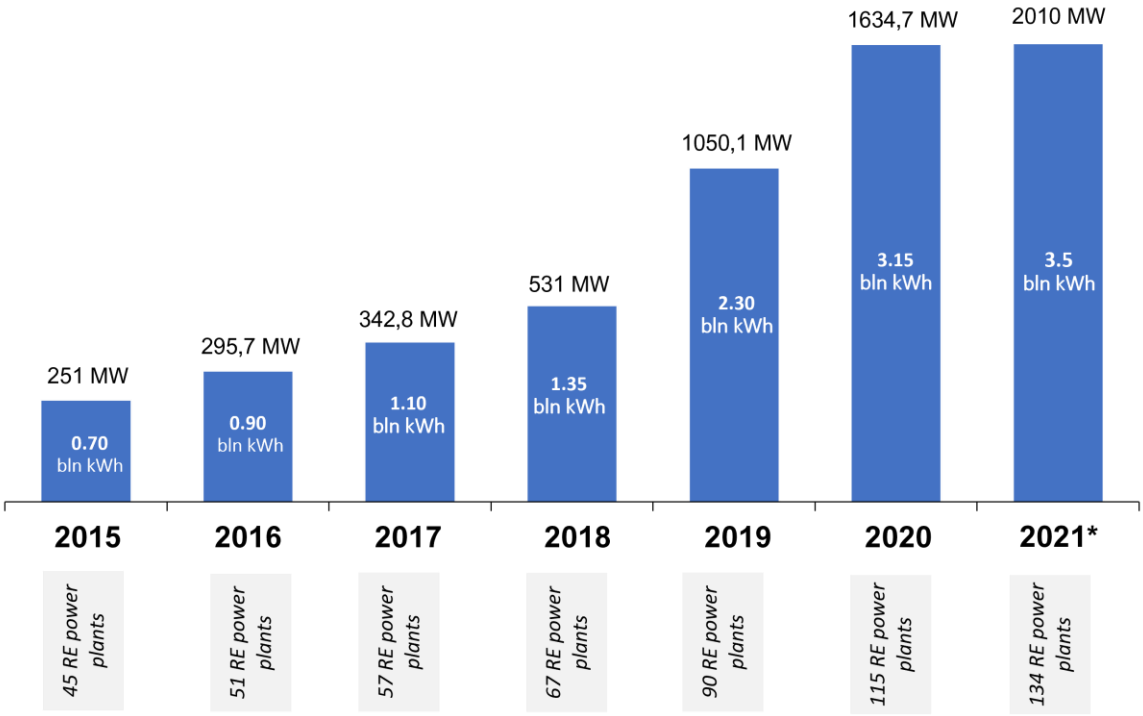

Figure 5. RE development from 2015 to 2021

**Planned electricity generation in 2021*

3. National Regulations Supporting RE Development

To achieve the established goals and stimulate investments in clean energy, Kazakhstan is focused on improving its regulatory framework. The first law in Kazakhstan that intended to support RE development was adopted in 2009, and since then the institutional and legal frameworks for RE development have significantly improved.

In December 2020, the Law *on Amendments and Additions to Certain Legislative Acts of the Republic of Kazakhstan on Supporting the Use of Renewable Energy Sources and Electricity* was adopted. The following amendments were introduced by this Law:

- Hydroelectric power plants are obliged to sell electricity generated from flood water to FSC, which in turn will distribute this inexpensive electricity among all consumers of the Republic of Kazakhstan, through the existing mechanism of centralized sale of RE electricity.
- Encourage the construction of power plants, which have a flexible generation mode.
- Introduce a "pass-through tariff" for the support of RE, which will be added on top of the ceiling tariff for electricity generated by conventional energy producers.
- Establish the potential for the government to grant the FSC financial assistance in case the FSC fails to fulfill payment obligations to RE project developers.
- Extension of the PPA term from 15 to 20 years.
- Introduce an auction mechanism to select waste to energy projects.

To date, the regulatory framework for RE investments includes the following key elements:

Single buyer of electricity produced by RE facilities	The FSC was created within the Kazakhstan Electricity Grid Operating Company JSC (KEGOC) and is the guaranteed off-taker and single buyer of electricity produced by RE facilities. The FSC carries out financial settlement of imbalances from RE facilities. Conditional consumers[4] are obliged to purchase from the FSC the entire amount of electricity produced by RE facilities.
Tariffs	From 2014 to 2017 and before the introduction of the auction mechanism, a feed-in tariff in local currency was applied to electricity produced from RES.
	The auction mechanism was introduced in 2017. The current prices for RE projects were set through the 2018-2020 auctions.
Tariff indexation	Feed-in tariffs are subject to annual indexation: 70% for consumer price index (CPI) and 30% for foreign currency exchange rate. Tariffs set through auctions are also subject to annual indexation: 30% for CPI and 70% for foreign currency exchange rate.

[4] According to the *Law on Support for the Use of Renewable Energy Sources,* the conditional consumers of electricity produced from RES include: a. energy producing companies that use coal, gas, raw materials containing sulfur, oil products and nuclear fuel; b. companies that acquire electric energy outside of Kazakhstan; and c. hydroelectric power plants with installations located within one hydro system, with a total capacity of more than 35 MW (with the exception of those commissioned after January 1, 2016).

PPA term	The PPA term is 15 years from the start date of a RE power plant's comprehensive test, and the seller of electricity generated from a RE facility should provide a financial guarantee for the fulfillment of PPA provisions at the rate of 10,000 KZT/kilowatt (kW) of installed capacity. In addition to other terms and conditions, the PPA grants creditors the right of direct project management, or step-in rights. For auctions held after January 1, 2021, the PPA term is 20 years from the start date of a comprehensive test of a RE power plant.
Construction period	The PPA allows the following periods for RE facility commissioning: SPP – 24 months, WPP and BioPP – 36 months, HPP – 60 months. However, the construction period may be extended for one year if the readiness of a RE facility is not less than 70% by the specified date of commissioning. To implement the instruction of the meeting of the State Commission on ensuring the emergency regime from April 17, 2020, by order of the MoE No. 197 from May 19, 2020, all energy-producing organizations that use RES and have valid PPA agreements with the FSC were given the opportunity to extend the deadlines of providing a copy of the notification on the beginning of construction and installation works and (or) a copy of the act of commissioning of a RE facility for a period not exceeding one calendar year. This Order was entered into force on May 26, 2020 and was valid until November 1, 2020.
Dispute resolution	Disputes shall be resolved by the court at the location of the buyer (FSC). However, the PPA also grants the right to resolve disputes in the Astana International Financial Center's (AIFC) international arbitration center. AIFC allow the use of the IAC rules, United National Commission on International Trade (UNCITRAL) Model Rules or ad hoc rules as arbitration regulations.
Grid connection	Access to the electric grid, priority dispatch and obligatory wheeling of electricity from RE facilities are guaranteed. The transmission system operator (TSO) may not refuse to connect RE facilities once the technical readiness of the electrical grid is confirmed.
Electricity transmission	RE producers are exempt from payment for electricity transmission services and the obligation to obtain electricity generation licenses.
RE Auction	An online and unilateral auction mechanism was introduced in 2017. Land plots and grid connection points are reserved for auctions and the main criterion for the selection of auction winners is the lowest price. As previously mentioned, a 15- year PPA is awarded to RE auction winners for while auctions held after January 1, 2021 will award bid winners with 20-year PPAs.
Investment preferences	The Commercial Code of Kazakhstan provides investment preferences such as exemption from tax duties and value added tax (VAT) on imported

equipment, as well as state land grants, subject to fulfillment of certain conditions.

Kazakhstan's legislative framework creates the following support mechanisms to develop RE projects:

- Introduce a new auction type that includes site-specific documentation (project auctions).
- Improve the auction procedure and its qualification requirements.
- Less stringent requirements for BioPP and HPP auctions.

At the same time, the government continues to introduce and reform current legislation in order to attract investment in RE and plans to consider the following issues:

- Integrate RE into the Unified Electric Power System (UES) of Kazakhstan.
- Construct additional flexible generation capacities (large HPPs and gas power plants).
- Long-term planning and improve the RE auctions.
- Improve the mechanism of distributed renewable energy generation among the population and SMEs.
- Provide incentive mechanisms to construct large HPPs.
- Develop renewable energy with energy storage solutions.

The government also plans to analyze the feasibility of reaching 2050 RE target, considering construction of a nuclear power plant and other alternative energy sources.

4. RE Auction Mechanism

The RE auctions have become increasingly popular as a global best practice mechanism to procure energy at least-cost competitive prices. According to the International Renewable Energy Agency (IRENA), in 2017-2018 some 55 countries used auctions to procure renewables-based electricity and, by the end of 2018, 106 countries used auctions for these purposes. [5]

As a result of RE auctions, price results for solar and wind auctions have significantly decreased in the past decade.

Below, Figure 6 illustrates the global average price results for solar photovoltaic (PV) and onshore wind auctions held between January 2010 and December 2018[6].

According to this Figure, in 2010 solar energy was contracted at a global average price of almost USD 50/MWh, compared with the global average price of 83 USD/MWh in 2016. The global average prices for solar PV also decreased sharply between 2010 and 2017. The steep decrease was driven mainly by a steady decline in the price of solar panels, which fell to a quarter of their initial price over the same period.

During the same period, wind prices also fell albeit at a slower pace. The average price in

[5]Information accessed via https://www.irena.org/publications/2019/Dec/Renewable-energy-auctions-Status-and-trends-beyond-price.

[6] The calculated global weighted averages are obtained by averaging the auction outcomes from countries with different macroeconomic dynamics, energy policy and auction design among many other factors.

2016 was 50 USD/MWh, down from 75 USD/MWh in 2010. The decrease in prices continued until 2017, followed by an increase in 2017-2018. The increase is mainly due to high-price countries constituted a larger share of the wind volume auctioned globally.

In addition to the decline in prices for RE technologies, the following factors influenced the decline in world auction prices:

- The degree of investor confidence related to, for example, the experience of the bidder and auctioneer, and credibility of the off-taker.
- Other policies related to RE including clear targets, grid policies, priority dispatch, and local content rules.
- The auction design.

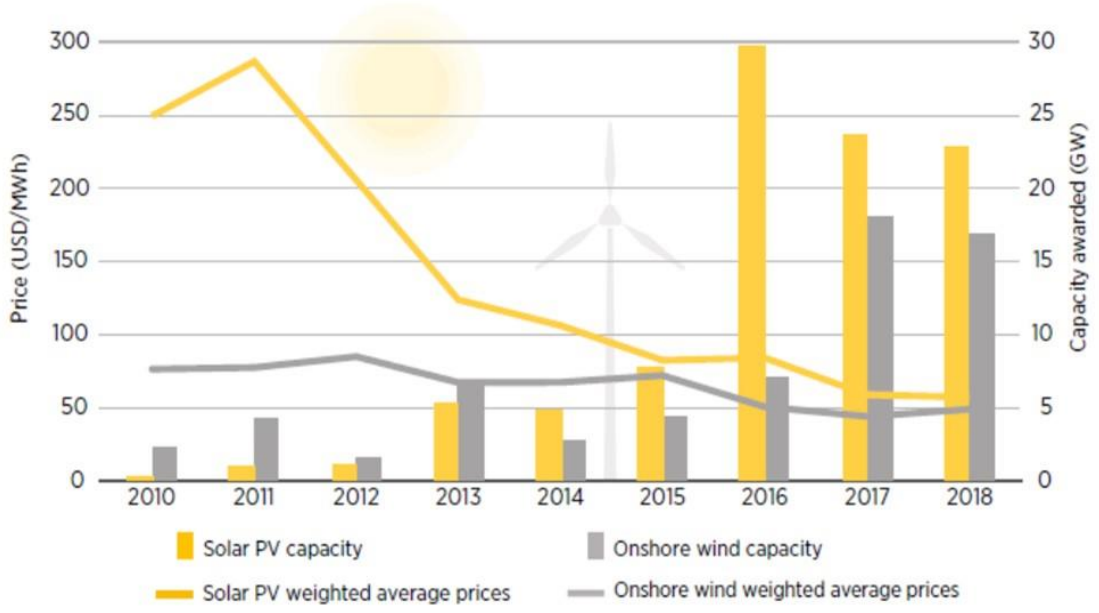

Figure 6. Global weighted average prices resulting from 2010-2018 auctions and annual awarded capacities

In Kazakhstan, the auction mechanism was introduced at the end of 2017 instead of a feed-in tariff in order to select the most effective projects and determine competitive market prices for electricity produced by RE facilities. The *RE Auction Rules* were developed based on global best practices and international experiences and include the qualification requirements for auction participants, the bidding and application submission procedure, types of financial guarantees and terms for the provision and repayment thereof, and procedures for confirming the results and determining the auction winners, among others.

KOREM JSC provides an electronic trading platform and acts as the auction organizer. The MoE approves the annual Auction Schedule, which includes the following: information on the proposed land plots and grid connection points; the amount of installed capacity (MW) to be auctioned; type of RE technology; starting auction ceiling price (KZT/kWh); project size (small, large), auction type; RE facility location within the UES RK; and auction date and time.

Key Characteristics of the Auction Mechanism in Kazakhstan

Auction schedule – auctions are held according to a schedule, and sessions are held separately for certain RE types and regions (north, west and south) considering the technical connection limitations. RE auctions are classified in terms of installed capacity: small is up to and

including 10 MW and large is over 10 MW.

Auction format – a unilateral auction is conducted online via an electronic trading system, and the main criteria used to determine auction winners is the lowest bid price. Auction starting ceiling prices are established by the MoE. For the 2018 auctions, the auction ceiling prices were set at the level of the feed-in tariff for each RE type. For the 2019 and 2020 auctions, the auction ceiling prices were set at the maximum auction price by RE type, proposed at the 2018 and 2019 auctions respectively.

Auction type – auctions with and without project documentation. Auctions with project documentation were introduced in 2019. When using this auction type, potential investors are provided in advance with project detailed information and technical data (such as land plots, resource potential, preliminary feasibility study, power distribution scheme, specifications, environmental impact assessment, etc.). More detailed information and calculations allows investors to offer a lower auction price.

Primary pre-qualification criterion – for an auction trading session, pre-qualification is the provision of a financial guarantee at the rate of 2,000 KZT/kW of installed capacity for auctions without project documentation, and 5,000 KZT/kW of installed capacity for auctions with project documentation. The financial guarantee should be provided in the form of a bank guarantee or a standby letter of credit issued to the FSC in the SWIFT system.

Criteria to recognize auctions as valid – (a) participation of at least two bidders; and (b) the total volume of applications should be more than 130% of the announced capacity.[7] Paragraph (b) is not applicable for auctions of BioPP and HPP projects.

Auction results – the winners and the FSC sign a PPA with a validity period of 15 years. When signing a contract, the winner should provide the FSC with a PPA performance bond at the rate of 10,000 KZT/kW of RE project installed capacity. The auction winners with signed PPA are obliged to use only new generating equipment for the construction of RE facilities. For auctions held after January 1, 2021, winners are awarded with PPAs for a period of 20 years.

5. Auction Results for 2018

In February 2018, the MoE announced the first auctions for the selection of RE projects and published the Auction Schedule for 2018. According to the Schedule, the total installed capacity declared for the auction amounted to 1,000 MW with a breakdown by the following power plant type: WPP – 620 MW; SPP – 290 MW; HPP – 75 MW; BioPP - 15 MW.

In 2018, the starting auction ceiling prices were established at the level of the following feed-in tariffs:

- WPP – 22.68 KZT/kWh (5.2 US cents/kWh)[8]
- SPP – 34.61 KZT/kWh (7.9 US cents/kWh)
- HPP – 16.71 KZT/kWh (3.8 US cents/kWh)
- BioPP – 32.23 KZT/kWh (7.3 US cents/kWh)

A total of 20 auctions were planned (11 for small and nine for large RE projects), of which seven auctions were recognized as void due to an insufficient number of bidders or an insufficient

[7] The first auctions were held in spring 2018. These were recognized as valid subject to the participation of at least three bidders and a total volume of bids for not less than 150% of the installed capacity. Under these criteria, two of the 10 auctions were void. During the subsequent auctions held in autumn, these requirements were relaxed to two bidders and 130% of the installed capacity. The terms and conditions for BioPP and HPP projects were also relaxed.

[8] 437.12 KZT/USD exchange rate is used throughout the document. Exchange rate as of December 8, 2021.

number of applications.

Overall, during the 2018 auctions, 36 RE projects with total installed capacity of 857.93 MW were selected, including: WPP – 500.85 MW, SPP – 270 MW, small HPP – 82.08 MW and BioPP – 5 MW (Figure 7).

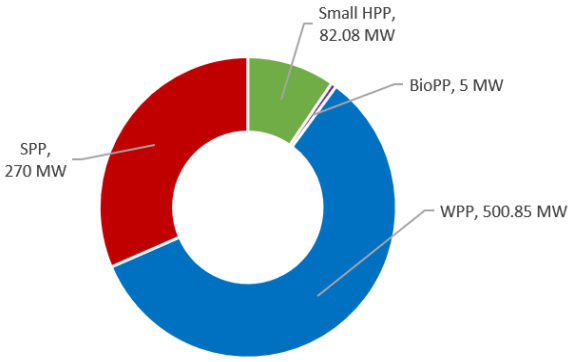

Figure 7. Total installed capacity of RE projects selected through 2018 auctions.

The auction participants included 113 local and international companies from 9 countries: Kazakhstan, Russia, China, Turkey, France, Bulgaria, United Arab Emirates (UAE), Italy and the Netherlands. The bids for a total capacity of 3,422 MW were received, indicating that demand was 3.4 times greater than supply. Eighty five percent of the proposed capacity was cleared at the auctions, and bidders were interested in projects of all proposed RE types.

In particular, the demand for BioPP, HPP and WPP projects was approximately twice as great as the auctions offer. However, investors showed the greatest interest in SPP projects and demand was seven times higher than the auctions offer.

According to the auction results, the largest auction prices decreases were: WPP projects - 23.3%, SPP – 48%, small HPP – 23.4%, BioPP – 0.25% (Figure 8). These results confirm that auctions reduce energy prices and make it possible to determine market-based prices for electricity produced by RE facilities. More detailed 2018 auction results are provided in Table 1 below. The list of 2018 auction winners is provided in Annex 1.

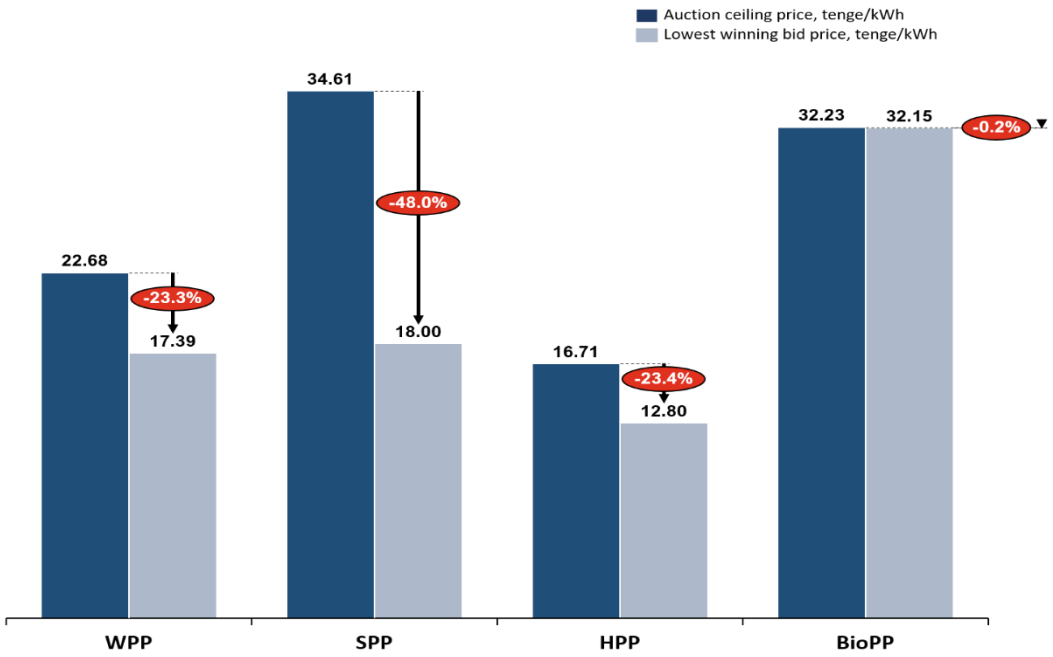

Figure 8. Price decreases due to 2018 auctions.

Table 1. Results of 2018 RE Auctions

RE technology	Auctions capacity (MW)	Capacity proposed by bidders (MW)	Capacity successfully auctioned (MW)	Number of projects selected	Starting auction ceiling price (KZT/kWh) / (US cents/ kWh)	Minimum auction price (KZT/ kWh) / (US cents/ kWh)
Wind	620	1235,85	500.85	16	22.68 / 5.2	17.39 / 4
Solar	290	2023,10	270	12	34.61 / 7.9	18 / 4.1
HPP	75	152.50	82,08	7	16.71 / 3.8	12.80 / 2.9
Biogas	15	10.90	5	1	32.23 / 7.4	32.15 / 7.4
Total:	**1 000**	**3 422**	**857.93**	**36**	**-**	**-**

6. *Auction Results for 2019*

According to the 2019 Auction Schedule approved by the MoE, RE auctions were announced for a total of 255 MW installed capacity with the following types of RES power plants: WPP – 100 MW; SPP – 80 MW; HPP – 65 MW; BioPP – 10 MW.

A total of eight auctions were planned and held (four for small and four for large RE projects), including seven auctions without and one auction with project documentation[9]. According to the Rules for determination of feed-in tariffs and auction ceiling prices, the auction ceiling prices for 2019 auction were determined based on the maximum price proposed by auction participants in 2018. Thus, the starting auction ceiling prices for 2019 auctions were set at the following levels (excluding VAT):

- WPP – 22.66 KZT/kWh (5.2 US cents/kWh)
- SPP – 29 KZT/kWh (6.6 US cents/kWh)
- HPP – 15.48 KZT/kWh (3.5 US cents/kWh)
- BioPP – 32.15 KZT/kWh (7.4 US cents/kWh).

During the 2019 auctions, 13 RE projects were selected with a total installed capacity of 212.89 MW, including: WPP – 108.99 MW, SPP – 86.5 MW, HPP – 7 MW and BioPP – 10.4 MW (Figure 9).

The auction participants included 32 local and

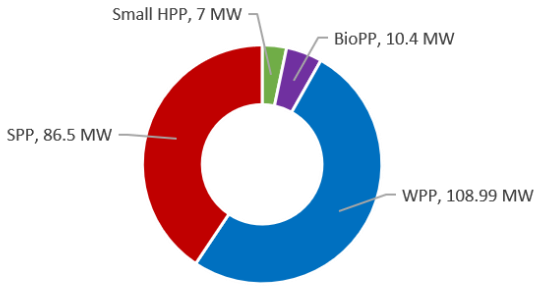

Figure 9. Total installed capacity of RE projects selected during 2019 auctions.

international companies from eight countries:

[9] In 2019, the Auction Rules were amended and classification of auctions with and without project documentation was introduced. When holding site-specific auctions with project documentation, potential investors are provided with a package of documents that describe the basic project parameters. This documentation includes marketing research for the construction of new RE facilities, including the resource potential assessment, results of public hearings and preliminary environment impact assessment, land plot location considering specifications and costs for purchase/lease of land plots, power distribution schemes and grid connection specifications.

Kazakhstan, Russia, China, Germany, Malaysia, Italy, Spain and the Netherlands.

The bids for total capacity of 818.99 MW were received, meaning the level of demand was 3.2 times greater than the level of supply. Eighty three percent of the proposed capacity was cleared at the auctions and auction winners had an interest in projects of all proposed RE types. In particular, demand for WPP was 2.8 times greater than supply. However, investors were most interested in SPP and demand was 6.5 times higher than supply. Through the auctions, the largest price reduction was 15% under WPP, 66% under SPP, 0.3% under HPP and 0.1% under BioPP (Figure 10).

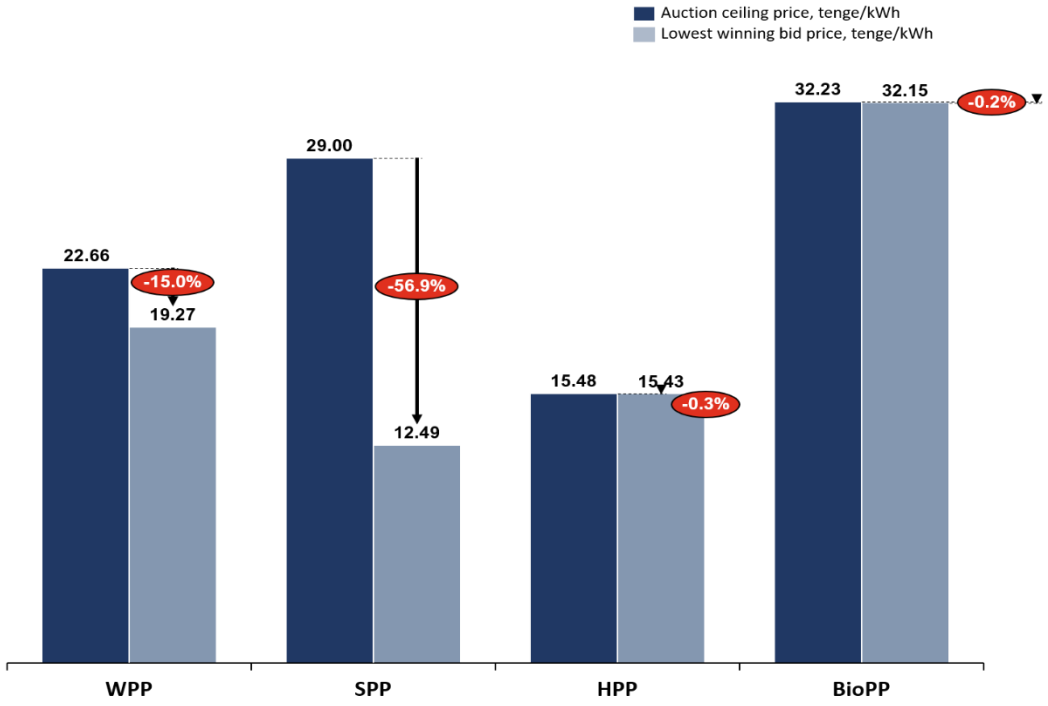

Figure 10. Price decreases due to 2019 auctions.

The table below provides auction results for 2019. The list of auction winners in 2019 is provided in Annex 2.

Table 2. Results of 2019 RE Auctions

RE technology	Auction capacity (MW)	Capacity proposed by bidders (MW)	Capacity successfully auctioned (MW)	Number of projects selected	Starting auction ceiling price (KZT/kWh) / (US cents/ kWh)	Minimum auction price (KZT/kWh) / (US cents/ kWh)
Wind	100	278.99	108.99	5	22.66 / 5.2	19.27 / 4.4
Solar	80	522.6	86.5	3	29 / 6.6	12.49 / 2.9
HPP	65	7	7	2	15.48 / 3.5	15.43 / 3,5
Biogas	10	10.4	10.4	3	32.15 / 7.4	32.13 / 7.4
Total:	**255**	**818.99**	**212.89**	**13**	-	-

7. First Project-Specific Auction for a 50 MW SPP in Shaulder Village, Turkestan region

As noted above, in 2019 the Auction Rules were amended and a new auction type – project-specific auction (with project documentation) was introduced. The project-specific auction type provides potential investors in advance with detailed information on project parameters, including marketing research for the construction of a new RE facility, an assessment of resource potential, grid connection specifications, etc. According to international experience, these types of auctions allow investors to propose lower electricity prices.

During 2019, as part of the UNDP/GEF Project "De-risking Renewable Energy Investments", a documentation package was prepared for the 50 MW SPP auction, including an assessment of resource potential, land plot location, taking into account specifications and costs for purchase/lease of land plots, results of public hearings and preliminary environment impact assessment, power distribution schemes and grid connection specifications and other documents.

For this auction type, more stringent requirements were imposed. For instance, the amount of financial guarantee was increased from 2,000 to 5000 KZT per 1 kW of installed project capacity. To participate in this auction, 14 companies initially registered in KOREM's trading system. However, only seven companies were admitted to the auction as others failed to provide the financial guarantee for the auction bid.

The auction was held on November 27, 2019. Seven companies from the following six countries participated in the auction: Kazakhstan, Italy, Russia, Germany, China and the Netherlands. During the trading session, bidders submitted 95 price quotations, with a starting auction price of 29 KZT/kWh and a final price of 12.49 KZT/kWh, 2.3 times lower.

Figure 11. 50 MW SPP project site
Source: UNDP

Figure 12. Map of the 50 MW SPP project site.
Source: UNDP

Table 3. Results of project-specific auction for the 50 MW SPP in Shaulder Village

RE technology	Auction capacity (MW)	Capacity proposed by bidders (MW)	Capacity successfully auctioned (MW)	Number of submitted bidding prices	Starting auction price (KZT/kWh) / (US cents/ kWh)	Minimum auction price (KZT/kWh) / (US cents/ kWh)
Solar	50	350	50	95	29 / 6.6	12.49 / 2.9

The purpose of introducing the project-specific auctions was to offer investors more prepared and well-developed RE projects to reduce the risks to investors during construction, and to determine a lower competitive price for RE. Despite the higher financial guarantee required to participate in the auction, this auction type saw great demand from international investors and allowed KOREM to exclude companies lacking the financial ability to implement the project.

8. Auction results for 2020

According to the Schedule approved by the MoE for 2020, RE auctions were announced for a total of 250 MW of installed capacity with the following types of power plants: WPP – 65 MW; SPP – 55 MW, of which two 20 MW each project-specific auctions; HPP – 120 MW; BioPP – 10 MW.

According to the Rules to determine feed-in tariffs and auction ceiling prices, the ceiling prices for the 2020 auction were determined based on the maximum price proposed by auction participants in 2019. Thus, the starting auction ceiling prices for 2020 auctions were set at the following levels (excluding VAT):

- WPP – 21.69 KZT/kWh (5 US cents/kWh)
- SPP – 16.97 KZT/kWh (3.9 US cents/kWh)
- HPP – 15.48 KZT/kWh (3.5 US cents/kWh)
- BioPP – 32.15 KZT/kWh (7.4 US cents/kWh).

A total of eight auctions were planned and held: four auctions for small projects without documentation, two for large projects without documentation, two for large project with documentation.

The auction participants included 27 local and international companies from the following four countries: Kazakhstan, Russia, Germany and the Netherlands.

Bids for a total capacity of 493.9 MW were received, indicating the level of demand was two times greater than the level of supply.

In particular, demand for WPP, SPP and small HPP was almost two times greater than supply.

However, investors were most interested in WPP as the demand was five times higher than supply.

Overall, during the 2020 auctions, 16 RE projects were selected with a total installed capacity of 147.95 MW, including: WPP – 64.95 MW, SPP – 60 MW, HPP – 23 MW (Figure 13).

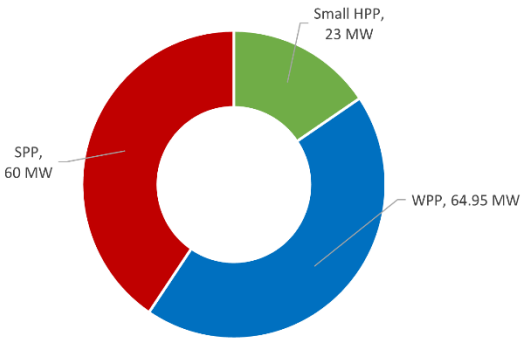

Figure 13. Total installed capacity of RE projects selected through 2020 auctions.

The auction winners selected 60% of the proposed auction capacity. The auctions were held in a regular mode, while two auctions were declared invalid due to the insufficient number of participants (large HPP and BioPPs).Through the auctions, the largest price reduction was 26.7% under WPP, 14.1% under SPP, 12.9% under HPP. Since the auction for BioPP projects did not take place, the auction price did not decrease (Figure 14).

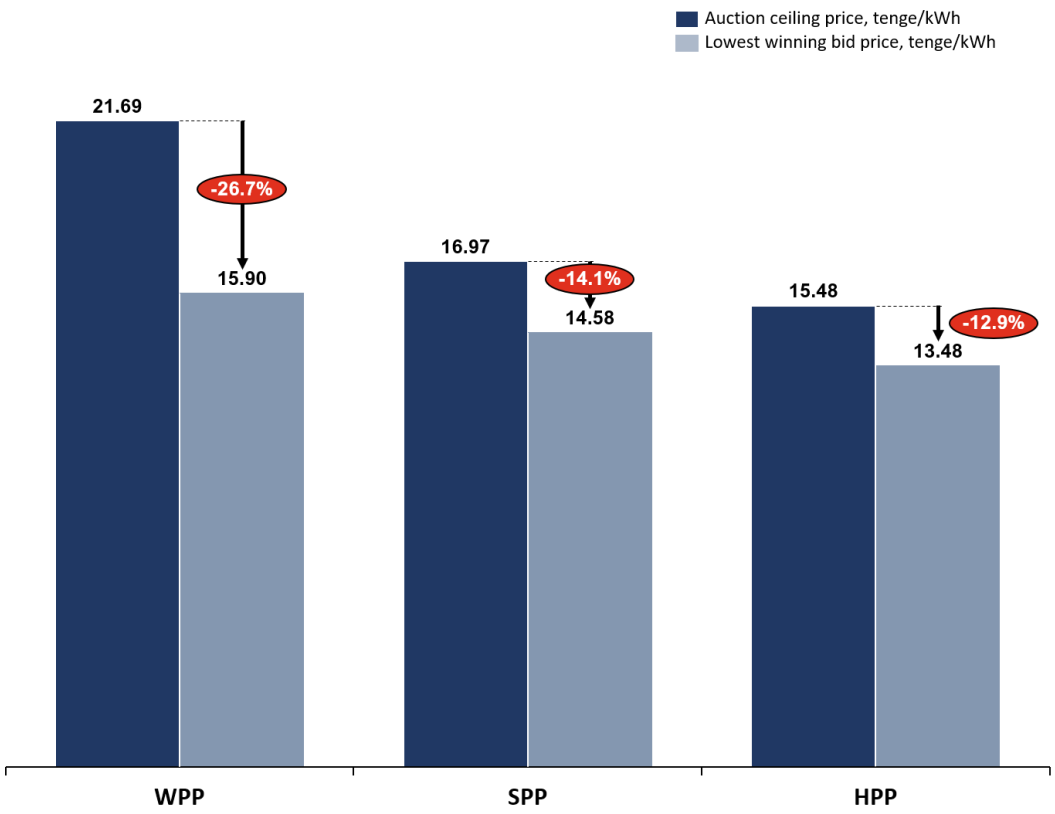

Figure 14. Price decreases due to 2020 auctions.

The table below provides auction results for 2020, and the list of auction winners in 2020 is provided in Annex 3.

Table 4. Results of 2020 RE Auctions

RE technology	Auction capacity (MW)	Capacity proposed by bidders (MW)	Capacity successfully auctioned (MW)	Number of projects selected	Starting auction ceiling price (KZT/kWh) / (US cents/ kWh)	Minimum auction price (KZT/kWh) / (US cents/ kWh)
Wind	65	329.8	64.95	3	21.69/5	15.9/3.6
Solar	55	136.15	60	4	16.97/3.9	14.58/3.3
HPP	120	23	23	9	15.48/3.5	13.48/3.1
Biogas	10	4.95	0	0	32.15/7.4	-
Total:	**250**	**493.9**	**147.95**	**16**	-	-

9. Auction results for 2021

According to the Schedule approved by the MoE for 2021, RE auctions were announced for a total of 200 MW of installed capacity with the following types of power plants: WPP – 50 MW; SPP – 20 MW, HPP – 120 MW; BioPP – 10 MW.

The starting auction ceiling prices for 2021 auctions were set at the following levels (excluding VAT):

- WPP – 21.53 KZT/kWh (4.9 US cents/kWh)
- SPP – 16.96 KZT/kWh (3.9 US cents/kWh)
- HPP – 15.2 KZT/kWh (3.5 US cents/kWh)
- BioPP – 32.15 KZT/kWh (7.4 US cents/kWh).

A total of five auctions were planned and held: two auctions for small projects, two for large projects. The auctions were held in a regular mode, while one auction was declared invalid due to an insufficient number of bidders (large HPP).

The auction participants included 24 local companies. Bids for a total capacity of 626.95 MW were received, indicating the level of demand was three times greater than the level of supply. In particular, demand for SPP and small HPP was almost three times greater than supply. However, investors were most interested in WPP as the demand was ten times higher than supply (Table 5).

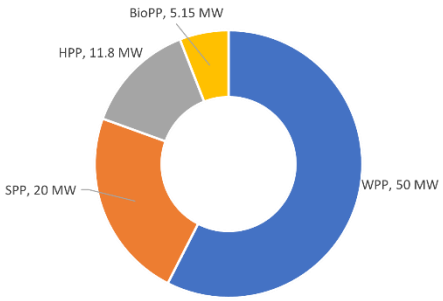

Figure 15. Total installed capacity of RE projects selected through 2021 auctions.

Overall, during the 2021 auctions, 8 RE projects were selected with a total installed capacity of 86.95 MW, including: WPP – 50 MW, SPP – 20 MW, HPP – 11.8 MW and BioPP – 5.15 MW (Figure 15). The auction winners selected 43.48% of the proposed auction capacity.

Through the auctions, the largest price reduction was 34.6% under WPP, 24.11% under SPP, 1.31 % under HPP and 0.03% under BioPP (Figure 16).

The list of auction winners in 2021 is provided in Annex 3.

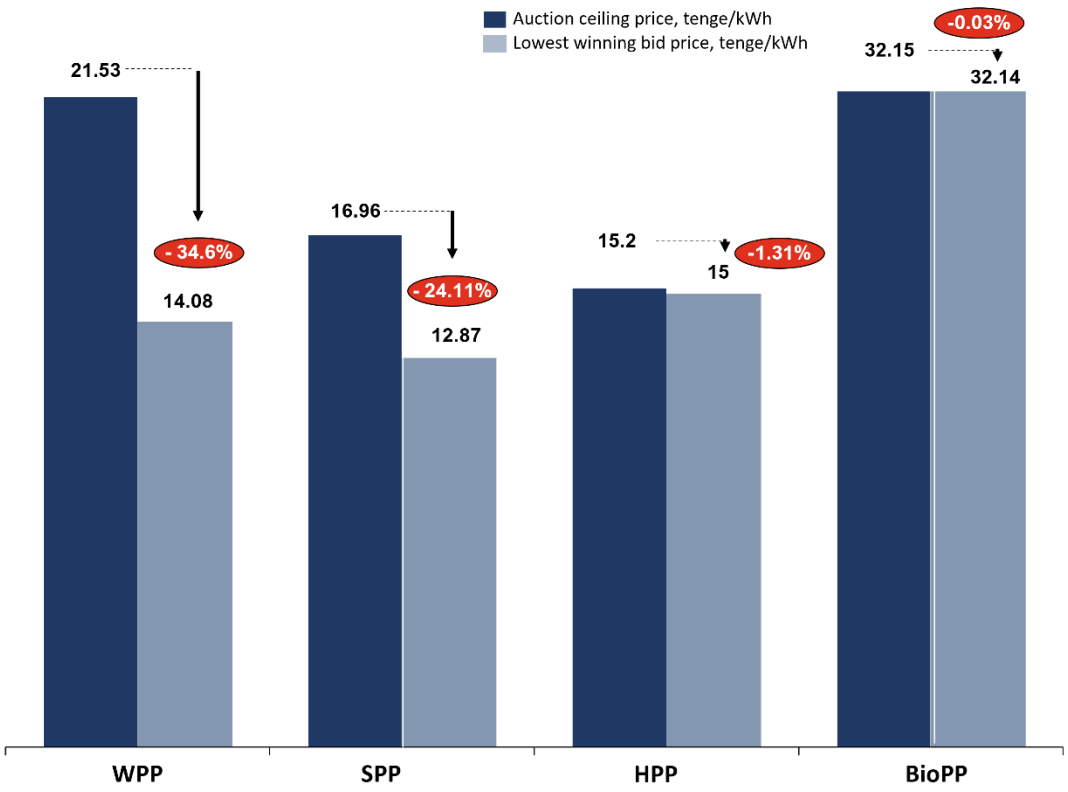

Figure 16. Price decreases due to 2021 auctions.

Table 5. Results of 2021 RE Auctions

RE technology	Auction capacity (MW)	Capacity proposed by bidders (MW)	Capacity successfully auctioned (MW)	Number of projects selected	Starting auction ceiling price (KZT/kWh) / (US cents/ kWh)	Minimum auction price (KZT/kWh) / (US cents/ kWh)
Wind	50	550	50	1	21,53/4.9	14,08/3.2
Solar	20	60	20	1	16,96/3.9	12,87/2.9
HPP	120	11.8	11.8	4	15,2/3.5	15,00/3.4
Biogas	10	5.15	5.15	2	32,15/7.4	32,14/7.4
Total:	**200**	**626.95**	**86.95**	**8**	-	-

10. Conclusion

The first RE auctions were held in Kazakhstan in 2018. From 2018 to 2021, 41 RE auctions have been held for a total installed capacity of 1,710 MW. Of these auctions, 1,305.72 MW of installed capacity was selected with the following breakdown by RE type: WPP - 724.79 MW; SPP - 436.5 MW; HPP – 123.88 MW; BioPP – 20.55 MW.

The auction participants included a total of 196 companies from the following 12 countries: Kazakhstan, Russia, China, Turkey, the Netherlands, France, UAE, Bulgaria, Italy, Germany, Malaysia and Spain. Table 5 below summarizes the results, including total capacity selected and prices obtained.

Table 5. Results of 2018-2021 RE Auctions in Kazakhstan

		WPP	SPP	HPP	BioPP	TOTAL
Projects selected (MW)	**2018 г.**	500.85	270	82.08	5	**857.93**
	2019 г.	108.99	86.5	7	10.4	**212.89**
	2020 г.	64.95	60	23	-	**147.95**
	2021 г.	50	20	11.8	5.15	**86.95**
	Итого	**724.79**	**436.5**	**123.88**	**20.55**	**1305.72**
Starting auction ceiling price (KZT/kWh)	**2018 г.**	22.68	34.61	16.71	32.23	**-**
	2019 г.	22.66	29	15.48	32.15	**-**
	2020 г.	21.69	16.97	15.48	32.15	**-**
	2021 г.	21.53	16.96	15.2	32.15	**-**
Minimum auction price (KZT/kWh)	**2018 г.**	17.39	18	12.8	32.15	**-**
	2019 г.	19.27	12.49	15.43	32.13	**-**
	2020 г.	15.9	14.58	13.48	-	**-**
	2021 г.	14.08	12.87	15	32.14	**-**

The analysis of the prices proposed during the 2018-2021 auctions for wind and solar power generation shows a significant reduction from the original auction ceiling prices. With the starting ceiling price for SPP projects at 34.61 tenge/kWh in 2018, the minimum price obtained as a result of the 2018-2021 auctions is equal to 12.49 tenge/kWh. Therefore, the maximum price reduction for solar generation was about 66% (Fig. 17).

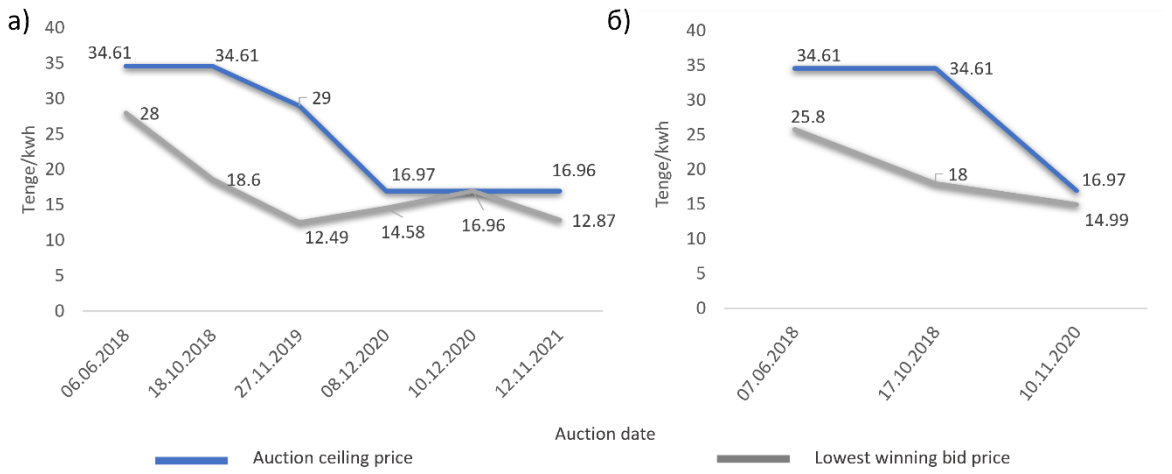

Figure 17. Dynamics of price reduction for a) large (over 10 MW) and b) small (0.1-10 MW), 2018-2021 SPP Auctions

As for the WPP projects, the starting ceiling price was at 22.68 tenge/kWh in 2018 and the minimum price obtained as a result of the 2018-2021 auctions is 14.08 tenge/kWh.

Thus, the maximum price reduction for wind generation was about 30% (Fig. 18).

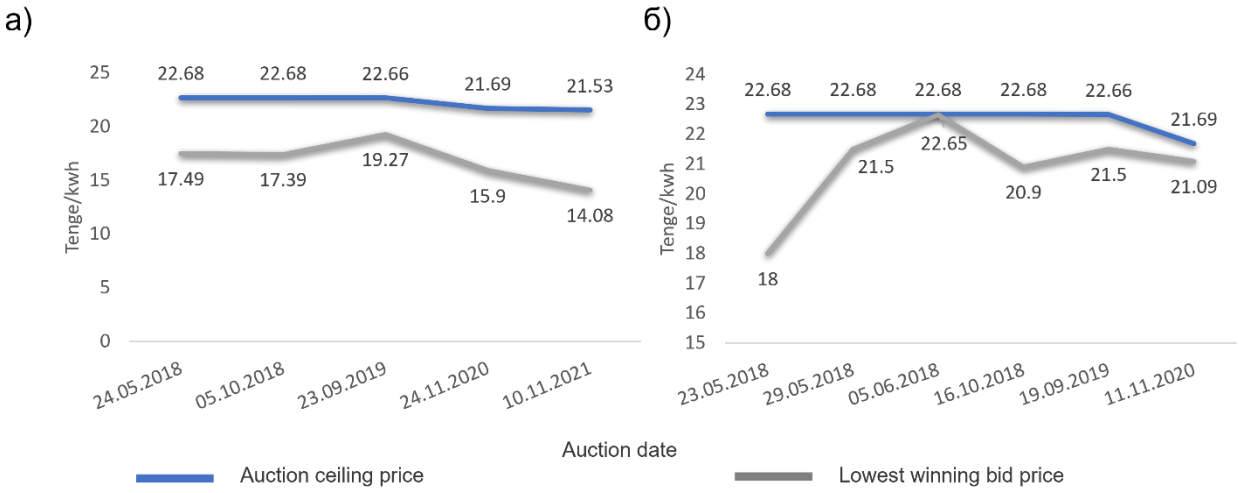

Figure 18. Dynamics of price reduction for: a) large (over 10 MW) and b) small (0.75-10 MW), 2018-2021 WPP auctions

In Central Asia, Kazakhstan has the highest share of inexpensive coal generation facilities and is the first country in the region that is actively developing RE and introducing auctions to select RE projects. The successful 2018-2021 auction results show the effectiveness and timeliness of transitioning from feed-in tariffs to an auction mechanism, which is conducted according to international best practice.

The introduction of the auction mechanism has created competitive conditions, attracted international RE investments, reduced the costs of RE generation, and partly reduced the financial burden upon end-user consumers. At the same time, further development of the RE sector

requires continued improvement of investment conditions and the resolution of issues related to integration of increased volume of RE into the UES RK.

In this regard, the Government of Kazakhstan is working to further reform regulations concerning RE investments including provisions to ensure the financial stability of the FSC, PPA terms and conditions, integration of RE into the UES RK. Additionally, Kazakhstan is supporting national manufacturers of RE equipment and providing incentives and financial instruments to develop small-scale RE generation.

11. Annexes

Annex 1

Table 1. List of 2018 RE Auction Winners in Kazakhstan

No.	Auction date	Winning Company Name	Project capacity, MW	Auction price, KZT/kWh	Project type	Project size*
1	23.05.2018	KT Zinchenko&Co.	2	18	WPP	small
2		Vici LLP	7	18.01		
3		Ventum Energy LLP	4.95	18.99		
4		EastWindEnergy LLP	4.95	19.99		
5		Ivan Zenchenko LLP	2	22.53		
6	24.05.2018	ZHEL ELECTRIC LLP	50	17.49	WPP	large
7	29.05.2018	Zhangiz WPP LLP	5	21.5	WPP	small
8		Service WPP LLP	10	21.7		
9	05.06.2018	Alcor Energy LLP	4.95	22.65	WPP	small
10		Vostok Veter LLP	10	22.66		
11	31.05.2018	ZharykEnergo National Energy Company LLP	8.6	12.8	HPP	small
12		Bekzat LLP	7	13.13	HPP	
13		Tolkyn WPP LLP	2	13.68	HPP	
14		Hydroservice LLP	3	15.19	HPP	
15	04.06.2018	Kaz Green Energy LLP	5	32.15	Bio PP	small
16	06.06.2018	URBASOLAR SAS	5	28	SPP	small
17		TechnoBazalt LLP	3	28.99		

18		Hydroenergy Company JSC	10	29		
19	07.06.2018	MISTRAL ENERGY LLP	50	25.8	SPP	large
20	05.10.2018	Zhel Electric LLP	100	17.39	WPP	large
21		Energo Trust LLP	50	19.5		
22		Shokpar Wind Power Plant LLP	50	19.98		
23		Ivesto LLP	50	20.5	WPP	large
24	10.10.2018	KazHydroOperating LLP	13.88	14.85	HPP	large
25		Karatal HPP Cascade LLP	21.6	14.9		
26		Korinsk HPP-2 LLP	26	15.48		
27	16.10.2018	ZHEL ELECTRIC LLP	50	20.9	WPP	large
28		Shokpar Wind Power Plant LLP	100	22.58		
29	17.10.2018	Dala Solar LLP	2	18	SPP	small
30		Hydroenergy Company JSC	10	19.58		
31		DSTO Solar LLP	10	19.6		
32		KK-KIUSEN LLP	10	19.63		
33	18.10.2018	Hydroenergy Company JSC	50	18.6	SPP	large
34		Avelar Solar Technology LLC	20	18.8		
35		Avelar Solar Technology LLC	50	22.5		
36		Shell Kazakhstan B.V. Branch	50	22.9		
	TOTAL:		**857.93**			

**Small project - from 0.1 to 10 MW inclusive, large project - over 10 MW*

Annex 2

Table 2. List of 21019 RE Auction Winners in Kazakhstan

No.	Auction date	Winning Company Name	Project capacity, MW	Auction price, KZT/kWh	Project type	Project size*
1	16.09.2019	Shet-Merke-Energo LLP	2.5	15.43	HPP	small
2		Zhetisu Zher ABC LLP	4.5	15.48		
3	18.09.2019	Waste Energy Kazakhstan LLP	4	32.13	Bio PP	small
4		ZOR-Biogas LLP	2.4	32.14		
5		GorComTrans of Karaganda City LLP	4	32.15		
6	19.09.2019	Arkalyk Wind Power Plant LLP	10	21.5	WPP	small
7		First Wind Power Plant LLP	4.99	21.61		
8		Arkalyk Wind Power Plant LLP	7	21.69		
9	23.09.2019	Arm Wind LLP	48	19.27	WPP	large
10		Sophiyevsk Wind Power Plant LLP	39	19.33		
11	24.09.2019	Solar System LLP	10.5	9.9	SPP	large
12		KazSolar 50 LLP	26	16.97		
13	27.11.2019	Arm Wind LLP	50	12.49	SPP	large
	TOTAL:		212.89			

** Small project - from 0.1 to 10 MW inclusive, large project -over 10 MW*

Annex 3

Table 3. List of 2020 RE Auction Winners in Kazakhstan

No.	Auction date	Winning Company Name	Project capacity, MW	Auction price, KZT/kWh	Project type	Project size*
1.	09.11.2020	UBS POWER LLP (Kazakhstan)	1	13.48	HPP	small*
2.		Lasyl qýat LLP (Kazakhstan)	2	13.48		
3.		TAUENERGO LLP (Kazakhstan)	2	14.98		
4.		Altyn Esik Management Company LLP (Kazakhstan)	3	14.99		
5.		Koksu-Kuat LLP (Kazakhstan)	4.5	15		
6.		TAUENERGO LLP (Kazakhstan)	2	15.01		
7.		Production Cooperative SEC Yntymak (Kazakhstan)	1.5	15.02		
8.		DALA SOLAR LLP (Kazakhstan)	2	15.03		
9.		MT & K LLP (Kazakhstan)	5	15.2		
10.	10.11.2020	UBS QZ LLP (Kazakhstan)	10	14.99	SPP	small
11.		UBS Solar LLP	10	15.62		
12.	11.11.2020	Greencity KZ, LLP	10	21.09	WPP	small
13.		Арест, LLP	4.95	21.53		
14.	23.11.2020	n/a			BioPP	
15.	24.11.2020	Eco Watt AKA, LLP (Kazakhstan)	50	15.9	WPP	large
16.	25.11.2020	n/a			HPP	
17.	08.12.2020	Hevel Kazakhstan (Russia)	20	14.58	SPP	large
18.	09.12.2020	Hevel Kazakhstan (Russia)	20	16.96	SPP	large
	TOTAL:		147.95			

** Small project - from 0.1 to 10 MW inclusive, large project -over 10 MW*

Annex 4

Table 4. List of 2021 RE Auction Winners in Kazakhstan

No.	Auction date	Winning Company Name	Project capacity, MW	Auction price, KZT/kWh	Project type	Project size*
1.	08.11.2021	Aksuhydro LLP	4.9	15	HPP	small
2.		Altyn-Hydro LLP	2	15.01		
3.		Altyn-Hydro LLP	3.5	15.05		
4.		Europe Solar LLP	1.4	15.19		
5.	09.11.2021	"Burabai biogas & Fertilizers Factory" LLP	4.95	32.15	BioPP	small
6.		"SAMP KAZAKHSTAN" LLP	0.2	32.14		
7.	10.11.2021	"Hyperborea"LLP	50	14.08	WPP	large
8.	11.11.2021	«NextEcoEnergy» LLP	20	12.87	SPP	large
	TOTAL:		**86.95**			

** Small project - from 0.1 to 10 MW inclusive, large project -over 10 MW*