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for 2018–2028



**ELECTRICITY AND COAL
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ELECTRICITY AND COAL MARKET OVERVIEW

**RELIABILITY
FOR ALL TIMES**

Power industry is regulated by government agencies.

The authorized body represented by the Ministry of Energy of the Republic of Kazakhstan manages power industry on the basis of the Republic of Kazakhstan Law No. 588 dated July 9, 2004 "On Power Industry".

The authorized body represented by the Ministry of Energy of the Republic of Kazakhstan manages renewable energy sources area on the basis of the Law of the Republic of Kazakhstan No. 165-IV dated July 4, 2009 "On Supporting the Use of Renewable Energy Sources".

The state body represented by the Committee for Regulation of Natural Monopolies, Protection of Competition and Consumer Rights of the Ministry of National Economy of the Republic of Kazakhstan implements the state policy in the areas of natural monopolies, including on regulated services for electricity transmission, heat production, transmission, distribution and supply in line with the Republic of Kazakhstan Law dated December 27, 2018 No. 204-VI "On Natural Monopolies".

The Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan is the state agency that manages coal industry in accordance with the Republic of Kazakhstan Code No. 125-VI dated December 27, 2017 "On subsurface and subsurface use".

ELECTRICITY BALANCE OF KAZAKHSTAN

The installed capacity of Kazakhstan's power plants in 2020 amounted to 23,547 MW, which is 611 MW more in comparison with the last year.

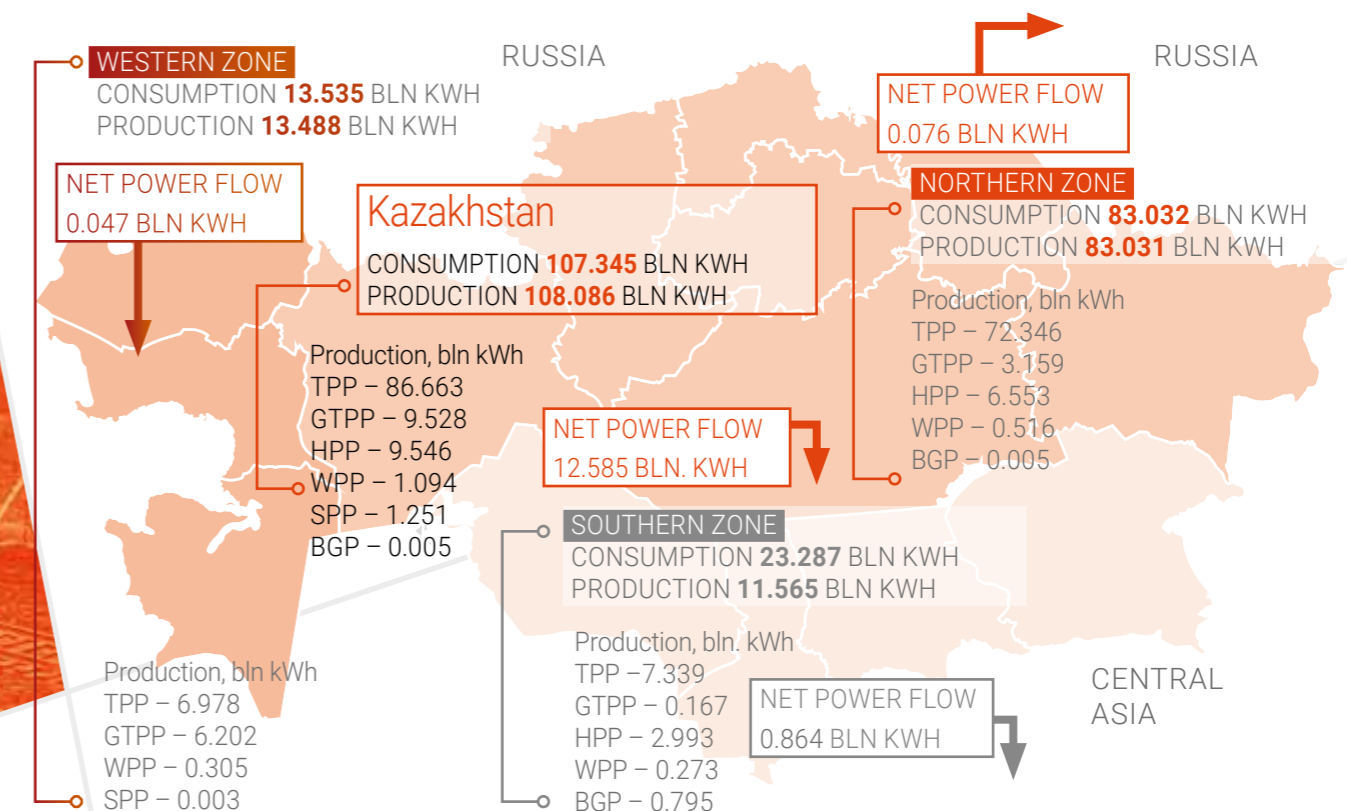
The available capacity of the RK power plants made 20,039.1 MW, which is 710 MW more than last year, incl. an increase in the Northern zone – 336.6 MW, the Western zone – 77.7 MW, the Southern zone – 296.4 MW.

Electricity was mainly produced at thermal power plants – 80.2%, the share of hydropower plants accounted for 8.8%, and the share of renewable energy sources was about 3%.

The northern zone produced 76.8% of electricity of the country's overall production. Main coal deposits and water and energy resources are located in the northern zone. Excess electricity is transferred to the southern zone experiencing power shortages and is exported to the Russian Federation.

The southern zone is characterized by a shortage of electricity covered owing to supplies from the northern zone, where the share of electricity generation was 10.7%.

The western zone – A significant share of electricity consumption is made by oil and gas companies with their own generating sources. There are no electrical connections of the West with the North and South of Kazakhstan through the territory of the country.





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According to the data from System Operator, Kazakhstan's power plants produced 108,086 mln kWh of electricity in 2020, which is 1.9% more than in the same period of 2019. Electricity production was available in all zones of Kazakhstan UES.

Electricity generation at Kazakhstan HPP and GTPP increased in comparison with the same period in 2019 by 707.6 mln kWh (0.8%) and 552.1 mln kWh (6.2%) respectively.

Electricity generation at HPP of Kazakhstan decreased by 439.1 mln kWh (4.4%). The operation mode of power plants was established according to water balance and hydrologic situation.

According to the System Operator, electricity consumption increased by 2% over time in 2020 in the republic

in comparison with the 2019 indicators. Thus, in the northern zone of the republic, consumption increased by 2%, in the southern zone by 3%, and in the western zone by 1%.

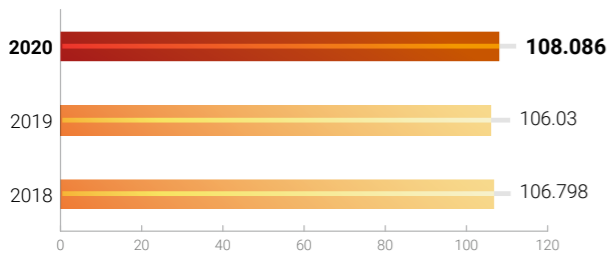
In 2020, in comparison with the same period in 2019, Pavlodar region shows the maximum increase in electricity consumption by 1,204.4 mln kWh (6%), Zhambyl region – by 475.6 mln kWh (11%), Karaganda region – by 470.3 mln kWh (3%), West Kazakhstan region – by 258.7 mln kWh (13%).

In the dynamics of electricity consumption, there was a 2% increase in comparison with the 2019 figures. So, in the northern zone of Kazakhstan, consumption increased by 2%, in the western zone by 1% and in the southern zone by 3%.

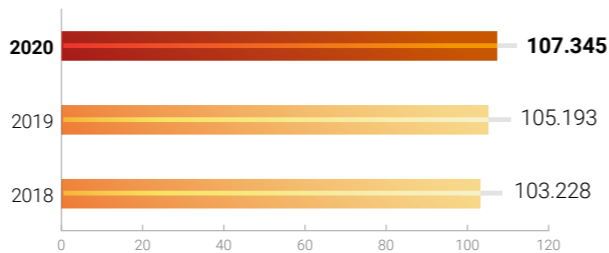
Electricity indicators across the Republic of Kazakhstan, mln kWh

No.	Indicators across the RK	2018	2019	Δ 2019/ 2018	2020	Δ 2020/ 2019
1.	Electricity consumption	103,228.3	105,193.1	2%	107,344.8	2%
2.	Electricity production, incl.:	106,797.1	106,029.8	0.9%	108,085.8	1.9%
	TPP	86,795.1	85,955	0.9%	86,662.6	0.8%
	GTPP	9,119.3	8,975.6	0.9%	9,527.7	6.2%
	HPP	10,343.0	9,984.9	0.9%	9,545.8	–4.4%
	WPP	400.5	701.9	75%	1,094.1	55.9%
	SPP	137.9	409.4	197%	1,250.7	205.5%
	Biogas plant	1.3	3	131%	4.9	63.3%
3.	Net power flow "+" shortage, "-" excess incl.:	–3,568.8	–836.7	23.4%	–741	88.5%
	Russia	–3,566	–3,057.8	–85.7%	123.1	–0.0004%
	Central Asia	–2.8	–962.4	–34,371%	–864.1	0.009%

POWER PRODUCTION BALANCE IN THE RK, bn kWh



POWER CONSUMPTION BALANCE IN THE RK, bn kWh



EXPORT AND IMPORT OF THE REPUBLIC OF KAZAKHSTAN ELECTRICITY

Russia has been the main export and import direction for the Republic of Kazakhstan electricity in January–December 2020 (exports to the RF – 1,105.9 mln kWh, imports from the RF – 1,240.6 mln kWh).

To “KEGOC” JSC – 1,065.6 bn kWh in order to balance electricity production and consumption.

During the reporting period 982.3 mln kWh electricity was imported from the RF in order to balance power production and consumption.

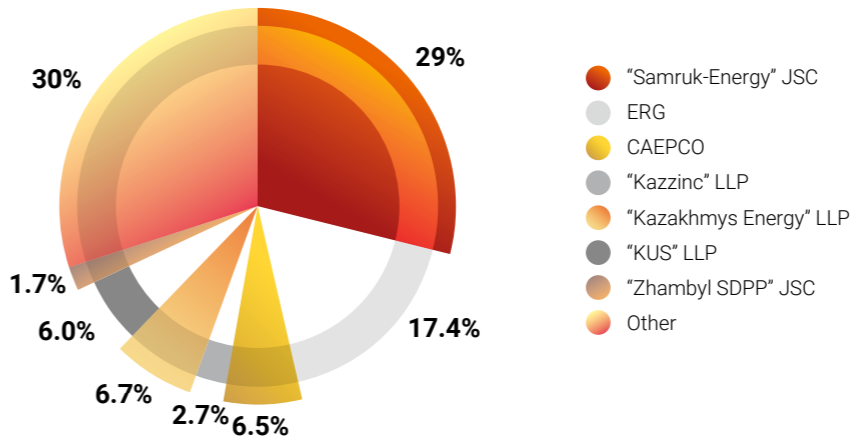
Export and import of the Republic of Kazakhstan electricity, mln kWh

Description	2018	2019	2020	Δ 2019/2018	
				mln kWh	%
Kazakhstan's export	4,882.4	2,189.5	–1,968.7	2,405.6	–55.0
to Russia	4,876.3	1,273.6	–1,105.9	3,262.2	–74.7
ESDPP-1	3,758.0	0.0	0.0	3,247.1	–100.0
“SevKazEnergo” JSC	68.7	58.0	–40.3	28.9	–41.8
“KEL” LLP	0.0	0.05	–1,065.6	–13.8	1.3
“KEGOC” JSC (balancing market)	1,049.6	1,215.6	–862.8	–856.6	14,016.3
to UES of Central Asia	6.1	962.4	–806.6	–806.6	
ESDPP-1	0.0	966.6	–3.7	2.5	–40.1
“KEGOC” JSC for “NPS of Kyrgyzstan” OJSC	6.1	3.7	–52.5	–52.5	
Kazakhstan's import	1,313.6	1,415.0	1,555.4	238.9	18.1
from Russia	1,310.2	1,407.1	1,240.6	–72.6	–5.5
“INTER RAO” PJSC	291.7	268.4	258.3	–31.5	–10.9
“INTER RAO” PJSC (purchase agreement) (balancing market)	1,018.6	1,138.6	982.3	–41.1	–4.0
From UES of Central Asia	3.3	7.9	314.8	311.5	9,331.5
“NPS of Kyrgyzstan” OJSC for “KEGOC” JSC»	3.3	7.9	302.6	299.3	8,966.1
power flow "+" shortage, "-" excess	–3,568.8	–836.7	–741	95.7	88.5

COMPETITIVE ENVIRONMENT IN ELECTRICITY MARKET

The volume of electricity production by “Samruk-Energy” JSC competitive energy-producing organizations in 2020 amounted to 75.8 bn kWh, which is 1.2 bn kWh less than in 2019 (52.9 bn kWh).

Shares of electricity production by “Samruk-Energy” JSC major competitors in the wholesale market in 2020, bn kWh





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Electricity production by Kazakhstan's major producers, mln kWh

No.	Description	2018	2019	2020	Deviation	Share in the RK, %
1	"Samruk-Energy" JSC	31,703	30,200.3	31,385.4	1,185.1	29
2	ERG	19,573.9	18,545.0	18,856.2	-176.1	17.4
3	CAEPCO	7,025.7	7,032.8	7,035.4	2.6	6.5
4	"Kazzinc" LLP	3,271.6	3,093.2	2,941.3	-151.9	2.7
5	"Kazakhmys Energy" LLP	6,437.0	7,443.6	7,267.5	-176.1	6.7
6	"KUS" LLP	6,376.8	6,645.4	6,445.7	-199.7	6.0
7	"Zhambyl SDPP" JSC	1,792.4	1,878.8	1,809.1	-69.7	1.7

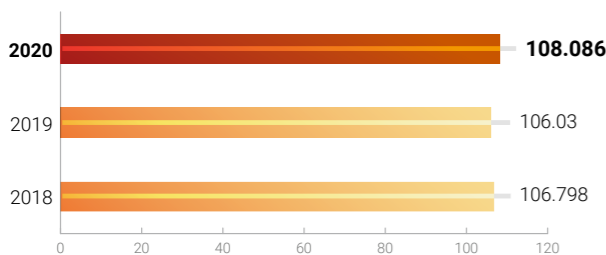
The volume of electricity production by "Samruk-Energy" JSC energy producing organizations in January–December 2020 amounted to 31,385.4 mln kWh or an increase by 3.9% compared to the same period in 2019.

However, this indicator of main competitors such as "Kazakhmys Energy" LLP was 6.7%, KUS – 6%, ERG – 17.4%.

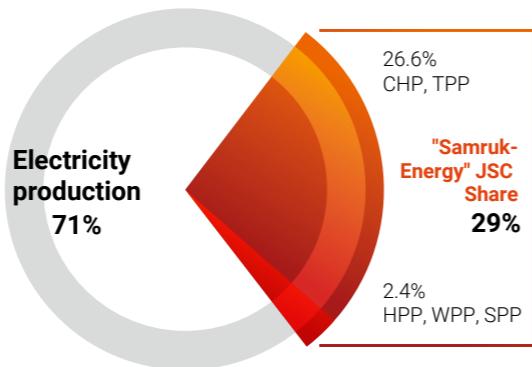
"SAMRUK-ENERGY" JSC IN ELECTRICITY PRODUCTION SECTOR

The volume of electricity production by energy-producing organizations of "Samruk-Energy" JSC in 2020 amounted to 31,385 bn kWh. The share of electricity generation by power plants of "Samruk-Energy" JSC amounted to 29% of the total electricity production in the Unified Energy System of Kazakhstan and in comparison with 2019 increased by 0.5%.

Electricity production over time by energy producing organizations of "Samruk-Energy" JSC, bn kWh



The Share of «Samruk-energy» JSC in the overall electricity production across the RK for 2020



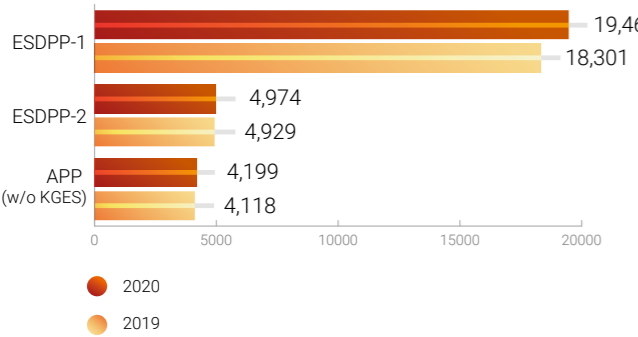
Operational KPI (broken down by producers)

Subsidiary and affiliate name	2018 (actual)	2019 (actual)	2020 (actual)	2020 deviation from 2019	2021 (forecast)	2022 (forecast)
Electricity production volume, mln kWh						
"Almaty Power Plants" JSC	5,599.1	5 397.4	5,335.1	99%	5,343.0	5,343.0
"Ekibastuz SDPP-1" LLP	19,121.6	18,301.5	19,466.4	106%	19,295.7	20,172.3
"Ekibastuz SDPP-2 Plant" JSC	5,436.5	4,928.5	4,974.2	101%	5,818.9	5,819.0
"Shardara HPP" JSC	348.7	464.8	513.5	110%	596.0	596.0
"Moynak HPP" JSC	1,036.1	951.5	929.5	98%	906.0	906.0
"Samruk-Green Energy" LLP	3.2	3.3	7.4	221%	20.8	20.7
"FWPP" LLP	157.9	153.3	159.4	104%	166.5	166.5
"Ereymtau Wind Power", LLP						215.0
"Energiya Semirechiya", LLP					61.0	243.8
Total	31,703.1	30,200.3	31,385.4	104%	32,207.7	33,482.3
Electricity sales volume, mln kWh						
"Almaty Power Plants" JSC	4,891.7	4,725.4	4,689.1	99%	4,777.6	4,767.9
"Ekibastuz SDPP-1" LLP	18,340.0	17 642.5	19 001.0	108%	18,332.2	19 173.8
incl. export	3,758.0	966.6	859.2	89%	1,500.0	500.0
"Ekibastuz SDPP-2 Plant" JSC	5,160.8	4,689.5	4,809.3	103%	5,660.3	5,684.5
"Shardara HPP" JSC	344.6	466.2	521.3	112%	607.8	607.8
"Moynak HPP" JSC	1,034.4	952.3	943.7	99%	929.8	924.3
"Samruk-Green Energy" LLP	3.1	3.2	7.2	222%	20.0	19.9
"FWPP" LLP	157.5	152.9	159.1	104%	166.1	166.1
"Ereymtau Wind Power", LLP						212.9
"Energiya Semirechiya", LLP					54.4	217.7
Total	29,932.2	28,632.1	30,130.6	105%	30,548.0	31,774.8
Capacity sales volume, MW						
"Almaty Power Plants" JSC		817.4	872.1	107%	850.0	850.0
"Ekibastuz SDPP-1" LLP		501.9	1,556.4	310%	1,827.0	2,187.3
"Ekibastuz SDPP-2 Plant" JSC		846.8	743.3	88%	625.0	635.0
"Shardara HPP" JSC		41.6	57.2	137%	61.0	61.0
"Moynak HPP" JSC		280.9	285.7	102%	298.0	298.0
Total		2,488.6	3,514.7	141%	3,661.0	4,031.3
Electricity transmission volumes, mln kWh						
"Alatau Zharyk Company" JSC	6,796.0	6,961.3	6,837.8	98%	6,880.0	6,887.0
Total	6,796.0	6,961.3	6,837.8	98%	6,880.0	6,887.0
Electricity sales volumes, mln kWh						
"AlmatyEnergoSbyt" LLP	5,904.3	6,218.2	6,055.5	97%	6,100.0	6,106.0
Total	5,904.3	6,218.2	6,055.5	97%	6,100.0	6,106.0
Heat production volumes, thous. Gcal						
"Almaty Power Plants" JSC	5,616.9	5,024.5	5,596.4	111%	5,198.5	5,198.5
"Ekibastuz SDPP-2 Plant" JSC	78.6	82.8	66.9	81%	76.0	76.0
"Ekibastuz SDPP-1" LLP	59.9	132.3	155.4	117%	307.3	307.3
Total	5,755.4	5,239.6	5,818.7	111%	5,581.8	5,581.8
Coal sales volumes, mln tons	45.2	44.7	43.4	97%	42.0	43.0

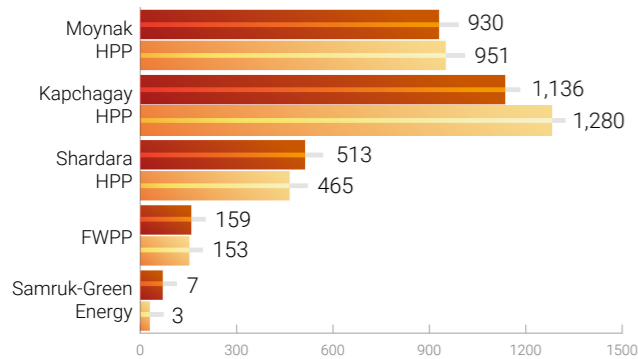
The volume of electricity production in 2020 amounted to 31,385.4 mln kWh (an increase of 1,185.1mln kWh or 4% compared with 2019).The main reason for the growth was the increase of production volumes by 1,164.9 mln kWh at “Ekibastuz SDPP-1” LLP.

The decrease in output of HPP by 116.6 mln kWh was driven by the decrease in water inflow at “Moynak HPP” JSC and “Kapshagay HPP” JSC, while the growth at “Shardarinsk HPP” JSC is driven by commissioning of hydraulic units No. 3.

Electricity production volumes at TPP, CHP, mln kWh



Electricity production volumes at HPP, WPP, SPP, mln kWh

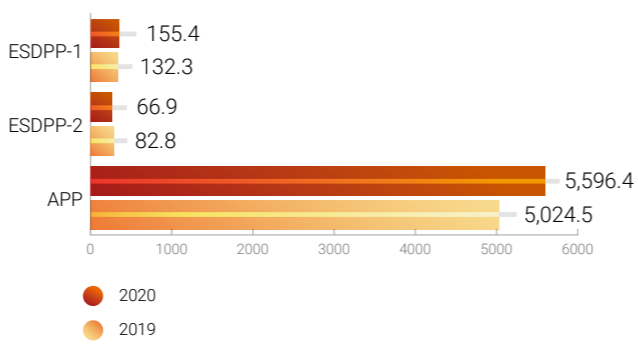


Forecast for the future period:

The volume of electricity production in the forecast for 2021 is projected with a gradual increase in relation to the actual figure of 2020. The increase in electricity production in 2022 by 1,274.6 mln kWh, mainly due to the growth in electricity production at “Ekibastuz SDPP-1” LLP.

Heat production volumes in 2020 amounted to 5,818.7 thous. Gcal; it increased as compared to the volume of 2019 (an increase of 579.1 thous. Gcal or 11%) mainly due to the growth in heat production by 572 thous. Gcal or 11% at “Almaty Power Plants” JSC.

Dynamics of changes in heat production volumes, thous. Gcal

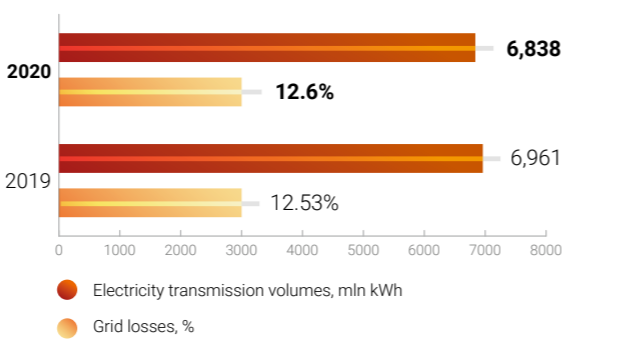


Forecast for the future period:

Heat production volumes in the plan for 2021 is expected to decrease by 4.1% against the actual figure of 2020 mainly due to the decline of heat production volumes at “Almaty Power Plants” JSC.

Electricity transmission volumes amounted to – 6,838 mln kWh, decreased as compared to 2019 volumes (a 124 mln kWh decrease). The decrease in the volume of electricity transmission at “Alatau Zharyk Company” JSC due to the decrease in consumption of Almaty region resulted from the emergency situation in the country because of COVID-19 pandemic.

Electricity transmission volumes and grid losses



Forecast for the future period:

The volume of transmission and distribution of electricity in 2021 is expected to increase by 1% compared with the actual figure of 2020.

The volume of electricity sales volume at power supply organizations for the reporting period amounted to 6,056 mln kWh, which is 163 mln kWh or 3% lower than actual figure of 2019. Decrease due to the termination of the work of enterprises of the city and region during the period of establishment of state of emergency in the Republic of Kazakhstan from March 2020.

Description	Actual 2019	Actual 2020	Deviation	%
“AlmatyEnergSbyt” LLP number of consumers, incl.:	844,234	869,680	25,546	103
Population	811,295	835,509	24,214	103
Corporate entities	32,939	34,171	1,332	104
Sales volume, mln kWh	6,218	6,056	–163	97

Forecast for the future period:

Electricity sales volume in the forecast for 2021 increases by 1% from the actual figure of 2020.

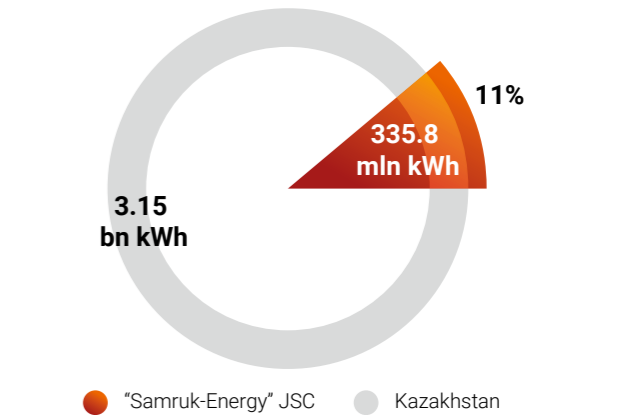
According to the Ministry of Energy of the Republic of Kazakhstan, the volume of electricity production by RES facilities in Kazakhstan in 2020 amounted to 3.15 bn kWh, or an increase of 76.2% compared to 2019.

At year-end 2020, 115 RE facilities operate in Kazakhstan.

In 2020 compared to 2019, large and small HPP show the decrease in production of electricity, while electricity production by wind power plants, solar power plants and biogas plants has increased.

In general, electricity production growth across the RK is connected with an increase in production by TPP and GTPP, as well as commissioning of new RE facilities. Electricity generation by “Samruk-Energy” JSC RES facilities (SPP, WPP, small HPP) in January-December 2020 amounted to 335.8 mln kWh or 10.8% of the total volume of electricity generated by RES facilities, which is 2% lower compared to the same period of 2019 (in January–December 2019, the generation of the Company’s RES amounted to 342.5 mln kWh, and the share of the Company’s RES was 17.8%).

The share of electricity production by “Samruk-Energy” JSC RE facilities in the RK



The share of the Company in the production of “clean” electricity (SPP, WPP, small and large hydropower plants) for January-December 2020 decreased by 21.7% (2,386.2 mln kWh) compared to the same period in 2019 (3,046.2 mln kWh).

No.	Description	2019		2020		Deviation 2020/2019	
		January-December	Share in the RK, %	January-December	Share in the RK, %	mln kWh	%
1	“Samruk-Energy” JSC production of “clean electricity” (RES + Major HPP)	3,046.2	32.0	2,386.2	27.1	–660.0	–21.7
2	“Samruk-Energy” JSC production of “clean electricity” (RES without major HPP), incl.:	342,5	17.8	335.8	10.8	–6.7	–2.0
	“APP” JSC Cascade of small HPP	190.9	9.9	165.6	5.3	–25.3	–13.3
	“Samruk-Green Energy” LLP 2 MW SPP	3.2	0.2	3.8	0.1	0.6	18.8
	“Samruk-Green Energy” LLP 5 MW Shelek WPP		0.0	3.5	0.3	3.5	
	“First Wind Power Plant” LLP 45 MW WPP	148.4	7.7	162.9	5.2	14.5	9.8

The decrease in electricity generation by “Samruk-Energy” JSC RES is connected with an increase in electricity production by other renewable energy facilities because of commissioning of new renewable energy facilities in Kazakhstan.

“SAMRUK-ENERGY” JSC PARTICIPATION IN THE CAPACITY MARKET

“Samruk-Energy” JSC power plants took part in the simulated trades of electric capacity held on the trading platform of “Kazakhstan Electricity and Power Market Operator” JSC (KEPMO) during 2020.

According to the results of centralized auction of capacity, which took place on November 18, 2020, the power plants of the Company sold 3,128.9 MW at a price of 590 thous. tenge / MW * month, incl.

- “ESDPP-1” LLP 1,653.91 MW
- “ESDPP-2 Plant” JSC 625 MW
- “APP” JSC 850 MW

According to the RK Law “On making changes and additions to certain legislative instruments of the RK regarding special economic and industrial zones, attracting investments, export development and promotion, as well as social security”, “Moynak HPP” JSC and “APP” JSC received individual tariffs for capacity.

The capacity volume was 61 MW for “Shardarinsk HPP” JSC and 298 MW for “Moynak HPP” JSC. Individual tariffs for capacity will ensure the return of borrowed funds used for the already constructed power plant (“MHPP” JSC), as well as refinancing of earlier received target loan for investment programs (“APP” JSC).

COAL MARKET

According to the BP Statistical Review of World Energy, as of 2020, Kazakhstan ranks eighth in the world in terms of proven coal reserves – 25.6 bn tons or 2.4% of the world total. According to the Statistics Committee of the RK MNE, the country’s coal production amounted to 109.2 mln tons of coal in 2020 (excluding coal concentrate) or 98% against the same indicator in 2019 (111 mln tons of coal).

Power generating coal market in Kazakhstan is relatively fragmented – the major players are “Bogatyr Komir” LLP (“Samruk-Energy” JSC and “RUSAL” UC), “EEC” JSC (ERG), “Shubarkol Komir” JSC (ERG), “Kazakhmys Corporation” LLP, “Karazhyra” JSC, “Angrensor Energy” LLP.

No.	Region	2017	2018	2019	2020	Δ, %
1	Pavlodar	62,467.9	70,325.2	68,364.9	67,049.9	98
2	Karaganda	35,909	34,987.3	34,217.1	33,614.6	98
3	East-Kazakhstan	6,867	8,290	8,157.7	8,388.8	103
Total across RK		105,964.9	113,703.4	111,083.2	109,227.6	98%

General scheme of coal sales



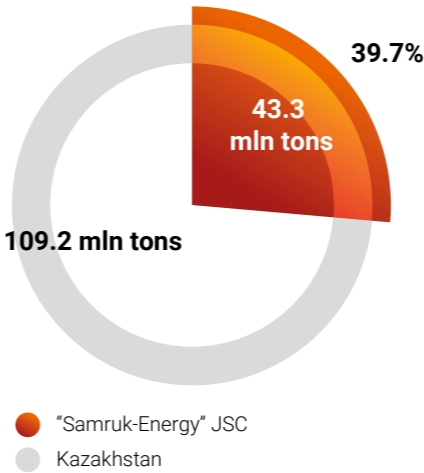
Power systems of Nur-Sultan, Almaty, Karaganda, Petropavlovsk, Pavlodar, Stepnogorsk cities and Ekibastuz SDPP-1, SDPP-2 are among the major consumers of “Bogatyr Komir” LLP in Kazakhstan.

To receive coal, the power plants of the Republic of Kazakhstan arrange the transportation of coal from Ekibastuz station (Bogatyr Komir, LLP) to the destination

station using their own resources; to this end they conclude contracts with various freight forwarding companies, which engage car owners (operators) to arrange transportation.

Following the results of transactions on the stock exchange, municipal coal is shipped in two ways: by railway and motor transport. Boiler houses in rural areas are the consumers; Ekibastuz coal is a fuel specified on their nameplates.

Coal mining



According to the 2020 results, the Company’s share amounted to 39.7% of the total coal mined in Kazakhstan and 64.6% of the volume of coal mined in the Ekibastuz coal basin.

In January–December 2020, “Bogatyr Komir” LLP produced 43,338 thous. tons of coal, which is 3.4% less than in corresponding period of 2019 (44,848 thous. tons).

43,436 thous. tons were sold in January–December 2020, including:

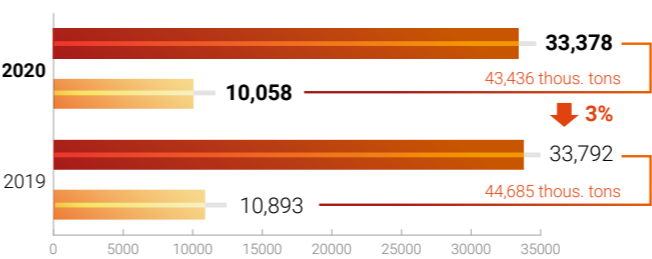
- 33,378 thous. tons to the domestic market of the RK, which is 1.2% less than in the corresponding period of 2019 (33,792 thous. tons);
- for export (RF) – 10,058 thous. tons, which is 7.7% less than for the corresponding period of 2019 (10,893 thous. tons).

Coal sales to consumers

No.	Company	Volume of sales, thous.tons			Δ, % 2020/2019
		2018	2019	2020	
1	“APP” JSC	3,299	3,338	3,291	101.4
2	“Karaganda Energocenter” LLP	3,521	3,417	3,500	97.45
3	“Astana –Energia” JSC	3,640	3,779	3,837	106.5
4	“Pavlodarenergo” JSC PCHP-2,3	3,289	3,004	2,494	70.7
5	“Stepnogorsk CHP” LLP	984	986	950	96.4
6	“ESDPP-1” LLP	11,559	10,937	11,553	105.6
7	“ESDPP-2 Plant” JSC	3,285	3,203	3,007	93.9
8	“Bassel Group LLS» LLP	605	622	539	86.6
9	“SevKazEnergo” JSC	2,672	2,949	2,773	94.0
10	“Ekibastuzteploenergo” LLP	513	499	481	96.4
11	MUS based on the REM “Kokshetau Zhylu”	323	281	316	112.3
12	Household	1,519	775	637	82.2
Total for the domestic market of the RK		35,572	33,378	98.8	
13	Reftinsk GRES	9,564	10,893	10,058	92.3
Total for export to the RF		9,587	10,058	92.3	

According to the 2020 figures, compared to the same period in 2019, coal sales decreases by 2.8%.

BOGATYR KOMIR coal sales, thous. tons



Forecast for the future period:

Coal sales volume in the forecast for 2021 will decrease by 1,436 thous. tons or by 3% as compared to the actual figure of 2020 in connection with the implementation of the project for construction of cyclical-and-continuous method facilities at the Bogatyr open-pit mine. In the forecast for 2022, coal sales will increase by 2% or by 1,000 thous. tons against 2021.