****

**MARKET ANALYSIS OF THE POWER INDUSTRY OF KAZAKHSTAN**

**JANUARY-DECEMBER 2022**

***Prepared by*** *: Market Development and Sales Department*

***Contact******data*** *: 8 (7172) 55-30-19*

**January 202 3 years**

Table of contents

[**1.**](#_Toc125389547)  [**Production of electricity in the UES of Kazakhstan**](#_Toc125389547)  [3](#_Toc125389547)

[*1.1 Electricity generation by regions of the Republic of Kazakhstan*](#_Toc125389548)  [3](#_Toc125389548)

[*1.2 Electricity generation by energy producing organizations*](#_Toc125389549)  [4](#_Toc125389549)

[*Samruk-Energy JSC*](#_Toc125389550)  [4](#_Toc125389550)

[*1.3 Shares of energy holdings and large energy producing organizations*](#_Toc125389551)  [5](#_Toc125389551)

[*2.1 Electricity consumption by zones and regions*](#_Toc125389552)  [7](#_Toc125389552)

[*2.2 Electricity consumption by consumers of energy holdings and large energy producing organizations*](#_Toc125389553)  [7](#_Toc125389553)

[*2.3 Electricity consumption by large consumers in Kazakhstan*](#_Toc125389554)  [8](#_Toc125389554)

[*2.4*](#_Toc125389555)  [*Export-import of electrical energy*](#_Toc125389555)  [9](#_Toc125389555)

[**3.**](#_Toc125389556)  [**Coal**](#_Toc125389556)  [10](#_Toc125389556)

[**4.**](#_Toc125389557)  [**Renewable energy sources**](#_Toc125389557)  [11](#_Toc125389557)

[*4.1*](#_Toc125389558)  [*RES indicators in Kazakhstan*](#_Toc125389558)  [11](#_Toc125389558)

[*5.1*](#_Toc125389559)  [*RES indicators in Kazakhstan*](#_Toc125389559)  [11](#_Toc125389559)

[*4.2*](#_Toc125389560)  [*The role of Samruk-Energy JSC in the production of clean electricity*](#_Toc125389560)  [12](#_Toc125389560)

[**5.**](#_Toc125389561)  [**International relations**](#_Toc125389561)  [13](#_Toc125389561)

[*5.1*](#_Toc125389562)  [*Status of formation of the Common Electricity Market of the Eurasian Economic Union*](#_Toc125389562)  [13](#_Toc125389562)

[*5.2 Overview of the media in the CIS countries*](#_Toc125389563)  [15](#_Toc125389563)

# **Electricity generation in the UES of Kazakhstan**

According to the System Operator, power plants of the Republic of Kazakhstan in January-December in 2022, 112,865.9 million kWh of electricity were generated, which is 1,582.0 million kWh or 1.4% less than the same period in 2021. A decrease in generation was observed in the Northern zone of the UES of Kazakhstan.

*million kWh*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.**  | **Zone** | **Generation type** | **January- December** | **Δ, million kWh** | **Δ, %** |
| **2021** | **2022** |
|  | **Kazakhstan** | **Total** | **114,447.9** | **112,865.9** | ***-1,582.0*** | ***-1.4%*** |
| *TPP* | 91 164.2 | 88,623.4 | *-2,540.8* | *-2.8%* |
| *GTES* | 10,701.8 | 10,940.5 | *238.7* | *2.2%* |
| *hydroelectric power station* | 9,184.9 | 9,185.1 | *0.2* | *0.0%* |
| *WES* | 1 758 | 2361.8 | *603.8* | *34.3%* |
| *SES* | 1636.5 | 1,754.7 | *118.2* | *7.2%* |
| *BSU* | 2.5 | 0.4 | *-2.1* | *-84.0%* |
| 1 | **Northern** | **Total** | **87,783.9** | **83,907.1** | ***-3,876.8*** | ***-4.4%*** |
| *TPP* | 76,954.6 | 73,122.3 | *-3,832.3* | *-5.0%* |
| *GTES* | 2949.9 | 2,892.2 | *-57.7* | *-2.0%* |
| *hydroelectric power station* | 6515.6 | 6,082.1 | *-433.5* | *-6.7%* |
| *WES* | 841.3 | 1255.3 | *414.0* | *49.2%* |
| *SES* | 520 | 554.8 | *34.8* | *6.7%* |
| *BSU* | 2.5 | 0.4 | *-2.1* | *-84.0%* |
| 2 | **South** | **Total** | **12 175** | **14441.5** | ***2266.5*** | ***18.6%*** |
| *TPP* | 7517.3 | 9,038.7 | *1521.4* | *20.2%* |
| *GTES* | 2669.3 | 3,103.0 | *433.7* | *16.2%* |
| *hydroelectric power station* | 269.7 | 297.6 | *27.9* | *10.3%* |
| *WES* | 605.3 | 805.5 | *200.2* | *33.1%* |
| *SES* | 1,113.4 | 1,196.7 | *83.3* | *7.5%* |
| 3 | **Western** | **Total** | **14 489** | **14,517.3** | ***28.3*** | ***0.2%*** |
| *TPP* | 6,692.3 | 6462.4 | *-229.9* | *-3.4%* |
| *GTES* | 7482.2 | 7,750.7 | *268.5* | *3.6%* |
| *WES* | 311.4 | 301.0 | *-10.4* | *-3.3%* |
| *SES* | 3.1 | 3.2 | *0.1* | *3.2%* |

# *1.1 Electricity generation by regions of the Republic of Kazakhstan*

In January-December 2022, compared to the same period in 2021, electricity generation increased significantly in Atyrau, Zhambyl, Kostanay, Kyzylorda and Turkestan regions. A sharp increase in electricity production in the Zhambyl region by 1,658.1 million kWh . or 54.8% due to the inclusion of an additional two blocks at the Zhambyl GRES in order to cover the shortage of electricity in the Southern zone.

At the same time, a decrease in electricity generation was observed in Akmola, Aktobe, Almaty, East Kazakhstan, West Kazakhstan , Karaganda, Mangistau, Pavlodar and North Kazakhstan regions.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.**  | **Region** | **January- November** | **Δ, million kWh** | **Δ, %** |
| **2021** | **2022** |
| *1* | Akmola | 5413.7 | 5357.3 | *-56.4* | *-1.0%* |
| *2* | Aktobe | 3,747.9 | 3680.7 | *-67.2* | *-1.8%* |
| *3* | Almaty | 6,827.5 | 6 651 | *-176.5* | *-2.6%* |
| *4* | Atyrau | 7,041.4 | 7201.4 | *160.0* | *2.3%* |
| *5* | East Kazakhstan | 9255.9 | 8 120.5 | *-1,135.4* | *-12.3%* |
| *6* | Zhambyl | 3,028.4 | 4,686.5 | *1658.1* | *54.8%* |
| *7* | West Kazakhstan | 2411.8 | 2317.9 | *-93.9* | *-3.9%* |
| *8* | Karaganda | 15,746.0 | 9351.7 | *-6,394.3* | *-40.6%* |
| *9* | Kostanay | 995 | 1,066.9 | *71.9* | *7.2%* |
| *10* | Kyzylorda | 623.6 | 635.5 | *11.9* | *1.9%* |
| *11* | Mangistau | 5,035.8 | 4 998 | *-37.8* | *-0.8%* |
| *12* | Pavlodar | 49,915.5 | 49 087 | *-828.5* | *-1.7%* |
| *13* | North Kazakhstan | 2,709.1 | 1610.5 | *-1,098.6* | *-40.6%* |
| 14 | Turkestan | 1695.5 | 1,832.4 | *136.9* | *8.1%* |
| *15* | Abai |  | 762.5 | *762.5* |  |
| *16* | Zhetysuskaya |  | 636.1 | *636.1* |  |
| 17 | Ulytauskaya |  | 4,869.9 | *4,869.9* |  |
|  | **Total for Kazakhstan** | **114,447.1** | **112,865.8** | ***-1,581.3*** | ***-1.4%*** |

# *1.2 Electricity generation by energy producing organizations* *of "Samruk-Energy" JSC*

The volume of electricity production by energy producing organizations of Samruk-Energy JSC for January- December 2022 amounted to 35,884.4million kWh . The increase in electricity generation compared to the same period in 2021 amounted to 275.1 million kWh or 0.8 %.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.**  | **Name** | **2021** | **2022** | **Δ 2022/2021** |
| **January -December** | **share in Kazakhstan, %** | **January -December** | **share in Kazakhstan, %** | **million kWh** | **%** |
|  | **"Samruk-Energy" JSC** | **35609.3** | **34.4%** | **35,884.4** | **31.8%** | **275.1** | **0.8%** |
| *1* | *AlES JSC* | *5008.4* | *4.8%* | *5098.9* | *4.5%* | *90.5* | *1.8%* |
| *2* | *"Ekibastuz GRES-1" LLP* | *22788.4* | *22.0%* | *23048.0* | *20.4%* | *259.6* | *1.1%* |
| *3* | *"Ekibastuz GRES-2" JSC* | *6433.4* | *6.2%* | *6002.5* | *5.3%* | *-430.9* | *-6.7%* |
| *4* | *"Shardara HPP" JSC* | *455.8* | *0.4%* | *518.3* | *0.5%* | *62.5* | *13.7%* |
| *5* | *"Moinak HPP" JSC* | *758.3* | *0.7%* | *972.8* | *0.9%* | *214.5* | *28.3%* |
| *6* | *Samruk-Green Energy LLP* | *20.4* | *0.0%* | *19.9* | *0.0%* | *-0.50* | *-2.5%* |
| *7* | *WPP Shelek Energy Semirechye LLP* |  |  | *88.3* | *0.1%* |  |  |
| *8* | *First wind power plant LLP* | *144.6* | *0.1%* | *135.7* | *0.1%* | *-8.9* | *-6.2%* |

# *1.3 Shares of energy holdings and large energy producing organizations*

*in power generation in Kazakhstan*

Samruk-Energy JSC in the electricity market of Kazakhstan remains the leader and amounts to 31.7%.

**Others**

**Kazakhstan**

**112 865,9 mln.kWh**

1. **Electricity consumption in the UES of Kazakhstan**

The industrial production index (hereinafter referred to as IPI) in January-December 2022 compared to 2021, amounted to 101.1%. An increase in production volumes was recorded in 13 regions of the republic, a decrease is observed in Atyrau, West Kazakhstan, Karaganda, Kostanay, Kyzylorda, Pavlodar and Turkestan regions.

**Change in industrial production indices**

*in % to the corresponding period of the previous year, increase +, decrease -*

In the Akmola region, due to the increase in the extraction of gold-bearing ores and concentrates, the production of gold in dore alloy, IPI amounted to 113.4%.

In the Zhambyl region, due to the growth in the production of sugar, sausages, diesel fuel, gold in doré alloy, IPI amounted to 110.2%.

In the Abay region, the IPI amounted to 109.7% due to the growth in the extraction of copper and gold ores, the production of copper concentrates.

In the city of Almaty, due to the growth in the production of chocolate, soft drinks, cars, the IPI amounted to 109.6%.

In the Almaty region, the IPI amounted to 108.9% due to an increase in the production of beer, soft drinks and cigarettes.

In the city of Shymkent, due to the increase in the production of gasoline, kerosene, diesel fuel, heating oil, medicines, the IPI amounted to 105.9%.

In the North-Kazakhstan region, due to the growth in the extraction of gold-bearing ores, the production of flour, ready-made animal feed, drinking alcohol, combines, IPI amounted to 104%.

In the Ulytau region, the IPI amounted to 102.7% due to the growth in the extraction of non-agglomerated iron and lead-zinc ores, the production of blister and refined copper, and copper wire.

In the Mangistau region, the IPI amounted to 101.9% due to an increase in the production of pumps for pumping liquids, oilfield equipment.

In the city of Astana, the IPI amounted to 101.8% due to the growth in the production of prefabricated structural elements for construction, refined gold.

In the East Kazakhstan region, the IPI amounted to 101.7% due to the growth in the production of refined gold and refined copper.

In the Aktobe region, the IPI amounted to 101.5% due to an increase in the extraction of copper ores and the production of drinking alcohol.

In the Zhetisu region, the IPI amounted to 101.3% due to an increase in the production of sugar and cement.

In the Pavlodar region, the IPI amounted to 99.5% due to a decrease in the production of copper concentrates, the production of raw aluminum, ferrochrome, and electricity.

In the Karaganda region, the growth of IPI amounted to 99.3% due to a decrease in the extraction of coal, gold ores and concentrates, and the production of galvanized rolled products.

In West Kazakhstan IPI was 99% due to a decrease in gas condensate production.

In the Kyzylorda region, the IPI amounted to 98.2% due to a reduction in the production of crude oil, the production of hydrocarbon liquefied gases.

In the Atyrau region, the IPI was 97.9% due to a reduction in crude oil production.

In the Kostanay region, the IPI amounted to 94.5% due to a decrease in the production of non-agglomerated iron ores, iron ore pellets and concentrates.

In the Turkestan region, due to a decrease in the extraction of uranium and thorium ores, the IPI amounted to 93.7%.

#

# *2.1 Electricity consumption by zones and regions*

According to the System Operator, in January-December In 2022, there was a decrease in the dynamics of electricity consumption of the republic in comparison with the same indicators in 2021 by 945.7 million kWh or 0.8%. Thus, in the southern zone of the republic, consumption increased by 1.1%, respectively.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Name** | **January -December** | **Δ, million kWh** | **Δ, %** |
| **2021** | **2022** |
|  | **Kazakhstan** | 113 890.28 | 112 944.6 | *-945.7* | *-0.8* **%** |
| *1* | Northern zone | 73 853.89 | 72 624.5 | *-1 229.4* | *-1.7* % |
| *2* | Western zone | 14 548.24 | 14 539.7 | *-8.6* | *-0.1* % |
| *3* | Southern zone | 25 488.15 | 25 780.4 | *292.2* | *1.1* % |
|  | **incl.by regions** |  |  |  |  |
| *1* | East Kazakhstan | 9 636.8 | 9 045.5 | *-591.3* | *-6.1* % |
| *2* | Karaganda | 19 001.5 | 10 847.4 | *-8 154.2* | *-42.9* % |
| *3* | Akmola  | 10 304.9 | 10 685.5 | *380.5* | *3.7* % |
| *4* | North Kazakhstan | 1 729.5 | 1 611.0 | *-118.6* | *-6.9* % |
| *5* | Kostanay  | 4 809.7 | 4 586.4 | *-223.4* | *-4.6* % |
| *6* | Pavlodar | 21 482.3 | 19 400.5 | *-2 081.8* | *-9.7* % |
| *7* | Atyrau  | 6 673.3 | 6 689.4 | *16.1* | *0.2* % |
| *8* | Mangistau  | 5 267.3 | 5 300.6 | *33.2* | *0.6* % |
| *9* | Aktobe | 6 888.8 | 6 944.1 | *55.2* | *0.8* % |
| *10* | West Kazakhstan | 2 607.5 | 2 549.6 | *-57.9* | *-2.2* % |
| *11* | Almaty  | 12 452.8 | eleven 442.0 | *-1 010.8* | *-8.1* % |
| *12* | Turkestan | 5 759.9 | 6 009.3 | *249.3* | *4.3* % |
| *13* | Zhambyl  | 5 321.8 | 4 982.7 | *-339.2* | *-6.4* % |
| *14* | Kyzylorda  | 1 953.4 | 1 935.1 | *-18.4* | *-0.9* % |
| *15* | Ulytau |  | 8 237.4 | *-* | *-* |
| *16* | Abai |  | 1 266.8 | *-* | *-* |
| *17* | Zhetysusky |  | 1 411.4 | *-* | *-* |

# *2.2 Electricity consumption by consumers of energy holdings and large energy producing organizations*

In January-December 2022, there is a decrease in electricity consumption by consumers energy holdings and large energy-producing organizations.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.**  | **Name** | **January December** | **Δ, million kWh** | **Δ, %** |
| **2021** | **2022** |
|  | **Total** | **49 125.6** | **43,584.3** | **-4196.5** | **-11.3%** |
| *1.* | *ERG* | *15274.10* | *14,925.9* | -348.2 | -2.3% |
| *2.* | *Kazakhmys Corporation LLP* | *18.50* | *3,792.0* | 3,773.5 | 20397.1% |
| *3.* | *Kazzinc LLP*  | *2926.31* | *1,732.5* | -1,193.8 | -40.8% |
| *4.* | *Arcelor Mittal Temirtau JSC* | *3834.32* | *3343.4* | -490.9 | -12.8% |
| *5.* | *KKS LLP* | *12433.34* | *14,743.2* | 2309.9 | 18.6% |
| *6.* | *CAEPCO JSC* | *6460.20* | *6,865.2* | 405.0 | 6.3% |
| *7.* | *Zhambyl GRES* | *4722.79* | *5486.8* | 764.0 | 16.2% |
| *8.* | *Oil and gas enterprises* | *2110.89* | *2391.3* | 280.4 | 13.3% |

In January-December 2022, there is an increase in electricity consumption by Samruk-Energy JSC companies by 822 million kWh or by 5.8% compared to the same indicators for 2021.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  **No.**  | **Name** | **January December** | **Δ, million kWh** | **Δ, %** |
| **2021** | **2022** |
|  | **"Samruk-Energy" JSC** | **7385.04** | **8208.0** | **822.9** | **11.1%** |
| *1.* | *Bogatyr- Komir LLP* | *300.73* | *283.4* | *-17.4* | *-5.8%* |
| *2.* | *Alatau Zharyk Companies JSC* | *1012.00* | *1,070.8* | *58.8* | *5.8%* |
| *3.* | *AlmatyEnergoSbyt LLP* | *6072.30* | *6,853.8* | *781.5* | *12.9%* |

*2.3 Electricity consumption by large consumers in Kazakhstan*

In January-December 2022, compared to the same period in 2021, electricity consumption by large consumers decreased by 1,585.5 million kWh or 4.6%.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.**  | **Consumer** | **January December** | **Δ, million kWh** | **Δ, %** |
| **2021** | **2022** |
| *1* | Arcelor Mittal Temirtau JSC | *3,771.6* | *3,671.5* | *-100.1* | *-2.7* |
| *2* | AZF ( Aksuysky ) "TNK Kazchrome " JSC | *5,172.0* | *5,156.5* | *-15.4* | *-0.3* |
| *3* | Kazakhmys Smelting LLP | *1060.3* | *1,178.3* | *117.9* | *11.1* |
| *4* | Kazzinc LLP | *2,787.4* | *2662.3* | *-125.1* | *-4.5* |
| *5* | "Sokolovsko-Sarbayskoye GPO" JSC | *1624.2* | *1359.4* | *-264.8* | *-16.3* |
| *6* | Kazakhmys Corporation LLP | *1292.8* | *1339.3* | *46.5* | *3.6* |
| *7* | AZF (Aktobe) "TNK Kazchrome" JSC | *3272.2* | *3,285.7* | *13.5* | *0.4* |
| *8* | “Channel them. Satpaev" RSE | *393.5* | *379.2* | -14.2 | -3.6 |
| *9* | Kazphosphate LLP | *2,102.3* | *1923.6* | -178.8 | -8.5 |
| *10* | NDFZ(part of the structure of Kazphosphate LLP) JSC | *1,777.2* | *1629.8* | -147.5 | -8.3 |
| *11* | "Taraz Metallurgical Plant" LLP | *295.4* | *30.3* | -265.1 | -89.7 |
| *12* | "Ust-Kamenogorsk titanium -magnesium plant" JSC | *690.3* | *703.2* | 12.9 | 1.9 |
| *13* | Tengizchevroil LLP  | *1,837.0* | *1904.9* | 67.9 | 3.7 |
| *14* | PAS (Pavlodar Aluminum Smelter) JSC | *950.6* | *963.8* | 13.2 | 1.4 |
| *15* | "KEZ" (Kazakhstan electrolysis plant) JSC | *3,780.7* | *3,558.4* | -222.3 | -5.9 |
| *16* | "KEGOC" JSC | *5480.1* | *5219.5* | *-260.5* | *-4.8* |
| **Total** | ***34,510.4*** | ***32,924.9*** | ***-1,585.5*** | ***-4.6*** |

# *Export-import of electrical energy*

In order to balance the production and consumption of electricity in January-December 2022, exports to the Russian Federation amounted to 1,257.6 million kWh , imports from the Russian Federation 1,142.9 million kWh .

Including export from "KEGOC" JSC to the Russian Federation 1,214.8 million kWh import of electricity for the reporting period in the amount of 970.6 million kWh.

*million kWh*

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **January - December** | **Δ, million kWh** | **Δ, %** |
| **2021** | **2022** |
| **Export of Kazakhstan** | ***-2457.6*** | ***-1838.4*** | ***619.2*** | ***-25.2%*** |
| *in Russia* | *-1133.7* | *-1257.6* | *-123.8* | *10.9%* |
| *in the IPS of Central Asia* | *-1323.8* | *-580.8* | *743.1* | *-56.1%* |
| **Import of Kazakhstan** | ***1841.3*** | ***1450.4*** | ***-391.0*** | ***-21.2%*** |
| *From Russia* | *1536.1* | *1142.9* | *-393.2* | *-25.6%* |
| **Balance- flow "+" deficit, "-" excess** | ***-616.2*** | ***-388.0*** | ***228.3*** | ***-37.0%*** |

# **Coal**

According to the Bureau of National Statistics, Kazakhstan produced 113,931.4 thousand tons of hard coal in January-December 2022, which is 2% more than in the same period in 2021 (111,742.4 thousand tons).

*thousand tons*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.**  | **Region** | **January -December** | **Δ, thousand tons** | **Δ, %** |
| **2021** | **2022** |
| 1 | *Pavlodar* | *66,932.3* | *68,388.1* | *1455.8* | *2.2%* |
| 2 | *Karaganda* | *35,362.6* | *34 284* | *- 1078.6* | *-3.1%* |
| 3 | *East Kazakhstan* | *8,804.1* | *8,832.7* | *28.6* | *0.3%* |
|  | **Total for the Republic of Kazakhstan** | **111,742.4** | **113,931.4** | **2189** | **2%** |

In January-December 2022, Bogatyr Komir LLP produced 42,473.2 thousand tons, which is 4.8% less than in the corresponding period of 2021 (44,632 thousand tons).

The volume of coal sold in January- December 2022 amounted to 42,409.4 thousand tons, of which 32,324.9 thousand tons went to the domestic market of the Republic of Kazakhstan, which is 7.5 % less than in the same period in 2021 ( 34,938, 6 thousand tons) and for export (RF) - 10,084.5 thousand tons, which is 2.9 % more than in the corresponding period of 2021 ( 9,802.2 thousand tons).

According to the indicators for January- December 2022, in comparison with similar indicators in 2021, Bogatyr Komir LLP observed a decrease in coal sales by 2,331.5 thousand tons, or by 5.2%.

*thousand tons*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.**  | **Region** | **January- December** | **Δ,** **thousand tons** | **Δ, %****2022/2021** |
| **2021** | **2022** |
| **Total to the domestic market of the Republic of Kazakhstan** | **34 938.6** | **32 324.9** | **-2,613.7** | **-7.5 % \_** |
| **Total for export to Russia** | **9,802.2** | **10,084.5** | **282.3** | **2.9%** |
| **TOTAL** | **44,740.8** | **42409.4 \_** | **2331.5** | **-5.2%** |

#

# **Renewable energy sources**

# *RES indicators in Kazakhstan*

Since the adoption by Kazakhstan of the vector for the transition to a "green economy", the electric power industry has gone through a serious path of reform.

The state has created the necessary measures to support the development of the renewable energy sources (hereinafter referred to as RES) sector in order to achieve the established target indicators.

- 3% share of RES in total electricity generation by 2020 (achieved);

- 15% share of RES in total electricity generation by 2030;

- 50% share of alternative and RES in total electricity generation by 2050.

Given the large resource potential of RES in Kazakhstan, as well as due to the created conditions for supporting the development of RES, over the past 7 years, the installed capacity of RES facilities has increased by almost 11 times.

The Energy Balance of the Republic of Kazakhstan until 2035, prepared by the System Operator, outlines 2 scenarios for the development of the share of clean electricity (with and without nuclear power plants).

Energy balance of the Republic of Kazakhstan until 2035.



# *RES indicators in Kazakhstan*

According to Ministry of Energy of the Republic of Kazakhstan, as of December 2022 , there are 148 renewable energy facilities operating in Kazakhstan with a total capacity of more than 2,400 MW .

14 facilities have been put into operation :

- SES 4.95 MW by "AlmatyEnergoProject" LLP;

- SPP "Aisha" 50 MW by "AEC Asa" LLP;

- SPP "Makpal" 4.95 MW by "Engineering Arena" LLP;

- WPP Shelek 50MW by “Zheruyik Energy” LLP;

- WPP Shelek 60 MW "Energy Semirechye" LLP;

- VES 100 MW Abai-1 LLP;

- WES 250 MW Abai LLP;

- SPP Balkhash 50 MW by "KAZ GREEN ENERGY" (as part of PMC) LLP;

- Net consumer;

- SES Otrar by "Cascade NRG" LLP;

- SES Zhalagash by "Nomad Solar" LLP;

- WPP "Shengeldi-1, 2" LLP;

- VES Novoteks LLP.

According to the System Operator, the volume of electricity supply in the EU of the Republic of Kazakhstan by renewable energy facilities (SPP, WPP, BGS, small HPPs) of the Republic of Kazakhstan for January- December 2022 amounted to 4,642.7 million kWh. Compared to January-November
2021 (4163.6 million kWh ), the increase was 854.2 million kWh or 20.5 %. An increase in electricity generation is observed at wind farms, solar power plants and small hydropower plants compared to the same period in 2021, while biogas generation decreased compared to last year.

million kWh

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.**  | **Name** | **2021** | **2022** | **Δ, million kWh** | **Δ, %** |
| **January December \_** | **share in Kazakhstan, %** | **January December** | **share in Kazakhstan, %** |
| **1** | **Production in the Republic of Kazakhstan** | **114447.9** | **100%** | **112865.9** | **100%** | **-1582.0** | **-1.4%** |
| **2** | **RES generation in Kazakhstan** | **4163.6** | **3.6%** | **5017.8** | **4.4%** | **854.2** | **20.5%** |
| **3** | **RES generation, incl . by zones** | ***share in the respective zone*** |
|  | *Northern zone* | *1514.2* | *1.7%* | *1985.8* | *2.4%* | *471.6* | *31.1%* |
|  | *Southern zone* | *2334.9* | *19.2%* | *2727.7* | *18.9%* | *392.8* | *16.8%* |
|  | *Western zone* | *314.5* | *2.2%* | *304.2* | *2.1%* | *-10.3* | *-3.3%* |
| **4** | **RES generation, incl . by zones** | ***share in RES of the Republic of Kazakhstan, %*** |
|  | *Northern zone* | *1514.2* | *36.4%* | *1985.8* | *39.6%* | *471.6* | *31.1%* |
|  | *Southern zone* | *2334.9* | *56.1%* | *2727.7* | *54.4%* | *392.8* | *16.8%* |
|  | *Western zone* | *314.5* | *7.6%* | *304.2* | *6.1%* | *-10.3* | *-3.3%* |
| **5** | **RES generation, incl . by type** | ***share in RES of the Republic of Kazakhstan, %*** |
|  | *SES* | *1636.5* | *39.3%* | *1754.7* | *35.0%* | *118.2* | *7.2%* |
|  | *WES* | *1758.0* | *42.2%* | *2361.8* | *47.1%* | *603.8* | *34.3%* |
|  | *Small HPPs* | *766.6* | *18.4%* | *900.9* | *18.0%* | *134.3* | *17.5%* |
|  | *BSU* | *2.5* | *0.1%* | *0.4* | *0.0%* | *-2.1* | *-84.0%* |

# *Samruk-Energy JSC in the production of clean electricity*

Samruk-Energy JSC (SPP, WPP and small HPPs) in January-December 2022 amounted to 417.5 million kWh, which is 34.6% higher compared to the same period in 2021 (310.2 million kWh).

The share of RES electricity of Samruk-Energy JSC in January-December 2022 amounted to 8.3% of the volume of electricity generated by RES facilities in the Republic of Kazakhstan, while in 2021 this figure was 7.5%.

*million kWh*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.**  | **Name** | **2021** | **2022** | **Δ, million kWh** | **Δ, %** |
| **January December** | **share in Kazakhstan, %** | **January December** | **share in Kazakhstan, %** |
|  | **RES S-E, including:** | **325.3** | **7.8%** | **417.5** | **8.3%** | **92.2** | **28.3%** |
| 1 | *Cascade of small HPPs of AlES JSC 43.7 MW* | *160.3* | *3.9%* | *173.6* | *3.5%* | *13.3* | *8.3%* |
| 2 | *Samruk - Green LLP Energy » SPP 2MW + SPP 1MW + SPP 0.4MW* | *20.4* | *0.5%* | *5.3* | *0.1%* | *-15.1* | *-74.0%* |
| 3 | *Samruk - Green Energy LLP WPP Shelek 5 MW* | *0.0* |  | *14.6* | *0.3%* |  |  |
| 4 | *First Wind Power Plant LLP WPP 45 MW* | *144.6* | *3.5%* | *135.7* | *2.7%* | *-8.9* | *-6.2%* |
| 5 | *Energy Semirechye LLP WPP Shelek 60 MW* | *-* | *-* | *88.3* | *-* | *-* | *-* |

# **International Relations**

# *Status of formation* *of the Common Electricity Market of the Eurasian Economic Union*

The common electricity market of the Eurasian Economic Union is planned to be formed by integrating the national electricity markets of Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia. The EAEU Member States are gradually forming a common electric power market of the Union on the basis of parallel operating electric power systems, taking into account the priority provision of electric energy to domestic consumers of the Member States.

At the same time, the balance of economic interests of producers and consumers of electric energy, as well as other subjects of the EAEU OER, will be observed.

On May 29, 2019, as part of the celebration of the fifth anniversary of the signing of the Treaty, the Supreme Council signed an international agreement on the formation of a common electric power market of the Union in the form of a Protocol on amendments to the Treaty on the Eurasian Economic Union dated May 29, 2014 (in terms of the formation of a common electric power market of the Eurasian Economic Union).

In addition, in accordance with paragraph 42 of the above international agreement, on December 20, 2019, the Supreme Council adopted Decision No. 31 “On the plan of measures aimed at the formation of a common electric power market of the Eurasian Economic Union”, which establishes, among other things, the terms for approval and entry into force of the rules for the functioning of a common electric power market of the Union, as well as other acts provided for by the said Protocol.

Reference :

*The Protocol defines the legal framework and principles for the formation, functioning and development of the OER, establishes the areas that will be regulated by the rules for the functioning of the OER, and also empowers the Intergovernmental Council and the Council of the Commission to approve acts regulating the OER.*

In 2022, two meetings of the Advisory Committee on the Electricity Industry under the EEC Board were held ( 17th meeting on January 19, 18th meeting on
August 24-25 , 19th meeting on October 10-12 ), 16 meetings of the Subcommittee on the formation of the Power Industry under the EEC Board (79th meeting January 13-14, 80th meeting January 26-27, 81st meeting February
11, 82nd meeting February 25, 83rd meeting March 17-18, 84th meeting March 31, 85th meeting April 8, 86th meeting April 15,
87th meeting April 26, 88th meeting May 17-18 , 89th meeting, 90th meeting
June 30, 91st meeting, 92nd meeting on July 22, 93rd meeting on July 29,
94th meeting on August 10), and also on March 4, 2022, Kazakhstani and Russian parties took part in a working meeting on the procedure for registering free bilateral contracts in mutual trade in electric energy on a common electricity market of the Eurasian Economic Union.

During the meetings discussed:

- timing of processes at the Union's OER;

- the possibility of setting prices (tariffs) for services for trade and non-trade interstate transmission of electric energy (capacity) for the planned year, the terms for publishing these prices (tariffs) and the terms for informing about adjusted prices (tariffs) during the year;

- reduction (zeroing) of hourly volumes of deliveries under fixed-term contracts in case of revealing the technical unfeasibility of electric energy balance flows through interstate sections (internal sections).

At the 17th meeting, the following issues were considered:

1. On the uncoordinated provisions of the draft rules for mutual trade in electric energy on the common electric power market of the Union (hereinafter referred to as the rules for mutual trade), including:

definition of the concept of "commercial accounting of electric energy";

exclusion (preservation) from the draft rules of mutual trade of the provision on the need for compensation by suppliers and buyers in the domestic wholesale electricity market in accordance with the legislation of the relevant Member State for deviations in the actual hourly volumes of production and consumption (supply) of the subjects of the internal wholesale electricity markets from the planned values determined in including taking into account transactions in the common electricity market of the Eurasian Economic Union (clause 8 of the draft rules for mutual trade);

procedure for registration of free bilateral agreements (proposal of the Russian Federation) (paragraphs 38, 40, 41 of the draft rules for mutual trade);

exclusion (preservation) from the draft rules of mutual trade of the provision on external balancing as one of the components of the magnitude of hourly deviations in the balance of electricity flows in the interstate section for each hour of the billing period (paragraphs 89, 90 of the draft rules of mutual trade);

the exclusion of paragraph 93, which contains the principle of equal prices for both the purchase and sale of electricity within the allowable range established in the agreements on parallel operation, if there is paragraph 94 of the draft rules for mutual trade (the proposal of the Russian side).

1. On the inconsistent provisions of the draft rules for access to services for the interstate transmission of electric energy (capacity) within the framework of the Eurasian Economic Union (hereinafter referred to as the access rules), including:

clarification of the condition “the person who applied for the conclusion of such an agreement has unfulfilled obligations to pay for the service of non-trade interstate transmission of electric energy (capacity)”, under which an organization authorized for non-trade interstate transmission has the right to refuse to conclude an non-trade interstate transmission agreement with the phrase “in with regard to volumes that do not cause disagreement between the parties under previously concluded agreements” (paragraph 17 of the draft access rules);

exclusion (preservation) from the draft access rules of the provision that the interstate transmission of electric energy (capacity) in the interests of electric power industry entities of third states (deliveries to third states and between third states, transfer from one part of a third state to another part of it) is regulated in accordance with paragraph 2 of the Protocol on the Common Electricity Market of the Union (paragraph 34 of the draft access rules).

Work on the formation of a common electricity market of the Eurasian Economic Union continues.

# *5.2 Overview of the media in the CIS countries*

*(according to information from the website of the CIS EES Executive Committee)*

**Kazakhstan**

**On the situation in the Unified Electricity System of Kazakhstan**

In December this year, there is a significant increase in energy consumption in the Unified Electricity System (UES) of Kazakhstan.

So, on December 07, 2022, the historical maximum consumption in the entire history of the Kazakhstani energy system was recorded - 16459 MW, while the total generation of the country's power plants was only 15203 MW. The deficit was covered by unscheduled flows from the Russian energy system.

Under such high loads, the National Electric Grid operated by KEGOC worked reliably, in the normal mode.

A systematic shortage of generation to cover the need for electricity and power arises due to frequent emergency and unscheduled repairs at power plants in the Republic of Kazakhstan.

In the context of significant imbalances, in order to ensure reliable operation of the UES of Kazakhstan, the System Operator is forced to declare the "Accident" mode in the North, South, and also in the Western zone of the Kazakhstan energy system, with the introduction of restrictions on the consumption of electric energy by large industrial enterprises.

At the same time, full satisfaction of the needs of the population in electricity for the System Operator is a priority.

**Electricity generation by renewable energy facilities in the Republic of Kazakhstan increased immediately by 21% over the year. The share of renewable energy facilities in the total generation volume reached 4.6%**

As of October 1 this year, the capacity of renewable energy sources (RES) facilities in Kazakhstan amounted to 2.3 thousand MW, which is immediately 21% more than a year earlier.

Most of the installed capacity came from solar power plants: 49.4% or 1.1 thousand MW, plus 11.3% per year.

Another 893.9 MW came from wind power plants, 280.2 MW from small hydropower plants, and 1.5 MW from bioelectric power plants .

Electricity generation by renewable energy facilities in January-September of this year amounted to 3.9 billion kWh - 21% more than a year earlier.

Wind power plants generated the largest volume: 1.6 billion kWh , plus 38.5% per year. In second place are solar power plants: 1.5 billion kWh , plus 7.9%.

Electricity generation by small hydropower plants increased by 17.6% over the year, to 789.8 million kWh , on the contrary, generation by bioelectric power plants decreased by 56.9%, to 1.1 million kWh .

The share of electricity generated by renewable energy facilities amounted to 4.6% of the total generation in the Republic of Kazakhstan, against 3.9% a year earlier.

Investments aimed at the "green economy" at the end of 2021 amounted to 103.8 billion tenge - 13.7% less in value terms than in 2020. In the regional context, the largest volume of investments fell on the Zhambyl region: 52.4 billion tenge - 8.3 times more than a year earlier. Aktobe (25.6 billion tenge , annual growth - 2.6 times) and Akmola (11.2 billion tenge , minus 81.5%) regions follow . In general, investments in the sector were recorded only in 11 regions of the Republic of Kazakhstan.

In terms of directions, most of the capital investments fell on activities in the field of renewable energy sources: 98.9 billion tenge , or 95.3% of the investment portfolio in the sector. Another 4.8 billion tenge was invested in activities in the field of energy-saving technologies and energy efficiency , 32 million tenge - in the area of reducing greenhouse gas emissions.

**Kyrgyzstan**

**The Kyrgyz Republic and the Republic of Kazakhstan established a joint venture for the construction of solar power plants**

The Kyrgyz " TazaEnergy " (a subsidiary of the National Energy Holding ) and the investment company from Kazakhstan "TGS- Energy Ltd ”signed the statutory documents on the creation of a joint venture LLC “Kun Bulagy ” for the construction of solar power plants.

The purpose of the joint venture is the construction of the solar power plant "Toru- Aigyr ", in the village of the same name on the territory of the Issyk-Kul region.

The capacity of the future SPP is 50 MW.

The total cost of the project is $35 million.

A land plot of 80 hectares is allocated for the implementation of the project.

It is planned to complete the 1st stage of construction by December 2023.

The service life is over 25 years.

The future solar station will supply the grid with at least 90 million kWh per year.

Kun Bulagy also plans to build a solar power plant in Kyrgyzstan with a total capacity of 300 MW.

For Kyrgyzstan , this is not the first solar power plant construction project. In the same village of Toru- Aigyr , a 300 MW solar power plant is being built as part of a PPP project between the Ministry of Natural Resources, Ecology and Technical Supervision of Kyrgyzstan and the Kazakh company TGS Construction . It is expected that the solar station will be able to generate 600 million kWh per year. In the future, it is planned to increase its capacity to 1 GW.

Creation of [renewable energy generation facilities](https://neftegaz.ru/tech-library/energoresursy-toplivo/141763-vozobnovlyaemye-istochniki-energii-vie/) should help the republic to solve the problem of energy shortage. President of the country S. Zhaparov said at an extended meeting of the government that the Kyrgyz Republic plans to significantly reduce the volume of electricity purchased abroad in the near future.

**Information on the progress of construction of CASA-1000 in Kyrgyzstan**

As part of the implementation of the CASA-1000 project, work is underway on the suspension of wires. The length of the 500 kV overhead line is 456 km, which runs through Batken , Osh and Jalal-Abad regions.

To date, the project has completed the following construction works:

The construction of access roads to the construction sites of supports was completed for 1217 supports (97.9%), digging pits for supports - 1217 (97.9%), reinforcement and pouring of concrete - 1202 (96.7%), installation of supports - 969 (78 %), suspension of wires - 83.9 km (18.4%). A total of 1243 supports will be built under the project.

In addition, in the Jalal-Abad region, construction and installation work is underway on a 500 kV cell at the Datka substation under the CASA-1000 project.

To mobilize specialists for the construction of infrastructure facilities in these three regions, 6 construction bases have been created.

***Reference:*** *CASA-1000 is designed to connect the energy systems of Central Asia with South Asia - Kyrgyzstan, Tajikistan with Afghanistan and Pakistan and develop mechanisms for electricity trade in accordance with international standards.*

**Russia**

**The capacity of renewable energy generation in Russia in October-November increased by 3% and reached 5.68 GW**

As of December 1, 2022, the total installed capacity of renewable energy generation facilities in Russia, including taking into account isolated energy systems and industry's own generation, reached 5.68 GW, the Association for the Development of Renewable Energy (ARVE) said in a statement.

At the end of September this year, the total installed capacity of renewable energy generation facilities in Russia amounted to 5.51 GW (indicated in the renewable energy review prepared by ARVE for the III quarter). Thus, in October-November, the indicator increased by 3.1% (0.17 GW).

At the same time, the share of installed capacity of renewable energy generation in the energy system of the Russian Federation increased to 2.3% compared to the results of the third quarter (RES CSA - 1.6%) from 2.2%.

As of the end of November, wind and solar power plants are leading in the structure of the total installed capacity of RES generation. They account for 2.2 and 2.1 GW of capacity, respectively. The total capacity of small hydro power plants (up to 50 MW) is 1.2 GW.

According to the results of 11 months of 2022, electricity generation by renewable energy generation facilities built under the CSA RES program amounted to 6940 million kWh .

The share of generation of CSA RES in the total volume of electricity generation in the UES of Russia is 0.7%.

Average installed capacity utilization factor (ICUF) of power plants: SPP - 14.7%, WPP - 31.1%, SHPP - 42.2%.

**Belarus**

**State Production Association " Belenergo " installed almost 400 thousand electronic electricity meters in ten months**

In Belarus, the planned replacement of induction metering devices with modern meters continues.

Electronic meters have a lot of advantages compared to induction meters. This is a high measurement accuracy (accuracy class 1.0 and higher); the presence of built-in memory, which allows you to store information on electricity consumption by months for the last year; the ability to configure the meter for several tariffs for more favorable payment for electricity. Also among the advantages of electronic meters is their resistance to temperature extremes (from minus 40 degrees to plus 50 degrees) and noiselessness in operation due to the absence of moving parts.

In January-October 2022, 399,095 electric energy meters were replaced by residential subscribers, which made it possible to increase the share of single-phase electronic electric energy meters to 87.53% .

Systematic work on the implementation of the program for the modernization of electricity metering facilities has been underway for the sixth year. In total, since 2016, more than 2.881 million electricity meters have been replaced with electronic ones for residential subscribers during the period of the program implementation.

The next step is the integration of modern meters into automated systems for monitoring and accounting for electrical energy (ASKUE) with inclusion in the information space of energy supply organizations. According to the Deputy General Director, this will allow remote reading of metering devices, their technical control, as well as offer for payment in payment systems the real consumption of electricity for the billing period.

For 9 months of 2022, 2395 " ASKUE-byt " were introduced in the republic , the number of electricity metering devices included in the system amounted to 287,454 .

The work is carried out in accordance with the program approved by the State Production Association " Belenergo " for the creation in the housing stock of automated systems for monitoring and accounting for electrical energy (capacity) ( " ASKUE-byt " ) for 2021-2025.

**Tajikistan**

**Tajikistan increased electricity exports by 62% in November**

In November 2022, Tajikistan exported electricity worth over $2.1 million, which is $0.8 million more than the volume of the previous month, the statistical office of the republic reports.

In general, over 11 months of this year, deliveries of Tajik electricity abroad were carried out in the amount of more than $103 million. This is 10.2% more than in January-November 2021 (about $93.6 million).

The share of electricity in the total export of the republic in January-November 2022 amounted to 5.2%.

Tajikistan, in accordance with the agreements concluded, supplies electricity to Afghanistan and Uzbekistan (in the spring and summer period - May-August).

Prisoner with Afghan Da Company Afghanistan Breshna The Sherkat (DABS) contract for 2022 provides for the daily supply of Tajik electricity to Afghan consumers up to 400 MW in May-August and 40 MW in September-April.

kWh of electricity to Afghanistan in 2022 at a price of 4.67 cents per kilowatt.

Head of OAHK "Barki Tojik " Mahmadumar Asozoda said at a press conference in Dushanbe in August this year that DABS owed OAHK Barki Tojik for electricity $28 million

According to statistics, in January-November of this year, over 19.2 billion kWh of electricity was generated in Tajikistan, which is 2.6% more compared to the same period in 2021.

About 93.8% of electricity is produced by hydroelectric power plants, over 6.2% by thermal power plants. Solar stations generated only 300 thousand kWh - 0.001% of the total production.

Meanwhile, residents of some rural areas of Tajikistan have been facing limited electricity supplies since October.

OAHK "Barki Tojik " in its appeal to consumers in mid-October explained this by a shortage of water resources due to low water, as well as maintenance and repair work.

**Tajikistan received more than $100 million from electricity exports**

Tajikistan in January-October of this year exported electricity in the amount of $101 million, according to the statistical department of the republic.

This is 10.7% more compared to the same period in 2021, when electricity was supplied abroad in the amount of $91.3 million.

Revenue from the export of electricity in October of this year decreased 13 times compared to the previous month - from $17.1 million to $1.3 million.

The share of electricity in the total exports of the republic in January-October 2022 amounted to 5.7%.

Tajikistan, in accordance with the agreements concluded, supplies electricity to Afghanistan and Uzbekistan (during the spring-summer period, May-August).

According to the contract concluded with the Afghan electricity company Da Afghanistan Breshna Sherkat (DABS), calculated for 2022, in the summer, Afghan consumers receive up to 400 MW daily, and in the autumn-winter period (September-April), supplies are reduced to 40 MW.

Under this agreement, Tajikistan in 2022 must supply Afghanistan with 1.5 billion kilowatt-hours of electricity, the cost of each kilowatt-hour of Tajik electricity is 4.67 cents.

In early August of this year, the head of the OAHK "Barki Tojik " Mahmadumar Asozoda told reporters that DABS owed $28 million to OAHK Barki Tojik for electricity .

Meanwhile, residents of rural areas of Tajikistan have been facing limited electricity supplies since the beginning of the last ten days of September.

OAHK "Barki Tojik ", in its appeal to consumers last week, explained this by lack of water, as well as repair and maintenance work.