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**REPORT**

**ANALYSIS OF THE ELECTRICITY AND COAL MARKET OF KAZAKHSTAN**

**JANUARY-NOVEMBER 2021**

**DEPARTMENT "MARKET DEVELOPMENT"**

**December, 2021**

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# **SECTION I**

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

According to the System Operator, power plants of the Republic of Kazakhstan in January-November   
2021 generated 103,657.1 million kWh of electricity, which is 6.7% more than the same period in 2020. The growth in generation was observed in all zones of the UPS of Kazakhstan.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Zone** | **Generation type** | **January-November** | | **Δ, %**  **2020** |
| **2020** | **2021** |
| **Kazakhstan** | **Total** | **97,083.3** | **103,657.1** | **6.7%** |
| *TPP* | *77,551.1* | *82,355.8* | *6.2%* |
| *GTES* | *8545.1* | *9652.0* | *12.9%* |
| *hydroelectric power station* | *8,806.5* | *8495.5* | *-3.5%* |
| *WES* | *970.7* | *1565.6* | *61.2%* |
| *SES* | *1205.5* | *1,585.7* | *31.5%* |
| *BSU* | *4.4* | *2.5* | *-37.5%* |
| **Northern** | **Total** | **74,585.2** | **79,637.5** | **6.7%** |
| *TPP* | *64,821.6* | *69,720.4* | *7.5%* |
| *GTES* | *2850* | *2666.5* | *-6.5%* |
| *hydroelectric power station* | *6,023.4* | *6,021.9* | *-0.02%* |
| *WES* | *449* | *728.4* | *62.2%* |
| *SES* | *436.8* | *506.8* | *16.0%* |
| *BSU* | *4.4* | *2.5* | *-43.2%* |
| **South** | **Total** | **10,332.9** | **10,920.1** | **5.6%** |
| *TPP* | *6392.2* | *6,567.5* | *2.7%* |
| *GTES* | *145.4* | *240.5* | *65.4%* |
| *hydroelectric power station* | *2,783.1* | *2482.6* | *-10.8%* |
| *WES* | *246.4* | *553.6* | *224.6%* |
| *SES* | *765.8* | *1075.9* | *40.4%* |
| **Western** | **Total** | **12,165.2** | **13,099.5** | **7.6%** |
| *TPP* | *6337.3* | *6,067.9* | *-4.25%* |
| *GTES* | *5,549.7* | *6,745.0* | *21.5%* |
| *WES* | *2 75.3* | *283.6* | *3.0%* |
| *SES* | *2.9* | *3.0* | *3.0%* |

# 

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

In January-November 2021, compared to the same period in 2020, electricity generation increased significantly (growth of 15% or more) in Akmola, Zhambyl, Kyzylorda , Pavlodar, Atyrau , West Kazakhstan , Mangistau and Turkestan regions. At the same time, a decrease in electricity generation was observed in Aktobe, Almaty , East Kazakhstan, Karaganda, Kostanay , North Kazakhstan regions.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No. p / p** | **Region** | **January- November** | | **Δ, %** |
| **2020** | **2021** |
| 1 | Akmola | 4,157.0 | 4,876.7 | 17.3% |
| 2 | Aktobe | 3444.9 | 3367.6 | -2.3% |
| 3 | Almaty | 6475.2 | 6,194.4 | -4.4% |
| 4 | Atyrau | 5646.8 | 6352.4 | 12.5% |
| 5 | East Kazakhstan | 8666.8 | 8488.0 | -2.1% |
| 6 | Zhambyl | 2089.0 | 2610.3 | 24.9% |
| 7 | West Kazakhstan | 2022.3 | 2170.9 | 7.3% |
| 8 | Karaganda | 14904.8 | 14,333.0 | -3.8% |
| 9 | Kostanay | 964.1 | 881.8 | -8.5% |
| 10 | Kyzylorda | 454.3 | 568.1 | 25% |
| eleven | Mangistau | 4496.1 | 4,576.2 | 1.7% |
| 12 | Pavlodar | 39,403.0 | 45,210.8 | 14.7% |
| 13 | North Kazakhstan | 3,044.6 | 2479.6 | -18.6% |
| 14 | Turkestan | 1314.4 | 1547.3 | 17.7% |
|  | **Total for Kazakhstan** | **97,083.3** | **103,657.1** | **6.7%** |

The volume of electricity production by energy producing organizations of Samruk-Energy JSC for January-November 2021 amounted to 32,227.9million kWh or an increase of 17.2% compared to the same period in 2020.

*million kWh*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **2020** | | **2021** | | **Δ 2021/2020** | |
| **January-November** | **share in Kazakhstan, %** | **January-November** | **share in Kazakhstan, %** | **million kWh** | **%** |
|  | **JSC " Samruk-Energy "** | **27,492.6** | **28.3%** | **32,227.9** | **31.1%** | **4,735.3** | **17.2%** |
| *1* | *JSC AlES \_* | *4716.5* | *4.9%* | *4501.8* | *4.3%* | *-214.7* | *-4.6%* |
| *2* | *LLP " Ekibastuz GRES-1"* | *17,038.7* | *17.6%* | *20634.6* | *19.9%* | *3,595.9* | *21.1%* |
| *3* | *JSC " Ekibastuz GRES-2"* | *4263.0* | *4.4%* | *5830.5* | *5.6%* | *1567.5* | *36.8%* |
| *4* | *JSC " Shardara HPP"* | *462.2* | *0.5%* | *428.6* | *0.4%* | *-33.6* | *-7.3%* |
| *5* | *JSC Moynakskaya HPP* | *864.2* | *0.9%* | *683.6* | *0.7%* | *-180.6* | *-20.9%* |
| *6* | *Samruk-Green LLP Energy »* | *6.3* | *0.006%* | *18.8* | *0.018%* | *12.50* | *198.4%* |
| *7* | *LLP "First wind power plant"* | *141.7* | *0.1%* | *130.0* | *0.1%* | *-11.7* | *-8.3%* |

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

# *Consumption of electrical energy by zones and regions*

According to the System Operator, in January-November 2021, there was an increase in the dynamics of electricity consumption in the republic compared to January-November 2020 by 7%. Thus, in the northern zone of the republic, consumption increased by 5%, in the southern zone by 11% and in the western zone by 8%.

*million kWh*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **Jan - Nov**  **2020** | **Jan - Nov**  **2021** | **Δ,  million kWh** | **Δ, %** |
| **I** | **Kazakhstan** | **96458.7** | **103150.2** | **6691.5** | **7%** |
| 1 | Northern zone | 63501.4 | 66970.0 | 3468.6 | 5% |
| 2 | Western zone | 12205.6 | 13156.2 | 950.6 | 8% |
| 3 | Southern zone | 20751.7 | 23024.0 | 2272.3 | eleven% |
|  | ***incl . \_ by regions*** |  |  |  |  |
| 1 | East Kazakhstan | 8316.5 | 8662.1 | 345.6 | 4% |
| 2 | Karaganda | 16659.2 | 17234.9 | 575.7 | 3% |
| 3 | Akmola | 8134.1 | 9210.0 | 1075.9 | 13% |
| 4 | North Kazakhstan | 1490.5 | 1558.9 | 68.4 | 5% |
| 5 | Kostanay | 4150.9 | 4346.2 | 195.3 | 5% |
| 6 | Pavlodar | 18759.1 | 19693.4 | 934.3 | 5% |
| 7 | Atyrau | 5659.7 | 6038.2 | 378.5 | 7% |
| 8 | Mangistau | 4524.9 | 4783.7 | 258.8 | 6% |
| 9 | Aktobe | 5991 | 6264.5 | 273.5 | 5% |
| 10 | West Kazakhstan | 2021 | 2334.3 | 313.3 | 16% |
| 11 | Almaty | 10090.2 | 11210.7 | 1120.5 | 11% |
| 12 | Turkestan | 4659.7 | 5200.0 | 540.3 | 12% |
| 13 | Zhambyl | 4445.04 | 4852.6 | 407.6 | 9% |
| 14 | Kyzylorda | 1556.8 | 1760.7 | 203.9 | 13% |

# **The results of the industry in January-November 2021**

*(express information of the Bureau of National Statistics ASPR RK)*

January-November 2021 compared to January-November 2020, the industrial production index (hereinafter referred to as IPI) amounted to 103.3%. An increase in production volumes was recorded in 15 regions of the republic, a decrease was observed in the West Kazakhstan and Mangystau regions.

**Changes in industrial output by region**

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

In the city of Almaty, due to an increase in the production of boxes, boxes made of paper or cardboard, plastic bags and packages, ready-mixed concrete, mortars, steel pipes, building prefabricated metal structures, cars, buses, the IPP amounted to 120.1%.

In the city of Nur -Sultan, the IPP was 114% due to the growth in the production of soft drinks, preforms , ready-mixed concrete, mortars, refined gold, tiles, bricks made of cement and concrete, building prefabricated structures made of cement and concrete, and the production of railway and diesel locomotives.

In the Almaty region, the IPI was 112.8% due to an increase in the production of soft drinks, fruit and vegetable juices, pasta, sugar, tiles, cement and concrete bricks, prefabricated metal structures, Portland cement, glass containers, plastic packaging products, mortars .

In the Akmola region, due to an increase in the extraction of gold ores, the production of chilled poultry meat, pesticides, ready-made animal feed, pipes and hoses made of rubber, slag wool, natural uranium, the production of combines, tractors and trucks, the IPP amounted to 109.3%.

In the Kostanay region, the IPP amounted to 107.9% due to an increase in the extraction of gold and aluminum ores, copper and iron ore concentrates, iron ore pellets, the production of gold in doré alloy, hot-rolled bars and rods from steel, tractors, combines, cars and trucks.

In the city of Shymkent, due to an increase in the production of soft drinks, sunflower oil, Portland cement, heating oil, diesel fuel, kerosene, transformers, plastic pipes, the IPP amounted to 106.5%.

In the North-Kazakhstan region, due to the growth in the extraction of uranium and thorium ores, the production of milk, butter, confectionery, cheese, bags and packaging bags, an increase in the production of freight cars, the IPP amounted to 105.3%.

In the East Kazakhstan region, the IPP amounted to 104.8% due to an increase in the extraction of copper and gold ores, lead-zinc ores, gold concentrates, the production of finished animal feed, refined gold and silver, raw zinc, oxygen, building solutions, trucks.

In the Zhambyl region, due to the growth in the extraction of copper and gold ores, finely ground phosphate raw materials, the production of sugar, sausages, pesticides, pharmaceuticals, ferrosilicomanganese , phosphoric acid, diesel fuel, heating oil, the IPP amounted to 104.5%.

In the Pavlodar region, the IPP amounted to 102.8% due to the growth in the production of pesticides, ferrosilicochromium , ferrosilicomanganese , propylene polymers, gasoline, diesel fuel, kerosene, parts of railway locomotives, bars and rods of their steel, and electricity.

In the Turkestan region, due to the growth in the extraction of uranium and thorium ores, gold concentrates, the production of soft drinks, sausages, cheeses, wires and cables, circuit breakers, Portland cement, building prefabricated metal structures, the IPP amounted to 102.5%.

In the Aktobe region, the IPP amounted to 102.4% due to an increase in the production of oil, gas condensate, zinc concentrates, iron ores, an increase in the production of ferrochromium, chromium salts, chromium oxide, sodium bichromate, diesel fuel, liquefied propane and butane, heating oil, building solutions .

In the Atyrau region, the IPP amounted to 100.7% due to an increase in oil production, the production of gasoline, kerosene, diesel fuel, heating oil, domestic furnace fuel, and vacuum gas oils.

In the Karaganda region, the growth of IPP amounted to 100.6% due to an increase in the extraction of coal, gold ores and concentrates, copper ores, lead-zinc ores, the production of medicines, pig iron, flat and galvanized rolled products, non-alloyed steel.

In the Kyzylorda region, the IPP amounted to 100.4% due to an increase in the extraction of uranium and thorium ores, the production of rice, sulfuric acid, Portland cement, building prefabricated concrete structures.

In the Mangistau region, the IPP decreased mainly due to a reduction in crude oil production (99.2%).

In West Kazakhstan IPP amounted to 93.7% due to a decrease in gas condensate production.

# *Electricity consumption by large consumers in Kazakhstan*

In January-November 2021, compared to the same period in 2020, electricity consumption by large consumers increased by 0.8%.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No. p / p** | **Consumer** | **January-November** | | |
| **2020** | **2021** | **Δ, %** |
| 1 | JSC Arcelor Mittal Temirtau" | 3369.6 | 3435.1 | 1.9% |
| 2 | JSC AZF ( Aksuysky ) "TNK Kazchrome " | 5308.6 | 4,733.8 | -10.8% |
| 3 | Kazakhmys LLP Smelting » | 1,101.7 | 972.2 | -12% |
| 4 | Kazzinc LLP \_ | 2608.2 | 2538.1 | -3% |
| 5 | JSC " Sokolovsko-Sarbayskoye GPO" | 1566.9 | 1476.4 | -6% |
| 6 | Kazakhmys Corporation LLP | 1,169.4 | 1,182.6 | 1% |
| 7 | AZF JSC (Aktobe) "TNK Kazchrome " | 2943.5 | 2995.0 | 2% |
| 8 | RSE “Channel them. Satpaev » | 259.4 | 372.7 | 44% |
| 9 | Kazphosphate LLP \_ | 2007.8 | 1,892.0 | -6% |
| 10 | NDFZ JSC (part of Kazphosphate LLP ) | 1,759.8 | 1600.8 | -9% |
| 11 | LLP " Taraz Metallurgical Plant" | 243.2 | 274.2 | 13% |
| 12 | JSC " Ust-Kamenogorsk titanium -magnesium plant" | 612.7 | 624.8 | 2% |
| 13 | Tengizchevroil LLP \_ | 1675.5 | 1,671.6 | 0% |
| 14 | PAZ JSC (Pavlodar Aluminum Smelter) | 869.1 | 867.2 | 0% |
| 15 | JSC "KEZ" (Kazakhstan electrolysis plant) | 3446.0 | 3456.7 | 0% |
| 16 | TemirzholEnergo LLP \_ | 1348.9 | 1525.7 | 13% |
| 17 | JSC "KEGOC" | 4,169.8 | 4939.2 | 18% |
| **Total** | | **32,700.5** | **32,957.6** | **0.8%** |

*million kWh*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Name** | **January-November** | | **Deviation, million kWh** | **Δ , %**  **2020** |
| **2020** | **2021** |
| **I** | **JSC " Samruk-Energy "** | **5821.55** | **7307.8** | **1486.3** | **25.5%** |
| *1.* | *LLP "Bogatyr-Komir"* | *240.53* | *271.2* | *30.7* | *12.8%* |
| *2.* | *JSC Alatau Zharyk Companies »* | *760.78* | *913.9* | *153.1* | *20.1%* |
| *3.* | *AlmatyEnergoSbyt LLP* | *4820.24* | *6,122.7* | *1302.5* | *27.0%* |

# **Coal**

# *Coal mining in Kazakhstan*

According to the Bureau of National Statistics, in Kazakhstan in January-November 2021, 99,569.4 thousand tons of coal were mined, which is 1.6% more than in the same period in 2020 (97,995.1 thousand tons).

*thousand tons*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No. p / p** | **Region** | **January-November** | | **Δ, %** |
| **2020** | **2021** |
| 1 | Pavlodar | 60,326.9 | 60,033.9 | 0.9% |
| 2 | Karaganda | 30,669.7 | 31,609.1 | 3.6% |
| 3 | East Kazakhstan | 6998.5 | 7926.4 | 13.3% |
|  | **Total for the Republic of Kazakhstan** | **97,995.1** | **99,569.4** | **1.6%** |

*Coal mining by Samruk-Energy JSC*

In January-November 2021, Bogatyr Komir LLP produced 40,630 thousand tons, which is 3.9% more than in the corresponding period of 2020 (39,117 thousand tons).

*Sale of coal by Samruk-Energy JSC*

In January-November 2021, 40,633 thousand tons were sold, including :

- to the domestic market of the Republic of Kazakhstan 31,736 thousand tons, which is 5.8% more than in the corresponding period of 2020 (29,985 thousand tons);

- for export (Russian Federation) - 8,897 thousand tons, which is 3.5% less than for the corresponding period of 2020 (9,224 thousand tons).

*thousand tons*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No. p / p** | **Region** | **Sales volume, thousand tons** | | **Δ, %**  **2021/2020** |
| **January-November 2020** | **January-November 2021** |
| **Total to the domestic market of the Republic of Kazakhstan** | | **29 985** | **31 736** | **105.8%** |
| **Total for export to Russia** | | **9 224** | **8 897** | **96.5%** | **1 144** | **46.8%** |

According to the indicators for January-November 2021, compared to the same period in 2020, the Company observed an increase in coal sales by 3.9%.

# **Renewable energy sources**

According to the system operator, the volume of electricity production by renewable energy facilities (SPP, WPP, BGS, small HPPs) of the Republic of Kazakhstan in January-November 2021 amounted to 3878.6 million kWh . Compared to the period of January-November 2020 (2,864.2 million kWh ), the increase was 35.4%.

million kWh

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **2020** | | **20 2 1g** | | **Deviation 20 2 0/2021,** | |
| **January-November** | **share in Kazakhstan, %** | **January-November** | **share in Kazakhstan, %** | **million kWh** | **%** |
|  | **Total output in Kazakhstan** | **97083.3** | **100%** | **103657.1** | **100%** | **6573.8** | **6.8** |
| **I** | **Total RES in the Republic of Kazakhstan, incl . by zones** | **2864.2** | **3.0%** | **3878.6** | **3.7%** | **1014.4** | **35.4** |
| 1. | *Northern zone* | 1024.2 | 35.8% | 1378.5 | 35.5% | **354.3** | **34.6** |
| 2. | *Southern zone* | 1561.8 | 54.5% | 2213.5 | 57.1% | **651.7** | **41.7** |
| 3. | *Western zone* | 278.2 | 9.7% | 286.6 | 7.4% | **8.4** | **3.0** |
| **II** | **Total RES in the Republic of Kazakhstan, incl . by type** | **2864.2** | **3.0%** | **3878.6** | **3.7%** | **1014.4** | **35.4** |
| 1. | *SES* | 1205.5 | 42.1% | 1585.7 | 40.9% | **380.2** | **31.5** |
| 2. | *WES* | 970.7 | 33.9% | 1565.6 | 40.4% | **594.9** | **61.3** |
| 3. | *Small HPPs* | 683.6 | 23.9% | 724.8 | 18.7% | **41.2** | **6.0** |
| 4. | *BiogasInstallations* | 4.4 | 0.2% | 2.5 | 0.1% | **-1.9** | **-43.2** |

January-November 2021 there is an increase in the production of electricity by solar power plants, wind farms and small hydropower plants compared to the same period in 2020.

million kWh

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **2020** | | **2021** | | **Deviation 2020/2021,** | |
| **January-November** | **share in Kazakhstan, %** | **January-November** | **share in Kazakhstan, %** | **million kWh** | **%** |
|  | ***Electricity production in UES RK*** | **97083.3** | **100%** | **103657.1** | **100%** | **6573.8** | **6.8** |
| 1. | Production of "clean" electricity (RES + Large HPPs) | 10987.1 | 11.3% | 11649.3 | 11.2% | 662.2 | 6.0 |
| 2. | Production of "clean" electricity (RES excluding Large HPPs) | 2864.2 | 3.0% | 3878.6 | 3.7% | 1014.4 | 35.4 |

Samruk-Energy JSC (SPP, WPP, small HPPs) for January-November 2021 amounted to 299 million kWh or 7.7% of the volume of electricity generated by renewable energy facilities in the Republic of Kazakhstan, which is compared to the same period in 2020 year lower by 4.7 % (in January-November 2020, the Company's RES generation amounted to 303.7 million kWh , and the share of the Company's RES was 10.7%).

million kWh

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **2020** | | **2021** | | **Deviation 2020/2021,** | |
| **January-November** | **share in Kazakhstan, %** | **January-November** | **share in Kazakhstan, %** | **million kWh** | **%** |
| 1 | Production of JSC " Samruk-Energy" "clean" electricity (RES excluding Large HPPs), including : | **303.7** | **10.6%** | **299** | **7.7%** | **-4.7** | **-1.5** |
|  | *AlES JSC Cascade of small HPPs* | 155.7 | 5.4% | 150.2 | 3.9% | **-5.5** | **-3.5** |
|  | *Samruk - Green Energy LLP SPP 2 MW* | 3.7 | 0.1% | 5.1 | 0.1% | **1.4** | **37.8** |
|  | *Samruk - Green Energy LLP WPP Shelek 5 MW* | 2.6 | 0.1% | 19.2 | 0.5% | **16.6** | **638.5** |
|  | *First Wind Power Plant LLP WPP 45 MW* | 141.7 | 4.9% | 130.0 | 3.4% | **-11.7** | **-8.3** |

# **Centralized electricity trading JSC "KOREM"**

*(information of KOREM JSC for November is not provided)*

# **Export-import of electrical energy**

In order to balance the production and consumption of electricity in January-November 2021, exports to the Russian Federation amounted to 1,200.04 million kWh , imports from the Russian Federation - 1,623.32 million kWh .

Including export of KEGOC JSC to the Russian Federation - 1,145.59 million kWh , import of electricity for the reporting period in the amount of 1,365.42 million kWh .

million kWh

| **Name** | **2020** | **2021** | **Δ 2021/2020** | |
| --- | --- | --- | --- | --- |
| **January-November** | | **million kWh** | **%** |
| **Export of Kazakhstan** | **-2017.59** | **-2435.48** | **-417.90** | **20.7%** |
| **in Russia** | -974.19 | -1200.04 | -225.85 | 23.2% |
| **in the IPS of Central Asia** | -1043.40 | -1235.44 | -192.04 | 18.4% |
| **Import of Kazakhstan** | **1392.94** | **1928.53** | **535.60** | **38.5%** |
| **From Russia** | 1078.09 | 1623.32 | 545.24 | 50.6% |
| **from IPS Central Asia** | 314.85 | 305.21 | -9.64 | -3.1% |
| **Balance- flow "+" deficit, "-" excess** | **-624.65** | **-506.95** | **117.70** | **-18.8%** |

# **SECTION II**

# **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.

May 29, 2019 as part of the celebration of the fifth anniversary of the signing of the Treaty on the Eurasian Economic Union 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).

On December 20, 2019, the Supreme Council adopted Decision No. 31 “On the plan of measures aimed at the formation of a common electricity market of the Eurasian Economic Union”, which establishes, among other things, the deadlines for the approval and entry into force of the rules for the functioning of the Union’s common electricity market, as well as other acts provided for by the specified protocol.

At present, the EAEU Member States are working on the development and harmonization of the rules for the functioning of the EAEU CER.

In 2021, three meetings of the Advisory Committee on the Electricity Industry under the EEC Board were held (14th meeting on January 21, 15th meeting on April 21, 16th meeting on October 6), two meetings of authorized representatives of the Member States (March 18 and July 30) , 21st meeting of the Subcommittee on the Formation of the ERA of the EAEU of the Advisory Committee on the Electric Power Industry under the EEC Board (56th meeting on January 14, 57th meeting on February 5, 58th meeting on February 25-26, 59th meeting on March 11-12, 60- th meeting 26 March, 61st meeting 9 April, 62nd meeting 16 April, 63rd meeting 13 May, 64th meeting 7 June, 65th meeting 24-25 June, 66th meeting 7 July, 67 th meeting 22-23 July, 68th meeting 12-18 August, 69th meeting 26-27 August, 70th meeting 9-10 September, 71st meeting 16-17 September, 72nd meeting 1 October , 73rd meeting on 15 October, 74th meeting on 25-26 October, 75th meeting on 17-18 November, 76th meeting on 25-26 November) and one workshop on 1 July 2021.

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

# **Status of formation of the Electricity market of the CIS**

Since 1992, 55 meetings of the Electric Power Council of the Commonwealth of Independent States (hereinafter - CIS EEC) have been held.

By decision of the EEC of the CIS (Minutes No. 50 dated October 21, 2016), the Consolidated Schedule for the Formation of a Common Electricity Market of the CIS Member States was approved.

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Events** | **Period of execution** | **Current status** |
| 1 | Implementation of activities in accordance with Section II . Action Plan for Cooperation between the EEC and the EEC of the CIS, approved on June 10, 2016. | 2016-2020 | Permanent participation of the EEC representatives at the meetings of the EEC of the CIS, representatives of the EC of the EEC of the CIS - at the meetings on the formation of the EER of the EAEU is ensured. |
| 2 | Preparation of a draft procedure for the settlement of deviations from the agreed values of interstate power flows . | 2016-2017 | The decision to develop a procedure for settling deviations from the agreed values of interstate power flows was taken at the 45th meeting of the EEC of the CIS. The draft Procedure was considered at the 29th meeting of the Working Group "Formation of a common electric power market of the CIS countries" on September 15, 2016 in Moscow (RF). In accordance with the Decision of the 47th meeting of the EEC of the CIS, the Action Plan of the EEC of the CIS for 2016 includes the development and approval of draft documents on determining the magnitude of deviations from the agreed values of interstate electricity flows and the settlement of deviations from the agreed values of interstate electricity flows . Work continues. |
| 3 | Preparation of a draft procedure for the distribution of throughput capacity of interstate sections / export-import sections between participants in export-import activities. | 2018-2020 | By the decision of the 50th meeting of the EEC of the CIS, Methodological recommendations for the metrological support of measuring complexes for metering electric energy at interstate  power lines.  By the decision of the 50th meeting of the EEC of the CIS, the Schedule for monitoring the application of regulatory technical documents in the field of metrology of electrical measurements and electricity metering in the production activities of the energy systems of the CIS member states was approved. |
| 4 | Preparation of a draft procedure for compensation of costs associated with the implementation of the transit / transmission / movement of electricity through the energy systems of the CIS member states. | 2018-2020 | The unified format of the data exchange layout for accounting of interstate electricity flows , developed by the Working Group on metrological support of the electric power industry of the Commonwealth of Independent States, was approved by the decision of the 33rd meeting of the CIS EEC and recommended to the electric power industry management bodies of the CIS member states for use in organizing the accounting of interstate electricity flows and data exchange on interstate flows . |
| 5 | Harmonization of national legislation in the field of electric power industry, development and adoption of national regulatory legal documents necessary for the formation and functioning of the CIS EER. | 2020-2025 | The decision of the 51st meeting of the EEC of the CIS approved the Conceptual approaches to technical regulation and standardization in the field of electric power industry. The Regulations on the Working Group “Updating and Harmonizing the Regulatory and Technical Base for Regulating the Electricity Industry” were also approved. By the decision of the 51st meeting of the CIS EEC, the Work Plan of this Working Group was approved. |

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

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

**REPUBLIC OF ARMENIA**

**From February 2022, Armenia will switch to a new energy model**

From February 2022, part of the Armenian energy market will be liberalized .

According to the amendments to the law "On Energy", licenses will be granted without quotas and corresponding state guarantees, but according to a simpler scheme. Further, by connecting to the electronic platform, these economic entities will be able to wholesale the electricity produced.

To implement the electricity market liberalization program, the US Agency for International Development provided a grant in the amount of $8.5 million.   
With market liberalization, a number of generating stations will start selling their electricity at a tariff formed as a result of supply and demand in the market, and not at the price set by the PSRC tariff. As a result of the application of the program, generating facilities will have the opportunity of a 10% free sale of electricity. Gradual liberalization of the electricity market will ensure a level playing field, contribute to the stabilization of tariffs and increase the level of regional cooperation.

**About $3.5 million will be invested in the construction of a 5 MW solar power plant in the Gegharkunik region of Armenia**

OOO A-S Energy " will invest 1.65 billion drams for the construction of a solar station with an installed capacity of 5 MW in the Gegharkunik region of Armenia.

On November 4, the Government of the Republic of Armenia satisfied the company's application for exemption from import customs duties on imported technological equipment, their components and components, raw materials and materials imported under the investment program implemented in the priority area.

According to the explanation to the document, the solar power plant will be built in the Astghadzor community. Gegharkunik region of RA. The planned volume of investments will be about 1.65 billion drams (about 3.5 million US dollars at the current exchange rate - ed.).

It is planned to install high-efficiency double-sided single-crystal photovoltaic modules Risen Energy (www.risenenergy.com) with a capacity reduction of no more than 0.5% per year. The project will use Huawei inverters (converters) . The portable solar panel support structure will be imported from Arctech .

The total volume of production will be about 230 million drams per year, which will be fully realized in the territory of Armenia. The generated electricity will be fully sold to ENA CJSC, there is a license for electricity production issued by the Public Services Regulatory Commission of the Republic of Armenia.

It is noted that about 80% of investments have already been made - a land plot has been acquired, construction and design work has been completed, payment for equipment has been made. Within the framework of the program, it is planned to invest 1.6 billion drams for the construction, testing and operation of the stations. 4 jobs will be created with a salary of 250,000 drams .

The cost of goods for which the privilege is granted is 312.6 million drams . The exemption from customs duty is 30.6 million drams .

**A new thermal power plant was opened in Yerevan with the participation of the prime minister**

On November 29, the opening ceremony of a new power plant with a combined steam-gas cycle with a capacity of 254 MW was held in Yerevan.

About $270 million has been invested in the project. 1,200 people were involved in the construction work, after the launch of the power plant, 50 permanent jobs were created. Recall that on July 12, 2019, an official ceremony was held in Yerevan to start work on the construction of a new thermal power plant, the construction of which was carried out by Renko , which created ArmPower for this purpose with a 60% stake in Renko . Siemens AG, which owns a 40% stake in ArmPower , was also involved in the project .

The construction of the station took about 26 months. The efficiency of the new station will be 54.4%, and the tariff from the new generation facility will be the lowest for such facilities - 5.7 cents or about 29 drams per 1 kWh . Under a 25-year service agreement, Siemens will provide cost-effective and reliable power generation throughout this period.

**The tariff from the new thermal power plant will consist of a base tariff and a fluctuating gas price**

The tariff can be changed upwards or upwards if the price of gas changes. At the same time, the increase or decrease in the tariff will occur from the approved base tariff, which is set for a period of 25 years.

**EU-Armenia SME Fund launches 4 MW solar power plant**

Amber Capital - EU-Armenia SME Private Equity Fund has launched a 4 MW solar power plant in the Aragatsotn region of Armenia.

A fund sponsored by the European Bank for Reconstruction and Development (EBRD) and the European Union (EU) has commissioned a photovoltaic plant in the Partizak community in the Aragatsotn region . The power plant was owned by Solis LLC , which was acquired by the Fund at the end of 2020 as a company that has a license to build and operate a solar power plant. The construction work was carried out by Ecovil , and the project was financed by Ameriabank .

The total expected annual production capacity of the power plant will be about 7.8 GWh , which is equivalent to the annual electricity consumption of 2,000 households. The enterprise will save about 3,200 tons of carbon dioxide per year, which is equivalent to planting about 120,000 trees or removing 1,000 cars from the roads . During the construction work, about 100 jobs were created for the local population, which contributed to the development of the village. In addition to advancing Armenia's green agenda, the plant will help reduce dependence on imported energy sources, putting the country on the brink of a green and sustainable future.

**REPUBLIC OF BELARUS**

**The first digital substation of 330 kV voltage class was put into operation in Belarus**

On November 19, a solemn ceremony was held to put into operation the reconstructed digital substation Mogilev-330, the first such facility of this voltage class in Belarus. The Slovenian company RIKO doo acted as the general contractor , JSC Belelektromontazhnaladka was engaged in construction and installation works .

"Mogilev-330" is a unique facility for the Belarusian energy system, where the most modern technologies and advanced solutions are applied and which will significantly increase the reliability of the Mogilev energy center . In addition, due to the high automation of the substation, operating and labor costs for its maintenance will be significantly reduced. “The widespread use of digital technologies is one of the priorities of our energy system. This area is developing in accordance with the strategy of informatization and digital transformation adopted by Belenergo until 2025. Projects for the introduction of modern IT technologies are being implemented in various areas of the industry: from the creation of "smart" distribution networks to the provision of qualitatively new services to consumers.

General Director of RUE " Mogilevenergo " Konstantin PUTILO drew attention to the fact that "Mogilev-330" is a key substation for the regional center, which provides power to eight nearby districts. The facility was put into operation back in 1969, but over the years the equipment has become obsolete, and in addition, expenses for own needs have increased, so in 2018 a decision was made to reconstruct the facility.

General Director of State Production Association Belenergo Pavel DROZD recalled that when the issue of substation reconstruction began to be raised, there were different opinions in the industry. Even the head of the energy system himself doubted whether it would be possible to introduce completely new technologies for Belarus, given the fact that there are only a few such substations in the world.

According to experts, the use of unique digital solutions at the Mogilev-330 substation, in comparison with the "classic" equipment, provides many significant advantages. Among them, increasing the efficiency of work due to the installation of energy-efficient equipment, increasing reliability, self-diagnostics and predicting the health of equipment, safety of management and maintenance, minimizing the human factor in managing equipment, reducing the area of the substation, the ability to transfer all data, including control signals, to top level, lower maintenance costs.

It should be noted that for the first time in the Belarusian power system, optical current transformers FOCS-FS 110 kV and 330 kV were used at the substation , the operation of which is based on the magneto-optical Faraday effect. Their use made it possible to increase the sensitivity of relay protection and automation devices and ensure high accuracy over the entire measurement range. The absence of oil and SF6 in the design of these transformers ensures not only their explosion and fire safety, but also environmental friendliness . The substation also has DCB 110–330 kV switch-disconnectors , which combine the functions of both a switch and a disconnector, making the process of putting into repair easier and safer due to the absence of the need to switch disconnectors under voltage. A system of wave damage location on 330 kV overhead lines has been introduced , which allows to determine the location of damage on power lines with high accuracy - up to several tens of meters, which will significantly reduce the time required to eliminate them. As a result of the introduction of the above and other power equipment, for the first time, it was possible to fully implement a “digital” protocol for receiving and transmitting information according to the IEC-61850 standard at a power facility.

**THE REPUBLIC OF KAZAKHSTAN**

**at Zhambylskaya GRES to increase electricity generation**

The population and social facilities should not be disconnected from electrical energy. Minister of Energy Magzum gave a corresponding instruction to profile companies and organizations today Mirzagaliyev during an offsite meeting in the Zhambyl region.

At the meeting on the mode of operation of JSC " Zhambylskaya GRES named after. T.I. Baturov" was attended by Deputy Akim Zhambyl region, heads of the Committee for Nuclear and Energy Supervision and Control of the Ministry of Energy of the Republic of Kazakhstan, KazTransGas Aimak JSC, the Zhambyl production branch of KazTransGas JSC , the Supervisory Board of Zhambyl Electric Networks LLP and Zhambyl Zharyk LLP Saudi 2030". Shareholders and heads of power supply and grid companies from all regions of the country also took part in the online discussion of topical issues .

It was noted that electricity consumption in the energy-deficient Southern zone of the Unified Electric Power System (UES) of Kazakhstan increased by 12% this year. Due to the growth in consumption, there is an overload of 500 kV transit of KEGOC in the North-South direction, an imbalance in the generation and consumption of electric energy. Consumption turns out to be more than there is a possibility of generating electricity. In this regard, reserves from the Zhambyl GRES are put into operation .

The management of the Zhambyl GRES reported on the technical readiness to connect the third unit to work today with an increase in the generation of electric energy.

The minister said that on October 30 of this year, marginal tariffs for electric energy of Zhambyl GRES JSC were approved.

The system operator records daily deviations and violations from the daily schedule of electricity consumption by the subjects of the wholesale electricity market, including energy transmission and energy supply organizations.

In this regard, the Minister of Energy instructed KEGOC JSC, energy transmission and energy supply organizations, together with the Committee for Nuclear and Energy Supervision and Control (KAENC), to conduct an analysis by the end of the week and take all necessary measures to provide household consumers with uninterrupted power supply.

At the same time, the Minister set the task of starting the restoration of blocks 4 and 5 of the Zhambyl GRES, which would increase the generation of electricity in the future.

Following the meeting, the head of the department instructed KEGOC to provide information on consumers and the volumes of electricity distributed between them on a daily basis.

**In the next 10 days, the country's energy system will increase by another 1,150 MW of electricity**

Pavlodar region is a significant region in the energy system of Kazakhstan, which occupies more than 40% of the share of electricity generation.

The Minister of Energy of the Republic of Kazakhstan, during a visit to the power plants of the Pavlodar region, held a meeting at which issues were discussed on the execution of repair campaigns of stations, the development of the Energy Balance of the Republic of Kazakhstan until 2035 and the connection of cities and regions of Western Kazakhstan to the Unified Energy System of the country.

In addition, the Minister got acquainted with the implementation of projects for the restoration of the first power unit at Ekibastuz GRES-1 and the construction of the third power unit at Ekibastuz GRES-2 and the implementation of repair campaigns at the stations of Pavlodar region.

Preparatory work is being completed to put it into the grid after the repair of the power unit at Ekibastuz GRES-1, as well as the turbine unit and boiler unit at Aksuskaya GRES. The total capacity introduced into the National Electric Grid will be 650 MW. The repair of the power unit at the Ekibastuz GRES-2 is also expected to be completed, which will add another 500 MW to the country's energy system.

The minister instructed to complete this work within 10 days and launch the power units. Thus, the country's energy system will increase by another 1,150 MW of electricity.

As a result of the meeting, the Minister gave a number of instructions.

Energy producing organizations are instructed to:

- take all necessary measures for the timely commissioning of equipment under repair. At the same time, to prevent a decrease in the quality of repairs;

- to eliminate the risk of unscheduled outages of generating equipment in 2022, start working on the issue with the System Operator to plan the implementation of the summer repair campaign.

The system operator (KEGOC JSC), together with the developers of the forecast balance, was instructed to submit to the Ministry of Energy no later than November 15 the final version of the Energy Balance of the Republic of Kazakhstan until 2035.

**Tokayev spoke about the importance of building a nuclear power plant and the shortage of electricity**

According to the head of state, unpopular decisions will have to be made. At a meeting with representatives of the financial sector, President of Kazakhstan Kassym-Jomart Tokayev spoke about the importance of building a nuclear power plant in the country.

It is noted that in the speech of the head of state, the prospects for the development of nuclear energy in Kazakhstan were touched upon. According to the president, in the end Kazakhstan will finally come to such a decision.

Recall that Vice Minister of Energy Murat Zhurebekov said at the end of October that the construction of nuclear power plants would be discussed together with international experts.   
Within one year, the department will present a vision for the further implementation of the issue.

In his message to the people of Kazakhstan on September 1, 2021 , Kassym-Jomart Tokayev noted that due to the approaching electricity shortage in 2030, it is necessary to think about sources of reliable generation, in addition to coal and renewable energy sources. He stressed that the government and Samruk-Kazyna will study this possibility . As the head of state said, "during the year we should study the possibility of developing safe and environmentally friendly nuclear energy in Kazakhstan."

The President believes that Kazakhstan needs a nuclear power plant. But the head of state believes that when considering this issue, it is necessary to take into account the needs of the state, citizens and business.

**REPUBLIC OF KYRGYZSTAN**

**Ministry of Energy of Kyrgyzstan to build several small hydropower plants**

The Ministry of Energy intends to build several small hydropower plants on its own, head of the department Doskul said. Bekmurzaev at the ceremony of awarding certificates to companies intending to build facilities using renewable energy sources.

He noted that the construction of the Bala- Saruu hydroelectric power station continues. In addition, it is planned to build the Orto-Tokoi , Sary- Jaz , Kara- Kul , Tort- Kul HPPs . Hydroelectric power plants built on the dam will not have a negative impact on irrigation.

A small hydroelectric power plant for Kyrgyzstan is by far the most promising.

**In the Kyrgyz Republic, since the beginning of the year, the fee for supplied electricity has increased and amounted to 12.7 billion soms**

The efficiency of distribution energy companies (RECs) is increasing.

Following the results of 10 months of the current year, the collection of funds for the supplied electricity under the REC amounted to 12 billion 730.3 million soms or 103.4% of the accrual, which is more by 1 billion 704.8 million soms or 15 .5% (for the same period in 2020, the fee was 11 billion 25.5 million soms or 100.0%).

The accounts receivable of consumers to the REC decreased by 425.5 million soms or 27.0% and as of November 1, 2021 to the REC is 1 billion 151.7 million soms.

Losses of electricity in REC networks amounted to 10.9% or 1,109.2 million kWh , which is at the level of the standard (10.9%), and also lower than the same period in 2020 by 0.7%, when losses were 11.6% or 1098.4 million kWh .

191 additional transformer substations were installed in distribution networks in the regions of the republic against the plan of 181 pieces (106%) and 315 transformers were replaced against the plan of 292 (108%). 919.4 km of transmission lines-35-0.4 kV were built and reconstructed against the plan of 946.4 km (97%). This made it possible to additionally connect about 18.5 thousand new residential subscribers and 2.7 thousand new non-residential subscribers.

Also, major repairs were carried out in the distribution power grids:

- 143 substations 35/6-10 kV with a plan of 138 units or 104% of the plan;

- 3488 KTP 6-10 / 0.4 kV with a plan of 3342 pieces or 104% of the plan;

- 5 thousand 108.5 kilometers of power lines (VL and CL) 6-10-0.4 kV with a plan of 4 thousand 848.1 kilometers or 105% of the plan;

kV overhead lines with a plan of 475.6 kilometers or 102% of the plan.

**The Ministry of Energy plans to introduce an auction for the purchase of electricity generated with the help of renewable energy sources: Tariffs will then adjust themselves**

The Ministry of Energy plans to introduce an auction for the purchase of electricity generated from renewable energy sources (RES). Deputy Minister of Energy Tilek said this during a briefing by the Ministry of Energy on the development of renewable energy sources in Kyrgyzstan. Aitaliev on plans for the development of RES in Kyrgyzstan and explained why the country has the same allowances for all sources of RES.

The Ministry of Energy is carrying out comprehensive work on the development of renewable energy sources in Kyrgyzstan. The law should provide support for the energy sector, meet the interests of both investors and the population. As for the surcharge, tariff, regardless of the source of renewable energy, there is one multiplying factor.

**THE REPUBLIC OF MOLDOVA**

**The Republic of Moldova will have alternative sources of electricity imports**

The government will continue to unblock infrastructure projects that diversify electricity sources and will take new actions in this regard. So, on Friday, November 12, a contract was signed for the construction of a 158 km high-voltage overhead power transmission line with a single circuit of 400 kilovolts in the Chisinau- Vulcanesh direction .

With the construction of this line, the Republic of Moldova will be able to more easily overcome crises in the energy sector, such as, for example, in October. The Republic of Moldova must have alternative sources of electricity supply and be ready for any situation. The project supports the general program established by the Government of the Republic of Moldova for the asynchronous connection of the national electricity system to the single European electricity market through the European network of electricity transmission system operators.

The construction of a new transmission line is carried out within the framework of the electricity system development project, which also includes the modernization of the Chisinau power plant and the construction of the Vulcanesti on-off station. The cost of the entire project is 270 million euros and is financed by the World Bank. This project will improve the reliability of power supply. The Republic of Moldova will be connected to a high-voltage line with Romania. This transmission line will be able to supply about 600 megawatts of electricity. The maximum total consumption of the Republic of Moldova is approximately 1100 megawatts throughout the country: 800 for the right bank and 300 for the left bank.

International , a multinational company founded in 1945, India's second largest transmission tower manufacturer and one of the world's largest transmission line companies. So far, since 2013, the company has built 24 transmission lines in different regions of the world.

The planned duration of the project is 3 years and 4 months.

**Moldova adopted the Energy Package in cooperation with the EU**

The energy package was adapted and adopted at a meeting of the Council of Ministers organized by the European Energy Community.

The energy package consists of several documents and provides for the obligation to draw up action plans for anti-crisis management in the electric power industry and to introduce appropriate tools to prevent and manage such situations, tv8.md reports.

Under the new Energy Package, the consumer is at the center of the transition to clean energy, and the new rules allow consumers to actively participate in the energy market, providing a solid foundation for consumer protection. Directives to promote the use of energy from renewable sources and on energy efficiency provide for an increase in ambitions in terms of using energy from renewable sources and obtaining energy savings.

Once adopted, the relevant authorities should develop a Comprehensive National Energy and Climate Plan. As such, the contracting parties map out their sustainable energy goals in a single policy document that will be rescheduled by 31 December 2022.

The Council of Ministers also adopted a Decarbonization Roadmap for Energy Community contracting parties. The adoption of the Roadmap is an important signal of the Energy Community's readiness to join the European Union's efforts to achieve climate neutrality by 2050.

The Republic of Moldova acceded to the Energy Community Treaty in 2010, which aims to reform the energy sector in the interests of consumers.

Cooperation in the energy sector with the European Union through the Energy Community is also specified in the Association Agreement.

Minister of Infrastructure and Regional Development Andrei Spinu is on a working visit to Belgrade and attends the 19th meeting of the Council of Ministers organized by the European Energy Community.

# **RUSSIAN FEDERATION**

**The first solar power plant in the region will be built in the Amur region**

The facility will be able to be used for the needs of residents of the Priamurskaya ASEZ, who are implementing projects totaling 1.97 billion rubles.

The first solar power plant in the Amur Region will appear near the village of Volkovo, Blagoveshchensk District. It is assumed that it can be used for the needs of residents of the Priamurskaya ASEZ.

A solar power plant may appear near the village of Volkovo. In the Amur region, investment projects have been identified that participate in the competition of projects that provide for the construction of generating facilities operating on the basis of renewable energy sources.

The decarbonization trend is actively gaining momentum both worldwide and in Russia. The development of "green" energy based on renewable energy sources is one of the promising areas that should be paid attention now. Given the high level of insolation, the Amur Region is an excellent place to implement projects in the field of solar generation.

According to the Ministry of Economic Development of the region, a special legal regime is in force at the Priamurskaya ASEZ for 57 types of economic activity. The main direction is logistics and industry. There are 15 residents working here, who are implementing projects totaling 1.97 billion rubles and who are planning to create 607 jobs.

**System operators of Russia and Kazakhstan improve the work of emergency automation systems**

Specialists of SO UES JSC together with colleagues from the National Dispatch Center of the System Operator (branch of KEGOC JSC - NDC SO, Republic of Kazakhstan) successfully tested the joint operation of the Centralized Emergency Automation System (CSPA) of the IPS of Siberia and the CSPA of the UES of Kazakhstan.

During the tests, the possibility of transferring the table of control actions formed by the TsSPA IPS of Siberia to the Ekibastuz GRES-1 through the TsSPA UES of Kazakhstan, which is in trial operation, was checked.

The complex of local automatics for the prevention of stability failure (LAPNU) of Ekibastuz GRES-1 is the main complex of emergency automatics on the 500 kV transit Siberia - Kazakhstan - Urals. Connecting the Ekibastuzskaya GRES-1 LAPNU to the TsSPA as its downstream complex of the LAPNU of the Ekibastuzskaya GRES-1 will increase the efficiency and reliability of managing the electric power modes of the Unified Energy System of Siberia, as well as the reliability of power transmission through the Siberia-Kazakhstan-Urals transit.

To connect the emergency automation complex of Ekibastuzskaya GRES-1 to the CSPA of the IPS of Siberia, the System Operator implemented a list of measures, including work to expand the information model of the IPS of Siberia, as well as preliminary tests for the calculation of the CSPA of the IPS of Siberia of control actions, taking into account the changes made to the information model. Specialists of the System Operator and the branch of JSC "KEGOC" NDC SO developed a test program for the joint operation of the CSPA IPS of Siberia and the CSPA UES of Kazakhstan, organized communication and information exchange channels between the CSPA IPS of Siberia, the CSPA UES of Kazakhstan and LAPNU at Ekibastuz GRES- 1 .

The centralized emergency automation system is a software and hardware complex that automatically maintains the stability of the power system in the event of emergency situations in it. CSPA provides the minimum required amount of emergency control, reduces the redundancy of control actions and expands the range of permissible operating modes of the power system. The use of TsSPA allows minimizing the number of disconnected consumers in case of accidents in the power system and reducing the consequences of such accidents for consumers.

TsSPA is a unique development of domestic power engineers, which has been carried out since the appearance of the first computers in the industry in the 1960s. The ideologist for the creation and development of the CSPA was the Central Dispatch Office of the Unified Energy System. TsSPAs have a two-level structure, which provides for the installation of top-level hardware and software systems in the dispatch centers of the branches of SO UES JSC, and downstream devices - at electric power facilities.

At present, the UES of Russia operates the third generation DSPA with extended functionality, including a more advanced algorithm for calculating the static stability of the power system, as well as an algorithm for selecting control actions according to the conditions for ensuring dynamic stability (stability of the power system in the process of emergency disturbances) and a new algorithm for assessing the state of the electric power mode of the power system . Improving the DSPA, as an integral element of the modern model of emergency control of power systems, is one of the key tasks for the System Operator in the field of digital technology development. For more than 20 years, JSC "Institute of Automation of Energy Systems" (JSC "INPP") has been the most important partner of JSC "SO UES" in the field of creation and modernization of devices and complexes of emergency automatics.

**THE REPUBLIC OF TAJIKISTAN**

**Tajikistan earned $41 million more from electricity exports than last year**

Tajikistan increased the export of electricity by 1.8 times (in total monetary terms). For the ten months of this year, the republic gained more than $91.2 million due to the supply of electricity to neighboring countries.

According to the relevant departments of the country's energy sector, the amount of electricity exports increased by 1.8 times compared to the same period in 2020, or by almost $41 million.

Meanwhile, the energy sector did not disclose data on the volume of electricity supplies to neighboring countries during this period and only noted that electricity was supplied to Afghanistan and Uzbekistan.

During this period, the country produced more than 17.1 billion kWh of electricity, which is 6.1% more than the same period in 2020.

Earlier it was reported that OJHC "Barki Tojik " signed agreements with the electric power companies of Afghanistan and Uzbekistan on the supply of electricity to these countries for 2021.

It was noted that, according to the agreement, it was planned to export 3 billion kWh of electricity to Uzbekistan and Afghanistan in the spring-summer period.

According to the State Energy Holding , electricity is exported to Afghanistan through two transmission lines - 110 kV and 220 kV. The cost of electricity supplied through a 110 kV transmission line is 3 cents per kilowatt, and for 220 kV - 4.5 cents with an annual increase of 3%.

Recall that in Tajikistan since October, residents of rural areas receive electricity under the limit, although officially the introduction of the limit has not been reported.

Barki Tojik explains the restrictions on the supply of electricity to the population of the country by carrying out preventive work at substations, power lines and operating hydroelectric power plants.

**Tajikistan almost 10 times reduced the export of electricity to neighboring countries in October this year.**

This is most likely due to its acute shortage in the republic itself.

Last month, Tajik electricity was exported in the amount of $1.8 million, while in September the neighbors received it in the amount of about $17 million.

The export of Tajik electricity also decreased compared to October last year, when exports were made in the amount of $2 million.

In general, over the 10 months of this year, Tajikistan exported electricity worth about $91.3 million. This is 82% more than in January-October last year.

Tajikistan supplies electricity to Afghanistan and Uzbekistan within the framework of contracts concluded with the electric power companies of these countries.

In accordance with the agreements, these countries should receive Tajik electricity in the amount of 3 billion kilowatt-hours (1.5 billion kWh each) by the end of the year.

Afghanistan pays 3 cents per kilowatt for a 110 kV transmission line and 4.5 cents for a 220 kV transmission line , while Uzbekistan pays 2 cents, as do domestic consumers in Tajikistan.

In early October of this year, Tajikistan also started supplying energy to Kyrgyzstan, but the supplies were suspended four days later.

According to Barki Tojik , electricity generation in January-October of this year in the country was produced in the amount of over 17.1 billion kilowatt-hours, which is 6.1% more than in the same period of 2020.

Recall that consumers in rural areas of Tajikistan from the beginning of the second decade of October receive electricity in a limited amount.

Barki Tojik explains these restrictions by carrying out repair and maintenance work on power transmission lines, as well as substations.