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**REPORT**

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

**JANUARY - OCTOBER 2021**

**DEPARTMENT "MARKET DEVELOPMENT"**

**November, 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-October 2021 generated 93,741 million kWh of electricity, which is 7.5% 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-October** | | **Δ, %**  **2020** |
| **2020** | **2021** |
| **Kazakhstan** | **Total** | **87186.3** | **93741.0** | **7.5%** |
| *TPP* | *69368.9* | *74335.8* | *7.2%* |
| *GTES* | *7745.2* | *8683.6* | *12.1%* |
| *hydroelectric power station* | *8066.2* | *7859.6* | *-2.6%* |
| *WES* | *858.0* | *1359.5* | *58.4%* |
| *SES* | *1144.0* | *1500.0* | *31.1%* |
| *BSU* | *4.0* | *2.5* | *-37.5%* |
| **Northern** | **Total** | **66931.1** | **72150.4** | **7.8%** |
| *TPP* | *58004.2* | *63081.7* | *8.8%* |
| *GTES* | *2608.5* | *2429.0* | *-6.9%* |
| *hydroelectric power station* | *5501.7* | *5537.9* | *0.7%* |
| *WES* | *398.4* | *615.3* | *54.4%* |
| *SES* | *414.3* | *484.0* | *16.8%* |
| *BSU* | *4.0* | *2.5* | *-37.5%* |
| **South** | **Total** | **9252.8** | **9769.6** | **5.6%** |
| *TPP* | *5614.0* | *5732.9* | *2.1%* |
| *GTES* | *2564.5* | *2321.7* | *-9.5%* |
| *hydroelectric power station* | *135.4* | *212.9* | *57.2%* |
| *WES* | *212.0* | *488.9* | *130.6%* |
| *SES* | *726.9* | *1013.2* | *39.4%* |
| **Western** | **Total** | **11002.4** | **11821.0** | **7.4%** |
| *TPP* | *5750.7* | *5521.2* | *-4.0%* |
| *GTES* | *5001.3* | *6041.7* | *20.8%* |
| *WES* | *247.6* | *255.3* | *3.1%* |
| *SES* | *2.8* | *2.8* | *0.0%* |

# 

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

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

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No. p / p** | **Region** | **January-October** | | **Δ, %** |
| **2020** | **2021** |
| 1 | Akmola | 3,695.5 | 4361.5 | 18.0% |
| 2 | Aktobe | 3,155.5 | 3,021.1 | -4.3% |
| 3 | Almaty | 5,797.4 | 5624.0 | -3.0% |
| 4 | Atyrau | 5,096.6 | 5,723.6 | 12.3% |
| 5 | East Kazakhstan | 7,847.5 | 7,745.6 | -1.3% |
| 6 | Zhambyl | 1,858.1 | 2231.2 | 20.1% |
| 7 | West Kazakhstan | 1822.1 | 1951.4 | 7.1% |
| 8 | Karaganda | 13,587.0 | 12,939.4 | -4.8% |
| 9 | Kostanay | 860.8 | 804.1 | -6.6% |
| 10 | Kyzylorda | 410.4 | 509.7 | 24.2% |
| 11 | Mangistau | 4,083.7 | 4,146.0 | 1.5% |
| 12 | Pavlodar | 35,071.8 | 40,997.4 | 16.9% |
| 13 | North Kazakhstan | 2,713.0 | 2281.3 | -15.9% |
| 14 | Turkestan | 1,186.9 | 1404.7 | 18.4% |
|  | **Total for Kazakhstan** | **87 186.3** | **93,741.0** | **7.5%** |

The volume of electricity production by energy producing organizations of Samruk-Energy JSC for January-October 2021 amounted to 29,197.5million kWh or an increase of 21.2% compared to the same period in 2020.

*million kWh*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **2020** | | **2021** | | **Δ 2021/2020** | |
| **January-October** | **share in Kazakhstan, %** | **January-October** | **share in Kazakhstan, %** | **million kWh** | **%** |
|  | **JSC " Samruk-Energy "** | **24,083.1** | **27.6%** | **29,197.5** | **31.1%** | **5,114.4** | **21.2%** |
| *1* | *JSC AlES \_* | 4201.1 | *4.8%* | 4053.4 | *4.3%* | *-147.7* | *-3.5%* |
| *2* | *LLP " Ekibastuz GRES-1"* | *14,974.0* | *17.2%* | 18479.6 | *19.7%* | *3505.6* | *23.4%* |
| *3* | *JSC " Ekibastuz GRES-2"* | *3,582.5* | *4.1%* | 5504.6 | *5.9%* | *1922.1* | *53.7%* |
| *4* | *JSC " Shardara HPP"* | *435.5* | *0.5%* | 405.4 | *0.4%* | *-30.1* | *-6.9%* |
| *5* | *JSC Moynakskaya HPP* | *757.4* | *0.9%* | 625.8 | *0.7%* | *-131.6* | *-17.4%* |
| *6* | *Samruk-Green LLP Energy »* | *4.9* | *0.006%* | 16.8 | *0.018%* | *11.90* | *242.9%* |
| *7* | *LLP "First wind power plant"* | *127.7* | *0.1%* | 111.9 | *0.1%* | *-15.8* | *-12.4%* |

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

# *Consumption of electrical energy by zones and regions*

According to the System Operator, in January-October 2021, there was an increase in the dynamics of electricity consumption in the republic compared to January-October 2020 by 7.3%. Thus, in the northern zone of the republic, consumption increased by 5.8%, in the southern zone by 11.6% and in the western zone by 7.5%.

*million kWh*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **January-October 2020** | **January-October 2021** | **Δ,** | **Δ, %** |
| **I** | **Kazakhstan** | **86,734.70** | **93,024.6** | **6,289.9** | **7.3** |
| 1 | Northern zone | 57,156.80 | 60,459.5 | 3302.7 | 5.8 |
| 2 | Western zone | 11 036 | 11,866.9 | 830.9 | 7.5 |
| 3 | Southern zone | 18,541.90 | 20,698.3 | 2156.4 | 11.6 |
|  | ***incl . \_ by regions*** |  |  |  |  |
| 1 | East Kazakhstan | 7,516.50 | 7,757.9 | 241.4 | 3.2 |
| 2 | Karaganda | 15 020 | 15,563.0 | 543.0 | 3.6 |
| 3 | Akmola | 7,222.40 | 8215.9 | 993.5 | 13.8 |
| 4 | North Kazakhstan | 1 331 | 1402.6 | 71.6 | 5.4 |
| 5 | Kostanay | 3,726.20 | 3916.0 | 189.8 | 5.1 |
| 6 | Pavlodar | 16,925.40 | 17,938.1 | 1,012.7 | 6.0 |
| 7 | Atyrau | 5,133.10 | 5442.1 | 308.9 | 6.0 |
| 8 | Mangistau | 4,091.70 | 4337.6 | 245.9 | 6.0 |
| 9 | Aktobe | 5415.30 | 5665.9 | 250.6 | 4.6 |
| 10 | West Kazakhstan | 1,811.20 | 2087.2 | 276.0 | 15.2 |
| 11 | Almaty | 8999.10 | 10,042.8 | 1,043.7 | 11.6 |
| 12 | Turkestan | 4,164.20 | 4,698.6 | 534.4 | 12.8 |
| 13 | Zhambyl | 3,995.60 | 4372.5 | 376.9 | 9.4 |
| 14 | Kyzylorda | 1 383 | 1584.3 | 201.3 | 14.6 |

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

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

January-October 2021 compared to January-October 2020, the industrial production index (hereinafter referred to as IPP) amounted to 102.9%. An increase in production volumes was recorded in 14 regions of the republic, a decrease was observed in Atyrau , West Kazakhstan and Mangystau regions.

**Changes in industrial output by region**

*in % to the corresponding period of the previous year*

In the city of Almaty, due to an increase in the growth in the production of sunflower oil, boxes, boxes made of paper or cardboard, ready-mixed concrete, mortars, bituminous mixtures, steel pipes, building prefabricated metal structures, furniture, cars, buses, the IPP amounted to 118%.

In the Almaty region, the IPP was 113.3% due to an increase in the production of soft drinks, fruit and vegetable juices, pasta, sugar, medicines, tiles, cement and concrete bricks, building prefabricated metal structures, Portland cement, mortars.

In the city of Nur -Sultan, the IPP was 110.5% due to the growth in the production of soft drinks, preforms , ready-mixed concrete, mortars, refined gold, plastic packaging products, prefabricated building structures made of cement and concrete, and the production of railway and diesel locomotives.

In the Kostanay region, the IPP amounted to 108.1% 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, hot-rolled bars and rods from steel, tractors, combines and cars .

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 108.8%.

In the North Kazakhstan region, due to the growth in the extraction of uranium and thorium ores, the production of milk, flour, confectionery, linseed oil, cheeses, sacks and packaging bags, an increase in the production of freight cars, the IPP amounted to 105.9%.

In the city of Shymkent, due to an increase in the production of soft drinks, sunflower oil, medicines, Portland cement, fuel oil, diesel fuel, kerosene, transformers, plastic pipes, the IPP amounted to 106.7%.

In the Zhambyl region, due to the growth in the extraction of gold ores, finely ground phosphate raw materials, the production of sugar, pesticides, pharmaceuticals, ferrosilicomanganese , sulfuric and orthophosphoric acids, diesel fuel, bituminous mixtures, fuel oil, the IPP amounted to 105%.

In the Aktobe region, the IPP amounted to 102.8% due to an increase in the production of oil, gas condensate, zinc concentrates, iron ores, an increase in the production of finished animal feed, ferrochromium, chromium salts, chromium oxide, sodium bichromate, diesel fuel, liquefied propane and butane, heating oil, building solutions.

In the East Kazakhstan region, the IPP amounted to 105.2% due to an increase in the extraction of coal, copper and gold-bearing ores, gold-bearing concentrates, the production of finished animal feed, refined gold and silver, enriched uranium, trucks and tractors.

In Pavlodar region, the IPP amounted to 103.1% due to the growth in the production of pesticides, ferrosilicochrome , propylene polymers, gasoline, diesel fuel, kerosene, liquefied propane and butane, household furnace fuel, steel rods and rods, 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, flour, sausages, cheeses, electrical transformers and wires, circuit breakers, building prefabricated metal structures, the IPP amounted to 102.2%.

In the Kyzylorda region, the IPP amounted to 100.3% due to an increase in the extraction of uranium and thorium ores, the production of rice, sulfuric acid, lime, Portland cement, building prefabricated concrete structures.

In the Karaganda region, the growth of IPP amounted to 100.1% due to an increase in the extraction of gold ores and concentrates, copper and manganese ores, lead-zinc ores, the production of medicines, coke and semi-coke from hard coal, pig iron, flat rolled products, unalloyed steel .

In Mangistau (98.7%) and Atyrau (99.4%) regions, the IPP decreased mainly due to a reduction in crude oil production.

In the West Kazakhstan IPP amounted to 92.8% due to a decrease in gas condensate production.

# *Electricity consumption by large consumers in Kazakhstan*

In January-October 2021, compared to the same period in 2020, electricity consumption by large consumers increased by 1.43%.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No. p / p** | **Consumer** | **January-October** | | |
| **2020** | **2021** | **Δ, %** |
| 1 | JSC Arcelor Mittal Temirtau" | 3,055.7 | ***3,112.9*** | 1.9% |
| 2 | JSC AZF ( Aksuysky ) "TNK Kazchrome " | 4,827.0 | ***4313.9*** | -10.6% |
| 3 | Kazakhmys LLP Smelting » | 997.1 | 898.3 | -10% |
| 4 | Kazzinc LLP \_ | 2368.5 | 2299.6 | -3% |
| 5 | JSC " Sokolovsko-Sarbayskoye GPO" | 1413.7 | 1334.4 | -6% |
| 6 | Kazakhmys Corporation LLP | 1062.2 | 1,075.0 | 1% |
| 7 | AZF JSC (Aktobe) "TNK Kazchrome " | 2680.0 | 2,710.6 | 1% |
| 8 | RSE “Channel them. Satpaev » | 224.1 | 316.5 | 41% |
| 9 | Kazphosphate LLP \_ | 1,822.6 | 1688.0 | -7% |
| 10 | NDFZ JSC (part of Kazphosphate LLP ) | 1600.3 | 1429.6 | -11% |
| 11 | LLP " Taraz Metallurgical Plant" | 211.3 | 249.8 | 18% |
| 12 | JSC " Ust-Kamenogorsk titanium -magnesium plant" | 585.2 | 563.6 | -4% |
| 13 | Tengizchevroil LLP \_ | 1523.4 | 1513.2 | -1% |
| 14 | PAZ JSC (Pavlodar Aluminum Smelter) | 793.3 | 789.9 | 0% |
| 15 | JSC "KEZ" (Kazakhstan electrolysis plant) | 3,133.1 | 3,143.8 | 0% |
| 16 | TemirzholEnergo LLP \_ | 1,197.8 | 1393.0 | 16% |
| 17 | JSC "KEGOC" | 3663.6 | 4,577.8 | 25% |
| **Total** | | **29,558.6** | **29,980.4** | **1.43%** |

*million kWh*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Name** | **January-September** | | **Deviation, million kWh** | **Δ , %**  **2020** |
| **2020** | **2021** |
| **I** | **JSC " Samruk-Energy "** | **5220.97** | **5,834.2** | **613.2** | **11.7%** |
| *1.* | *Bogatyr- Komir LLP* | 217.41 | 218.8 | 1.4 | 0.7% |
| *2.* | *JSC Alatau Zharyk Companies »* | 644.30 | 685.0 | 40.7 | 6.3% |
| *3.* | *LLP " AlmatyEnergoSbyt "* | 4359.25 | 4930.4 | 571.1 | 13.1% |

# **Coal**

# *Coal mining in Kazakhstan*

According to the Bureau of National Statistics, Kazakhstan produced 88,876.1 thousand tons of hard coal in January-October 2021, which is 1% more than in the same period in 2020 (87,840.9 thousand tons).

*thousand tons*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Region** | **January-October** | | **Δ, %** |
| **2020** | **2021** |
| 1 | Pavlodar | 53,972.9 | 53,716.9 | 99.5% |
| 2 | Karaganda | 27,521.0 | 27,668.8 | 100.5% |
| 3 | East Kazakhstan | 6,095.3 | 7020.3 | 115.2% |
|  | **Total for the Republic of Kazakhstan** | **87,840.9** | **88,876.1** | **101.2%** |

*Coal mining Samruk-Energo JSC*

In January-October 2021, Bogatyr Komir LLP produced 36,821 thousand tons, which is 4.8% more than in the corresponding period of 2020 (35,127 thousand tons).

*Sale of coal by Samruk-Energy JSC*

In January-October 2021, 36,831 thousand tons were sold, including :

- to the domestic market of the Republic of Kazakhstan 28,793 thousand tons, which is 7.7% more than in the corresponding period of 2020 (26,730 thousand tons);

- for export (RF) - 8,038 thousand tons, which is 4.4% less than in the corresponding period of 2020 (8,411 thousand tons).

*thousand tons*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Region** | **Sales volume, thousand tons** | | **Δ, %**  **2021/2020** |
| **January-October 2020** | **January-October 2021** |
| **Total to the domestic market of the Republic of Kazakhstan** | | **26 730** | **28 793** | **107.7%** |
| **Total for export to Russia** | | **8 411** | **8038** | **95.6%** | **1 144** | **46.8%** |

# According to the indicators for January-September 2021, compared to the same period in 2020, the Company observed an increase in coal sales by 6.6%.

# **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 for January- October 2021 amounted to 3,546.3 million kWh . Compared to the period of January-October 2020 (2,645 million kWh ), the increase was 34.1%.

million kWh

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **2020** | | **20 2 1g** | | **Deviation**  **2020/2021,** | |
| **January-October** | **share in Kazakhstan, %** | **January-October** | **share in Kazakhstan, %** | **million kWh** | **%** |
|  | **Total output in Kazakhstan** | **87186.3** | **100%** | **93741.0** | **100%** | **6554.7** | **7.5** |
| **I** | **Total RES in the Republic of Kazakhstan, incl . by zones** | **2645.0** | **3.0%** | **3546.3** | **3.8%** | **901.3** | **34.1** |
| 1. | *Northern zone* | 937.2 | 35.4% | 1231.6 | 34.7% | **294.4** | **31.4** |
| 2. | *Southern zone* | 1457.4 | 55.1% | 2056.6 | 58.0% | **599.2** | **41.1** |
| 3. | *Western zone* | 250.4 | 9.5% | 258.1 | 7.3% | **7.7** | **3.1** |
| **II** | **Total RES in the Republic of Kazakhstan, incl . by type** | **2645.0** | **3.0%** | **3546.3** | **3.8%** | **901.3** | **34.1** |
| 1. | *SES* | 1144.0 | 43.3% | 1500.0 | 42.3% | **356.0** | **31.1** |
| 2. | *WES* | 858.0 | 32.4% | 1359.5 | 38.3% | **501.5** | **58.4** |
| 3. | *Small HPPs* | 639.0 | 24.2% | 684.3 | 19.3% | **45.3** | **7.1** |
| 4. | *BiogasInstallations* | 4 | 0.2% | 2.5 | 0.1% | **-1.5** | **-37.5** |

January-October 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-October** | **share in Kazakhstan, %** | **January-October** | **share in Kazakhstan, %** | **million kWh** | **%** |
|  | ***Electricity production in UES RK*** | **87186.3** | **100%** | **93741.0** | **100%** | **6554.7** | **7.5** |
| 1. | Production of "clean" electricity (RES + Large HPPs) | 10072.2 | 11.6% | 10721.6 | 11.4% | 649.4 | 6.4 |
| 2. | Production of "clean" electricity (RES excluding Large HPPs) | 2645.0 | 3.0% | 3546.3 | 3.8% | 901.3 | 34.1 |

Samruk-Energy JSC (SPP, WPP, small hydropower plants) in January-October 2021 amounted to 269.1 million kWh or 7.6% of the volume of electricity generated by renewable energy facilities in the Republic of Kazakhstan, which is compared to the same the period of 2020 is lower by 3.4 % (in January-October 2020, the generation of RES of the Company amounted to 278.5 million kWh , and the share of RES of the Company was 10.5%).

million kWh

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Name** | **2020** | | **2021** | | **Deviation 2020/2021,** | |
| **January-October** | **share in Kazakhstan, %** | **January-October** | **share in Kazakhstan, %** | **million kWh** | **%** |
| 1 | Production of JSC " Samruk-Energo " "clean" electricity (RES excluding Large HPPs), including : | **278.5** | **10.5%** | **269.1** | **7.6%** | **-9.4** | **-3.4** |
|  | *AlES JSC Cascade of small HPPs* | 145.9 | 5.5% | 140.4 | 4.0% | **-5.5** | **-3.8** |
|  | *Samruk - Green Energy LLP SPP 2 MW* | 3.6 | 0.1% | 4.8 | 0.1% | **1.2** | **33.3** |
|  | *Samruk - Green Energy LLP WPP Shelek 5 MW* | 1.3 | 0.0% | 12.0 | 0.3% | **10.7** | **823.1** |
|  | *First Wind Power Plant LLP WPP 45 MW* | 127.7 | 4.8% | 111.9 | 3.2% | **-15.8** | **-12.4** |

# **Centralized electricity trading JSC " KORE M"**

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

# **Export-import of electrical energy**

In order to balance the production and consumption of electricity in January-October 2021, exports to the Russian Federation amounted to 2,329.78 million kWh , imports from the Russian Federation - 1,145.93 million kWh .

Including export of KEGOC JSC to the Russian Federation - 1,095.74 million kWh , import of electricity for the reporting period in the amount of 1,308.22 million kWh .

million kWh

| **Name** | **2020** | **2021** | **Δ 2021/2020** | |
| --- | --- | --- | --- | --- |
| **January-October** | | **million kWh** | **%** |
| **Export of Kazakhstan** | **-1717.17** | **-2329.78** | **-612.62** | **0.36** |
| **in Russia** | **-865.12** | **-1145.93** | **-280.82** | **0.32** |
| **in the IPS of Central Asia** | **-852.05** | **-1183.85** | **-331.80** | **0.39** |
| **Import of Kazakhstan** | **1265.58** | **1613.42** | **347.85** | **0.27** |
| **From Russia** | **950.73** | **1308.22** | **357.49** | **0.38** |
| **from IPS Central Asia** | **314.85** | **305.21** | **-9.64** | **-0.03** |
| **Balance- flow "+" deficit, "-" excess** | **-451.59** | **-716.36** | **-264.77** | **0.59** |

# **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, two 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), two meetings of authorized representatives of the Member States (March 18 and July 30), 19 meetings of the Subcommittee on the formation of the IER EAEU Advisory Committee on the Electricity 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, 60th meeting on March 26, 61- th meeting 9 April, 62nd meeting 16 April, 63rd meeting 13 May, 64th meeting 7 June, 65th meeting 24-25 June, 66th meeting 7 July, 67th 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 15 October , 74th meeting 25-26 October) 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, 5 5 meetings of the Electric Power Council of the Commonwealth of Independent States (hereinafter referred to as the 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**

**For Armenia, the most correct would be the construction of a reactor with a capacity of 600 MW**

In terms of scale for Armenia, the most correct could be a 600 MW reactor, the project of which is available at the research institutes of Rosatom .

We are talking about the construction of a low-power reactor, which must be built by the end of the life of the 2nd unit of the Armenian NPP. In the near future, the modernization process of Unit 2 will be completed and a license for its operation until 2026 will be obtained. Rosatom Corporation will participate in the process of technical operation of the station and maintaining its high level of safety, as well as the task of further extending the reactor's operating life until 2036.

As it was said at the round table, practice shows that the station can be operated until 2036 if certain measures are taken to further improve its safety. It is by this time that the government and the corporation plan to launch a new unit of small nuclear power plants operating on the basis of modernized pressurized water nuclear reactors RITM - 200, which are intended for installation on icebreakers and promising floating nuclear power plants and which Rosatom Corporation intends to "land on the ground " .

**Armenian NPP has been connected to the unified energy system of Armenia since October 17**

After scheduled preventive maintenance (PPR-2021), within the framework of the project to modernize and extend the life of the Armenian Nuclear Power Plant, on October 17, 2021, the ANPP power unit No. 2 was launched, which was connected to the unified energy system of the Republic of Armenia. This was reported in the press service of the Armenian NPP.

The key scheduled preventive maintenance (PPR-2021) as part of the project to modernize and extend the operation of the plant started at the Armenian NPP in early June. It was reported that the nuclear power plant was shut down for 141 days. This is the longest shutdown since the beginning of the modernization project. Such a long stop is connected with the final important work on the modernization of the power unit. The station is actually prepared for the final part of the life extension work. And the annealing of the reactor will allow it to return to its original state by 80-85% (August 6, the ANPP press service reported that work on the restorative annealing of the VVER-440 reactor vessel of power unit No. 2 was completed at the Armenian NPP. Work at the station is carried out in order to extend the operating life NPP until 2026).

According to the information of HAEK CJSC, employees of almost all departments of the Armenian NPP, as well as about 600 specialists from Russia, Belarus, Ukraine, Croatia, the Czech Republic, Slovakia and other countries, participated in the work. "One of the most important processes of PPR-2021 was the annealing of the metal of the reactor vessel. It was successfully carried out at the ANPP and will help extend the design life and improve the safety level of power unit No. 2," the report says.

During the long shutdown of the unit, work was also carried out to modernize the main safety systems: the emergency core cooling system, the sprinkler system, the reliable power supply system, the in-reactor process control system and the information and computing system.

With the participation of specialists from Rusatom Service JSC and involved contractors, as well as plant personnel, exceptional work in the history of the ANPP was performed on an unprecedented scale, in particular, installation of about 730 m of pipeline and about 270 fittings, manufacturing of 420 new welded joints   
, as well as non-destructive control of about 4700 welds, laying and installation of cables with a length of about 42 km, etc.

In parallel with the work of the final stage of extending the design life of the ANPP power unit No. 2, the work provided for by the annual scheduled repair was carried out: overhaul of about 520 pieces of equipment, as well as medium and current repairs of about 330 pieces of equipment, etc.

PPR-2021 was the longest for the power unit No. 2 of the Armenian NPP. Its implementation became possible due to the maximum concentration of efforts of the ANPP personnel, clear organization of work, coordination of the simultaneous execution of work   
with numerous specialists involved from contracting organizations.

According to the intergovernmental agreement, Russia provided Armenia with a state loan of $300 million for the modernization of the second power unit of the ANPP (of which $270 million is a loan, $30 million is a grant). As of the end of February 2020, the Armenian side disbursed about $200 million from the state loan. In April 2019, the Armenian side applied to the Russian Ministry of Finance with a proposal to prolong the loan, as well as postpone the start of repayment of the loan   
(from December 31, 2019 to December 31, 2021) against the backdrop of a delay in the work on the project.

Without agreeing, in June 2020, Armenia refused the remainder of the Russian loan. The then Minister of Territorial Administration and Infrastructures of Armenia, and now Deputy Prime Minister Suren Papikyan , noted that at this stage, the authorities considered it more beneficial for the country to find funds from other sources for these purposes. As part of the ANPP modernization program , Papikyan confirmed that the state corporation Rosatom remains Armenia's main partner   
(its subsidiary Rusatom -Service is the general contractor for the station's modernization program) .

**REPUBLIC OF BELARUS**

**Electricity consumption in Belarus in January-September increased by almost 2 billion kWh .**

The volume of electricity consumption in Belarus for the nine months of 2021 increased by 1.95 billion kWh compared to the same period last year and amounted to 29.5 billion kWh . Minister of Energy Viktor Karankevich said this at a meeting with the staff of the Grodno CHPP-2, the press service of the Ministry of Energy reported.

At the same time, electricity consumption by the real sector of the economy over this period increased by 1.12 billion kWh , by the population - by 200 million kWh , by the energy system - by 630 million kWh .

Last year, the volume of electricity consumption in the country amounted to 38 billion kWh . This year it is predicted that it will exceed 40 billion kWh , and by the end of 2025 it will grow to 44 billion kWh .

Throughout 2021, there has been a steady growth in electricity consumption, this was facilitated by comprehensive measures taken at the level of the head of state and government. In particular, an intersectoral set of measures is being implemented to increase electricity consumption until 2025, within the framework of which new production facilities are being created and existing ones are being modernized. The volume of electrification of the housing stock is growing. This work is organized in three main areas - the electrification of multi-apartment housing stock, the transfer of multi-apartment buildings from the use of solid fuel to electricity, as well as the electrification of individual housing stock for the needs of heating and hot water supply.

**New ASKUE devices released**

In the production laboratory of the "Training Center" branch of RUE " Vitebskenergo " the production of new ASKUE devices has been mastered. The devices were developed and created as part of the program for the introduction of automated systems for the commercial accounting of electricity. They allow you to automate the control of electricity and power consumption in the industrial and housing and communal sectors, as well as collect, process and store metering parameters in a database.

The AMR device includes primary (electricity meters and measuring current and voltage transformers) and secondary (devices for collecting and transmitting data) means of measuring and accounting for electricity, as well as communication channels that provide remote data collection via standard interfaces and protocols from primary to secondary means accounting.

In 2021, the branch has already produced more than 500 ASKUE devices, each of which can serve up to 1000 meters. In 2022, it is planned to increase the production of devices up to 1000 units per year.

**Digital transformation**

At the moment, digital transformation is one of the main priorities for the development of the economy not only in the Republic of Belarus, but also in a number of former Soviet republics. In 2017, the decision of the Supreme Eurasian Economic Council “On the main directions of the implementation of the digital agenda of the EAEU” was adopted. In this regard, the program "Digital Development of Belarus" for 2021–2025 was created in our country. and sectoral programs have been formed, including those for the energy sector.

Thus, the employees of RUE "BELTEI" and RUE " Belenergo " developed a strategy for informatization and digital transformation of the electric power industry for the period up to 2025, the main provisions of which within the framework of the Belarusian Energy Environmental Forum Energy Expo - 2021 was shared by Anna BEREZANSKAYA, junior researcher of the general energy department of RUE "BELTEI". According to the specialist, the main goal of the digital transformation of the energy industry is to create conditions for improving the reliability, technological, economic, organizational and structural efficiency of the electric power industry by introducing advanced information technologies into the processes of the industry.

“In the organizations of the State Production Association Belenergo , measures are constantly being taken to develop and implement information systems. Currently, automated process control systems of various degrees of automation are operated at energy industry facilities, and separate systems for business processes on various platforms are also being developed. The construction of a system for automatic control of the frequency and power flows of the UES of Belarus is nearing completion. Control panels are being replaced with modern collective display systems of the " video wall " type. As for the work on automated systems for monitoring and accounting for energy resources, they are being carried out in four areas. AMRs for interstate and intersystem flows and generations have been implemented in full, AMRs for RUP- oblenergo have been fully implemented for four regions, AMRs for industrial consumers with a capacity of 750 kV or more have been implemented by 82%, the number of AMRs for the domestic sector is gradually increasing. Also, in many distribution zones, work is underway to introduce "smart grid" technologies. Today, 99% of 35–110 kV substations are equipped with a telesignaling system and 88% with telecontrol systems. It is expected that in the future the level of digitalization will require a large scale of data transmission, which at the moment the communication systems cannot provide. Fiber-optic communication lines are underdeveloped, a significant number of metal cable lines have exhausted their resources and need to be replaced. That is why the development of communication systems will become one of the key areas of digitalization .”

As part of the Strategy, it is planned to create our own unified integrated digital communications network, which will include two levels. The first level will be a high-speed backbone network that will cover all RUE- oblenergos and large substations, and the second level will be an intra-system network for connecting other power facilities to the backbone network . Creation of the backbone network is planned on the basis of FOCL, topologically it will coincide with the existing network with maximum coverage of electric power facilities. To implement this measure, it is planned to reconstruct and build 183 objects of communication networks and digital infrastructure and 955 km of fiber-optic and communication lines.

The Strategy also approved the Target Model for the Digital Transformation of the Electricity Industry, the implementation of which is based on 4 main principles. Among them are the creation of a unified digital environment, the development of information systems based on unified platform solutions, a unified technical policy of association and the use of modern innovative digital technologies. To achieve the target model, it will be necessary to create an industry-wide business intelligence system at the level of Belenergo with an integrated artificial intelligence system and a single source of unified data coming from technological and corporate systems in real   
time. A single digital environment will ensure the availability of information on the state of energy facilities for various services for monitoring and controlling the operating mode, for planning repairs and replacing devices. Also, the introduction of a single environment will allow collecting and processing large volumes of statistical data and will ensure two-way exchange of information using online monitoring, telecontrol and telemechanization systems. “In addition, the Strategy provides for the creation of a two-level system for collecting, processing and analyzing technological and corporate information. The top level, where Belenergo will be represented , will ensure the storage of information, the provision of prompt access to it, a single archive and data protection. As for the lower level, it will present the digital systems of each RUE- oblenergo . Also, as part of the digital transformation for the period up to 2025, it is planned to digitize a number of business processes.   
First of all, among them it should be noted procurement activities, logistics management, including monitoring of warehouse stocks, monitoring of investment activities, planning of production and economic activities. Currently, there are several approaches in the world for assessing the level of digitalization of the economy, which include such components as infrastructure development, digitalization costs , involvement in digital activities, human capital, the level of Internet use, and the integration of digital technologies into public services . In 2019, JSC Giprosvyaz developed a system for assessing the level of digitalization for the most important sectors of the economy, compatible with indicators used in other countries of the world. A separate section of indicators was also developed for the energy sector (each of them corresponds to an index   
from 0 to 1). The indicators of digitalization of the energy sector are divided into 3 main groups: management processes, core business processes and auxiliary business processes.   
According to the forecasts of the State Production Association " Belenergo ", it is expected that the implementation of all the measures of the Strategy will lead to a qualitative and quantitative change in the indicators of the energy sector in the field of informatization and digital transformation. Thus, the degree of automation of decision-making, automation of distribution power networks and automation of employee control should increase significantly; it is also expected to increase the share of digital substations, the share of consumers integrated into ASKUE, and the share of energy sources equipped with automated process control systems.

According to the Strategy, the total amount of funding for the program will be about 653 million rubles. The main source of funding (99.8%) will be the own funds of enterprises that are part of the system of the Ministry of Energy, and the share of the republican budget (0.08%) will be directed to the creation of digitalization systems at the BelNPP . The largest part of the total amount of funds (38%) will be allocated for the design and construction of fiber-optic communication lines, about 16% of the budget will be spent on replacing induction metering devices and introducing them into the ASKUE-byt system.

**THE REPUBLIC OF KAZAKHSTAN**

The global trend led to a reduction in tariffs for solar power plants in Kazakhstan from 2014 to 2020 by 58 percent at once.

The International Renewable Energy Agency (IRENA) analyzed the results of auctions for the construction of renewable energy sources over the past 10 years and calculated how much alternative energy has fallen in price. From 2010 to 2020, the average global cost of electricity generated by solar power plants (SPPs) fell by 74 percent to $0.04 per kWh (about 18 tenge). According to the agency's calculations, this is 27 percent below the cheapest coal generation tariff.

Tariffs for onshore wind farms (WPPs) have fallen by 47 percent over the past decade, to $0.04. The data on tariffs for offshore wind farms in the IRENA report are incomplete, but they are expected to be in the corridor of 0.05-0.10 US dollars in Europe in 2023.

The lowest tariffs in the past 18 months were offered by new SPPs in Qatar ($0.0157), the UAE ($0.0135) and Saudi Arabia ($0.0104). The agency notes that a few years ago it was impossible to imagine that tariffs could fall below $0.02.

The cost of renewable energy has decreased so significantly due to the improvement of technology and the value chain, as well as economies of scale, IRENA explains. As a result, last year the "green" share in the global increase in generating capacity was 62 percent. In the global energy system, RES account for 36.6 percent; in 2020, their installed capacity reached 2,799 GW.

**In trend**

Last year, RES tariffs in Kazakhstan followed the global trend. Solar energy fell the most, wind farm tariffs also dropped significantly.

In Kazakhstan, the starting point for renewable energy as an industry is considered to be 2014, when the Government approved fixed tariffs for renewable energy projects. In 2018, an auction selection of projects was launched in the republic - the winners were the investors who offered the lowest tariff per kilowatt-hour. The auction model made it possible to achieve a rapid reduction in tariffs in the "green" energy of the Republic of Kazakhstan.

In 2020, the cost of solar energy in Kazakhstan decreased by 55 percent from the level of 2014 - the average tariff was 15.54 tenge per kWh. Winners of auctions for the construction of wind turbines offered an average of 19.51 tenge per kWh (-14 percent), small hydroelectric power plants - 14.69 tenge per kWh (-0.9 percent).

The tariff reduction went hand in hand with an increase in the number of new projects: from 2014 to 2020, the number of "green" stations in the country increased from 26 to 115, the installed RES capacity increased from 178 to 1635 MW. In 2020, Kazakhstan reached the target indicator for the development of renewable energy - three percent of the total generation in the country.

Stable growth in the volume of "green" generation is due to state support for the renewable energy sector. The settlement and financial center of KEGOC, the national operator of the electric power system of the Republic of Kazakhstan, is guaranteed to buy all electricity from renewable sources for 15 years (from 2021 for winners of new auctions - 20 years). In the future, RES electricity is purchased by coal-fired and gas turbine power plants (conditional consumers).

**The birth of competition**

In 2020, 16 auction winners offered tariffs for HPPs from 13.48 tenge, solar power plants from 14.58 tenge and wind farms from 15.90 tenge. Such results bring renewable energy in the country closer to the tariffs of new gas-fired power plants. The gas piston power plant of OralMunaiProm LLP , commissioned in 2020, sells electricity at 16.92 tenge per kWh (the tariff is effective from July 1, 2021). It also offers the highest tariff among all 47 groups of energy producing organizations in Kazakhstan, which include all coal, gas and large hydroelectric power plants. Another gas generation, SagatEnergy LLP (launched in 2012 and expanded in 2016), received a tariff of 15.04 tenge. For comparison, it is the new power plants, the payback period of which has not yet been completed. At the same time, it is not possible to compare the cost of electricity at new coal-fired power plants due to the absence of such — in Kazakhstan, in the last 10 years, new power units have been introduced only at existing coal-fired power plants.

**Minister of Energy of Kazakhstan Magzum Mirzagaliev promised to restore Ekibastuz GRES-1 by the end of 2023.**

Ekibastuz GRES-1 and GRES-2 are the main energy sources of the northern and southern zones of the Unified Electric Power System of Kazakhstan.

The goal of the project for the restoration of the first power unit at Ekibastuz GRES-1 is to increase the plant's capacity by 500 MW. This will ensure the predicted growth in consumption in the Unified Energy System of Kazakhstan.

The amount of investment provided for by the comprehensive plan is 66.5 billion tenge. The project implementer is Samruk-Energy JSC .

At present, the readiness of the Ekibastuz GRES-1 project is 41.8%. Old equipment was dismantled by 88.3% and new equipment was installed by 33%. Completion of the project is scheduled for the end of 2023.

The project for the expansion and reconstruction of the Ekibastuz GRES-2 involves the construction of a new power unit with a capacity of 636 MW by 2025.

Based on the results of this project, the plant's installed capacity will be increased from 1,000 MW to 1,636 MW. Currently, work is underway to adjust the design and estimate documentation of the project, with a deadline for completion in December this year.

**REPUBLIC OF KYRGYZSTAN**

**New electricity and heat tariffs come into force in the Kyrgyz Republic**

Electricity and heat tariffs in Kyrgyzstan came into force on October 15 this year . Electricity tariffs for end consumers for 2021

Population:

for household consumers, tariffs will remain at the current level - 0.77 soms per kilowatt-hour. When consuming more than 700 kilowatt-hours per month, the tariff will be 2.16 soms per kilowatt-hour;

for citizens living in highlands and remote hard-to-reach areas, the consumption rate will not be established. The tariff will be 0.77 soms per kilowatt-hour for the whole year;

for pumping stations and wells that provide the population with drinking water and water for irrigation of agricultural land, as well as those used for the needs of the sewerage sector, the tariff for electricity will be 1.09 soms per kilowatt-hour (excluding taxes);

electric transport, boarding schools for children , social stationary and semi-stationary institutions for the disabled and/or the elderly, as well as religious organizations - 1.68 soms per kilowatt-hour (excluding taxes);

industrial, agricultural, budget and other consumers - 2.52 soms per kilowatt-hour (excluding taxes);

mining entities , enterprises of the gold mining industry, enterprises for the production of alcoholic products - 5.04 soms per kilowatt-hour (excluding taxes);

foundry smelting shops - 3.78 soms per kilowatt-hour;

cement plants - 3.28 soms per kilowatt-hour (excluding taxes).

Tariffs for thermal energy for end consumers for 2021

Population:

the tariff for thermal energy will remain - 1,134.76 soms per gigacalorie ;

the tariff for hot water supply will also not change - 981.76 soms per gigacalorie .

For other consumer groups, the tariff for heat energy will be 1,802 soms per gigacalorie (excluding taxes), for hot water supply - 1,802 soms per gigacalorie (excluding taxes).

**National Development Program of the Kyrgyz Republic until 2026**

Based on the strategic agenda, it is necessary to reduce the country's dependence onhydrocarbon energy sources. One of the acceptable solutions is a more large-scale development of hydropower and the transition to alternative energy, taking into account changes in the internal structure of energy consumption and technological modernization of the economy, especially climate change processes. This is a fundamental and complex task that requires a lot of effort and resources.

In the medium and long term, electricity consumption will increase. The most important task is to launch new hydropower projects. The hydropower potential of the Naryn River basin should be realized, taking into account the priority and efficiency of the construction of promising hydroelectric power plants ( Kambaratinskaya HPP-1, Upper Naryn cascade of HPPs, Susamyr-Kokomeren cascade of HPPs, Kazarmansky cascade of HPPs and others).

An accelerated reconstruction and modernization of existing capacities at the Cascade of Toktogul HPPs is required.

In parallel, it is necessary to develop the sale (export) of energy, creating new electricity trading markets, the beginning of which is the CASA-1000 project, as well as the project to create a single market of the EAEU member states. The possibility of exporting energy in the future should also be directed to East Asia. Taking into account the construction and launch of new energy facilities, it becomes expedient to study the possibility of entering new sales markets.

It is necessary to launch the process of designing, developing and launching small hydropower plants with guaranteed state purchase of electricity from small and medium-sized producers at mutually attractive tariffs and terms. The Cabinet of Ministers of the Kyrgyz Republic, together with local authorities, will decide at the legislative level the issues of land allocation for hydropower projects. This will allow putting into operation generating facilities with a total capacity of 300-400 MW.

From a financial point of view, the energy sector is in critical condition and remains unattractive for investors. It is necessary to take a step that is difficult but necessary for the sustainability of the sector - a gradual increase in tariffs. Compensatory measures will be taken to support socially vulnerable categories of citizens.

In addition, it is required to review and increase electricity tariffs for highly profitable projects. It is necessary to improve the flexibility of electricity consumption metering systems so that the system can respond to seasonal, daily changes in demand, smoothing out peak loads.

Particular attention will be paid to alternative, environmentally friendly types of energy, which in the medium term will allow the commissioning of facilities with a capacity of about 100 MW. The commissioning of new capacities will make it easier to connect to power grids and infrastructure and to obtain the necessary technical conditions. In the context of growing electricity consumption and the number of new subscribers, a favorable condition for locating mining farms is their location in close proximity to renewable energy sources, including small hydropower plants. This will also affect the reduction of electricity losses during transportation.

At this stage, the heating system in large cities has exhausted the potential for further development of heat networks and has shown the unprofitability of the provided heat supply. In order to develop the heating system in large cities and regions of the Kyrgyz Republic, it is necessary to start developing autonomous boiler houses using alternative energy sources (natural gas, coal and other energy resources), including environmentally friendly ones.

With the introduction of new capacities, it is necessary to gradually transfer transport in the Kyrgyz Republic to an electric drive: electric machines, electric trucks , high-speed electric trains, trolleybuses and electric trains. In the future, a network of high-speed electric charging stations for accumulators and batteries will be created.

A complete inventory and revaluation of assets should be ensured in the entire energy system with state participation. In addition, all technological and management processes must be fully automated. Modern corporate governance standards will be introduced at all facilities.

The level of technical wear and tear of energy sector equipment has reached a critical threshold. Due to financial recovery and improvement of the quality of sector management, funds will be found for the speedy modernization of the energy infrastructure.

In the shortest possible time, a wholesale electricity market will be formed with the definition of clear rules for its functioning and the creation of appropriate institutions.

Projects:

construction of large hydropower facilities Kambaratinskaya HPP-1, Verkhne- Naryn HPP cascade, Suusamyr - Kokomeren HPP cascade, Kazarman HPP cascade, etc.;

construction of small hydropower plants;

implementation of the CASA-1000 project;

phased transition of the state vehicle fleet to electric vehicles;

implementation of the project on energy efficiency of buildings;

development of alternative energy sources (solar and wind energy).

The National Development Program of the Kyrgyz Republic came into force in accordance with the Decree of the President of the Kyrgyz Republic Sadyr Zhaparova Nurgozhoevich signed on October 14, 2021

**To achieve energy independence, Kyrgyzstan needs to increase electricity generation to 18 billion kWh. The deficit and pent-up demand for electricity today is nearly 6 billion kWh.**

Electricity consumption in Kyrgyzstan is growing by 4-6% annually. “Today, energy is one of the most problematic areas of the domestic economy. With a critical wear rate of 30% in the energy sector , this figure is 80%. At the Bishkek thermal power plant, equipment depreciation is 60%.

The state is going to build the Kara- Keche thermal power plant according to the standards of green technologies. There is an agreement with an Indian company. In addition, the first wind station is being built in Balykchy .

For generation, we also need renewable energy sources. The solar potential in Kyrgyzstan is 490 million kWh, and the wind potential is 44.6 million kWh.

**In 2022, it is planned to direct 8.4 billion soms of investments in the energy sector (list of projects)**

In 2022, large investment projects in the energy industry will be implemented, which will make a major contribution to the development of construction. This is stated in the Medium-Term Forecast for 2021-2024, published by the Ministry of Economy.

According to the forecast, the volume of financing provided in the energy sector in the amount of 8 billion 485.3 million soms (19.8% of all public investments).

The volume of these investments is expected due to the implementation of projects:

- "Rehabilitation of the Toktogul HPP, Phase II" (2 billion 168.4 million soms - ADB, EDB);

— “Rehabilitation of the Toktogul HPP, Phase III” (260.3 million soms — ADB);

- "Reconstruction of the At-Bashi HPP" (5161 billion 2.5 million soms - the World Bank) and others.

“The implementation of these projects will significantly improve the state of the energy industry in the Kyrgyz Republic and create a favorable basis for increasing the exchange of electrical energy between neighboring states, as well as transit flows ,” experts explain.

In addition, it is planned to implement large projects, such as the CASA-1000 Project (2 billion 122.6 million soms - the World Bank, EIB, IsDB), "Commissioning of the second hydroelectric unit of the Kambar-Ata HPP-2" (945.9 million soms - EDB), "Modernization of the Uch -Kurgan HPP" (232.3 million soms - ADB), "Project to support local communities CASA-1000" (397.8 million soms - WB) and other projects.

By 2022, an increase in capacity by 184 MW is expected, - forecast

In the medium-term forecast for 2021-2024, they reported what capacity growth in the energy sector is expected in 2022.

At the first stage (2021-2024), as a result of the completion of all three phases of the rehabilitation of the Toktogul HPP, including the replacement of three hydroelectric units in 2022, an increase in capacity by 180 MW is expected.

the At-Bashi HPP will be completed in 2022 with an increase in capacity by 4 MW, which will improve the quality and reliability of power supply in the energy system.

“According to forecasts , electricity generation for 2022 is predicted in the amount of 14 billion 834 million kWh , which is calculated taking into account the average long-term inflow of the Naryn River in the alignment of the Toktogul hydroelectric complex.

Thermal energy generation is projected at 3 million 50 thousand Gcal and depends on the climatic conditions of the forecast period.

**THE REPUBLIC OF MOLDOVA**

**Moldova increased electricity imports from Ukraine**

Over the past 24 hours, Moldova has increased imports of electricity from Ukraine to cover the deficit that arose in the system as a result of a decrease in production at the thermal power plant and in Kuchurgan .

Operational and technical information of the state enterprise Moldelectrica   
on the operation of the electricity system shows that in the morning energy flows from Ukraine reached about 130-150 MW, which is almost 20% of the needs of the Republic of Moldova. For example, today, October 13, at 07:38 am, energy consumption was 758 MW, and according to the production and consumption plan, this figure was 724 MW. Moldelectrica data show that generation was 621 MW, of which only 582 were produced by CHP plants, including Moldavskaya CHP in Kuchurgan , CET- Nord and Termoelectrica . Approximately 34 MW were provided by hydroelectric power plants ( Costesti and Dubossary) and 3 MW by renewable energy sources. The remaining 130 MW were taken from the Ukrainian energy system. A month ago, these flows were about 8-10 times less.

It should be noted that only one company in the Republic of Moldova has a contract to import electricity from Ukraine, but the contract volume is 5-6 times less than the actual flow. Recall that since October 1, due to a drop in pressure in gas pipelines due to the fact that Gazprom supplies gas 35% less than Moldova needs, Moldovagaz initiated measures to turn off some consumers and turned to the thermal power plant with a request to switch to alternative types fuel. The Moldavian Thermal Power Plant in Kuchurgan has put a coal plant into operation, but supplies are limited, and the company has already twice warned utilities to cut electricity supplies since October 11.

Moldelectrica's operating data also show a significant increase in energy imports from Ukraine since the evening of Tuesday, October 12, due to the fact that domestic production no longer covers demand. Suppliers and authorities have not yet commented on the situation.

**ANRE approved the Additional Agreement between Moldelectrica and Moldavskaya GRES**

On October 15, 2021, the Board of Directors of the National Agency for Energy Regulation (ANRE) approved during the regular meeting the Additional Agreement No. 2 dated September 30, 2021 between State Enterprise   
Moldelectrica and Closed Joint-Stock Company Moldavskaya GRES on the extension of the Contract for the supply of electricity until March 31 .2022.

The volume of supplied electricity is 61 million kWh , the price is 53.5 US dollars / MWh . At the request of LLC Moldovatransgaz, the board of directors agreed to extend the term for considering the case on the application of financial sanctions for non-compliance by the operator of the gas transmission system Moldovatransgaz LLC with its obligations, in accordance with the law on ensuring independence in relation to the vertically integrated gas company - SA Moldovagaz . This issue will be considered at a meeting of the Board of Directors of ANRE on November 1, 2021.

Recall that the Moldavskaya GRES has been supplying electricity to Moldova since April 2021. Spring Premier Energy chose MoldGRES , which offered the best price — $53.5 per kWh. The company added that the new market rules will finally come into force in October 2021, and then Moldova will have even higher chances to receive electricity at the most attractive prices.

In recent years, electricity supplies to Moldova were carried out through the state company Energocom , which bought it from MoldGRES and DTEK Energo and resold it to local operators.

**Prices for electricity, fuel and gas in Moldova reached a record**

In the nine months of 2021, energy prices increased by 12.5%, and by the end of the year, estimates show that price increases will reach 16%, which is the highest value in the last 10 years.

Energy inflation was most affected by the 31.8% increase in oil prices in the first   
9 months of the year. At the same time, the price of electricity for residential consumers decreased by 8.3%, while natural gas tariffs have not changed yet. This year, the increase in energy prices came after a sharp fall in 2020 by 10.4% and relative stability over the past 8 years. In 2020, energy inflation decreased due to a decrease in prices for petroleum products by 16.6% and electricity tariffs by 8.9%.

Price stability in recent years has led to a reduction in Moldova's energy burden, which is determined by energy imports in relation to GDP. Thus, until 2015, Moldova imported energy resources in the amount of 12-15% of GDP, and in 2020 this figure reached a historical minimum of only 4.8% of GDP. In a worst-case scenario, Moldova's energy load is likely to reach 10.4%, twice as high as in 2020, but comparable to the situation before 2015.

**Moldovan authorities plan to generate electricity**

The Moldovan authorities have big plans for the production of electricity. And this is because our country is currently experiencing a serious crisis in the energy sector, and electricity is purchased from abroad.

The authorities want to build fields with photovoltaic panels to generate electricity. In the next four years, the number one task for Moldova should be to create an opportunity to produce electricity and not depend on imports. We must cover our needs, and maybe sell, why not. After all, the need for electricity in the EU market is constantly growing.

According to experts, at present Moldova imports more than 20% of electricity from Ukraine and about 70% from Kuchurgan GRES.

**Entry into force of the Electricity Market Rules postponed**

The Board of Directors of the National Energy Regulatory Agency (ANRE) today,   
October 29, approved the postponement of the entry into force of the Electricity Market Rules.

Thus, the new deadline for implementing the Market Rules is January 1, 2022. It has been agreed both with the Energy Community Secretariat and with the electricity market operators in the country.

ANRE also notes that in this regard, additional time was provided to find a solution to the problem of imbalances caused by unlicensed organizations operating in the Transnistrian region. “Moreover, this decision is motivated by the difficult situation in the energy complex of the country and the region, most countries make decisions to protect their own producers and consumers.

In addition, ANRE approved the Regulation on the admission to the operation of electrical installations. The document was developed by ANRE in order to determine the procedure for considering applications and criteria for evaluating technical documentation, new or reconstructed electrical installations, as well as issuing an act of conformity. The entry into force of the Regulation on the admission to operation of electrical installations will fill the regulatory vacuum regarding the method of admission to operation of electrical installations, the method of issuing conformity documents for closed distribution systems, as well as for the free transfer of electrical installations, power lines and substations to the system operator, ”the press release states. The Regulation on the Authorization of Electrical Laboratories has also been approved, which will regulate the activities of laboratories authorized to carry out preventive measurements and tests in electrical networks and installations. “The regulation should provide regulated and non-discriminatory access for all applicants seeking a permit for an electrical laboratory , stipulate the conditions for issuing, suspending and withdrawing a permit for an electrical laboratory , establish clear procedures for organizing and conducting an inspection for obtaining a permit. How will the prices for gasoline and diesel fuel change tomorrow? The implementation of the Regulation will increase the level of competition and the quality of services provided by electrical laboratories, respectively, improve the quality of work performed by electrical laboratories, and will contribute to the proper functioning of electrical installations,” notes ANRE.

**Moldavskaya GRES for 9 months. 2021, in comparison with the same period in 2020, increased electricity production by 4.9% - up to 3 billion 650.9 kW / h.**

At the same time, the station's installed capacity utilization factor (2520 MW) increased over the specified period from 21% to 22.12%. In the fuel balance of the station, the share of gas in January-September amounted to 99.54%, coal - 0.35%, fuel oil - 0.11% against (a year earlier - 99.95%; 0.01%; 0.04%, respectively ).

G increase in electricity generation for 9 months. 2021 was associated with an increase in its consumption by enterprises of Pridnestrovie, as well as with an increase in the volume of electricity supplies to the right bank of the Dniester, which is regarded in Tiraspol as “export to Moldova”. Moldavskaya GRES ( Dnestrovsk ) in 2020, compared to 2019, increased electricity production by 10.5% - up to 4 billion 688.96 kW / h. Moldavskaya GRES is located in Transnistria on the western shore of the Kuchurgan Estuary. The installed capacity of the power plant is 2520 MW. The first stage of the Moldavskaya GRES was put into operation in 1964. The power plant consists of 12 power units and operates on three types of fuel: coal, gas and fuel oil. Moldavskaya GRES is 100% owned by the Inter RAO Group, a diversified energy holding operating in various segments of the electric power industry in Russia and abroad.

# **RUSSIAN FEDERATION**

**At the end of 2021, the UES of Russia is expected to put into operation generation with a total capacity of more than 3.3 GW** .

According to the System Operator, by the end of the year, the UES of Russia is expected to commission generating facilities with a total capacity of 3,349 MW, including 949 MW TPPs, 1,188 MW NPPs, 1,009 MW wind and 203 MW solar power plants,

Among the largest facilities are unit No. 6 of the Leningrad NPP with a capacity of 1188 MW, turbine generators 1 and 2 of Svobodnenskaya TPP with a total capacity of 160 MW, Marchenkovskaya WPP with a capacity of 120 MW, and Bondarevskaya WPP with a capacity of 120 MW.

**The Ministry of Industry and Trade of Russia presented a map of 33 hydrogen energy projects.**

On October 15, the Ministry of Industry and Trade of Russia published the map "Atlas of Russian projects for the production of low-carbon and carbon-free hydrogen and ammonia."

"Green" hydrogen and ammonia are expected to be obtained by water electrolysis using electricity from hydroelectric power plants, including small ones, pumped storage power plants, wind, solar and tidal power plants.

"Blue" hydrogen and ammonia are expected to be produced by steam reforming of methane, with CO2 capture at gas chemical enterprises.There are also plans to obtain "blue" hydrogen and ammonia by processing natural gas, using technologies for capturing and long-term underground storage of CO².

Another project involves the production of blue hydrogen and ammonia by steam reforming of methane with CO2 capture."Blue" ammonia is expected to be produced by gasification of brown coal using CO² capture and storage technology, or from gas fields using CO² capture technology.

"Turquoise" hydrogen is expected to be obtained by methane pyrolysis at gas processing plants.

Low-carbon hydrogen is planned to be obtained by electrolysis of water using electricity from nuclear power plants and coal-fired power plants.

The first hydrogen production project should be implemented in 2021 by producing "green" hydrogen by water electrolysis using electricity from the Uglichskaya HPP and the Zagorskaya HPSP.

Another 8 projects should be launched in 2023, 11 projects in 2024, 6 projects in 2025. From 2026 to 2031, it is also planned to implement 6 hydrogen production projects.

Earlier, on August 5, 2021, the Russian government adopted a concept for the development of hydrogen energy.

**The first solar power plant in Dagestan will be launched in December 2021**

The construction of the first solar power plant in Dagestan will be completed ahead of schedule. The launch of the facility is scheduled for December 2021.

Earlier it was reported that the first solar battery with a capacity of 15 MW in Dagestan will be put into operation in January 2022.

Over the past year, thanks to the assistance of the head of Dagestan and the support of the government of the republic, significant progress has been made in attracting investors to the implementation of renewable energy projects (RES). In Yuzhno-Sukhokumsk, the construction of a solar power plant with a capacity of 15 MW is being completed, the launch of which is scheduled for December this year /

Based on the results of competitive events held in September this year, investors were identified for the construction of generating facilities based on renewable energy sources for 206.16 MW in the republic.

The implementation of these projects will ensure a 14% increase in power in the energy system of Dagestan. The facilities will give the republic an additional 541 million kWh . per year of energy, which will reduce its growing deficit. In particular, about 2 thousand jobs, temporary and permanent, will be created.

**Norilsk Nickel completed the modernization of a hydroelectric power station in the north of the Krasnoyarsk Territory**

The total investment in the project amounted to 7.5 billion rubles

Norilsk Nickel has completed the modernization of the Ust-Khantayskaya HPP in the Norilsk industrial region in the north of the Krasnoyarsk Territory, a TASS correspondent reports from the ceremony of launching the HPP at full capacity.

The modernization of the station began in 2014; all seven hydroelectric units that had been in operation for more than 50 years were replaced. The total investment in the project amounted to 7.5 billion rubles. The modernization allowed to increase the installed electrical capacity from 441 MW to 511 MW with a maximum annual electricity generation of 2.4 billion kWh, reduce operating costs and environmental risks, since during the reconstruction it was decided to abandon the oil hydraulic pumps.

“Modernization of the energy system is one of the main priorities for Norilsk Nickel . The company is betting on renewable energy sources in the long term. This is due to the general desire to implement the most environmentally friendly projects. The replacement of hydroelectric units at the Ust-Khantayskaya HPP made a significant contribution to the process of reliable and environmentally friendly energy supply to the settlements in the north of the Krasnoyarsk Territory and large industrial facilities of the company.”

Ust-Khatai HPP was built in 1963-1975. and became the first hydroelectric power plant in the Arctic. The HPP is part of the Norilsk -Taimyr Energy Company (NTEK, a subsidiary of Norilsk Nickel ) and supplies electricity to the enterprises of the Norilsk industrial region, as well as the housing and communal complex of Norilsk, Igarka , Dudinka.

**THE REPUBLIC OF TAJIKISTAN**

**Tajikistan gained about $90 million from electricity exports.**

Tajikistan in January-September 2021 exported electricity in the amount of $89.4 million, which is $36.1 million more than in 2020, the Agency on Statistics reported.

In September of this year, Tajik electricity was supplied to neighboring countries in the amount of about $17 million, about the same as in August this year.

The markets for Tajik electricity are Uzbekistan and Afghanistan, which receive it in almost the same volumes. This is due to the fact that the agreements concluded with the electric power companies of these two countries for 2021 assume the same volume of supplies - 1.5 billion kWh each .

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

Earlier, after the Taliban came to power in Afghanistan, the electricity company   
Da Afghanistan Breshna Sherkat reported that it owed neighboring countries, including Tajikistan, $62 million due to the electricity received, and asked to postpone payment to a later date.

The relevant structures of Tajikistan do not comment on the situation with the export of electricity abroad, including to Afghanistan.

At the beginning of this month, Tajikistan also started supplying energy to Kyrgyzstan, however, supplies were suspended.

Meanwhile, in Tajikistan itself, with the beginning of the second decade of October, frequent and prolonged power outages began in rural areas.

OAHK "Barki Tojik " explains the power outages "by carrying out planned preventive work necessary for the preparation of power lines."

According to official statistics, in January-September of this year, about 15.9 billion kWh of electricity was produced in Tajikistan, which is 7.4% more than in the corresponding period of 2020.