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**REPORT**

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

**JANUARY-MAY 2020**

**MARKET DEVELOPMENT DEPARTMENT**

**June 2020**

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# **SECTION I**

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

According to the System Operator, Republic of Kazakhstan’s power plants generated 45 577,5 million kWh of electricity in January-May 2020, which is 3.3% more than in the same period of 2019. The increase in generation was observed in all zones of the UES of Kazakhstan.

*million kWh*

|  |  |  |  |
| --- | --- | --- | --- |
| **Zone** | **Generation type** | **January-May** | **Δ, %** |
| **2019** | **2020** |
| **Kazakhstan** | **Total**  | **44126,0** | **45577,5** | **3,3%** |
| *TPP* | *35885,6* | *36552,9* | *1,9%* |
| *GTPP* | *3761,5* | *4117,9* | *9,5%* |
| *HPP* | *4105,9* | *4038,8* | *-1,6%* |
| *WPP* | *252,8* | *414,8* | *64,1%* |
| *SES* | *118,7* | *451,4* | *280,3%* |
| *BSU*  | *1,5* | *1,7* | *13,3%* |
| **North** | **Total** | **33816,4** | **34646,0** | **2,5%** |
| *TPP* | *29520,4* | *30138,5* | *2,1%* |
| *GTPP* | *1276,7* | *1371,4* | *7,4%* |
| *HPP* | *2895,1* | *2781,9* | *-3,9%* |
| *WPP* | *69,4* | *190,0* | *173,8%* |
| *SES* | *53,3* | *162,5* | *204,9%* |
| *BSU*  | *1,5* | *1,7* | *13,3%* |
| **South** | **Total** | **4772,9** | **5081,0** | **6,5%** |
| *TPP* | *3311,9* | *3347,2* | *1,1%* |
| *GTPP* | *91,6* | *91,8* | *0,2%* |
| *HPP* | *1210,8* | *1256,9* | *3,8%* |
| *WPP* | *94,4* | *97,4* | *3,2%* |
| *SES* | *64,2* | *287,7* | *348,1%* |
| **Western** | **Total** | **5536,7** | **5850,5** | **5,7%** |
| *TPP* | *3053,3* | *3067,2* | *0,5%* |
| *GTPP* | *2393,2* | *2654,7* | *10,9%* |
| *WPP* | *89,0* | *127,4* | *43,1%* |
| *SES* | *1,2* | *1,2* | *0,0%* |

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

In January-May 2020, compared to the same period in 2019, electricity production increased significantly (20% growth and above) in Turkestan and Kostanay regions. At the same time, a decrease in electricity production was observed in Zhambyl and West Kazakhstan regions.

*million kWh*

|  |  |  |  |
| --- | --- | --- | --- |
| **№** | **Region** | **January-May** | **Δ, %** |
| **2019** | **2020** |
| 1 | Akmola | 1 960,7 | 2 058,2 | 5,0% |
| 2 | Aktobe | 1 659,0 | 1 736,8 | 4,7% |
| 3 | Almaty | 2 962,8 | 3 127,9 | 5,6% |
| 4 | Atyrau | 2 406,0 | 2 639,8 | 9,7% |
| 5 | East Kazakhstan | 4 181,5 | 4 092,8 | -2,1% |
| 6 | Zhambyl | 1 038,1 | 998,4 | -3,8% |
| 7 | West Kazakhstan | 966,7 | 1 012,3 | 4,7% |
| 8 | Karaganda | 6 964,9 | 7 155,0 | 2,7% |
| 9 | Kostanay | 412,2 | 496,1 | 20,4% |
| 10 | Kyzylorda | 196,9 | 246,4 | 25,1% |
| 11 | Mangystau | 2 164,0 | 2 198,4 | 1,6% |
| 12 | Pavlodar | 17 133,3 | 17 604,6 | 2,8% |
| 13 | North Kazakhstan | 1 504,8 | 1 502,5 | -0,2% |
| 14 | Turkestan | 575,1 | 708,3 | 23,2% |
|  | **Total for RoK** | **44 126,0** | **45 577,5** | **3,3%** |

# *Electricity generation by associated generation*

In January-May 2020, electricity production from associated generation totaled 22.5 billion kWh, which is comparable to the same period in 2019 (22.8 billion kWh). Meanwhile, compared to January-May 2019, the share of associated generation increased slightly to 49.6% of the total electricity generation in Kazakhstan.

*million kWh*

|  |  |  |  |
| --- | --- | --- | --- |
| **№** | **Name** | **2019** | **2020** |
| **January-May** | **share in the Republic of Kazakhstan, %** | **January-May** | **share in RoK, %** |
| 1 | ERG | 8 423,6 | 19,1% | 8 136,9 | 17,9% |
| 2 | Kazakhmys Energy LLP | 3 146,3 | 7,1% | 3 313,3 | 7,3% |
| 3 | Kazzinc LLP | 1 277,2 | 2,9% | 1 161,5 | 2,5% |
| 4 | Arcellor Mittal JSC | 1 082,3 | 2,5% | 1 164,2 | 2,6% |
| 5 | KKS LLP | 2 904,8 | 6,6% | 2 792,2 | 6,1% |
| 6 | CAEC | 2 997,3 | 6,8% | 3 166,1 | 6,9% |
| 7 | Zhambyl GRES JSC | 826,3 | 1,9% | 749,8 | 1,6% |
| 8 | Oil and gas enterprises | 2 164,8 | 4,9% | 2 106,5 | 4,6% |
|  | **TOTAL** | **22 822,6** | **51,7%** | **22 590,5** | **49,6%** |

The volume of electricity production by the energy producing organizations of Samruk-Energy JSC in January-May 2020 amounted to **12 225,7** mln/kWh, or an increase of 7% compared to the same period of 2019.

*million kWh*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **№** | **Name** | **2019** | **2020** | **Δ2020/2019** |
| **January-May** | **share in RoK, %** | **January-May** | **share in RoK %** |  **mln kWh** | **%** |
|  | **Samruk-Energy JSC** | **11 427,8** | **25,9%** | **12 225,7** | **26,8%** | **798,0** | **7,0%** |
| *1* |  *AlES JSC* | *2 375* | *5,4%* | *2 449,3* | *5,4%* | *74,0* | *3,1%* |
| *2* | *Ekibastuz GRES-1 LLP* | *5 949,3* | *13,5%* | *7 330,8* | *16,1%* | *1 381,6* | *23,2%* |
| *3* |  *Ekibastuz GRES JSC-2 JSC* | *2 427,8* | *5,5%* | *1 755,4* | *3,9%* | *-672,4* | *-27,7%* |
| *4* |  *Shardara HPP JSC* | *223,9* | *0,5%* | *267,9* | *0,6%* | *43,9* | *19,6%* |
| *5* | *Moinak HPP JSC* | *382,4* | *0,9%* | *345,4* | *0,8%* | *-37,0* | *-9,7%* |
| *6* | *Samruk-Green Energy LLP* | *67,7* | *0,153%* | *1,6* | *0,004%* | *-66,08* | *-97,6%* |
| *7* | *First Wind Power Station LLP* | *1,4* | *0,0%* | *75,3* | *0,2%* | *73,9* | *5436,7%* |

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

# *Electricity consumption by zones and regions*

According to the data of the System Operator, in January-May 2020, there was an increase by 2% in the electricity consumption in the Republic compared to the indicators of January-May 2019. Thus, in the northern zone consumption increased by 2%, western zone by 5%, and in the southern zone by 1%.

 *million kWh*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#** | **Name** | **January- May 2019** | **January-May 2020** | **Δ, million kWh** | **Δ, %** |
| **I** | **Kazakhstan** | **44 144,4** | **45 170** | **1 025,6** | **2%** |
| 1 | Northern zone | 29 186,6 | 29 808,2 | 621,6 | 2% |
| 2 | Western zone  | 5 569,3 | 5 875,3 | 306 | 5% |
| 3 | Southern zone | 9 388,5 | 9 486,5 | 98 | 1% |
|  | ***including by region*** |  |  |  |  |
| 1 | East Kazakhstan  | 3 989 | 4 034,3 | 45,3 | 1% |
| 2 | Karaganda  | 7 532,1 | 7 832,9 | 300,8 | 4% |
| 3 | Akmola  | 2 874,9 | 2 758,5 | -116,4 | -4% |
| 4 | North Kazakhstan | 1 946,4 | 1 887,2 | -59,2 | -3% |
| 5 | Kostanay  | 2 031 | 1 966,7 | -64,3 | -3% |
| 6 | Pavlodar  | 8 096,5 | 8 588,6 | 492,1 | 6% |
| 7 | Atyrau  | 2 570,6 | 2 744,3 | 173,7 | 7% |
| 8 | Mangystau  | 2 130,4 | 2 163,6 | 33,2 | 2% |
| 9 | Aktobe  | 2 716,7 | 2 740 | 23,3 | 1% |
| 10 | West Kazakhstan  | 868,3 | 967,5 | 99,2 | 11% |
| 11 | Almaty  | 4 710,1 | 4 710,7 | 0,6 | 0,01% |
| 12 | Turkestan | 2 077,7 | 2 086,6 | 8,9 | 0,4% |
| 13 | Zhambyl  | 1 872,5 | 1 953,6 | 81,1 | 4% |
| 14 | Kyzylorda  | 728,2 | 735,7 | 7,5 | 1% |

# **Industry results for January-May 2020**

*(express information of the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan)*

In January-May 2020 compared to January-May 2019, the index of industrial production amounted to 104.8%. Increase in production volumes was recorded in 12 regions of the republic, decrease was observed in Kyzylorda, Aktobe, Mangistau regions and Shymkent city.

**Change in industrial output by region**

*as a percentage of the corresponding period of the previous year*



In Atyrau region due to the increase in crude oil production, the index of industrial production amounted to 114.1%.

In Kostanay region the production of agglomerated iron ores, iron ore pellets and concentrates increased, production of flour, bars and rods of steel, gold in gold doré alloy, cars and trucks increased (111.2%).

In Turkestan oblast, production of processed cotton, oil bitumen, commercial concrete and distribution power boards, and boxes increased (108%).

In Akmola region, production of copper and gold concentrates increased, production of flour, gold in gold doré alloy, tractors and trucks increased (107.3%).

In North-Kazakhstan region, extraction of uranium ores increased, production of unrefined rapeseed oil, processed milk, butter and commodity concrete increased (106.9%).

In Nur-Sultan city, production of flour, soft drinks, commodity concrete, refined gold and diesel locomotives increased (106.5%).

In Almaty region, production of confectionery and chocolate, cigarettes, medicines, assembly panels and instrument panels increased (105.2%).

In West-Kazakhstan region, due to the increase in gas condensate production, the index of industrial production amounted to 104.7%.

In Pavlodar region, the extraction of copper concentrates increased, production of part of railroad locomotives, streetcar motor cars and rolling stock increased (104.2%).

In Karaganda oblast, extraction of zinc concentrates increased, production of flat rolled products, rough and refined copper increased (103.2%).

In Almaty city the production of beer, medicines, cans of ferrous metals and other aluminum metal products increased (100.4%).

In East-Kazakhstan region there was an increase in extraction of gold-containing concentrates, production of cars and trucks increased (100.3%).

In Zhambyl oblast, the production of gold-containing ores and phosphate raw materials increased, production of diesel fuel, orthophosphoric acid, phosphate fertilizers and portland cement increased. Production of sugar and phosphorus decreased (100%).

In Mangistau region due to a decrease in crude oil production, the index of industrial production amounted to 98.4%.

In Aktobe region due to decrease in crude oil production the index of industrial production amounted to 98.3%.

In Shymkent city due to reduction in production of kerosene, furnace fuel oil and vacuum gasoil the index of industrial production amounted to 96.1%.

In Kyzylorda region due to the reduction of crude oil production, the index of industrial production amounted to 88.9%.

*(Source:* [*www.stat.gov.kz*](http://www.stat.gov.kz)*)*

# *Electricity consumption by large consumers in Kazakhstan*

In January-May 2020, electricity consumption by large consumers decreased by 2% compared to the same period in 2019.

*million kWh*

|  |  |  |
| --- | --- | --- |
| **№** | **Consumer** | **January-May** |
| **2019** | **2020** | **Δ, %** |
| 1 | Arcelor Mittal Temirtau JSC | 1 563,5  | 1 558,0 | 0% |
| 2 | AZF (Aksu) TNK Kazchrome JSC | 2 451,9  | 2 339,4 | 5% |
| 3 | Kazakhmys Smelting LLP  | 501,7  | 480,3 | 4% |
| 4 | Kazzinc LLP | 1 191,2  | 1 214,6 | -2% |
| 5 | Kazzinc JSCSokolovsko-Sarbay State Enterprise | 739,7  | 739,3 | 0% |
| 6 | Kazakhmys Corporation LLP  | 547,0  | 509,0 | 7% |
| 7 | AZF (Aktobe) TNK Kazchrome JSC | 1 290,3  | 1 311,1 | -2% |
| 8 | RSE Kanal im. Satpayev | 69,9  | 76,2 | -8% |
| 9 | Kazphosphate LLP | 868,0  | 952,3 | -9% |
| 10 | NDFZ JSC (part of Kazphosphate LLP) | 750,4  | 839,9 | -11% |
| 11 | Taraz Metallurgical Plant LLP | 89,1  | 70,0 | 27% |
| 12 | Ust-Kamenogorsk Titanium and Magnesium Combine JSC | 392,7  | 345,9 | 14% |
| 13 | Ust-Kamenogorsk Titanium and Magnesium Combine JSCTengizchevroil | 790,4  | 805,6 | -2% |
| 14 | JSC " PAZ "(Pavlodar Aluminum Plant) | 401,0  | 394,9 | 2% |
| 15 | JSC " KEZ "(Kazakhstan Electrolysis Plant) | 1 570,4  | 1 564,1 | 0% |
| 16 | Temirzholenergo LLP | 589,7  | 691,9 | -15% |
| 17 | JSC "KEGOC" | 1 852,7  | 2 158,8 | -14% |
| **Total** | **14909.1** | **15211.4** | **-1.99%** |

# **Coal**

# *Steam coal production in Kazakhstan*

According to information from the Statistics Committee of the Ministry of Energy of Kazakhstan, Kazakhstan produced 44,951.9 thousand tons of hard coal in the period January-May 2020, which is 2% higher than the same period in 2019 (43,874.7 thousand tons).

|  |  |  |  |
| --- | --- | --- | --- |
| **№**  | **Oblast** | **January-May** | **Δ, %** |
| **2019**  | **2020**  |
| 1 | Pavlodarskaya |  28 322,2 |  29 187,4 | 103% |
| 2 | Karagandinskaya |  12 909,0 |  13 101,9 | 101% |
| 3 | East Kazakhstan |  2 497,6 |  2 604,1 | 104% |
|  | **Total in RoK** |  **43 874,7** |  **44 951,9** | **102%** |

# *Coal production by Samruk-Energy JSC*

In January-May 2020, Bogatyr Komir LLP produced 19428 thousand tons, which is 6% more than in the corresponding period of 2019 (18328 thousand tons).

# *Coal sales by Samruk-Energy JSC*

In January-May 2020, 19 498 thousand tons were sold, including:

- 15 151 thousand tons were delivered to the domestic market of the Republic of Kazakhstan, which is 8.8% less than in the corresponding period of 2019 (13 923 thousand tons);

- exported to Russia – 4 346 million tons, which is 1.8% more than in the corresponding period of 2019 (4 271 thousand tons).

*thousand tonnes*

|  |  |  |  |
| --- | --- | --- | --- |
| **№** | **Region** | **Sales volume, thousand tonnes** | **Δ, %** |
| **January-May 2019** | **January-May 2020** |
| Total exports to the domestic market of the Republic of Kazakhstan | **13 923** | **15 151** | **108,8%** |
| Total exports to the Russian Federation | **4 271** | **4 346** | **101,8%** |

As per the figures for January-May 2020, as compared to the same period in 2019, the Company has seen an increase in coal sales by 7.2%.

# **Renewable energy sources**

The volume of electricity produced by renewable energy facilities (SES, wind farms, BGS, small hydroelectric power plants) in January-May 2020 amounted to 1170.2 million kWh. Compared to January-May 2019 (643.5 million kWh), the increase was 81.8%.

million kWh

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **№** | **Name** | **2019** | **2020** | **Deviation 2020/2019** |
| **January-May** | **share in the Republic of Kazakhstan, %** | **January-May** | **share in the Republic of Kazakhstan, %** |  **mln kWh** | **%** |
|  | **Total output in the Republic of Kazakhstan** | **44126,1** | **100%** | **45577,4** | **100,0%** | **1451,3** | **3,3%** |
| **I** | **Total RES in the Republic of Kazakhstan, including by zones**  | **643,5** | **1,5%** | **1170,2** | **2,6%** | **526,7** | **81,8%** |
| 1. | *Northern Zone* | *187,1* | *29,1%* | *399,5* | *34,1%* | *212,4* | *113,5%* |
| 2. | *Southern zone* | *366,2* | *56,9%* | *588,4* | *50,3%* | *222,2* | *60,7%* |
| 3. | *Western Zone* | *90,2* | *0,0%* | *182,3* | *15,6%* | *92,1* | *0,0%* |
| **II** | **Total RES in the Republic of Kazakhstan, including by type**  | **643,5** | **1,5%** | **1170,2** | **2,6%** | **526,7** | **81,8%** |
| 1. | *SES* | *118,8* | *18,5%* | *505,0* | *43,2%* | *386,2* | *325,1%* |
| 2. | *Wind farms* | *252,8* | *39,3%* | *412,3* | *35,2%* | *159,5* | *63,1%* |
| 3. | *Small hydroelectric* | *270,4* | *42,0%* | *251,2* | *21,5%* | *-19,2* | *-7,1%* |
| 4. | *Biogas plants* | *1,5* | *0,2%* | *1,7* | *0,1%* | *0,2* | *0,0%* |

In January-May 2020, there is a decrease in electricity production by large and small hydropower plants compared to the same period in 2019, while electricity production by WES, SES and BSU facilities increased.

million kWh

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Name** | **2019** | **2020** | **Deviation 2020/2019** |
| **January-May** | **share in the Republic of Kazakhstan, %** | **January-May** | **share in the Republic of Kazakhstan, %** | **mln kWh%** | **%** |
|  | ***Electricity production in the Unified Energy System of the Republic of Kazakhstan*** | **44126,1** | **100,0%** | **45577,4** | **100%** | **1451,3** | **3,3%** |
| 1. | Production of "clean" electricity (RES + Large hydroelectric power plants)  | *4427,2* | *10,0%* | *4986,5* | *10,9%* | *559,3* | *12,6%* |
| 2. | Production of "clean" electricity (RES excluding Large hydroelectric power plants) | *643,500* | *1,5%* | *1170,2* | *2,6%* | *526,7* | *81,8%* |

Electricity generation by RES facilities of Samruk-Energy JSC (SES, WES, small HPPs) for January-May 2020 amounted to 143.5 mln kWh or 12.3% of the total volume of electricity generated by RES facilities, which is higher by 9.1% compared to the same period of 2019 (for January-May 2019, RES generation of the Company amounted to 131.5 mln kWh, and the share of RES of the Company was 20.4%).

The main decrease in the share of the Company's RES power generation is the commissioning of new RES capacities in the RoK.

The Company's share in the production of "clean" electricity (SES, WES, small and large HPPs) for January-May 2020 decreased by 0.9% (1,112.2 mln kWh) compared to the same period of 2019. (1,134.8 million kWh).

million kWh

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **№** | **Name** | **2019** | **2020** | **Deviation 2020/20/2019.** |
| **January-May** | **share in the Republic of Kazakhstan, %** | **January-May** | **share in the Republic of Kazakhstan, %** |  **million kWh** | **%1.** |
|   | Productionof "clean" electricity by JSC "Samruk-Energy" (SES, wind farms, small and large hydroelectric power plants)  | 1134,8 | 25,6% | 1124,2 | 22,5% | -10,6 | -0,9% |
| 2. | Production of "clean" electricity by JSC "Samruk-Energy" (SES, wind farms and small hydroelectric power plants), incl.: | 131,5 | 20,4% | 143,5 | 12,3% | 12,0 | 9,1% |
| 3. |  *Cascade of small hydroelectric power plants of "AlES" JSC* | *62,5* | *9,7%* | *66,6* | *5,7%* | *4,1* | *6,6%* |
| 4. | *Samruk-Green Energy LLP* | *1,3* | *0,2%* | *1,6* | *0,1%* | *0,3* | *23,1%* |
| 5. | *First Wind Power Station LLP* | *67,7* | *10,5%* | *75,3* | *6,4%* | *7,6* | *11,2%* |

# **Centralized electricity trading by KOREM JSC**

*(Information provided by KOREM JSC)*

*General results of the trades*

According to the results of centralized electricity trading in April 2020, 326 transactions were concluded in the volume of 374,963 thousand kWh for a total amount of KZT 880,465.3 thousand (excluding VAT), (including, in the "day-ahead" mode and trading for the medium and long term), including:

- spot trades in "day-ahead" mode - 311 deals were concluded in the volume of 43,523 thousand kWh for the total amount of 260,316.1 thousand tenge. The minimum price at spot trades in "day-ahead" mode amounted to 5 tenge/kWh (excluding VAT), the maximum price - 6.7 tenge/kWh (excluding VAT);

- spot trades "within operational day" - no deals were concluded.

- trades in electricity for medium- and long-term periods - 15 deals were concluded in the volume of 331,440 thousand kWh for a total amount of 620,149.2 thousand tenge (excluding VAT). The minimum price for this type of centralized bidding was 1.1 tenge/kWh (excluding VAT), and the maximum price was 2.43 tenge/kWh (excluding VAT).

For the same period of 2019, the total volume of centralized bidding amounted to 941,228 thousand kWh. The table below shows the dynamics of transaction prices concluded at centralized bidding in April 2019-2020.

**Dynamics of prices formed as a result of centralized trades**

|  |  |  |  |
| --- | --- | --- | --- |
| **April** | **spot trading in the "day-ahead" mode** | **trading for medium- and long-term periods** | **within the operational day** |
| MIN price  | MAX price | MIN price  | MAX price | MIN price  | MAX price |
| **tg/kWh (excluding VAT)** |
| **2019** | **4,8** | **10,106** | **1,1** | **5,76** | **-** | **-** |
| **2020** | **5** | **6,7** | **1,1** | **2,43** | **-** | **-** |

# ***Results of spot trading in the "day-ahead" mode***

According to the results of spot trades held in April 2020, the following transactions were concluded

311 transactions in the amount of 43,523 thousand kWh, the minimum clearing price at spot trades in the "day-ahead" mode amounted to 5 tg/kWh (excluding VAT), and the maximum - 6.7 tg/kWh (excluding VAT).

maximum - 6.7 tenge/kWh (excluding VAT).

The table below shows volumes and bid-ask prices and final results of spot trades in the "day-ahead" mode in April 2020.



The table shows that the total demand amounted to 116,136 thousand kWh. kWh, while the total volume of supply amounted to 44,088 thousand kWh.

The unsatisfied volume of demand in April 2020 amounted to 72,613 thousand kWh. kWh, while the unsatisfied supply volume amounted to 5,821 thousand kWh. In the process of spot trades in the trading system a total of -662 bids were accepted, of which 578 bids from buyers and 84 bids from sellers.

**Results of spot trades "during operational days"**

According to the results of the trades held in April 2020, no deals were concluded. Following the results of the trades held in April 2019 similarly to the current period no deals were concluded.

**Results of trades for medium- and long-term period**

According to the results of bidding for medium- and long-term periods in April 2020, 15 transactions were concluded in the volume of 331,440 thousand kWh for a total amount of 260,316.1 thousand tenge (excluding VAT). The minimum for this type of centralized bidding was 1.1 tenge/kWh (excluding VAT), and the maximum price was 2.43 tenge/kWh (excluding VAT). All transactions were registered based on the results of centralized bidding for electricity generated by HPPs during the period of environmental water releases.

Compared to the same period of 2019, in April 2020, there was a 63.3% decrease in the volume of trades for the medium- and long-term period.

In April 2019, 52 transactions with the volume of 902,400 thousand kWh were concluded in bidding for the medium- and long-term period. The minimum price for this type of centralized bidding was 1.1 tg/kWh (excluding VAT), the maximum price was 5.76 tg/kWh (excluding VAT).

# **Export-import of electric energy**

In January-May 2020, the main direction of electricity export-import of the RK was the Russian Federation (export to the Russian Federation – 403.4 mln kWh, import from the Russian Federation –453.1 mln kWh). KEGOC – 377.4 mln kWh in order to balance electricity production-consumption. Electricity import from the Russian Federation in the reporting period in the amount of 351.3 mln kWh was carried out in order to balance production-consumption of electricity.

million kWh

| **Name** | **January-May** | **Δ 2020/2019гг.** |
| --- | --- | --- |
| **2019** | **2020** |  **mln kWh** | **%** |
| **Kazakhstan's exports** | **2 678,5** | **859,7** | **-1 818,8** | **-67,9%** |
| **to Russia** | *2 675,6* | *403,4* | *-2 272,2* | *-84,9%* |
| **to Central Asian ECO** | *2,9* | *456,3* | *453,4* | *15793%* |
| **Kazakhstan's imports** | **534,8** | **455,7** | **-79,1** | **-14,8%** |
| **from Russia** | *534,0* | *453,1* | *-81,0* | *-15,2%* |
| **from Central Asian ECO** | *0,8* | *2,6* | *1,8* | *231,1%* |
| **Balance-flow " + "deficit," - " excess** | **-2 143,7** | **-404,0** | **1 739,7** | **-81,2%** |

# **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 the common electric power market of the Union on the basis of power systems operating in parallel, taking into account the priority provision of electricity 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 EDM will be observed.

On 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 treaty on the formation of a common electric power market of the Union in the form of the Protocol on Amendments to the Treaty on the Eurasian Economic Union of May 29, 2014 (in terms of the formation of a common electric power market of the Eurasian Economic Union).

On December 20, 2019, the High Council adopted Decision No. 31 "On the plan of measures aimed at the formation of a common electric power market of the Eurasian Economic Union", which establishes, among other things, the deadlines for the approval and entry into force of the rules for the functioning of the common electric power market of the Union, as well as other acts stipulated by the said Protocol.

In 2020, the 13th meeting of the Advisory Committee on Electricity under the EEC Collegium in absentia (May 26, 2020), two meetings of the Subcommittee on the formation of the EEU EDM of the Advisory Committee on Electricity under the EEC Collegium are held, the work on the development and agreement by the EAEU member states of the rules of functioning of the EAEU EDM is carried out (49th meeting on January 23-24, 2020, 50th meeting on May 29, 2020) and one meeting of the Subcommittee members (February 20-21, 2020).

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

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

Since 1992, 53 meetings of the Electricity Council of the Commonwealth of Independent States (hereinafter referred to as the CIS EES) have been held.

By the decision of the CIS Unified Energy System (Protocol No. 50 of 21.10.2016), the Consolidated Schedule for the formation of the common electricity market of the CIS member States was approved.

|  |  |  |  |
| --- | --- | --- | --- |
| **№** | **Activities** | **Due date** | **Current status** |
| 1 | Implementation of activities in accordance with section II. Action Plan for Cooperation between the EEC and the CIS EES, approved on June 10, 2016. | 2016-2020 | Permanent participation of the EEC representatives at the meetings of the CIS EEC, and representatives of the CIS EEC EC – at the meetings on the formation of the EAEU EER is ensured. |
| 2 | Preparation of a draft Procedure for settling deviations from the agreed values of interstate electric energy flows | 2016-2017. | The decision to develop a procedure for regulating deviations from the agreed values of interstate electric energy flows was made at the 45th meeting of the CIS Unified Energy System. The draft Procedure was considered at the 29th meeting of the Working Group "Formation of the common electricity market of the CIS countries" on September 15, 2016 in Moscow (Russia). In accordance with the Decision of the 47th Session of the CIS EES, the CIS EES Action Plan for 2016 includes the development and approval of draft documents on determining the values of deviations from the agreed values of interstate electricity flows and regulating the values of deviations from the agreed values of interstate electricity flows. Work continues. |
| 3 | Preparation of a draft Procedure for distributing the capacity of interstate cross-sections / export-import cross-sections between participants in export-import activities. | 2018-2020 | By the decision of the 50th meeting of the CIS Unified Energy System, Methodological recommendations on metrological support of measuring systems for electric energy metering on interstatepower transmission lines were approved.By the decision of the 50th session of the CIS Unified Energy System, the Schedule for monitoring the use of regulatory technical documents in the field of metrology of electrical measurements and electricity metering in the production activities of power systems of the CIS member States was approved. |
| 4 | Preparation of a draft Procedure for compensation of costs associated with the implementation of transit/transmission/movement of electricity through the energy systems of the CIS member States. | 2018-2020 | The unified data exchange layout format for recording interstate electricity flows, developed by the Working Group on Metrological Support for the Electricity 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 management bodies of the CIS member States for use in organizing the recording of interstate electricity flows and the exchange of data on interstate flows. |
| 5 | Harmonization of national legislation in the field of electric power, 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 CIS EES approved Conceptual approaches to technical regulation and standardization in the field of electric power. The Regulation on the Working Group "Updating and harmonization of the regulatory and technical framework for Regulating the Electric Power Industry"was also approved. The Work Plan of this Working Group was approved by the decision of the 51st meeting of the CIS EES. |

# **CASA-1000 project implementation status**

*Project Description*

The CASA-1000 project is the first step towards creating a regional electricity market for Central and South Asia (CASAREM), using the significant energy resources of Central Asia to help reduce the energy deficit in South Asia on a mutually beneficial basis.

It is planned to start delivering electricity under the CASA-1000 project in 2021. It is assumed that the transmission line capacity will be about 6 billion cubic meters. kWh per year.

The project financing process is managed by the World Bank.

The project is divided into two main packages:

* construction of power transmission lines in Kyrgyzstan, Tajikistan, Afghanistan and Pakistan;
* Construction of two-terminal high-voltage DC converter substations in Pakistan and Tajikistan.

The construction period after signing the contract is 42 months (2021).

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

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

**EEC details roadmap for the formation of a common energy market of the EAEU (23.06.2020).**

"The roadmap of measures for the formation of a common electric power (CEP) market of the five countries of the Eurasian Economic Union was approved at the 13th meeting of the Advisory Committee on Electricity. It specifies and details the intermediate stages of work to create a common market," the press release said.

The minutes of the event, which was held in absentia due to COVID measures, were signed by Emil Kaikiev, a member of the EEC Collegium (Minister) for Energy and Infrastructure.

Thus, the EEC stressed, "work continues on the formation of the EAEU OER, which should start functioning no later than January 1, 2025."

"The full-fledged launch of the Union's OER can lead to an increase in the volume of mutual trade in electricity, will create prerequisites for strengthening the economies of the EAEU countries," Kaikiev noted.

The architecture of the upper level of the roadmap was worked out and approved earlier. The heads of the EAEU member states approved the Action Plan aimed at forming a common electricity market on December 20, 2019. The document sets deadlines for the adoption of acts (rules, regulations) governing the functioning of the EER of the EAEU. It also sets deadlines for a number of organizational measures, such as the selection of trading platforms and testing of the technological basis of the market.

"In order to optimize the sequence of processes for the creation of SEER EAEU, the experts of the countries considered it necessary to determine the intermediate stages of development and approval of draft documents," - explained in the EEC.

For this purpose, together with the EEC was prepared a draft "road map", which for each of the documents contains the timing of approval by the Advisory Committee, the conduct of regulatory impact assessment and alternate discussion of the bodies of the Union. It is reported "all parties supported the approval of this "road map". It is noted that members of the subcommittee on the formation of the EER EAEU Advisory Committee on Electricity must be guided by the approved in the document interim deadlines for work on the acts.

It is noted that "on the agenda issue related to approaches to the definition and distribution of capacity of interstate sections (interstate power lines), the positions of the parties have converged." "Progress has been made, which will allow to advance at the expert level in the development of draft rules for the definition and distribution of capacity," - emphasized in the EEC.

**Kyrgyz Republic**

**At an annual GDP growth rate of 4.7%, electricity demand is expected to grow by 17% by 2025 and by 25% by 2030 - Concept for the Development of the Fuel and Energy Complex of the Kyrgyz Republic (08.06.2020).**

With an annual GDP growth rate of 104.7%, electricity demand is expected to grow by 117% by 2025 and by 125% by 2030 compared to 2018, according to the draft Concept for the Development of the Fuel and Energy Complex of the Kyrgyz Republic until 2030 of the Kyrgyz Republic.

In terms of sectors, high growth rates are expected in housing and communal services and population, construction, industry due to the development of mining, light and processing industries.

According to the document, ensuring energy efficiency of GDP can be achieved with an annual reduction in the energy intensity of GDP by 1.5%, and by 20% for the period 2020-2030.

Electricity consumption growth rates should be lower than GDP growth rates with an annual reduction of GDP electricity intensity by 1-1.6%, and for the period 2015-2030 - by 15-19% under the scenarios. Ensuring the reduction of FER consumption growth rates compared to GDP growth rates and, accordingly, the regularity of annual reduction rates of energy and electricity intensity of GDP corresponds to the principles of energy-saving policy and development of the "green economy". If GDP growth rates increase, the projected demand for FER will also increase, in which case the degree of increase will depend on energy prices - the greater their increase, the smaller the degree of increase in demand.

"The solution of social problems will be provided by the growth of electricity consumption per capita for the period 2019-2030 by 1.57 times with population growth by 1.18 times and in the amount of 2,600 to 2,816 kWh per person. Diversification of TEB will be ensured by increasing the level of gasification of settlements, involvement of RES with the construction of small HPPs and the development of the coal industry, SES and biogas plants, which will contribute to the reliability of energy supply in the regions of the country and the release of electricity, coal and oil products. Thus, in the deficit Chui oblast it will be possible to ensure substitution of 8-10% of electricity demand, in Jalal-Abad oblast - 5-6%, in Issyk-Kul oblast - 2-3%, in Talas oblast - up to 2%, in Osh oblast - 2-3%," the draft concept says.

According to the authors, the tasks on the vector "Management of demand for energy carriers of the real sector of the economy, as well as the formation of a rational structure of the fuel and energy balance of the country and regions" should be aimed at:

- Forecasting energy consumption growth rates lower than GDP and gross output growth rates by sectors and by types of energy carriers, including industry, agriculture, construction, housing and utilities sector and population;

- ensuring annual rates of reduction of GDP energy intensity at the level of 1-1.5%;

- diversification of the fuel and energy resources of the Kyrgyz Republic based on the rational use of fuel and energy resources and renewable energy sources.

**Kyrgyzstan ranks 9th in the world after Norway in terms of hydropower reserves - SCPEN**

The hydropower potential of water resources of the Kyrgyz Republic is 142 billion kWh of possible annual electricity generation and ranks 9th in the world after Norway in terms of reserves. This is stated in the Concept of Development of Fuel and Energy Complex of the Kyrgyz Republic until 2030.

The reserves are concentrated in the basin of the following rivers: Naryn (36%), Fergana Valley (Chatkal and others - 27%), Saryjaz (10.7%), Chu (9%). The level of development reaches 10%, of which the most developed is the Naryn river basin with potential capacity of 6970 MW.

"Electricity production depends on natural and climatic conditions and water availability in the Naryn River basin and its tributaries. At the same time, cycles of low water and high water alternate every 3-4 years. Accordingly, electricity production fluctuates within 12-15 billion kWh. The Lower Naryn cascade of hydroelectric power plants (HPPs) with reservoirs of perennial (Toktogul - 19 billion m3) and seasonal regulation (Kurpsay, Tashkumyr, Shamaldysay and Uchkurgan) operate in the lower reaches of the Naryn River basin. The main generating capacities - Nizhne-Naryn HPP cascade with installed capacity of 2,860 MW located in Jalal-Abad oblast, At-Bashinsk HPP with capacity of 40 MW in Naryn oblast are part of JSC "Electric Power Plants"," the review says.

The total gross hydropower potential of small rivers and watercourses surveyed on the territory of the republic exceeds 80 billion kWh per year, of which technically acceptable for development is an average of 6 billion kWh per year. The level of their utilization is 0.000003%.

Electricity losses in the energy system of Kyrgyzstan in 2019 amounted to 2.3 billion KGS

Electricity losses in 2019 amounted to 2 billion 294 million 408, 593 thousand kWh or 15.28% of the receipt in the networks of the energy system of Kyrgyzstan. This is stated in the materials of KERC.

Including losses of electric power by NESK amounted to 800 million 257,115 thousand kWh or 5.48% of the inflow into the networks of NESK.

For distribution companies as a whole, losses amounted to 1,494,151,478 thou. kWh or 12.45% of grid losses.

Including losses in the grids of JSC "Severelektro" amounted to 703 mln 484,864 thousand kWh, JSC "Vostokelektro" - 237 mln 442,810 thousand kWh, JSC "Oshelektro" - 347 mln 262,700 thousand kWh, JSC "Jalalabatelektro" - 205 mln 961,100 thousand kWh.

**Commissioning of Kambarata HPP-1 will correct seasonal inflow regime into Toktogul reservoir, which will increase export of electric power, - Gospromenergo.**

Completion of construction of Kambarata HPP-1 and its commissioning will give a real opportunity to increase export potential taking into account the obligations of the Kyrgyz Republic under the CASA-1000 project, according to the Concept of Development of the Fuel and Energy Complex of the Kyrgyz Republic until 2030.

Also, this project will provide solutions for the country's energy system to the following tasks:

- meeting the higher growth rate of electricity demand in the KR until 2030;

- provision of capacity reserve in the energy system of the Kyrgyz Republic;

- ensuring efficient utilization of water and energy resources (WER);

- improving the performance of the Toktogul reservoir and Kambarata HPP-2;

- high technological efficiency of construction (possibility of parallel construction of hydrosystem structures);

- high economic efficiency (the lowest cost of specific capital investments);

- coverage of peak loads in the energy system;

- frequency regulation in the Central Asian unified energy system, maximum use of local resources;

- power delivery through the Datka-Kemin 500 kV transmission line, which is ready for operation.

According to the document, under construction of Kambarata HPP-1 in energy mode to cover the demand of consumers of the country in the autumn-winter period is possible operation of the Toktogul HPP in the design mode, with power generation in the winter period in the amount of about 25% of capacity and accumulation of water in the Toktogul reservoir, in the spring-summer period increasing power generation at Toktogul HPP along with water releases for the needs of irrigation, as the Kyrgyz Republic and neighboring republics. As a result, winter energy water releases from Kambarata HPPs will be accumulated and will be re-regulated by the Toktogul reservoir under the irrigation schedule of water consumption, i.e. operation of Kambarata HPP-1 will make adjustments in the seasonal regime of inflow to the Toktogul reservoir and, thus, will allow to supply sufficient water to neighboring downstream countries in the driest seasons and, accordingly, to increase electricity export.

**Commissioning of the Upper Naryn HPP cascade will ensure export of electricity under the CASA-1000 project in the amount of 1.5 bln kWh.**

The commissioning of the Upper Naryn cascade of HPPs will ensure the export of electricity under the CASA-1000 project in the amount of 1.5 billion kWh, and with the commissioning of Kambarata HPP-1, exports will increase to 1.7 billion kWh by 2030, according to the Concept of Development of the Fuel and Energy Complex of the Kyrgyz Republic until 2030.

With the construction and commissioning of the Kara-Kechinskaya TPP it is possible to cover the needs of its own consumers in the fall-winter period and increase electricity exports up to 2 billion kWh to the wholesale market of the EAEU and provide a capacity reserve in the energy system at the level of 1.15. The share of RES in electricity generation will amount to 5% by 2030, SCPES forecasts.

At the same time, it is necessary to:

- Ensuring a reduction in technological consumption associated with electricity transmission at the level of 4% for transmission grids and up to 8% for distribution grids by 2030;

- timely commissioning of generating sources with provision of parallel operation within UES CA;

- development and reconstruction of 35-500 kV grids in accordance with the growing production and consumption of electric power, taking into account the load of the energy system according to its optimal parameters;

- equalization of daily and seasonal load schedules by means of tariff regulation and consumer incentives;

- development and approval of regulatory and legal acts aimed at reducing costs and losses of electricity.

**Two stages of power grid development in Kyrgyzstan: Commissioning of new HPP and RES capacities, construction of substations and transmission lines**

The development of power grids in Kyrgyzstan should be ensured in parallel with the commissioning of new HPP and RES capacities, according to the draft Concept for the Development of the Fuel and Energy Complex of the Kyrgyz Republic until 2030.

Authors - V. Kasymova, A. Arkhangelskaya, R. Kurzhumbaeva.

According to the State Committee for Industry and Energy, at the first stage (2021-2025) under the optimistic scenario, further development of electric networks in the direction of South Asia through the energy system of Tajikistan will begin with the construction of a 500 kV transmission line "Datka-Sugd" within the CASA-1000 project to create an electricity market between Central and South Asia.

Also, in order to improve the energy efficiency of electricity networks and reliability of electricity supply, it is necessary to prepare feasibility studies of the following projects for the construction of substations (PS) and overhead power lines (OPL), in particular:

- 220 kV Tamga-Karakol 220 kV overhead line and 220 kV Karakol substation;

- 220 kV substation "Uchkun" and 220 kV overhead power lines (OPL-220 kV with a tie-in to 220 kV overhead power line "Kemin - Ala-Archa";

and it is also necessary to ensure the implementation of the following projects for the construction of substations, in particular:

- 110 kV substation "Ozernaya";

- 110 kV substation "Ippodromnaya";

- 110 kV substation "Don-Alysh";

- "improvement of power supply of Arki massif of Batken oblast".

At the second stage (2026-2030) the task is set to ensure the implementation of the following projects for the construction of substations and overhead lines, in particular:

- 220 kV overhead line "Tamga-Karakol" and 220 kV substation "Karakol";

- 220 kV substation "Uchkun" and 220 kV overhead line with a tie-in to 220 kV overhead line "Kemin - Ala-Archa";

- construction of 220 kV substation "Uchkun" and 220 kV overhead line with tie-in to 220 kV overhead line "Kemin - Ala-Archa";

- construction of 220 kV overhead line "Kristal-Shekaftar".

"Accordingly, distribution power grids will be developed. At the same time, REC faces important tasks on reconstruction and modernization of all energy equipment with installation of new transformer substations and laying of cable and overhead lines. Of particular importance is the development of measures of unified requirements to the implemented programs and systems to ensure integration into the complex (ERP, SCADA, On-line Biling, APCS with the installation of smart meters AIISKUE)," the document says.

**Foreign Trade: EEAS countries exported electricity, gas and steam worth $151.6 mln.**

In January-March 2020, the countries of the Eurasian Economic Union exported electricity, gas, steam and conditioned air for $151 million 682 thousand 845. This is stated in the materials of the EEC.

According to the Commission, Russia's exports account for $102 million 511.4 thousand, Kazakhstan - $11 million 830.2 thousand, Belarus - $20 million 242.2 thousand, Armenia - $17 million 98.9 thousand.

Kyrgyzstan neither exported nor imported electricity, gas, steam and conditioned air.

Imports of electricity, gas, steam and conditioned air for 3 months amounted to $4 million 511 thousand 767 for this period: Russia - $2 million 795.2 thousand, Belarus - $18.5 thousand, Armenia - $1 million 697.9 thousand.

**Republic of Uzbekistan**

**As a result of 212 violations committed by electricity consumers in the Republic of Uzbekistan since the beginning of this year, 34.5 billion soums were recalculated (22.06.2020).**

Since the beginning of 2020, 244.2 million kWh of electricity has been saved as a result of the ongoing work of the Electricity Supervision Inspectorate under the Ministry of Energy of the Republic of Uzbekistan.

The "Uzenergoinspektsiya" is entrusted with state supervision over compliance by legal entities and individuals (in addition to the population) with regulatory and legal documentation in the sphere of production, supply, distribution and consumption of electric and thermal energy, use of coal.

Since the beginning of the year the plans on energy inspections of 13 enterprises consuming more than 2 thousand tons of conditional fuel per year have been implemented.

This work made it possible to analyze the compliance of the activities of the inspected economic entities with the modern legal framework in the field of electric power industry, to identify existing violations and to return to the state and users unauthorized energy volumes.

In addition, during joint raids of "Uzenergoinspection" and the Bureau of Enforcement during the past months of the year, offenses committed by 212 consumers were revealed. As a result, recalculation was made, which amounted to 34.5 billion soums.

Another priority task of "Uzenergoinspection" is the development and analysis of regulatory legal documents in the field of energy. This work is currently of particular relevance in connection with the process of large-scale reforming of the electric power industry.

Accordingly, since the beginning of 2020, 38 regulatory and legal documents have been reviewed to make appropriate amendments to the existing regulatory and legal acts, revise them and recognize them as invalid. In particular, proposals for amendments and additions to two laws of the Republic of Uzbekistan, 13 resolutions of the Cabinet of Ministers of the country, etc. have been prepared.

The functions of "Uzenergoinspektsiya" also include issuing conclusions on inspection and commissioning of new and reconstructed electrical equipment. This work is aimed at ensuring safety in the power sector, including during the commissioning of new facilities. Thus, "Uzenergoinspektsiya" has reviewed projects on power supply of 2875 objects to be put into operation in the current year. On the whole in the country inspections and conclusions were given on the electric facilities of 1,987 consumers with a total capacity of more than 378 MW, including large industrial facilities.

Uzbekistan is developing a low-carbon development strategy (05.06.2020).

Uzbekistan will adopt a National Low Carbon Development Strategy, which is currently being developed by the country's Ministry of Energy with the involvement of international experts.

The document will reflect the ways of transition to electricity generation with low emission of greenhouse gases negatively affecting the environment.

In early May, the country adopted the "Concept of Electricity Supply of the Republic of Uzbekistan for 2020-2030", which was developed with the participation of the Asian Development Bank and the World Bank. The concept envisages modernization of existing power plants, creation of new types of power generation through renewable energy sources and nuclear power plants. These measures will make it possible to reduce greenhouse gas emissions by 10% by 2030 compared to the 2010 figure.

The National Low-Carbon Energy Strategy of Uzbekistan is currently being developed on the basis of this document, with the participation of experts from the European Bank for Reconstruction and Development. The strategy is necessary to solve the problem of energy supply of the country, on the one hand, and to reduce the negative impact on the environment, on the other.

"The strategy for the transition to low-carbon energy is being developed through a method of modeling the country's energy system and possible development scenarios for the future. This will be done by an international consulting company Corporate Solutions. In parallel, we are studying the experience of Germany, Japan and Spain. But it is necessary to realize that the available foreign experience should be adapted for application in the conditions of Uzbekistan. An individual development plan with maximum application of the best international experience will be chosen for our country. The transition to low-carbon energy will make it possible to provide the country with electricity at a sustainable high growth rate and simultaneously improve the quality of life of the population," Energy Minister Alisher Sultanov said.

The country's decades-old energy production system is physically and technologically outdated, and its efficiency does not meet modern requirements. This is largely due to the fact that it is almost entirely dependent on natural gas and limited hydropower resources. The solution to the situation is the development of alternative types of power generation based on solar, wind and water energy, which are among the methods of power generation with low carbon dioxide (carbon dioxide) emissions. Nuclear power also belongs to the group of energy production with minimal carbon dioxide emissions, while it is capable of providing the country with uninterrupted and high-quality electricity on an industrial scale.

The strategy will reflect three low-carbon energy transition scenarios, and to ensure the document's effectiveness, special attention will be paid to the development of renewable energy generation, particularly solar energy. The implementation of the plans will be funded by investors. According to the plan, by 2030 Uzbekistan is expected to have 3 GW of wind power plants, 5 GW of solar power plants and 2.4 GW of nuclear power plants.

**Republic of Turkmenistan**

**Turkmenistan plans to establish a National Agency for Renewable Energy Sources (23.06.2020).**

According to Deputy Prime Minister, Minister of Foreign Affairs Rashid Meredov, Turkmenistan is currently carrying out significant work in this direction, namely on the creation of new effective international mechanisms.

Turkmenistan was one of the first countries to support the initiative to establish the International Renewable Energy Agency (IRENA) in 2009 and became a full member of this organization in 2018. The main activities of the Agency are to support the strategies of the world's countries on transition to sustainable energy, promotion of innovative technologies and economic knowledge in the field of renewable energy. Currently, 161 states are members of IRENA.

In 2018, Turkmenistan developed a plan to develop cooperation with IRENA until 2023 and established a relevant interdepartmental working group, with which a number of activities were carried out.

In the field of renewable energy development, Turkmenistan also closely cooperates with the European Union, the Organization for Security and Cooperation in Europe and specialized UN structures: the United Nations Industrial Development Organization (UNIDO), the United Nations Environment Programme (UNEP) and the United Nations Development Programme (UNDP), with which profile projects and programs are implemented annually.

In connection with the activation of activities in the direction of energy diplomacy, a proposal was voiced to appoint Turkmenistan's Ambassador to the United Arab Emirates as a permanent representative of Turkmenistan to IRENA.

In order to share experience with foreign partners within IRENA, familiarize the world community with the country's experience in the energy sector, it is also proposed to nominate Turkmenistan for election to the IRENA Agency Council for 2021-2022.

The head of state generally approved the submitted proposals, noting that in recent years, as a result of rapid scientific and technological progress in the world, there has been a high growth rate in the use of renewable energy sources. This promising direction is also one of the important components of the country's energy strategy.

"Introduction of innovative, environmentally friendly technologies in the field of practical use of natural sources - energy of the sun, wind, water and others - acts as a significant vector of development of the "green" economy and can find effective application in various sectors of the economy," the head of state emphasized, instructing the Deputy Prime Minister and the head of the Ministry of Foreign Affairs to continue work to promote the initiatives of our country in the field of energy diplomacy.

**Republic of Tajikistan**

**The World Bank will give a grant of $134 mln. for rehabilitation of Barki Tojik (18.06.2020).**

On June 17, the Lower House of the Parliament of Tajikistan unanimously ratified the agreement signed in May of this year on financing the program of financial rehabilitation of the energy enterprise between the Republic of Tajikistan and the International Development Association.

Addressing the people's elected representatives, Tajikistan's Minister of Energy and Water Resources Usmonali Usmonzoda noted that the agreement provides for financial support to Barki Tojik, aimed at improving the management of the energy holding.

To implement the project, the World Bank will allocate 134 million US dollars to Barki Tojik as a grant.

According to the Minister, the implementation of the project will start this year and will be completed in 2026.

**Republic of Armenia**

**Armenia's power market liberalization is postponed due to coronavirus (09.06.2020).**

Liberalization of Armenia's power market is postponed due to a coronavirus, Chairman of the Public Services Regulatory Commission (PSRC) Garegin Baghramyan said in Parliament on Monday.

"We have started a large-scale process of market liberalization. There is a corresponding program of the government. According to the schedule, it is planned that its implementation will start from 2021, but there will be delays due to the coronavirus pandemic," he said.

Bagharmyan suggested that the final liberalized market will probably be formed by January 2022.

In addition, he said that within the framework of these measures, the government will receive a $1.5 million software donation from the United States Agency for International Development (USAID).

At the same time, the PSRC head also said that a program for creating a single electricity market has already been approved within the EAEU, according to which the work in this direction should be completed in 2022.

**Electricity transmission project between Iran and Armenia is in the process of realization**

Armenian Ambassador to Iran Artashes Toumanian said that a joint project on electricity transmission between the two countries is under implementation despite the coronavirus pandemic.

"Joint projects between Iran and Armenia have not been closed and preparations are underway to send 60 people from Iran to Armenia to work on the third power transmission line between the two countries," Toumanian said at an online meeting on the impact of the COVID-19 outbreak in the region, Mehr News reported.

Iran and Armenia have been cooperating in gas and electricity exchanges for years, and bilateral economic and political ties have grown in tandem with increased trade. Armenia has repeatedly announced its readiness to conclude swap agreements with Iran.

Back in July 2019, the two countries signed a memorandum of understanding (MoU) in Tehran to expand economic cooperation, especially in the energy sector.

Based on the memorandum, the two sides agreed to complete the construction of a third power transmission line from Iran to Armenia by 2020 to increase electricity exports to Armenia from the country to 1,000 megawatts (MW).

The memorandum also covered cooperation in various fields, including road and rail transportation, customs, standardization, establishment of Free Trade Zones, as well as industry, mining and trade.

Iran and Armenia use a barter system to exchange gas for electricity and other basic commodities.

**Republic of Belarus**

**The fifth out of seven high-voltage lines for communication with the energy system was connected to BelNPP**

The 330 kV high-voltage line "Belarusian NPP - Stolbtsy" and new equipment of the Stolbtsy substation have been switched on, Belenergo told BELTA.

"This is the fifth high-voltage line linking the Belarusian NPP with the power system. A total of seven high-voltage lines connect the switchgear of the Belarusian NPP with the power system, five of them have already been switched on, two more ("Belarusian NPP - Molodechno" and "Belarusian NPP - Ross") are to be switched on," Belenergo noted.

The construction of the lines has been completed, they are put into operation as soon as the main equipment and relay protection and emergency control devices at BelNPP are ready.

In addition to the construction of the transmission lines, the installation of the connection between BelNPP and the Stolbtsy substation envisaged the reconstruction of the existing 220 kV Stolbtsy substation with the organization of a new 330 kV switchgear. In addition, the reconstruction envisages equipping the substation with two shunt reactors.

The Belarusian NPP with two VVER-1200 reactors with a total capacity of 2,400 MW is being built according to the Russian project near Ostrovets (Grodno Region). The general contractor is the engineering division of Rosatom State Corporation. The first power unit is scheduled for commissioning in 2020, the second - in 2021.

On May 11, Minsk hosted a briefing on the topic "Belarusian NPP: at the stage of preparation for the physical start-up of the first power unit".

During the press event, which was held in the videoconference format, the journalists were able to get competent answers to the most topical issues of the nuclear agenda.

"At the moment we have completed an important stage in the construction of power unit No. 1 - hot running-in of the reactor plant equipment," Deputy Energy Minister Mikhail MIKHADYUK told about the current state of affairs at the construction site.

- This means that fuel simulators have been loaded into the reactor and the entire cycle of tests at intermediate and operating parameters of the coolant has been carried out. On April 15, we started the stage of revision of the equipment involved in hot run-in. Besides, at this stage and after it we have to conduct 306 tests of technological systems and equipment and complete a number of other works. Before the next stage, the personnel of the operating organization must also obtain a license to operate the nuclear facility. As for power unit No. 2, both general construction works and installation of the main process equipment are being carried out in accordance with the schedule. An important event has already taken place - transformers have been put into operation and voltage has been supplied to the 10-0.4 kV switchgear according to the standard scheme. On May 6, nuclear fuel was delivered to the nuclear power plant for initial loading of power unit No. 1". (On May 25, the process of fuel transportation to the storage facility and its incoming inspection were completed. - Editor's note). Today, as part of the licensing process, Gosatomnadzor is reviewing documents justifying safety," said Olga LUGOVSKAYA, Head of the Department of Nuclear and Radiation Safety of the Ministry of Emergency Situations of Belarus.

- By the end of May we will receive an expert opinion of the "United Institute of Energy and Nuclear Research - Sosny", which will allow us to make a decision on compliance with all design requirements and the requirements of all regulatory legal documents.

In parallel, we are preparing for a targeted comprehensive inspection, which will consider the readiness of the operator, the physical readiness of the facility to make a decision on the issuance of a license for physical launch."

PHYSICAL START-UP

"Today, within the framework of the regulations, we are carrying out all the necessary preparatory work to ensure the physical start-up," Mikhail Mikhadyuk noted. - There is no hurry, there are only strict requirements of regulatory documents in terms of performing a certain amount of work and achieving specific parameters for each technological system and unit of equipment.

Physical start-up, I remind you, begins with loading nuclear fuel into the reactor. Safety remains the main priority: until we are sure that we are ready technologically, that the personnel, all equipment, buildings and structures, and physical protection are ready, we will not proceed to this stage.

The schedule provided by the general contractor stipulates that such readiness will be ensured in July of this year".

 FINANCING AND CREDIT

"In connection with the shift in the commissioning dates of the first and second power units of the Belarusian NPP, work is underway to adjust the terms of the loan agreement both in terms of sampling dates and shifting the repayment dates and other terms of the loan. There is understanding from the Russian side, the document has not been signed yet - it is at the stage of final agreement and passing through internal procedures on both sides.

As for the current financing, it is carried out as planned without any restrictions and delays," the Deputy Minister of Energy informed.

COST OF ELECTRICITY

"The cost of electricity generation in the Belarusian energy system is influenced by many factors, primarily the price of natural gas," emphasized Mikhail Ivanovich. - The energy system carries out systematic work to reduce costs in all areas that can bring results.

Currently, the cost of electricity is 16 kopecks per kilowatt-hour. After the launch of the Belarusian NPP, its cost will also be affected by many factors, which are being studied today by a special interdepartmental commission. It certainly won't become more expensive.

I should note that the cost of nuclear fuel in the cost of electricity generation at the NPP has a share of about 20%, even taking into account its further processing and storage. For comparison: the cost of fossil fuel in the cost of electricity generation at classical power plants has a share from 60 to 70-80%, depending on the type of power plant".

POLITICAL ASPECT

"There is nothing but politics in the position taken by Lithuania in relation to the Belarusian NPP," Mikhail Mikhadiuk said. - We haven't received any questions from Lithuanian nuclear safety specialists, all claims come from politicians.

Today, a number of European Union countries have started building their own NPPs according to the same project as we have. Therefore, it is probably wrong to speak of unsafety. From environmental and other points of view, there is no alternative to nuclear power plants in terms of producing such an amount of energy and reliability.

 We take all possible measures and ensure safety. Belarus, which survived the Chernobyl tragedy, is more interested in this than any of our neighbors"

ENERGY EXPORT

 "With the commissioning of the NPP, Belarusian electricity, and the economy as a whole, will become more competitive," said Mikhail Ivanovich. - First of all, we are focused on our own consumers, so that our economy will become more competitive with the commissioning of the nuclear power plant. We will also offer our energy to foreign markets, to our neighbors. Today, politics makes certain adjustments, but I think a little time will pass, and the economy will put everything in its place".

STAFF READINESS

 "We have fully recruited and prepared personnel for the operation of the first power unit - the relevant licenses from the regulator have already been received," said the deputy energy minister. - Recruitment of personnel for the second unit has been mostly completed.

The personnel training process was carried out in different areas. For a number of key management positions, we invited specialists with experience of working at NPPs from other countries - primarily from Russia and Ukraine. There is at least one such specialist in each operational shift. In addition, we invited energy specialists from enterprises of the energy system: they have undergone retraining, training, internships at operating NPPs, and are continuously trained on our simulator in the training center. More than 300 graduates of Belarusian universities who have already received specialized education work at the plant.

Personnel training, along with quality equipment training, is our top priority, as it is the basis for the safety of the nuclear power plant". Anton TURCHENKO The video broadcast of the briefing can be viewed on the YouTube channel of Belenergo.

**Russian Federation**

**Renewable energy associations will work to attract investment in green energy.**

The Renewable Energy Development Association (REDA) and the Russian Wind Industry Association (RAVI) have signed a cooperation agreement that envisages joint work on stimulating investment attraction in RES projects. The signing of the document took place in the format of a videoconference.

The agreement on cooperation and interaction, according to RAVI, consolidates the desire of the two professional associations of the Russian RES sector to strengthen the promotion of investment and project activities in the renewable energy sector in Russia, to cooperate in the formation of an effective regulatory framework governing the RES industry, and will also allow the exchange of experience with foreign companies that have advanced technologies and competencies in the implementation of renewable energy projects.

"Combining the competencies, connections and experience in organizing legislative, lobbying, public and communication work of the two professional associations will contribute to the coordination of actions in the interests of all market participants without exception. Together we will be able to involve even more new forces capable of strengthening and expanding the renewable energy market in Russia," Igor Bryzgunov, Chairman of the Russian Wind Industry Association, said after the signing.

"It is precisely now, when the already established fast-growing and highly successful Russian renewable energy cluster needs an additional impetus for long-term development and volume build-up, that its prospects largely depend on consolidating the maximum available resources and concentrating efforts," added Alexey Zhikharev, Director of the Renewable Energy Development Association, Partner at Vygon Consulting.

About the Associations

The Association for the Development of Renewable Energy (ARRE) was established on the initiative of the largest companies in the renewable energy industry of the Russian Federation, and its members include Rosnano, Novavind, AvelarSolar Technology (Hevel Group), Solar Systems, Vestas Rus, Vershina Development LLC, VRS Towers, Fortum, Enel Russia, TGK-1, Severstal and other market participants.

The main objectives of the ARWE are to extend the measures of state support of RES for the period until 2035, to improve the regulatory framework in the field of construction of RES facilities, as well as to expand technological cooperation in order to increase the depth of localization of equipment for RES projects.

The Russian Association of Wind Industry (RAVI) is an independent non-profit organization that has existed since 2004 and develops the wind energy market. Today RAVI members are more than 160 companies from all segments of the wind energy market: leading global manufacturers of wind turbines, the largest Russian industrial and power engineering companies producing components for wind power plants, global engineering, construction, logistics companies, research institutes and others.

The purpose of the association is to provide practical assistance and support to its members in entering the market, mastering production, development of wind farms and obtaining orders for the production of components for wind turbines for design, construction, and logistics services.

The longest superconducting power transmission line will be built in St. Petersburg.

The world's longest superconducting power transmission line will be launched in St. Petersburg in 2021. The system is based on a cable made of bismuth and silver, which will have double-circuit cryogenic cooling and automatic control. Its use will minimize the space for infrastructure construction in the historic center of the city, as well as reduce energy transmission losses. The success of the project may become a landmark event in the electric power industry, after which there will be an explosive growth in efficiency due to the introduction of new materials, experts believe. The Federal Grid Company of the Unified Energy System (FGC UES) will be the contractor. The construction cost will amount to 3.5 billion rubles.

Cold circuit. Laying cables made of superconducting materials is the most advanced method of power transmission, which practically eliminates power losses. However, due to the technical complexity and costliness of this type of power lines, they have not had a significant length so far, which limited the range of tasks that can be solved with their help. The project to create a new superconductor line in St. Petersburg - it will have a record length of 2.5 kilometers - can change the view on innovative energy.

 - During construction, we will use a high-temperature superconductor Bi2223/Ag made of bismuth and silver, which is made in the form of a 4 mm wide tape," said a developer from the Scientific and Technical Center of FGC UES. - It reaches the required properties at the boiling point of liquid nitrogen at 77 °K (-196 °C), which makes it necessary to use a powerful cooling system.

Engineers decided to make the system a two-circuit system - the first one will contain gaseous helium, which is needed to cool the liquid nitrogen. It will circulate in the cable itself and the return line (cryostat), providing the superconductor operating temperature. Thus, the total length of the second circuit will exceed the length of the transmission line twice and will be about 5 kilometers.

The innovative line will be equipped with an automatic control system, which will be responsible for maintaining the operating mode of all nodes, as well as display the necessary information on the operator's console. From there, a specialist will be able to monitor the situation and intervene if necessary.

Superconductivity is the state of materials in which they have strictly zero electrical resistance. This phenomenon, discovered in 1911, is quantum in nature and is characterized by the complete displacement of the magnetic field from the conductor (Meissner effect). It is possible to achieve its manifestation only at extremely low, cryogenic temperatures. This still limits the application of superconductors to the manufacture of powerful magnets used in medical tomographs, particle gas pedals and some electric motors. At the same time, scientists are only now approaching the task of energy transportation by means of superconducting cables as they solve problems with cooling of long lines and safety of their use.

It is planned that the new power line will connect substations "Tsentralnaya" and "RP-9", which are located in the center of St. Petersburg (near Ligovsky Prospekt). According to the developers, in this area the growing power consumption is combined with the difficulty of building additional infrastructure facilities that may not fit into the historical image of the city. That is why the decision was made to lay a superconducting cable underground, which is capable of carrying 50 megawatts of power at an average voltage of 20 kilovolts.

As part of R&D on the new project, the developers successfully conducted a set of tests. These included analyzing the electrical properties of the cable, checking the life of the cooling system, as well as testing the necessary safety interlocks to ensure the safety of its use.

It is expected that the innovative power line will be introduced into the St. Petersburg power system in 2021 and will become the longest superconductor line in the world. Currently, the plan for its creation has already been included by the Russian Ministry of Energy in the national project. Total investment in construction will amount to 3.5 billion rubles.

"Green" energy in Russia may soon become cheaper than traditional energy.

The extension of the program to support the development of renewable energy (RES) until 2035 will lead to the fact that "green" electricity in Russia will become cheaper than electricity from traditional sources. This is stated in a study by Vygon Consulting.

Power plants based on renewable energy sources (RES) are being built in Russia under capacity delivery agreements (CDA) guaranteeing return on investment. Under the first program, about 5.5 GW of green capacity will be built by 2024. Now the government is discussing the parameters of the new program until 2035. In particular, it is about increasing the requirements for localization of equipment production and introducing requirements for its export.

According to Vygon Consulting experts, it is possible to build another 6.9-9 GW of "green" capacities under the new program. As a result, the share of RES in Russia's total electricity generation will grow to 2.9-3.3%.

The first program stimulated the creation of equipment manufacturing enterprises; its extension will ensure the inflow of up to 50 billion rubles of new investments and increase the demand for equipment and services. As a result, the volume of specific capex in the construction of new generation by 2030 will decrease by 30-45%, says Nikolay Posypanko, head of the energy markets regulation department at Vygon Consulting. Thanks to this, the cost of RES electricity in new projects will become cheaper than that of conventional power plants. Thus, in 2020, the electricity price of new solar power plants averages 9.5 rubles/kWh, wind power plants - 6.3 rubles/kWh, nuclear power plants - 5.1 rubles/kWh, new combined cycle plants - 3.6 rubles/kWh. By 2030, the electricity price of wind power plants will decrease to 5.2 rubles/kWh, solar power plants - to 7.5 rubles/kWh, while at NPPs - will increase to 7.5 rubles/kWh, at combined cycle plants - to 5.3 rubles/kWh, says the expert. When compared to some operating TPP power units, the difference can be dozens of times in favor of RES, he added.

Over the last 10 years, the cost of equipment for solar and wind power plants has decreased by 60% and 40%, respectively, and its efficiency and reliability are improving, says Alexei Zhikharev, Director of the Association for the Development of Renewable Energy (ARRE): "Not so long ago, the efficiency of a solar panel was below 15%, but now it exceeds 20%. Specific capex in new Russian solar power projects is at the level of the world, having decreased more than 2.5 times since the beginning of the program, said Igor Shakhrai, General Director of the company-investor in the construction of solar power plants and solar panel manufacturer GC "Hevel" at a press conference in TASS on May 22. Electricity from wind farms is already almost equal in price to new coal-fired generation and is cheaper than a number of inefficient gas-fired power plants, says Alisher Kalanov, head of the investment division of Rusnano MC: "The second program to support the industry for the period 2025-2035 has been agreed by the government in the minimum amounts that will allow the development of existing industrial competencies in high-tech power engineering, which has export potential." In the next 10 years, wind and solar will become the most affordable source of energy, Zhikharev believes.

Investments in the second program will cost the wholesale market an additional 2.1% in the final electricity price in the first price zone and 1.1% in the second at the peak in 2035, Vygon Consulting calculated. "But there is also a reverse effect: the introduction of RES generation will reduce the volume of price "expensive" supply in the wholesale market, which will lead to an average 1.1-1.6% reduction in prices in the day-ahead market (DAM) and save consumers up to 17 billion rubles a year, and in the aggregate up to 300 billion rubles by 2035," said Posypanko. In general, the implementation of the second program will provide GDP growth of 1.3 trillion rubles, reduce specific greenhouse gas emissions by 0.5%, the study says.

Price reductions in the narrow segment of DER do not pay off large-scale payments for RES capacity, says Valery Dzyubenko, deputy director of the Community of Energy Consumers: green energy facilities have no capacity in principle, as they cannot guarantee readiness to generate electricity due to their weather dependence. "With such large-scale expenditures both in the RES sphere itself and in other sectors, it would be possible to obtain much more convincing effects, from economy to ecology," he says.

The cost of a "green" kilowatt-hour is getting cheaper due to the rapid development of technologies: since 2009, the price of solar panels in the world has fallen by 80%, and turbines for "wind turbines" - by 30-40%, already now the average cost of electricity from renewable sources is comparable to fossil fuel-based generation, and by 2030 it may fall by another 58% for solar panels and 25% for wind farms, says Dmitry Stapran, Director of Strategy and Operational Excellence at PwC. But it is difficult to talk about comparing the cost of operating "green" and conventional energy in Russia by 2030, given the cost of localization of renewable energy sources and the dependence of conventional generation on fuel prices, he said.

Denis Krasnovsky, senior analyst at ACRA, considers it unrealistic that the cost of "green" energy will drop to a level lower than that of conventional energy in the next 15 years: "In addition to RES facilities themselves, in order to meet localization requirements, investors are forced to create new production facilities for RES components. This will require new capital expenditures, and 1 kWh of RES will have to pay back not only the generation facility itself, but also the creation of component production, he says: "If there is no possibility of compensating such costs in RES-2 DPM projects, investors will simply not be interested in them."

According to Krasnovsky, the commissioning of RES facilities will have a minimal impact on prices on the wholesale market, as the 5 GW of RES generation planned to be commissioned by the Ministry of Energy is an insignificant volume - only about 2% of the installed capacity of the entire energy system. Under the current price formation mechanism, the cost for end consumers is likely to increase, Stapran believes. But RES may become attractive for retail generation, given the speed of construction of RES plants and their proximity to consumers.

Over the last 10 years, the cost of equipment for solar power plants has decreased by 60%

"Inter RAO plans to consider a new development strategy in August-September 2020," the company said.

"As far as the strategy is concerned, we are focused on the month of August, but a lot of factors should be taken into account: these are the discussions that should take place, additional, within the framework of our committees in the board of directors, discussion at the level of the board of directors and coordination by the relevant FOIVs (federal executive authorities - ed.) - the Ministry of Economic Development and the Ministry of Energy... August, or September, we want it to be in August, because the document is ready," Maslov said.

"At the same time, we would not want to break the process of approving our strategy, our long-term development program into two stages, when we will be approved by the board of directors, then get approval from the Ministry of Energy, the Ministry of Economic Development and go to the board of directors again. But in principle, we are ready to act in this way, as it was in 2014, where these two processes were slightly separated by time," he added.

Earlier in May, Inter RAO's Board of Directors postponed consideration of the issue of approving the group's strategy until 2025 with a view to 2030 until the third quarter.

As the company explained, the management intends to conduct an additional assessment of the macroeconomic situation on the strategy horizon and clarify the forecast of operational and financial parameters, including the impact of electricity demand in Europe and Russia, energy price dynamics, collection of payments for electricity and heat consumed, as well as include in the strategy stress scenarios of the group's development.

The company is currently preparing an updated medium-term development strategy. The current strategy was adopted in 2014 and is valid until 2020 with a perspective until 2025. The board of directors planned to consider the new strategy this month.

**Republic of Moldova**

**Moldova's energy imports in January-February 2020 amounted to $148.43 million in monetary terms, decreasing by 9.8%, compared to the same period of 2019.**

As reported in the National Bureau of Statistics, in particular, in the first 2 months. 2020 г., compared to the same period of the previous year, imports of oil and oil products in value terms increased by 19.2% - to $77.75 million, and natural gas - decreased by 28.2% - to $63.14 million. Imports of electricity decreased by 38.1%, amounting to $5.5 million. Shipments of coal, coke and briquettes for the same period decreased by 16.3% to $2.04 million. The share of mineral fuels in the total volume of Moldovan imports in January-February 2020 amounted to 17.16% against 19.78% in the same period a year earlier. Imports of energy resources took the 3rd place in the total structure of product deliveries to Moldova in the first 2M. At the same time, the import of oil products in the structure of total imports amounted to 8.99%, natural gas - 7.3%, electricity - 0.64%, coal - 0.24%.

**In Moldova, the regulated price for electricity supplied by the central electricity supplier Energocom has been reduced by 23 bani (-14.6%) to 135 bani per 1 kWh (without VAT).**

The National Energy Regulatory Agency made the corresponding decision. It should be noted that from September 1, 2019 until now, the regulated price for electricity supplied by Energocom, approved earlier by ANRE, was 158 bani per 1 kWh (excluding VAT), and the company requested an increase in this tariff to 1.6 lei per 1kWh at the end of January 2020.

However, ANRE experts, based on the information provided by Energocom, after analyzing the projected volumes of electricity produced by the respective power plants from renewable energy sources, as well as electricity produced by urban district heating plants, determined the regulated supply price at 135 bani per 1 kWh and proposed it to the ANRE Council of Administration for approval. According to ANRE, the factors that led to the difference of 25 bani per 1 kWh between the price proposed by Energocom and the price proposed for approval by ANRE experts were: the reduction of the electricity tariff offered by Termoelectrica for the period from March 20 to December 31, 2020. to 1.16 lei/kWh , which is 43 bani per 1 kWh lower than its tariff in 2019; reduction of the tariff for electricity offered to CET Nord (CHP-Nord) in 2020 to 1.62 lei per kWh, which is 8 bani lower than the previous tariff; reflection in the tariff calculation of positive deviations of 6.65 million lei registered by Energocom in 2019.

ANRE said that Energocom, as a central electricity supplier, supplies to the wholesale electricity market the energy produced by the respective power plants that produce it from renewable energy sources, as well as the electricity produced by urban district heating plants. At the same time, ANRE reports that the total volume of electricity supplied by Energocom-as a central electricity supplier-is less than 20% of the total volume of electricity sold on the wholesale electricity market. The regulated price of electricity supplied by the central electricity supplier is only one of the components on the basis of which the price at which energy is delivered to end consumers is calculated, and has an insignificant impact.

**Republic of Kazakhstan**

**In preparation for the fall-winter period in the country it is planned to repair 8 power units, 59 boilers, 44 turbines (25.06.2020).**

At a meeting of the Government of the Republic of Kazakhstan chaired by Prime Minister Askar Mamin Minister of Energy Nurlan Nogaev reported on preparations for the upcoming fall and winter period.

Winter maximum load was marked on January 9, 2020 and amounted to 15,182 MW, which is 4% more than last year's level".

226 energy companies (or 87%) received passports of readiness to work in the fall-winter period of 2019-2020. 34 energy enterprises that did not receive readiness passports were brought to administrative responsibility.

"For such enterprises, there are high risks of power supply disruption due to unpreparedness for the heating season. At the same time, they continue to carry out their activities due to the absence of prohibitions. Due to the low amount of penalties, energy companies avoid obtaining a passport of readiness for the heating season. This issue is constantly raised by the Ministry, but it does not find support," N. Nogaev noted.

In 2019, 3996 technological violations were committed in the Unified Electric Power System of Kazakhstan. Compared to the same period last year, the number of technological violations decreased by 34 or 1.3%, for the heating period increased by 135 or 6%.

Also during the past heating period there were 48 cases of non-compliance of heat supply enterprises with temperature schedules of heat networks approved by local executive bodies, which is 20% less than last year.

In the past heating season, energy sources provided the necessary amount of operational fuel reserves of more than 3 million tons of coal and 120 thousand tons of fuel oil.

Н. Nogayev emphasized that in preparation for the heating season a significant issue that needs to be addressed is a significant amount of accounts payable for fuel.

As of June 1 this year, the debt of energy-producing organizations to JSC "KazTransGas-Aymak" is 6.4 billion tenge. There is also a debt of energy producing organizations to LLP "Bogatyr-Komir" in the total amount of 3.3 billion tenge",

To date, energy enterprises are preparing for the upcoming fall and winter period.

This year it is planned to repair 8 power units, 59 boilers, 44 turbines. As of the beginning of June, works on 3 power units, 5 boilers and 8 turbines have been completed. At various stages of repair works are being carried out on 3 power units, 21 boilers and 9 turbines. In general, repair works are carried out according to the schedule.

To prepare the electrical networks of the Unified Electric Power System of the Republic of Kazakhstan for the fall-winter period of 2020-2021 planned repairs of power lines with a total length of 25828 km, as well as 429 units of high-voltage substations. To date, 1140 km of power lines and 65 substations have been repaired on the power grids.

According to the minister, the elimination of ownerless grids is envisaged as part of the implementation of the tasks defined in Step 51 of the 100 Concrete Steps Plan of the Nation.

"A lot of work has been done. The length of ownerless networks has been significantly reduced. As a result of the work done, the length of ownerless power networks as of January 2020 amounted to 225 km and 98 transformer substations," N. Nogaev informed.

In general, the identified ownerless power grids should be transferred to the balance of power transmission organizations by the end of 2020.

In conclusion, N. Nogaev outlined a number of tasks to be accomplished for the successful passing of the fall-winter period of 2020-2021:

- to fulfill all repair works at power plants, power grids;

- Ensure normal accumulation of fuel in the warehouses of energy sources;

- Ensure reduction of debts to fuel suppliers;

- take measures to reduce the accounts receivable of consumers of public utilities to suppliers and accounts payable to energy supplying organizations;

- to implement all measures to prepare educational, health care, life support, social and cultural facilities of settlements;

- take measures to reduce debts of utility consumers;

The Ministries of Justice, Energy, National Economy and NPP "Atameken" together with the interested parties to study the issue of increasing the size of fines in case of failure of energy enterprises to receive the passport of readiness for the heating period.

"The Ministry together with local executive bodies continues to work to control the preparation of energy companies for the upcoming heating season," summarized Energy Minister N. Nogaev.

**Wind farms generate 45% of RES electricity in Kazakhstan (09.06.2020).**

In the first quarter of this year, the share of generated green electricity in the total volume of energy produced amounted to 1.8%. This is 58% more than in the same period of 2019.

The development of renewable energy in Kazakhstan is accelerating. In three years, the volume of green energy produced has doubled. If in 2017 the stations where RES are used generated 1.1 billion kWh, in 2019 this figure amounted to 2.4 billion kWh. The Ministry of Energy of the Republic of Kazakhstan plans to increase this figure to 3.15 billion kWh in 2020.

Meanwhile, in Kazakhstan, the share of RES in the total volume of electricity produced remains insignificant. In 2019, this indicator did not exceed 2.3%, and in 2020 it is planned to reach 3%. This indicator is outlined in the Concept for the transition of the Republic of Kazakhstan to a green economy.

According to the Ministry of Energy of the Republic of Kazakhstan, in the first quarter of 2020, the share of electricity generated by power plants in the total volume of electricity produced amounted to 1.8% or 548.4 million kWh. "Generation of green energy for the first quarter of this year compared to the same period of 2019 increased by 58%," the ministry said.

According to the Ministry of Energy, there are currently 37 solar, 37 hydro, 22 wind and 5 biopower plants operating in the country. At the same time, the total capacity of RES facilities in 2019 was 1,050 MW, by the end of 2020 through the construction of new RES facilities is planned to increase capacity to 1,655 MW.

In January-March 2020, wind farms generated the most electricity - 45% of the volume of RES energy generated, followed by solar power plants - 35.7% and small hydropower plants - 19%.

The trend toward wind and solar power is understandable. The USAID report notes that Kazakhstan has a huge potential for wind power.

"About 50% of the country has wind speeds of 4-5 meters/second at a height of 30 meters. Solar energy also has huge potential - the number of solar hours in Kazakhstan is 2,200-3,000 hours per year," the report says.

The UNDP (United Nations Development Program) emphasizes that almost all RES technologies can be developed in the Republic of Kazakhstan. "They can be related to wind, sun, water. Also in our country we can actively use biogas plants, biomass boiler plants, heat and geothermal pumps. The potential of wind and solar energy utilization is higher than other RES. These energy sources are more accessible, distributed throughout the country. For example, the technical potential of wind generation in the country is 920 billion kWh. This is an order of magnitude more than the current generation and consumption of electricity in the country. To be precise, last year Kazakhstan produced 106 billion kWh, while consumption amounted to 105.1 billion kWh," says Yerlan Dairbekov, UNDP expert.

**40 years to the largest power plant in Kazakhstan!**

April 15, 2020 was the anniversary of the flagship of Kazakhstan's energy industry - Ekibastuz GRES-1.

On April 15, 1980 the Ministry of Energy and Electrification of the USSR signed the Act of Acceptance of the first turbine generator and boiler unit of the station.

Ekibastuz State District Power Plant-1 was built as part of the project of the former USSR to create Ekibastuz Fuel and Energy Complex consisting of 5 power plants with installed capacity of 20000 MW to supply power to consumers in the Urals and Western Siberia. However, only two power plants were completed: EGRES-1 and EGRES-2.

Today, Ekibastuz GRES-1 named after B. Nurzhanov is the largest thermal power plant in the country, covering the needs of the Unified Electric Power System of Kazakhstan (UES). It is included in the list of plants of national importance and is able to cover about 20% of the total electricity consumption of the country. The owner of GRES-1 with 100% participation share is the largest domestic electric power holding Samruk-Energy JSC.

The condensing power plant with installed capacity of 4000 MW is equipped with eight power units of 500 MW each. Its first power unit was commissioned in 1980, the last eighth power unit was commissioned in 1984. According to power specialists, in those times when Ekibastuz GRES-1 was created, a number of progressive technical and economic solutions were implemented, for example: the power plant was as close as possible to the place of fuel extraction, the cooling pond and ash dump were located in the natural hollows of dried lakes not used for economic purposes, water feeding from the Irtysh-Karaganda canal, the location of the power plant was successfully combined with the wind rose relative to the city of Ekibastuz.

In October 1981 GRES-1 generated the first billion kilowatt hours of electricity. During the Soviet period, Ekibastuz GRES-1 became one of the largest thermal power plants in the USSR.

Ekibastuz GRES-1 was one of the first to implement the project on reconstruction of the chemical water treatment system (CWTS) of the power plant. During the reconstruction of the chemical water treatment system the transition to the latest membrane technologies was carried out, which not only significantly increased the reliability of the system for chemical treatment of desalinated water, but also reduced operating costs. The quality of treated water improved - hardness and conductivity decreased.As noted in Samruk-Energy, Bulat Nurzhanov Ekibastuz SDPP-1 LLP ended 2019 having generated 18.3 billion kWh of electricity. Overall, in the Kazakhstan market, the share of electricity generated by EGRES-1 increased by 14.2%. The station demonstrated full readiness for the fall-winter period with the operation of seven power units with an average unit load of 455 megawatts.

In February 2020, a record load of 3,481 MW was recorded for the operation of 7 power units. The last time such an indicator was recorded was in February 1986. Then the maximum mark reached 3095 MW, but when 8 power units were operating. At the moment the plant provides employment for more than 1400 people. Along with increasing production capacity, EGRES-1 takes an active part in the social life of the region by sponsoring social projects of Ekibastuz city, supporting charitable publicfunds, cultural events.