

# ISET

International School of Economics at TSU  
Policy Institute



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# ELECTRICITY MARKET REVIEW

# ISET POLICY INSTITUTE

## ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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## INFORMATION

- In August 2021 there was an increase in total electricity generation by 27% on a yearly basis, and a decrease by 3% on a monthly basis.
- Consumption increased by 21% on yearly basis and remained unchanged on a monthly basis.
- Generation exceeded consumption by 39 mln. kWh – 3% of total generation for August.
- The main import partner country was Russia.
- The cost of imports from Russia was 15.2 tetri per kWh.
- The weighted average price of imports decreased by 3% in GEL on a yearly, and increased by 15% on a monthly basis.
- There was almost no export in August.
- The HHI index for the Georgian electricity generation market moved further above the threshold of highly concentrated market in August 2021, indicating that the generation side of the market became substantially less competitive compared to previous months (it was more competitive in April, May, June, and even in July – index values of 706, 2183, 3884, and 4217, respectively, while it reached 4469 in August), mainly due to the high share of generation of state owned facilities.
- The HHI for the Georgian electricity consumption market was slightly below the threshold of a highly concentrated market. It demonstrates a downward sloping trend over the past year, despite a slight monthly increase (Index values of 1905 in July and 1955 in August 2021).

## ABBREVIATION USED

Mln – million

kWh – kilowatt-hour

HPP – Hydro Power Plant

WPP – Wind Power Plant

TPP – Thermal Power Plant

HHI – Hirschmann-Herfindahl Index

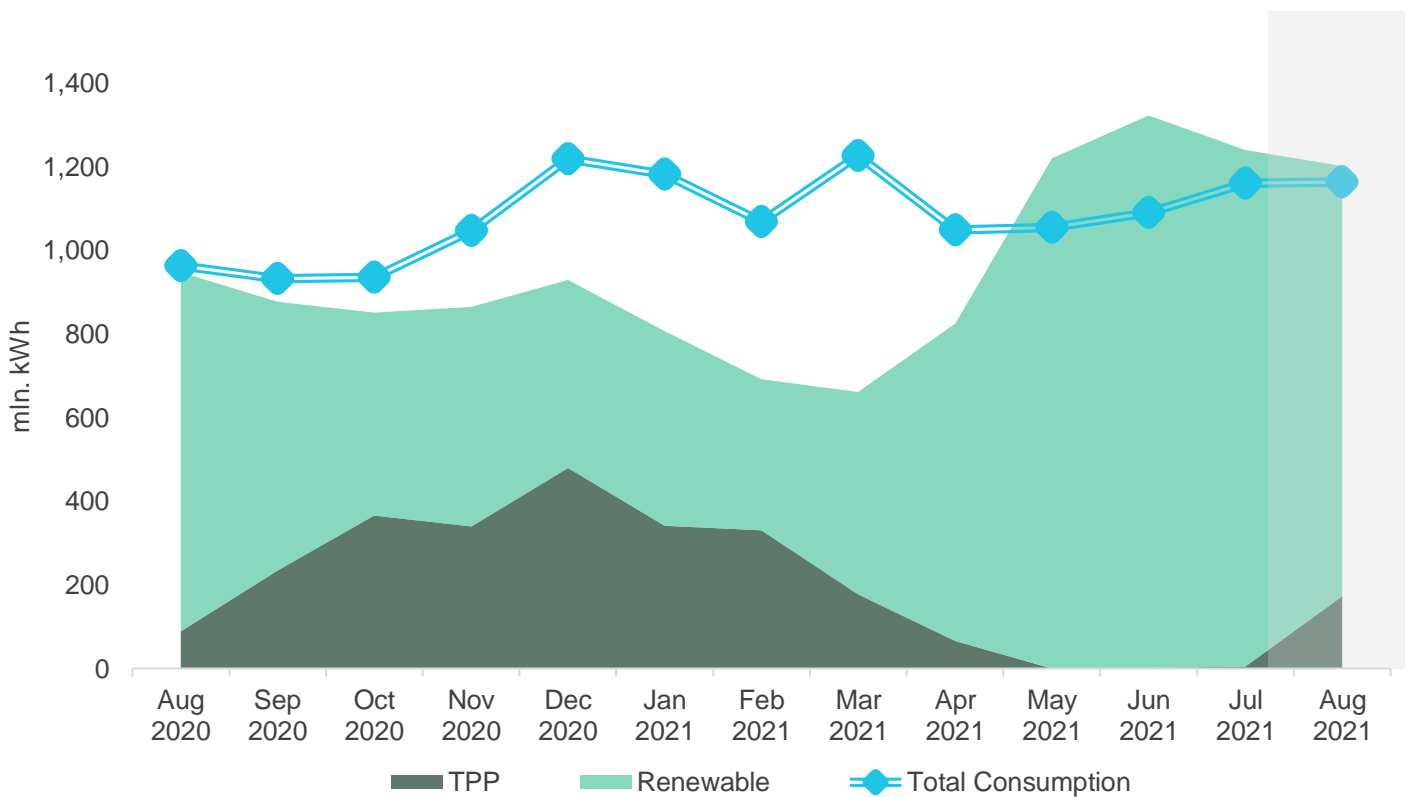
## Generation – Consumption – Trade

In August 2021, Georgian power plants generated 1202 mln. kWh of electricity (Figure 1). This represents a 27% increase in total generation, compared to the previous year (in August 2020, the total generation was 949 mln. kWh). The increase in generation on a yearly basis comes from the increase of 20% and 94% in hydro power and thermal power generation, respectively. There was a decrease of 27% in wind power generation.

On a monthly basis, generation decreased by approximately 3% (in July 2021, total generation was 1240 mln. kWh) (Figure 1). The monthly decrease in total generation, is mostly caused by a reduction in hydro power generation, 17% compared to July 2021, as well as the decrease of 15% in wind power generation. Thermal power generation increased by more than 40 times compared to July (when it was extremely low).

The consumption of electricity on the local market was 1,164 mln. kWh (+21% compared to August 2020, and almost the same as in July 2021) (Figure 1). In August 2021, power generation exceeded consumption by 39 mln. kWh which was 3% of total generation (in August 2020 difference between total generation and consumption resulted in a deficit of 14 mln. kWh, around 2% of the total generation for the month).

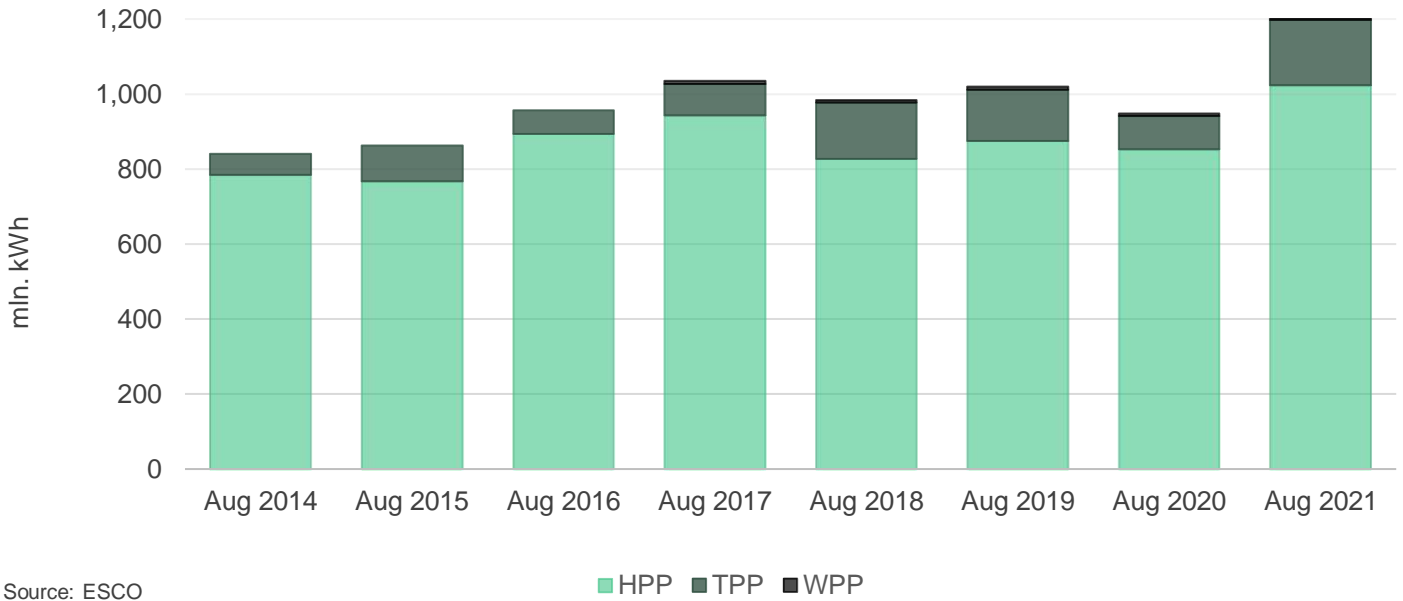
**Figure 1** - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

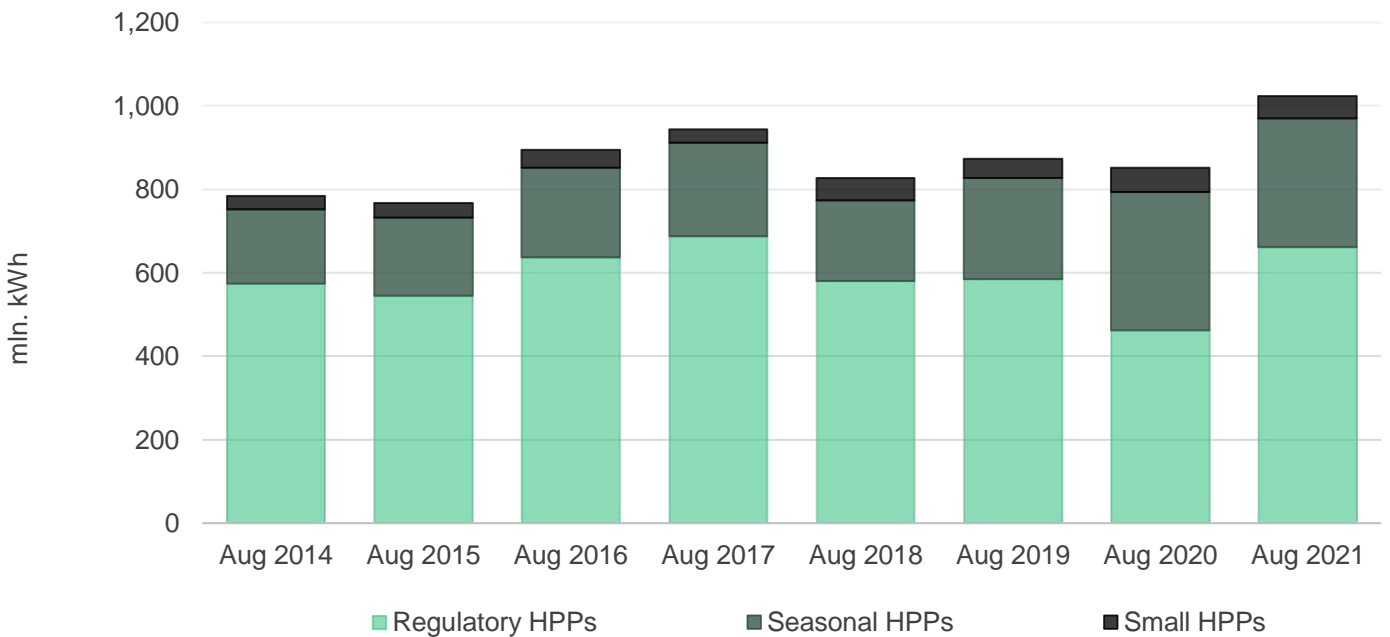
Most generation came from hydro power plants. In August 2021, hydro power (HPP) generation amounted to 1023 mln. kWh (85% of total), while thermal power (TPP) generation was 173 mln. kWh, and wind power (WPP) generation was 6 mln. kWh (14% and less than 1% of the total generation, respectively) (Figure 2).

**Figure 2 - Electricity Generation by Sources**

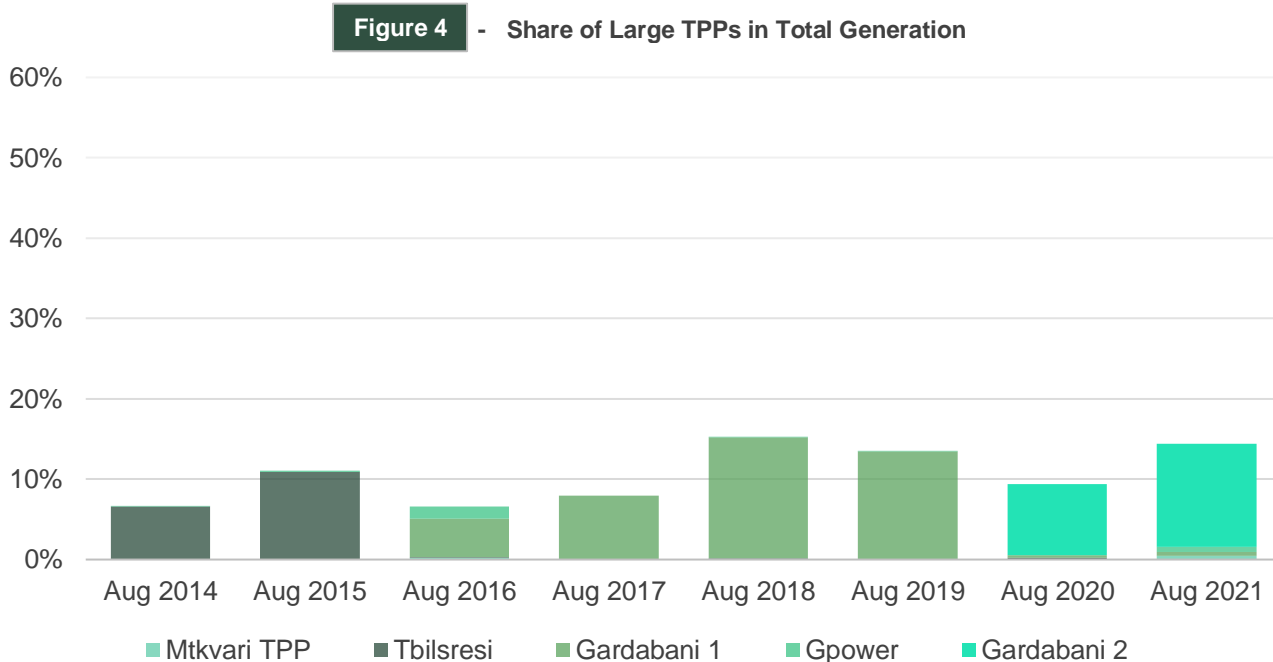


Among hydropower generators, large (regulatory) HPPs produced 65% (661 mln. kWh) of electricity, while seasonal and small HPPs produced 30% (309 mln. kWh) and 5% (53 mln. kWh), respectively (Figure 3).

**Figure 3 - HPP Generation by Type**

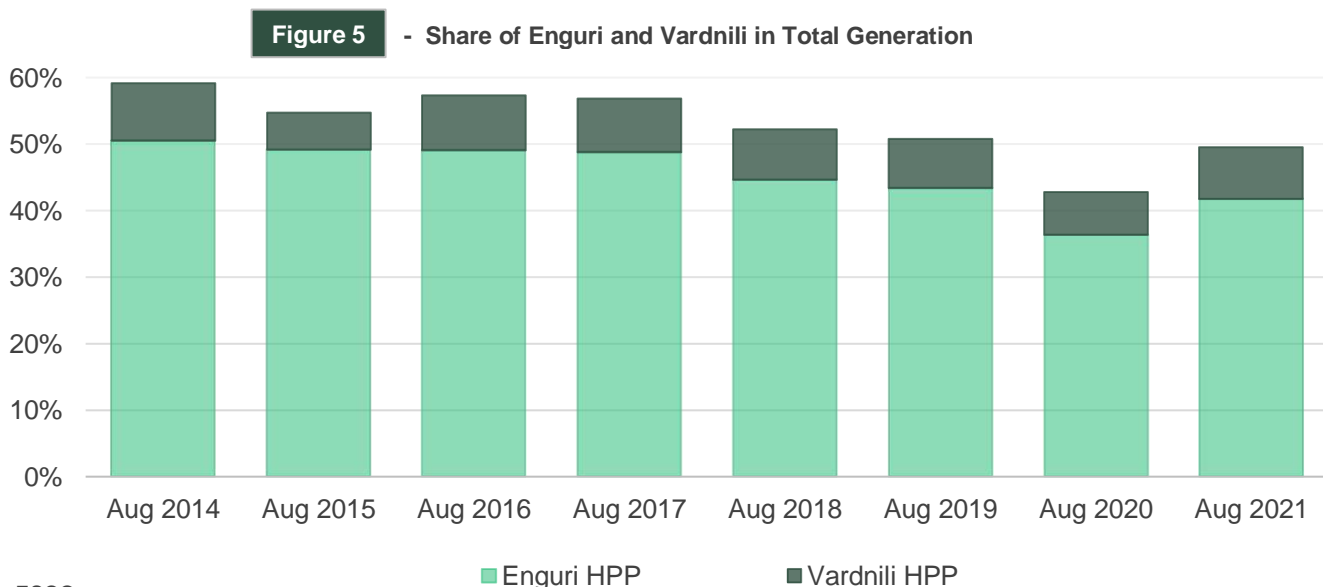


Among thermal power plants, Gpower TPP generated 7.8 mln. kWh, 4.5% of total thermal power generation, but only 0.7% of total generation, and Mtkvari TPP generated 6.0 mln kWh, 3.5% of total thermal power generation, but only 0.5% of total generation, Gardabani 1 TPP generated 5.0 mln. kWh, 2.9% of total thermal power generation, but only 0.4% of total generation, Gardabani 2 TPP generated 154.4 mln. kWh, 89.1% of total thermal power generation, but only 12.8% of total generation. (Figure 4).



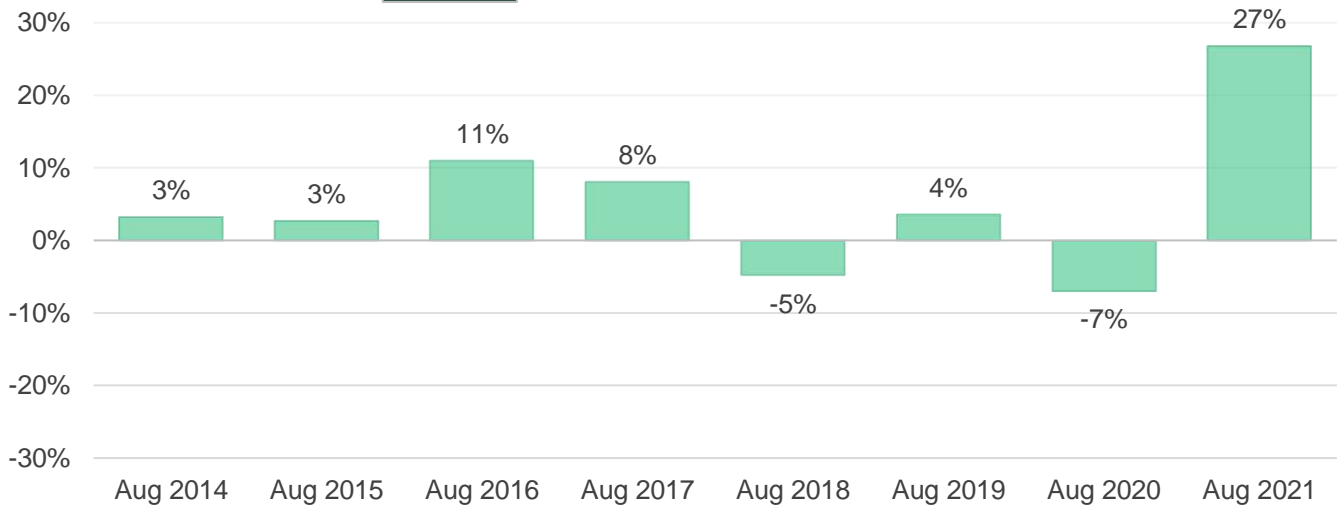
Source: ESCO

As for HPP generation, Vardnili HPP generated 94 mln. kWh (14% of generation for regulatory HPPs and 8% of total generation). Enguri HPP generated 501 mln. kWh, which represents 76% of generation of regulatory HPPs and 42% of total generation (Figure 5).



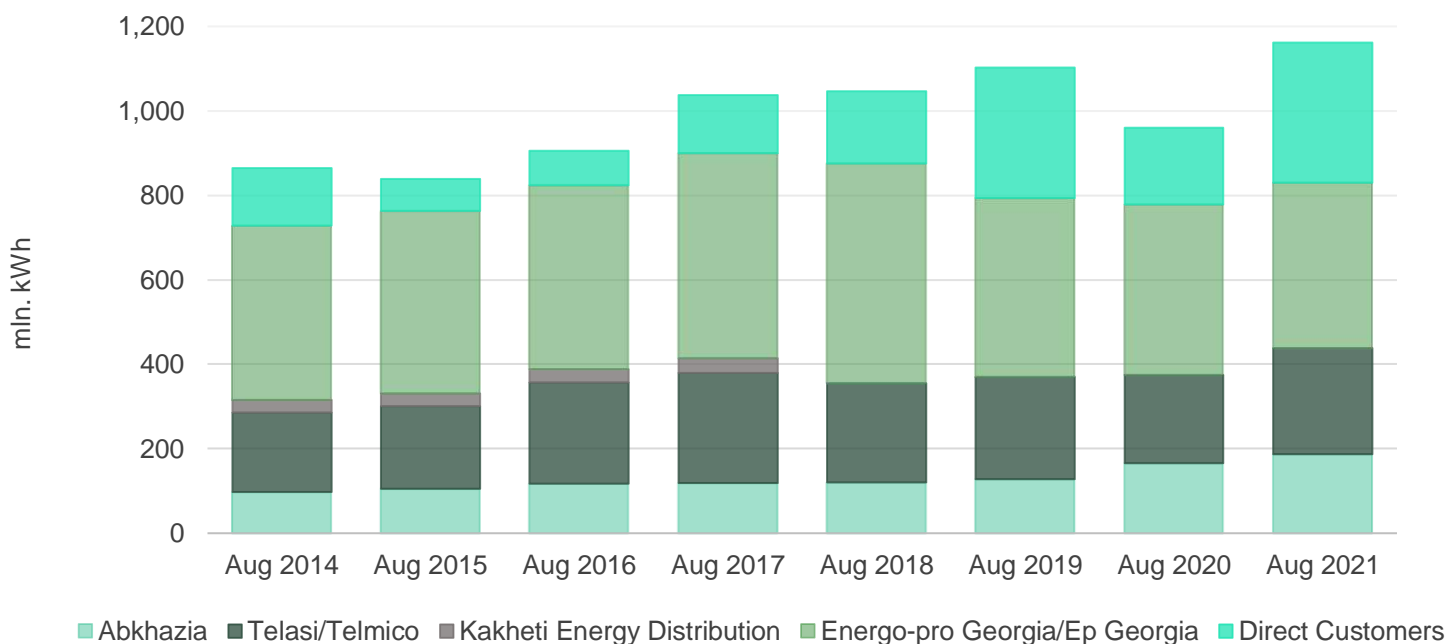
Source: ESCO

Overall, total generation increased by 27% compared to August 2020 (Figure 6).

**Figure 6 - Growth of Generation (% , y/y)**

Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia<sup>1</sup> (34% - 392 mln. kWh), Abkhazia (16% - 187 mln. kWh), Telasi/Telmico<sup>2</sup> (22% - 251 mln. kWh), and direct customers (28% - 331 mln. kWh) (Figure 7). Annual demand from Telasi, Abkhazia and direct customers increased by 20%, 13%, and 82%, respectively, while demand from Energo-pro Georgia decreased by 3%. Overall, there was an annual growth of 21% in the total electricity consumption in August 2021, compared to August 2020 (Figure 8).

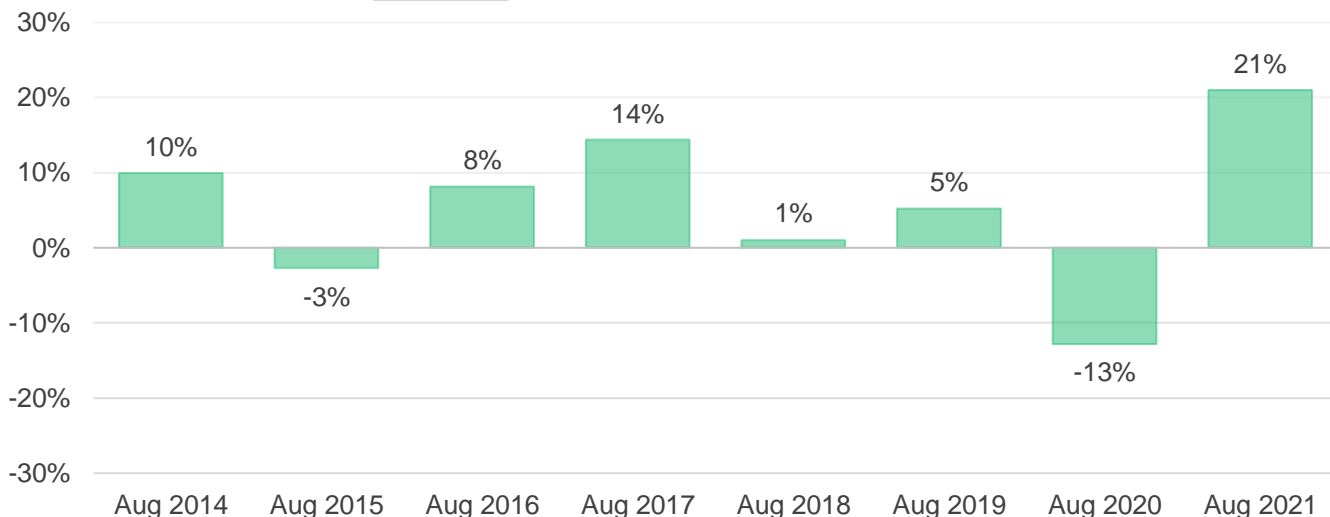
**Figure 7 - Electricity Consumption by Type of Customer**

Source: ESCO

<sup>1</sup> Energo-Pro Georgia acquired Kakheta Energy Distribution in September 2017. Since July 2021, Ep Georgia is responsible for supply of electricity.

<sup>2</sup> Since July 2021, Telmico is responsible for supply of electricity.

**Figure 8 - Electricity Consumption Growth (% , y/y)**

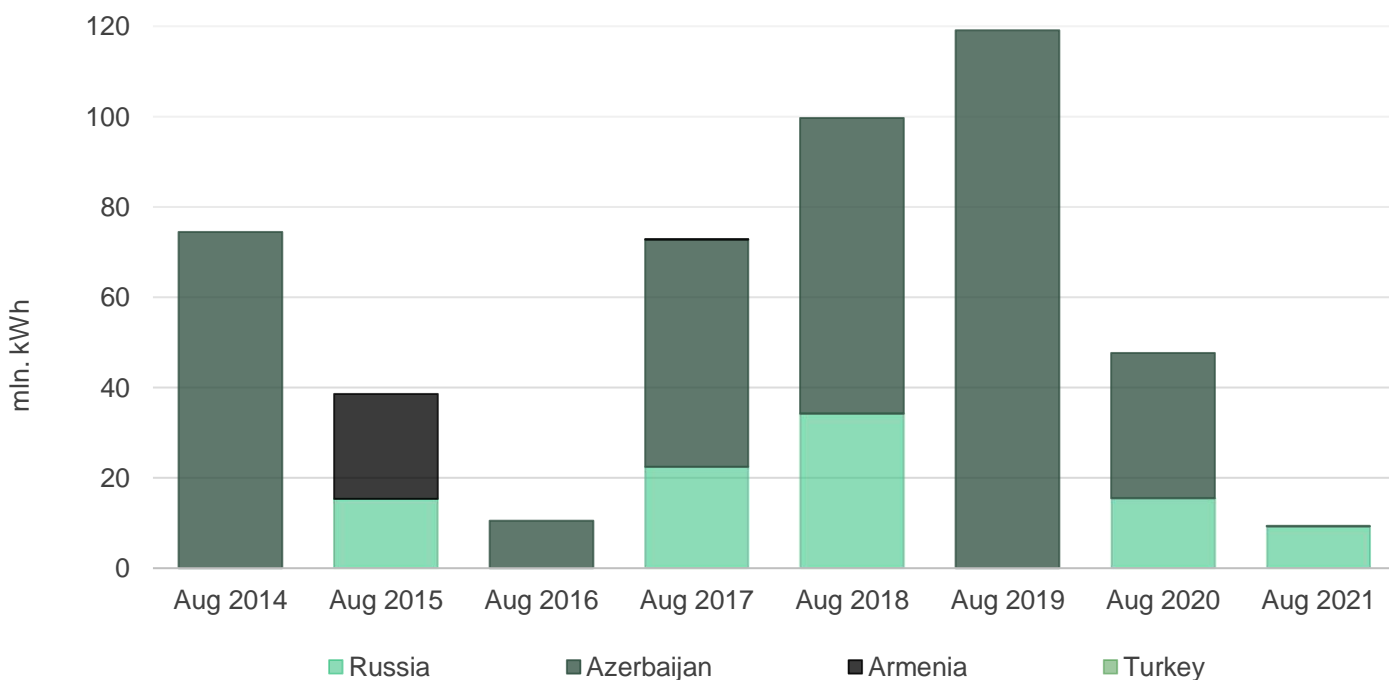


Source: ESCO

In August 2021, Georgia imported 9.4 mln. kWh of electricity (compared to 48 mln. kWh August 2020), 98% of which came from Russia and 2% from Azerbaijan (Figure 9). In August 2021, Georgia exported almost no electricity (2 mln. kWh in August 2020) (Figure 10). There was a 56 mln. kWh electricity transit from Azerbaijan to Turkey in August 2021 (In July 2020, there was 20 mln. kWh electricity transit from Azerbaijan to Turkey). Also there was a total transfer of 132 mln. kWh from Russia (71 mln kWh went to Turkey, and 61 mln kWh went to Armenia).

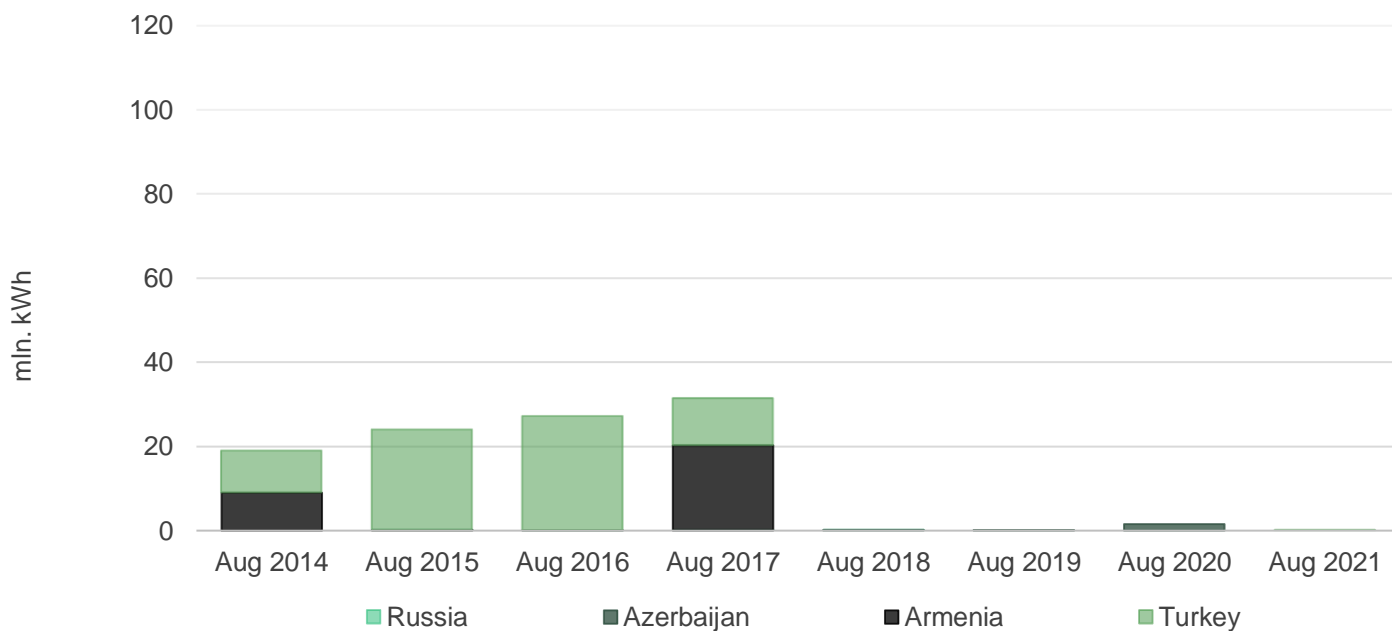
Compared to August 2020, imports decreased by 80% (Figure 9).

**Figure 9 - Imports by Year**



Source: ESCO

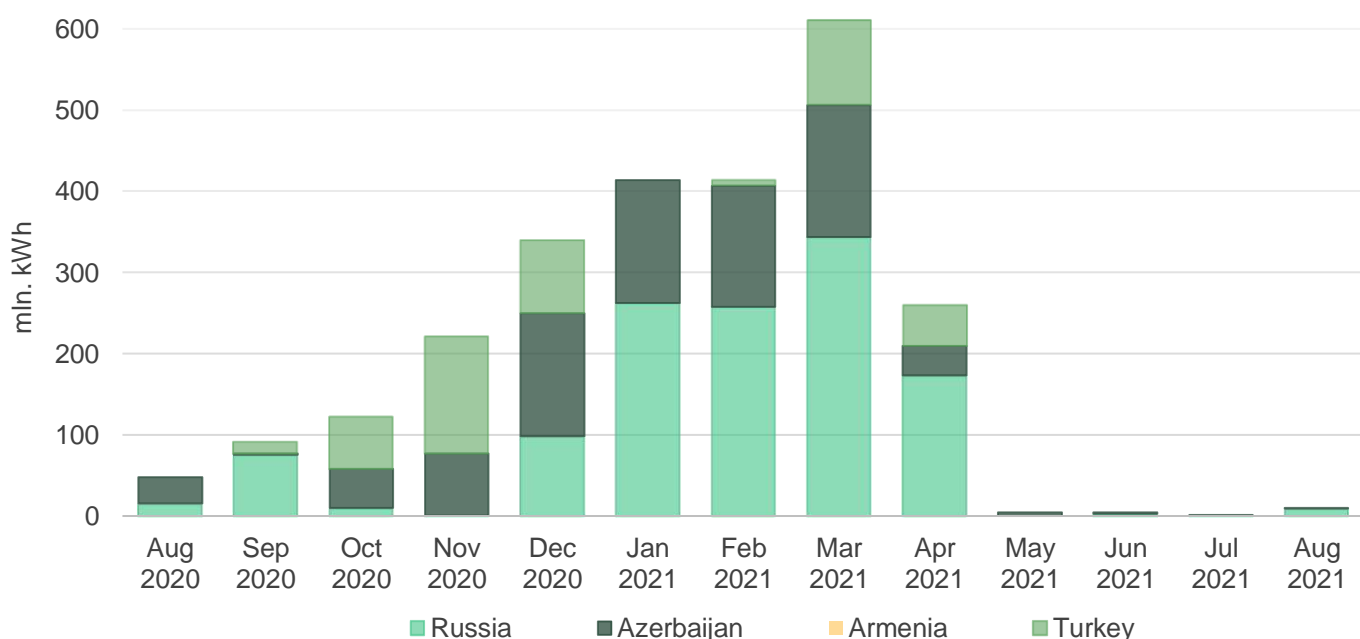
**Figure 10** - Exports by Year



Source: ESCO

In August 2021, electricity imports increased by 27 times, compared to July 2021 (Figure 11), remaining very low in absolute terms. Electricity export completely disappeared (The export comprised only 0.022 mln. kWh, compared to 37 mln. kWh in July 2021) (Figure 12).

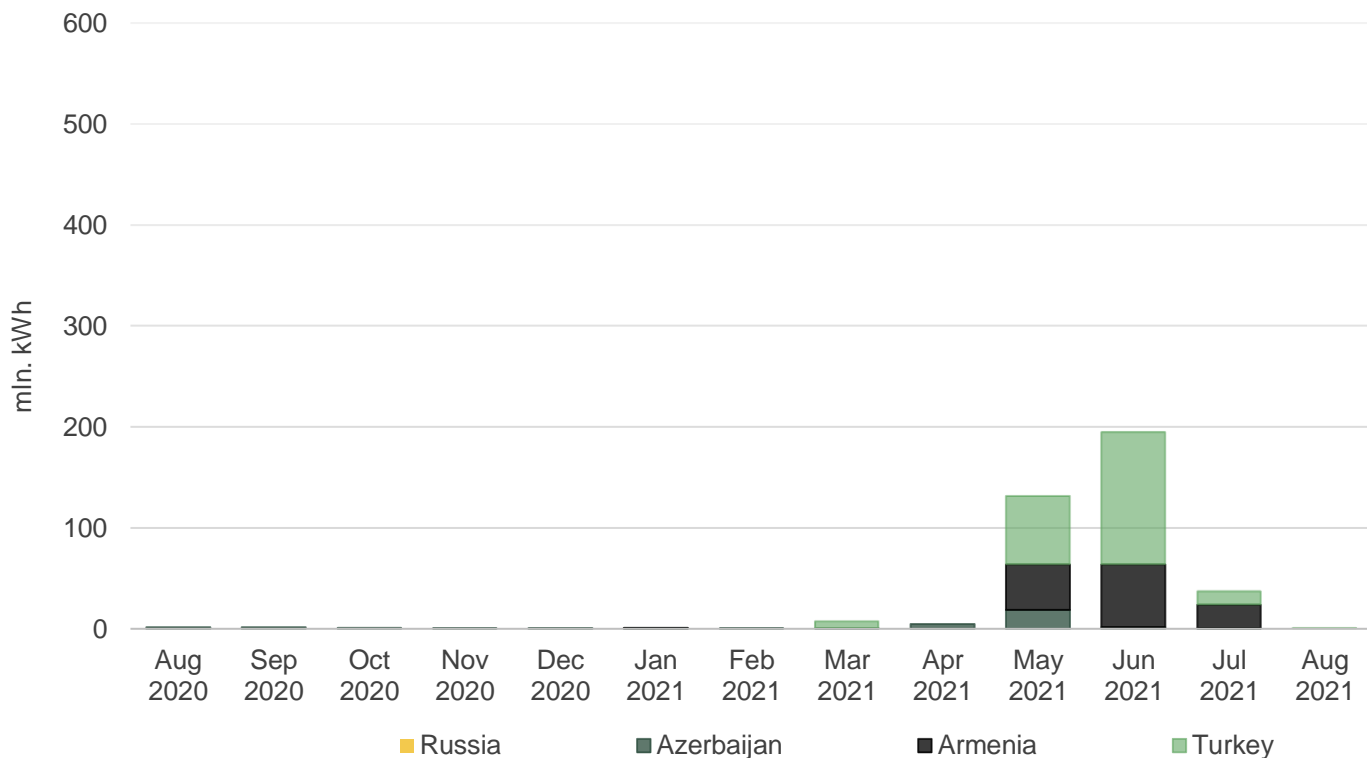
**Figure 11** - Imports by Month



Source: ESCO



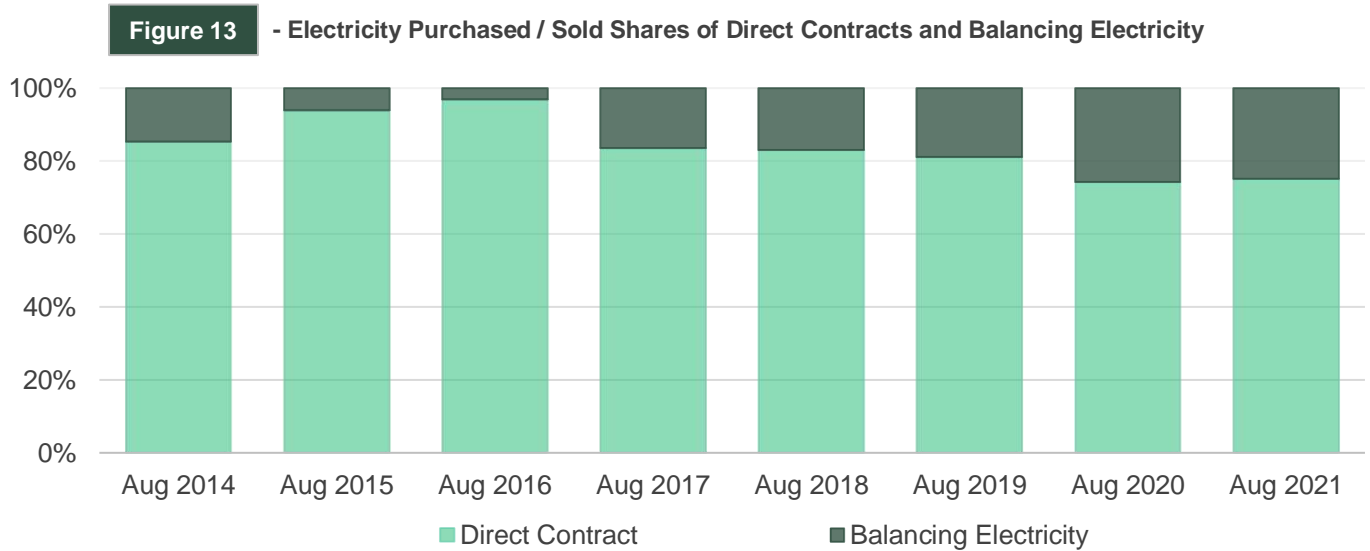
**Figure 12** - Exports by Month



Source: ESCO

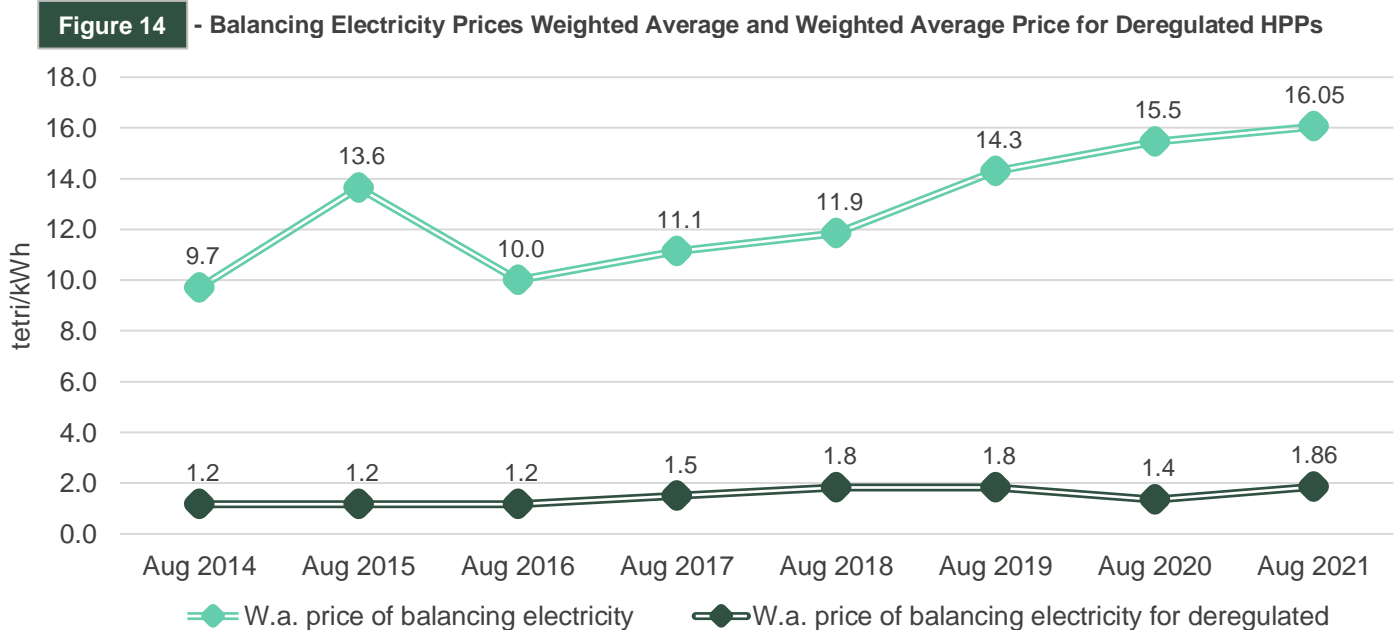
## 1. Market Operations

In August 2021, 75% of the electricity sold on/from the local market was sold through direct contracts. The remaining 25% was sold as balancing electricity (Figure 13).



Source: ESCO

In August 2021, the weighted average price of balancing electricity was 16 tetri/kWh, which corresponds to an annual increase of 4% compared to August 2020. As for the weighted average price for deregulated (small) HPPs, it was 1.9 tetri/kWh, which corresponds to an annual increase of 37% compared to August 2020 (Figure 14).

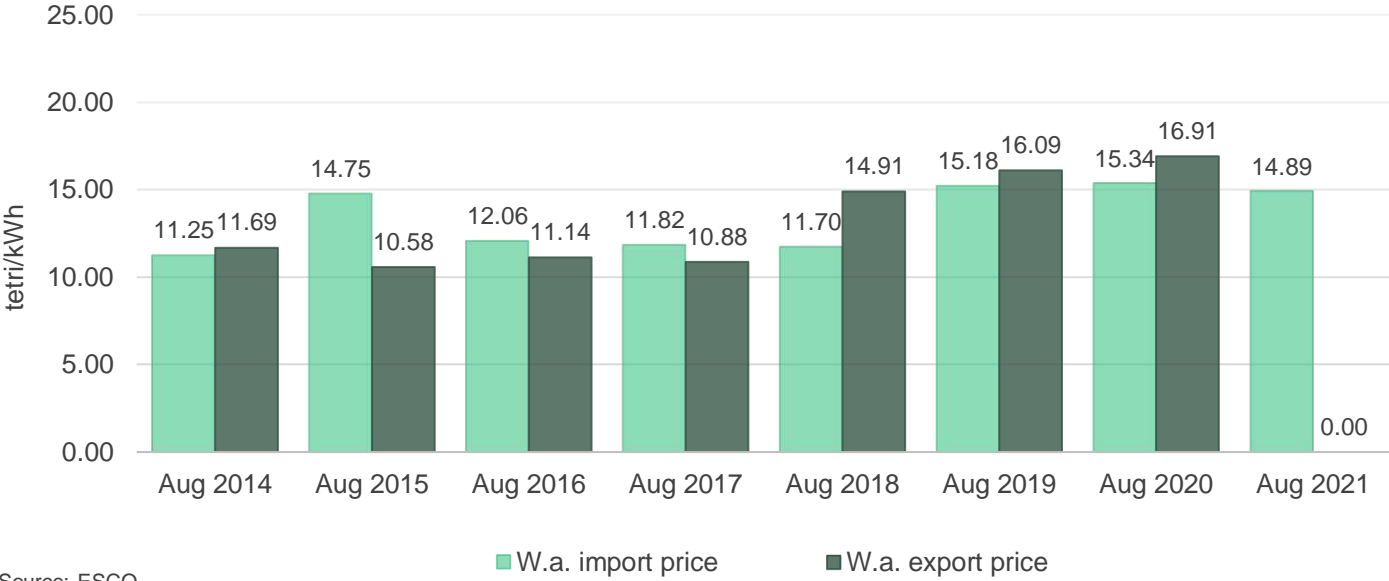


Source: ESCO

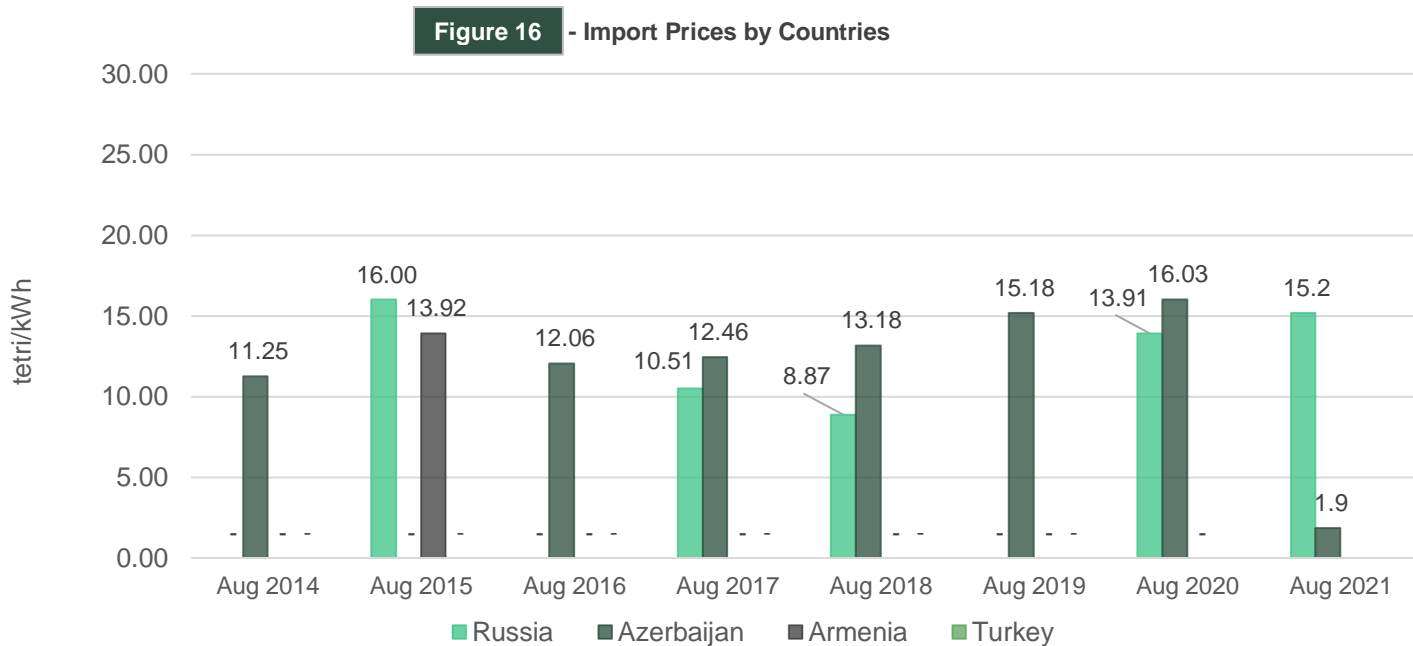
Data about guaranteed capacity payments in August 2021 are not available. Latest available data refer to January 2021 (available in previous EMR).

The weighted average electricity import price in August 2021 decreased by 4% in USD, on an annual basis, and decreased by approximately 3% in GEL (from 4.99 ¢ or 15.34 tetri per kWh in August 2020 to 4.78 ¢ or 14.89 tetri per kWh in August 2021 - Figure 15). The weighted average import price increased by 15% in both, USD and GEL, on a monthly basis (import price was 4.15 ¢ or 12.97 tetri per kWh in July 2021). As the level of export was extremely low and almost equal to zero, it is impossible to assess the weighted average price in August 2021. It was equal to 2.96 ¢, or 9.26 tetri per kWh in August 2020.

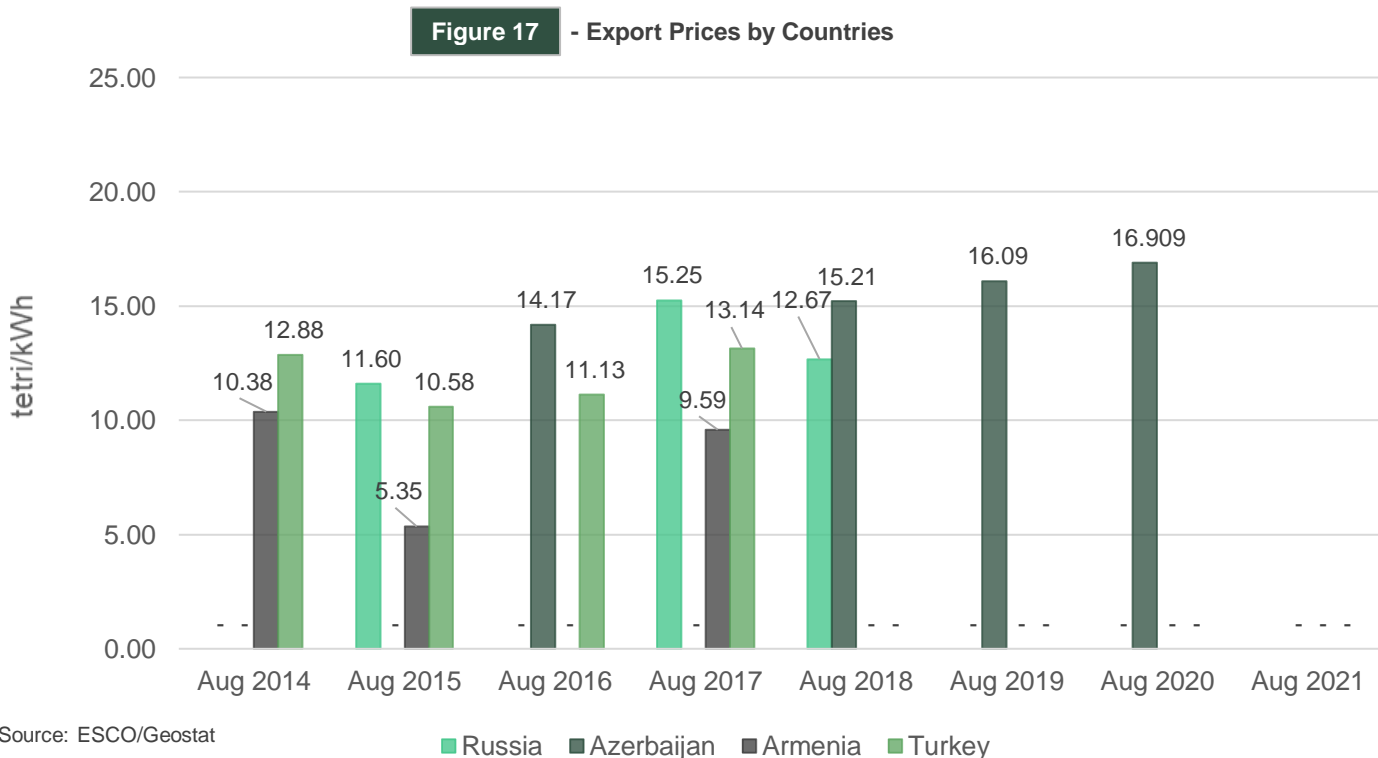
**Figure 15 - Prices Import/Export**



In August 2021, the electricity import price from Azerbaijan and Russia stood at 0.6 ¢ or 1.9 tetri per kWh and 4.9 ¢ or 15.2 tetri per kWh, respectively (Figure 16).



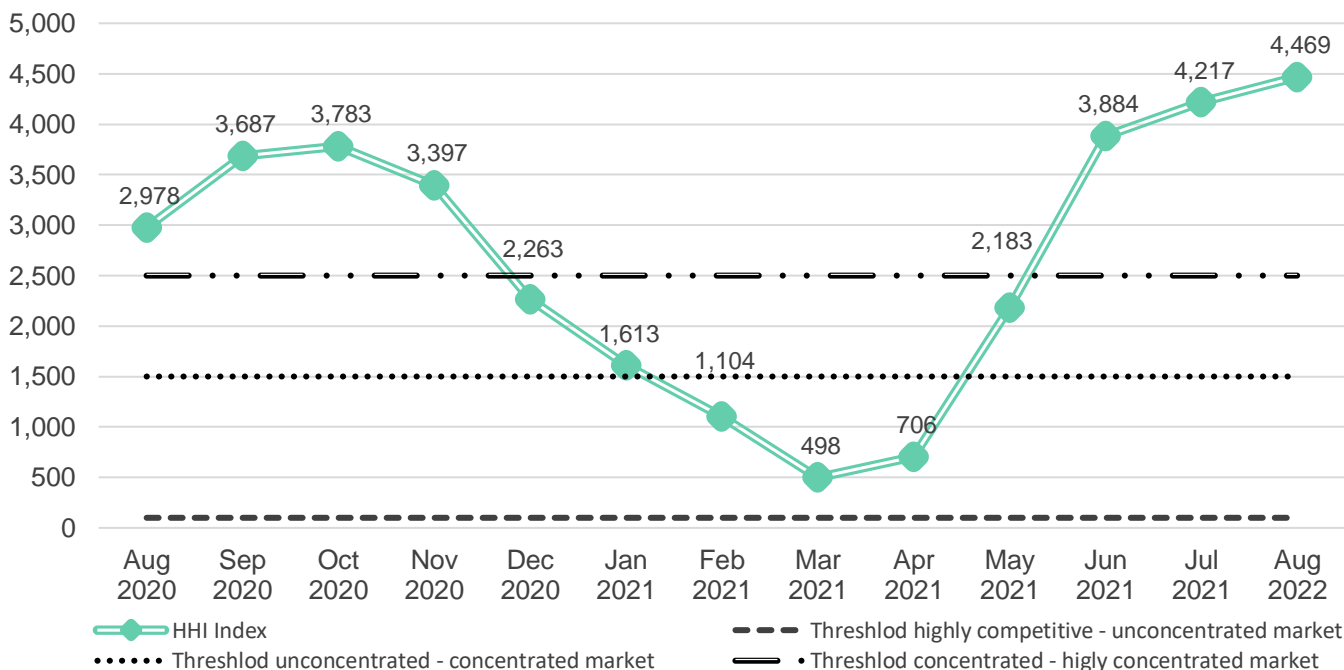
In August 2021, it is impossible to assess the prices of export to different countries, only the prices from previous years are available (Figure 17).



## 2. Market Concentration

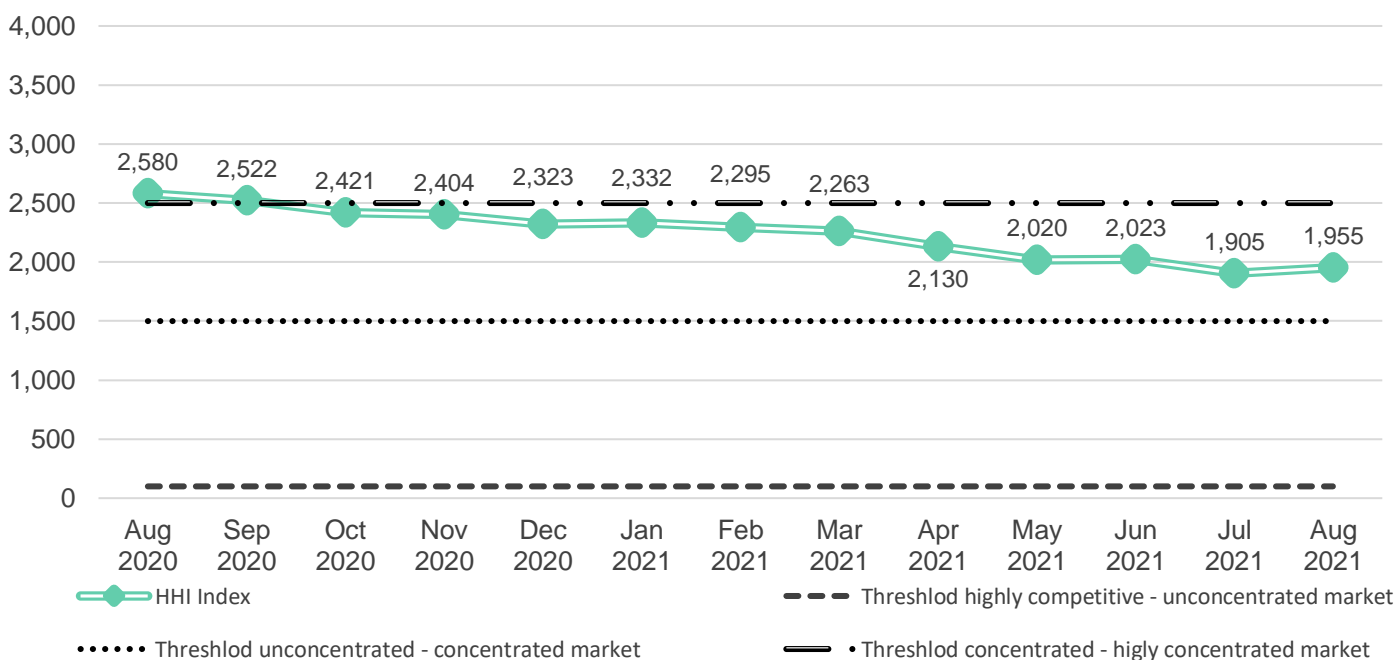
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In August 2021, the Georgian electricity generation market remained above the threshold of highly concentrated market, with an HHI value of 4,469 (Figure 18). This is substantially higher than the level in August 2020 (with an HHI value of 2,978), and also higher than the level in July 2021 (HHI was 4,217). In fact, this is the highest level over the last year and second highest over the last 3 years. Most of this is caused by a high share of state owned enterprises in generation process. As for the consumption segment, in August 2021, the HHI consumption index was below the threshold for a highly concentrated market, with an HHI value of 1,955 (slightly below the level in August 2020 – 2,580 and slightly above the level in July 2021 – 1,905). Over the last 12 months, a clear decreasing trend in market concentration is observable on the consumption side of the electricity market (Figure 19).

**Figure 18** - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

**Figure 19** - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO

