

# 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 2020, both power generation (-7%) and consumption (-12.8%) have decreased compared to the same month in 2019.
- The substantial decrease in consumption in annual basis is clearly caused by the COVID 19 lockdown. Compared to the last month, consumption increased by 0.4%.
- Interestingly, electricity consumption in Abkhazia has again increased, by 30.6% this month, compared to the same month in 2019, while in the rest of the country consumption mostly decreased.
- In August 2020, cross-border electricity trade was unsubstantial, with imports from Azerbaijan and Russia and increased export to Azerbaijan compared to the corresponding month of the previous year.
- Guaranteed Capacity Cost in August 2020 decreased by 80% compared to August 2019.
- In August 2020 the concentration in both the Demand and in the Supply sides of the market substantially decreased compared to the last month, but the HHI for both Demand and Supply remained above the threshold for highly concentrated markets.

## ABBREVIATION USED

Mln – million  
 kWh – kilowatt-hour  
 HPP – Hydro Power Plant  
 WPP – Wind Power Plant  
 TPP – Thermal Power Plant  
 HHI – Hirschmann-Herfindahl Index

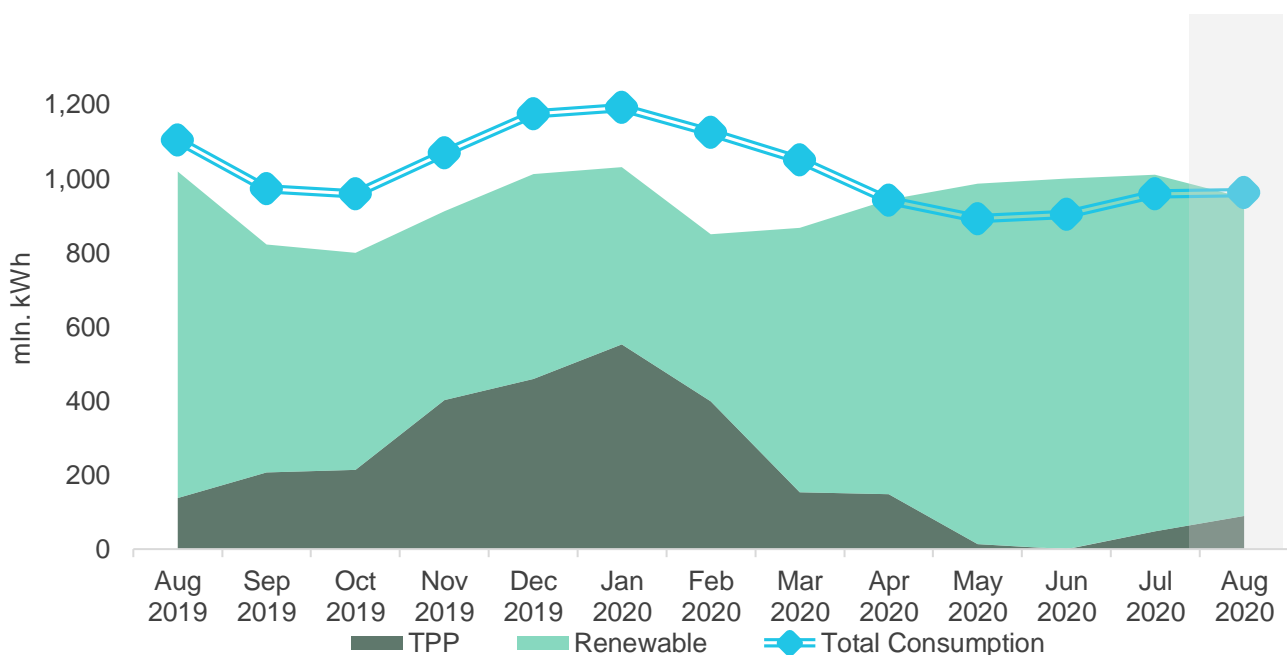
## Generation – Consumption – Trade

In August 2020, Georgian power plants generated 949 mln. kWh of electricity (Figure 1). This represents a 7% decrease in total generation, compared to the previous year (August 2019, the total generation was 1,020 mln. kWh). The decrease in generation on a yearly basis comes from the decrease of 2.5% in hydro power generation, more than 9% decrease in wind power generation and a 35% decrease in thermal power generation.

On a monthly basis, generation decreased by 6.1% (in July 2020, total generation was 1,010 mln. kWh) (Figure 1). The monthly decrease in total generation was the result of the 10.8% decrease in hydro power generation more than offsetting the increase of 87%, and 2.9% in thermal and wind power generation, respectively.

The consumption of electricity on the local market was 963 mln. kWh (-12.8% and +0.4% compared to August 2019, and July 2020, respectively) (Figure 1). In August 2020, power consumption exceeded generation by 14 mln. kWh which was 1.5% of total generation (in August 2019 difference between total generation and consumption resulted in a shortage of 84 mln. kWh which was around 8% of the total generation for the month).

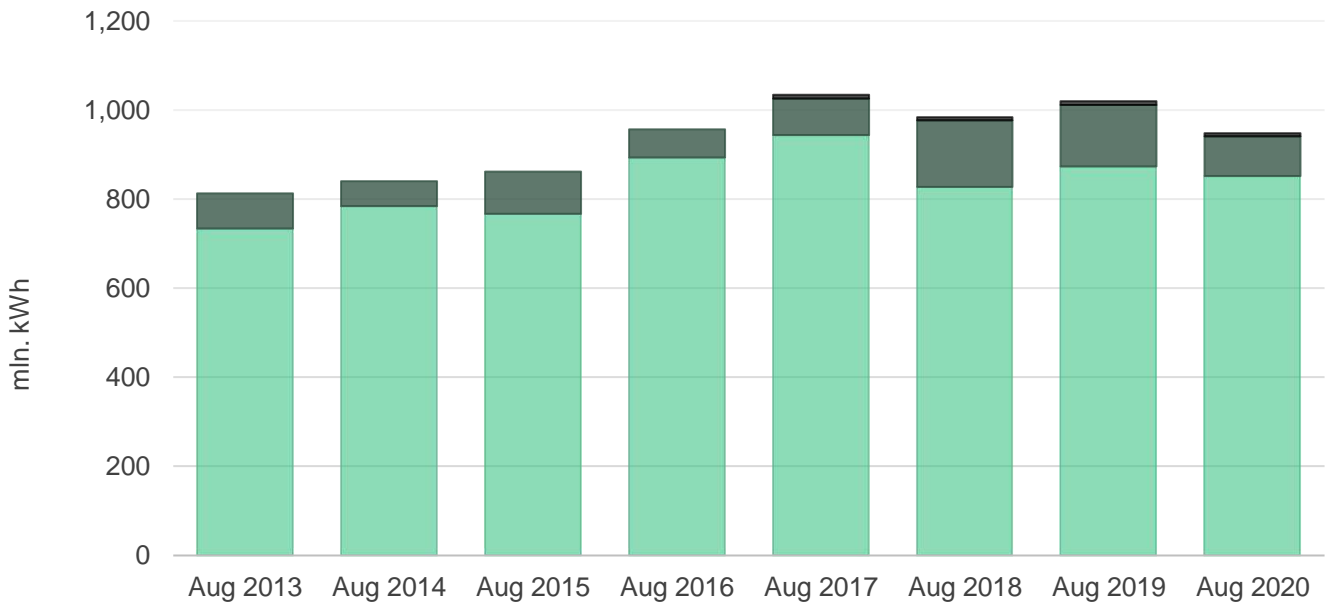
**Figure 1 - Electricity Consumption and Generation**



Source: Electricity System Commercial Operator (ESCO)

In this month most generation came from hydro power plants. In August 2020, hydro power (HPP) generation amounted to 852 mln. kWh (89.8% of total), while thermal power (TPP) generation was 89.3 mln. kWh (9.4% of total), and wind power (WPP) generation was 7.5 mln. kWh (0.79% of total) (Figure 2).

**Figure 2 - Electricity Generation by Sources**

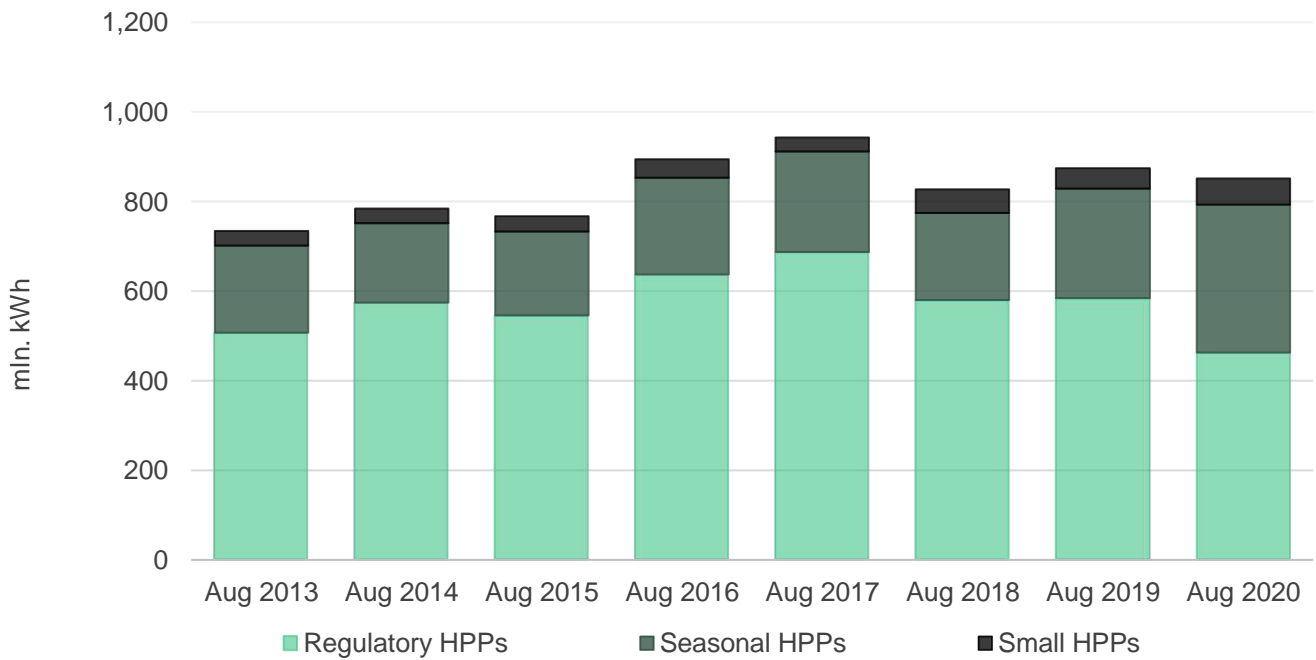


Source: ESCO

■ HPP ■ TPP ■ WPP

Among hydropower generators, large (regulatory) HPPs produced 54.3% (462 mln. kWh) of electricity, while seasonal and small HPPs produced 38.8% (330 mln. kWh) and 6.9 % (59 mln. kWh), respectively (Figure 3).

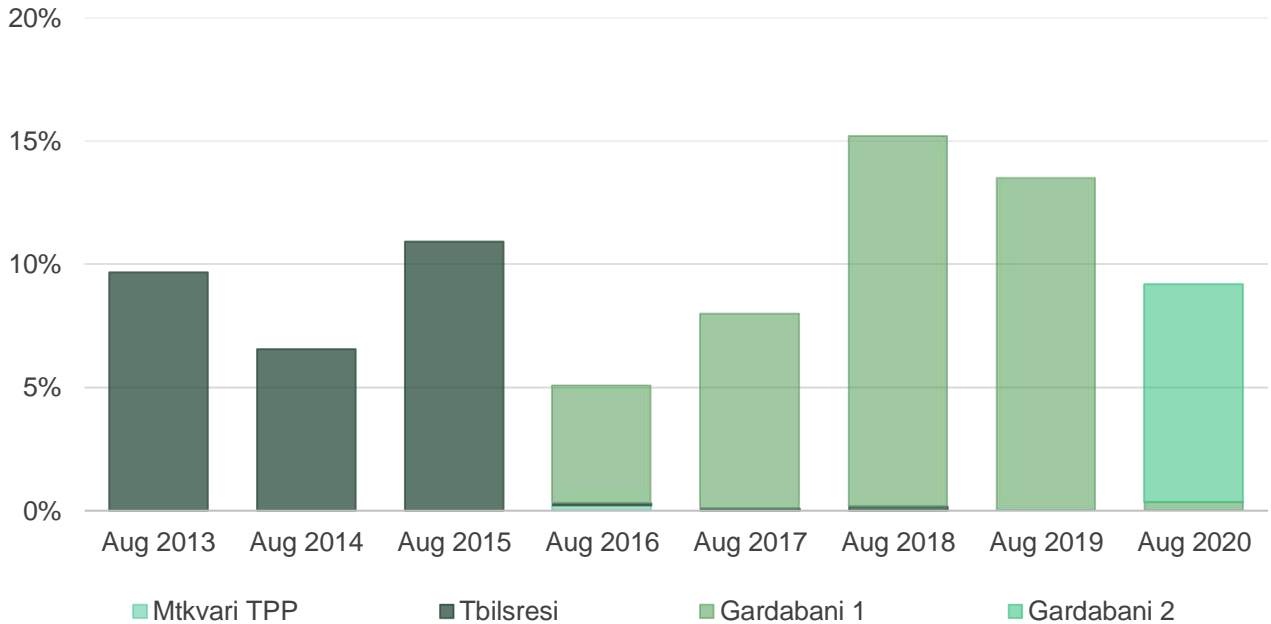
**Figure 3 - HPP Generation by Type**



Source: ESCO

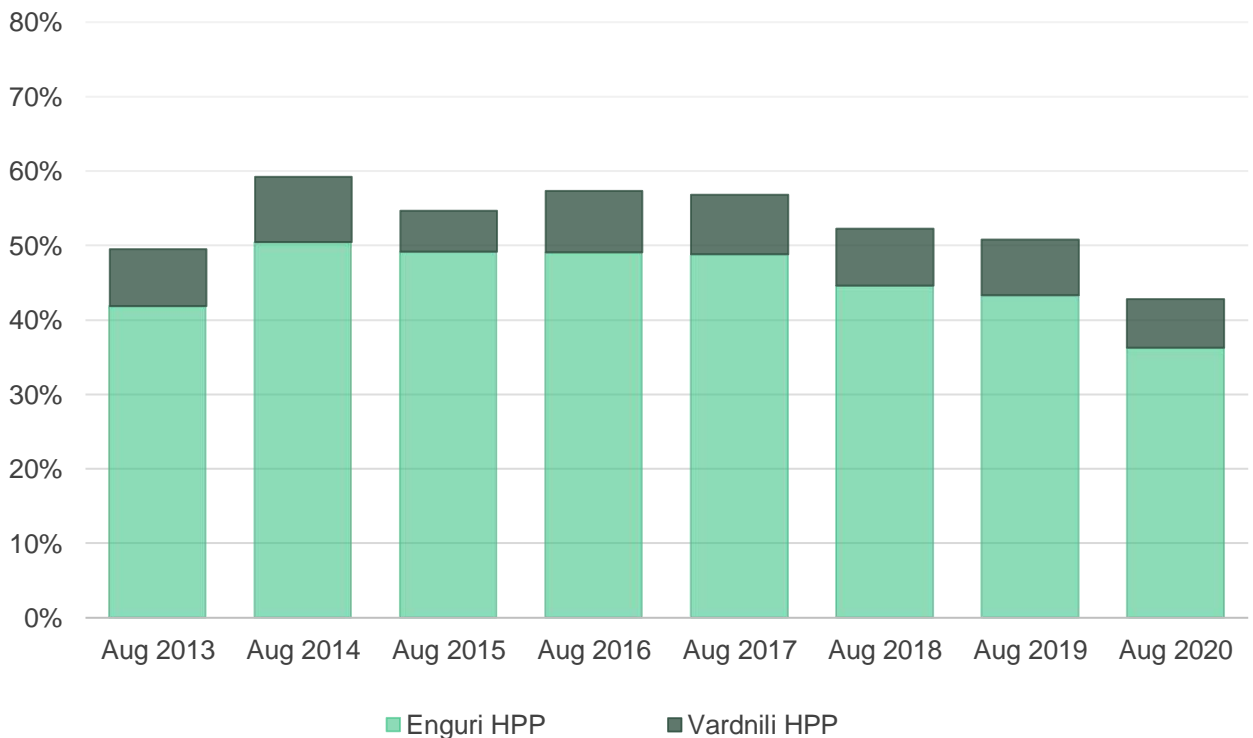
Among thermal power plants Gardabani 2 TPP generated 83.8 mln. kWh, 93.9% of total thermal power generation and just 8.8% of total generation (Figure 4). As for HPP generation, the large HPPs, Enguri and Vardnili generated 406 mln. kWh (87.9% of generation for regulatory HPPs), with 344 mln. kWh and 62 mln. kWh, respectively. Power generated by Enguri and Vardnili represented around 42.8% of the total generation (Figure 5). Overall, total generation decreased by 7% compared to August 2019 (Figure 6).

**Figure 4 - Share of Large TPPs in Total Generation**

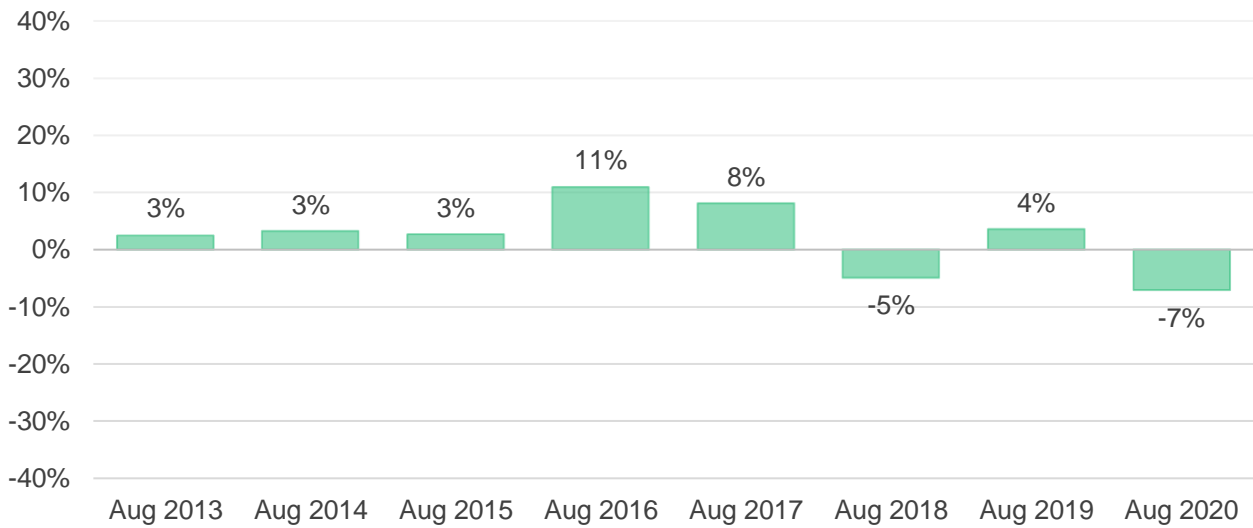


Source: ESCO

**Figure 5 - Share of Enguri and Vardnili in Total Generation**

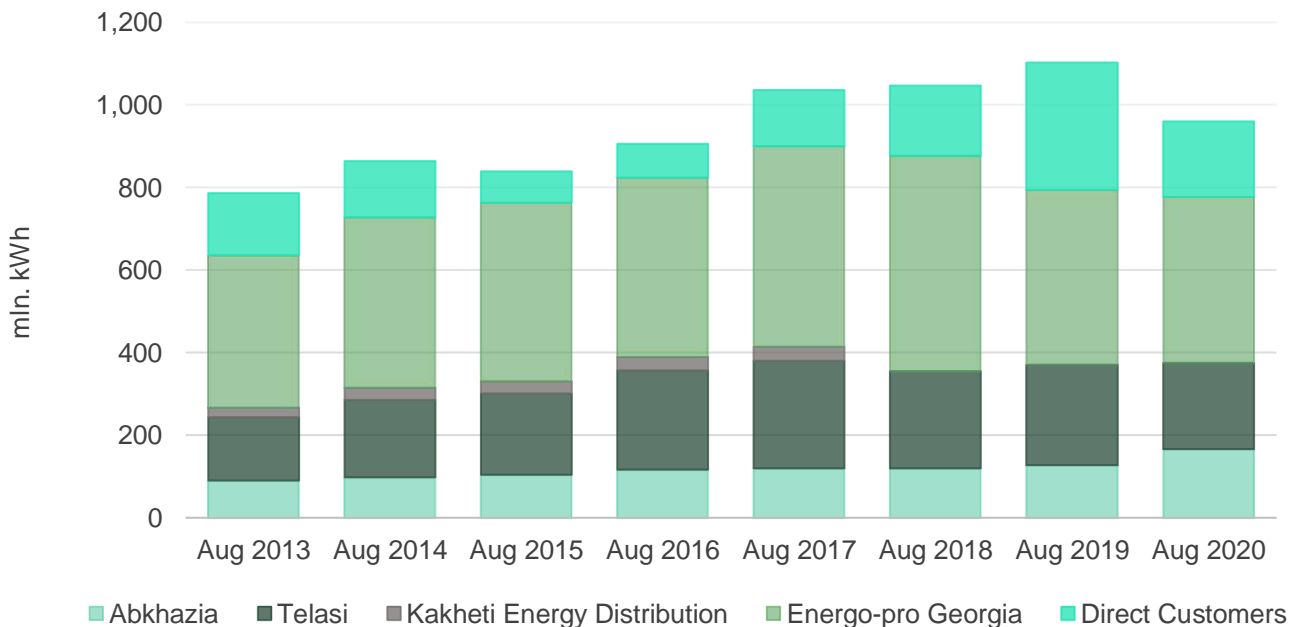


Source: ESCO

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

Source: ESCO

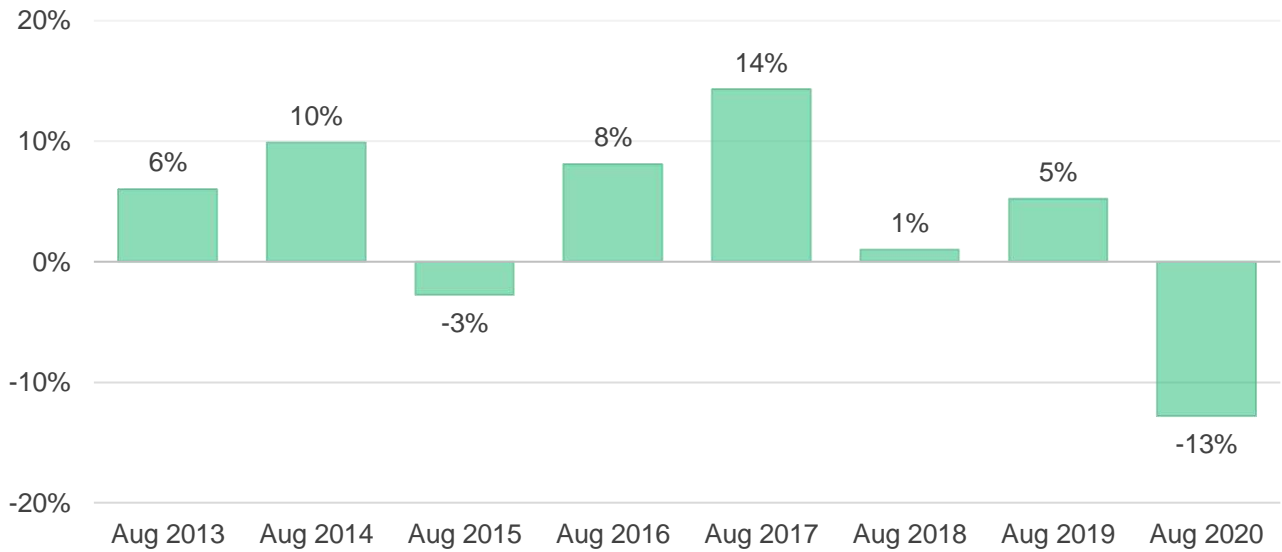
Total electricity demand came from: Energo-Pro Georgia<sup>1</sup> (41.8% - 402.4 mln. kWh), Telasi (21.7% - 208.8 mln. kWh), Abkhazia (17.3% - 166.5 mln. kWh), and direct customers (19% - 182.9 mln. kWh) (Figure 7). Annual demand from Abkhazia increased by 30.6%, while Energo-Pro Georgia, Telasi and direct customers decreased by 5%, 14% and 40.7%<sup>2</sup> accordingly. Overall, there was an annual decrease of 12.8% in the total electricity consumption in August 2020, compared to August 2019 (Figure 8).

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

Source: ESCO

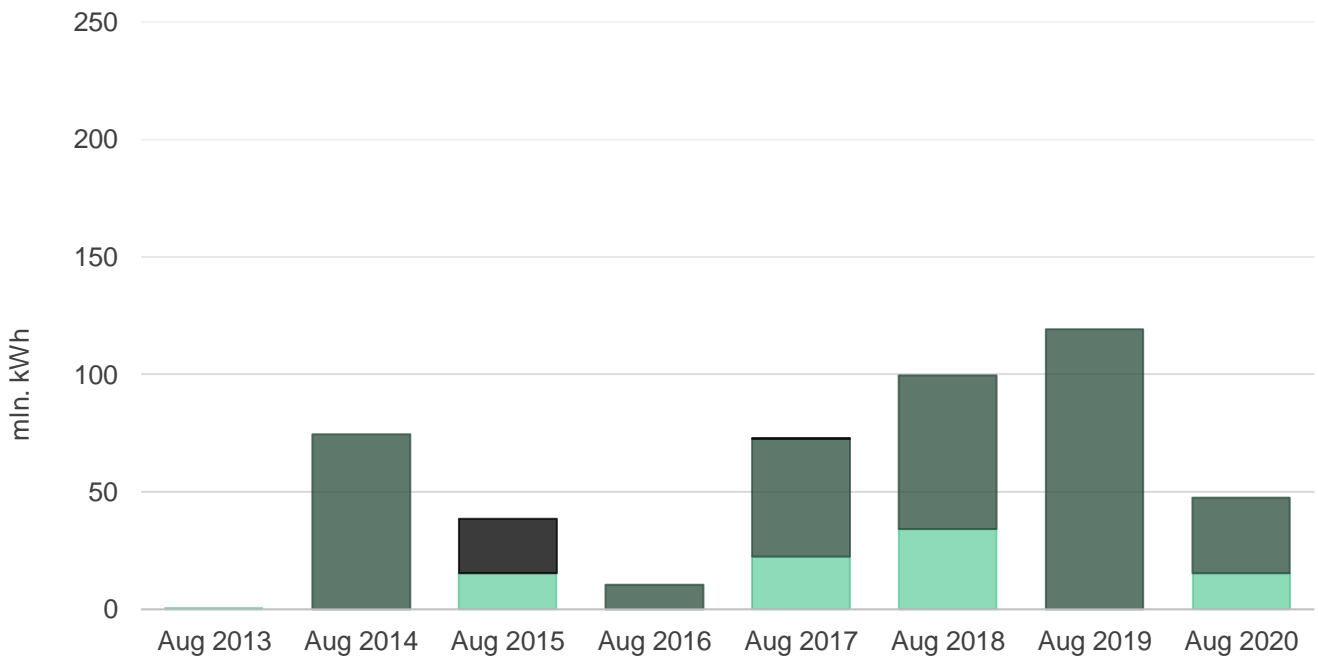
<sup>1</sup> Energo-Pro Georgia acquired Kakheti Energy Distribution in September 2017.

<sup>2</sup> It has to be noted that with the market opening since May 2019 large customers started buying their electricity on the market, as direct customers. Despite this fact, the effect of Covid-19 shutdown was such large-scale that it was reflected into decreased consumption by this group as well compared to the previous year.

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

Source: ESCO

In August 2020, Georgia imported 47.6 mln. kWh of electricity (compared to 119.2 mln. kWh August 2019) 67.6% of which came from Azerbaijan, and 32.4% came from Russia (Figure 9). In August 2020, Georgia exported 1.57 mln. kWh (1856% increase compared to August 2019), 100% of which was exported to Azerbaijan (Figure 10). There was no transit of electricity in August 2020.

**Figure 9** - Imports by Year

Source: ESCO

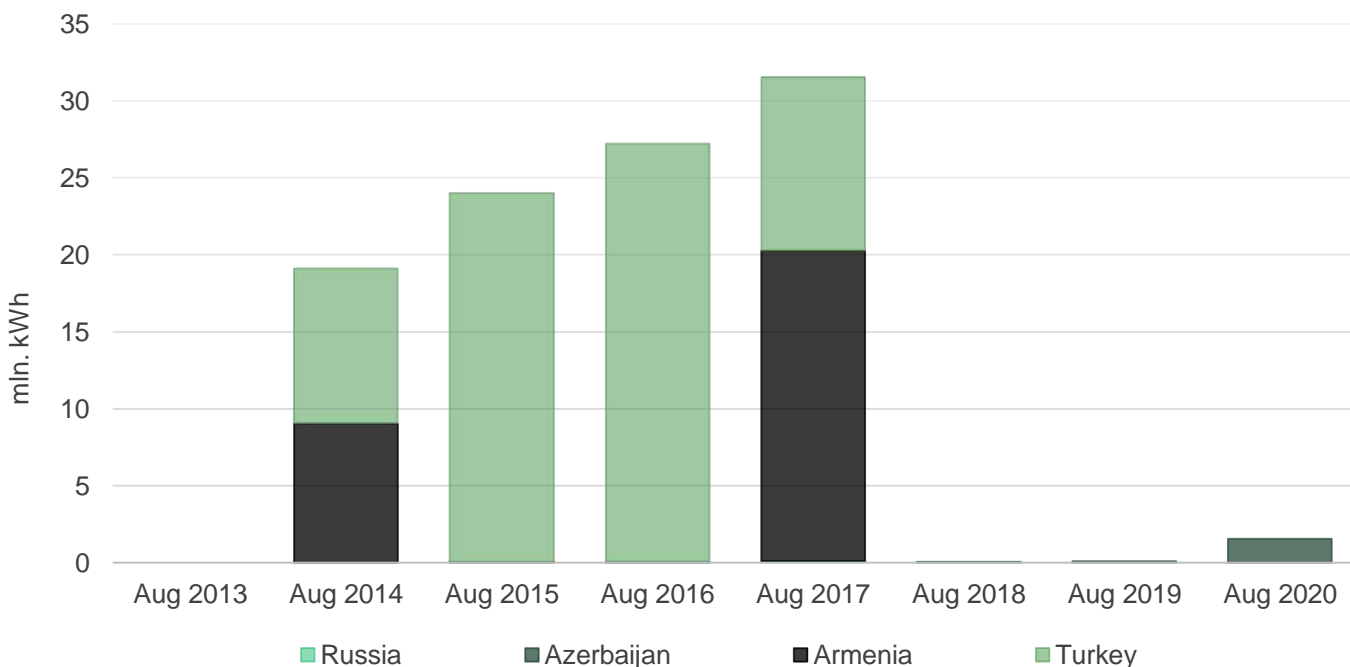
■ Russia

■ Azerbaijan

■ Armenia

■ Turkey

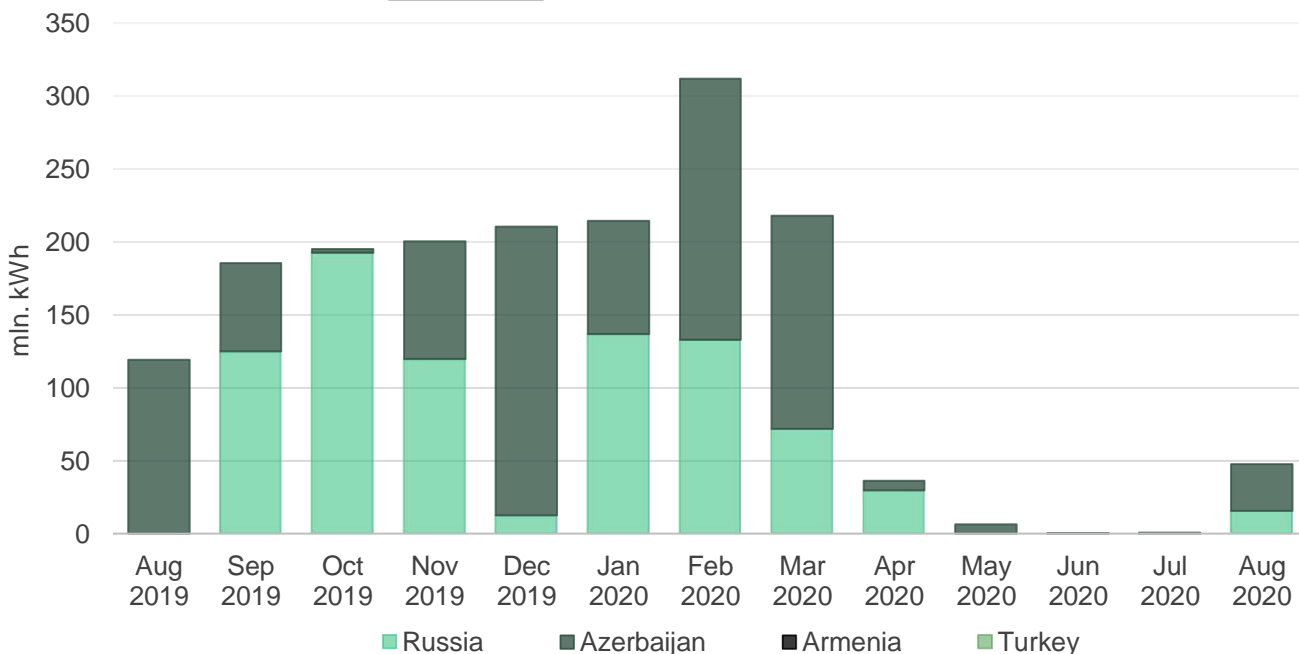
**Figure 10** - Exports by Year



Source: ESCO

In August 2020, electricity imports have substantially decreased compared to the previous year due to economic slowdown induced by COVID-related restrictions (Figure 11,12), while exports have increased. The same trend was observed in July, as well.

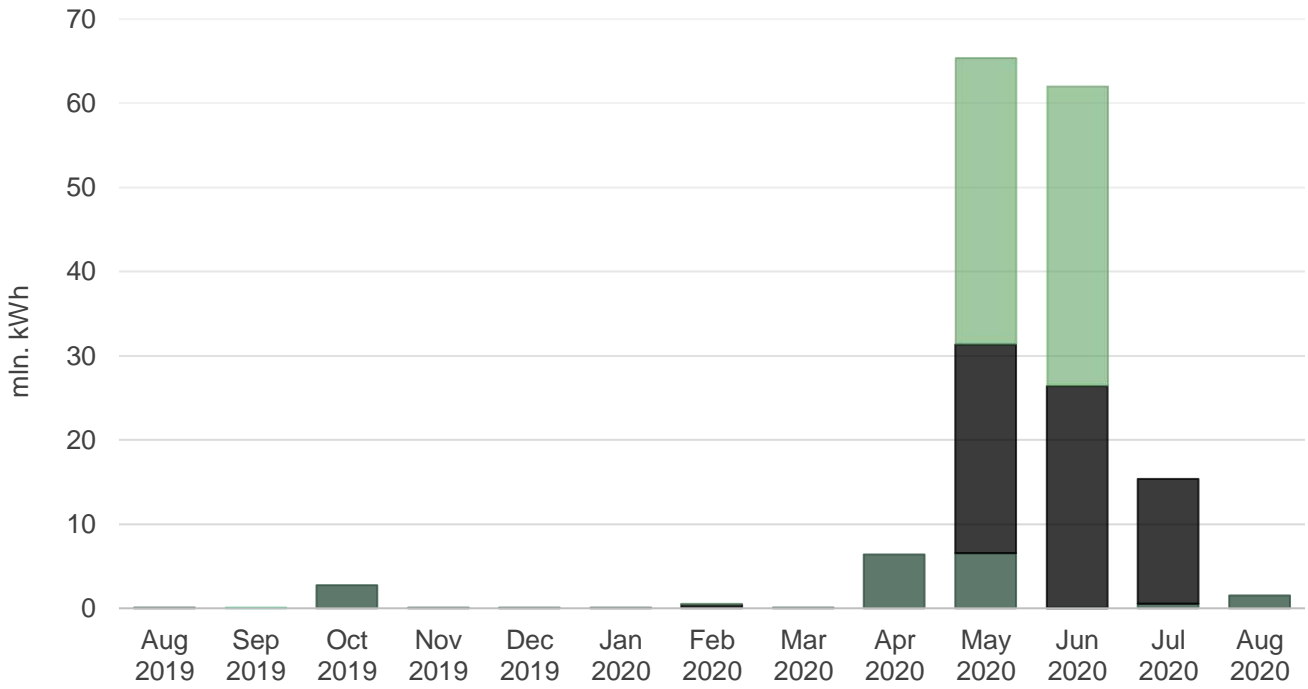
**Figure 11** - Imports by Month



Source: ESCO



**Figure 12 - Exports by Month**



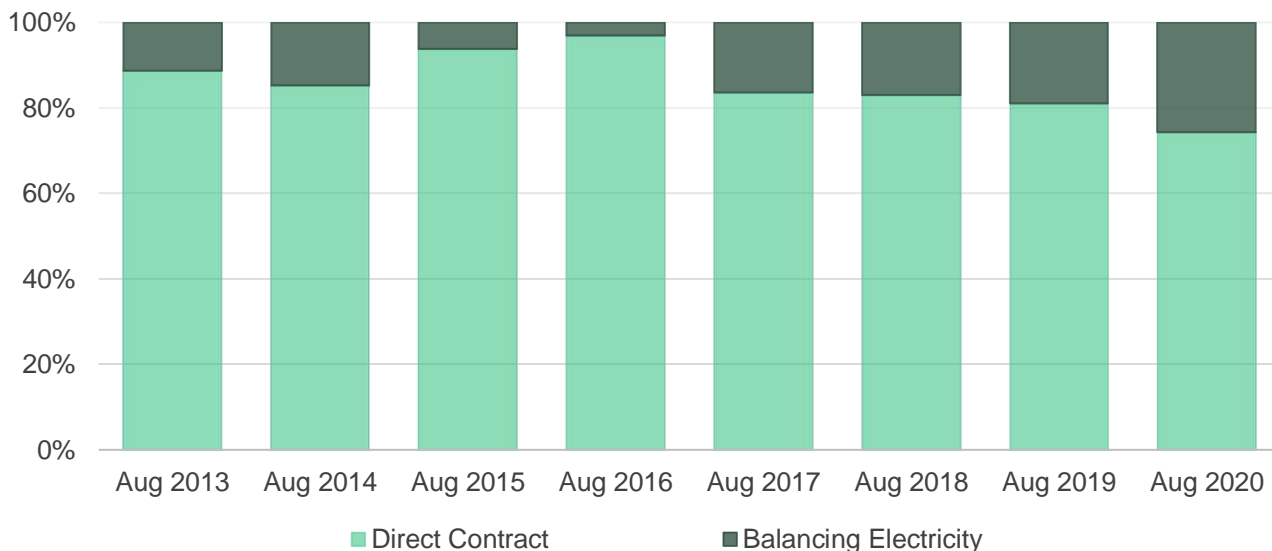
Source: ESCO

■ Russia      ■ Azerbaijan      ■ Armenia      ■ Turkey

## 1. Market Operations

In July 2020, 74% of the electricity sold on/from the local market was sold through direct contracts. The remaining 26% was sold as balancing electricity (Figure 13).

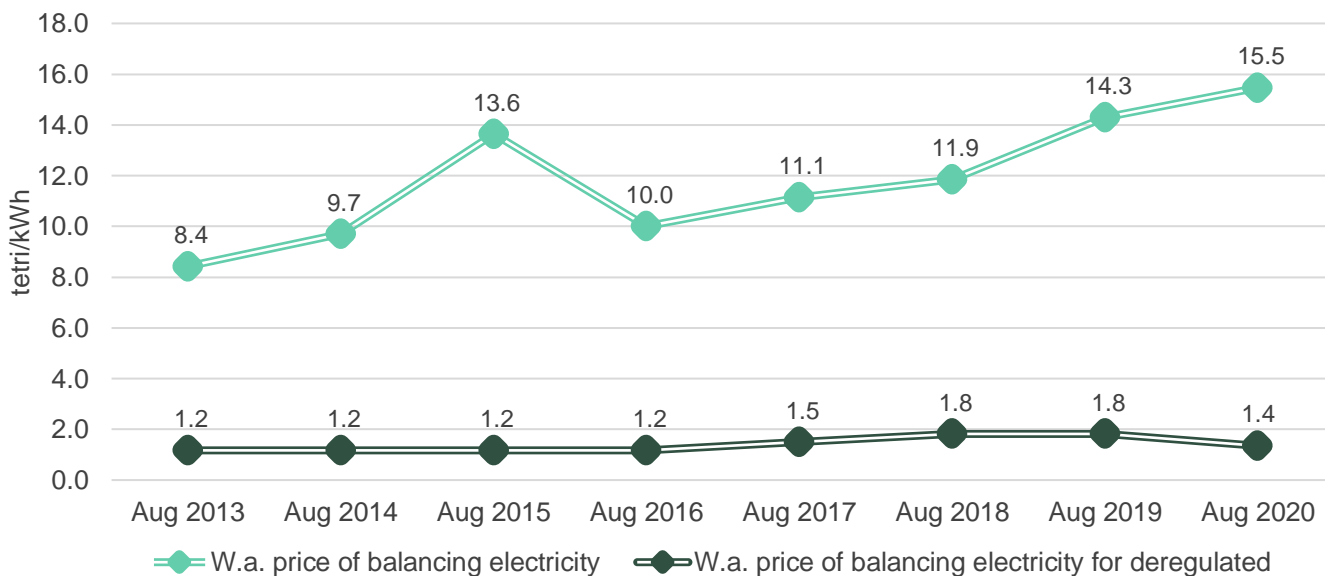
**Figure 13** - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In August 2020, the weighted average price of balancing electricity was 15.5 tetri/kWh, which corresponds to an annual increase of 8.3% compared to August 2019. As for the weighted average price for deregulated (small) HPPs, it was 1.36 tetri/kWh, decreased by 25.3% compared to the corresponding month of the previous year (Figure 14).

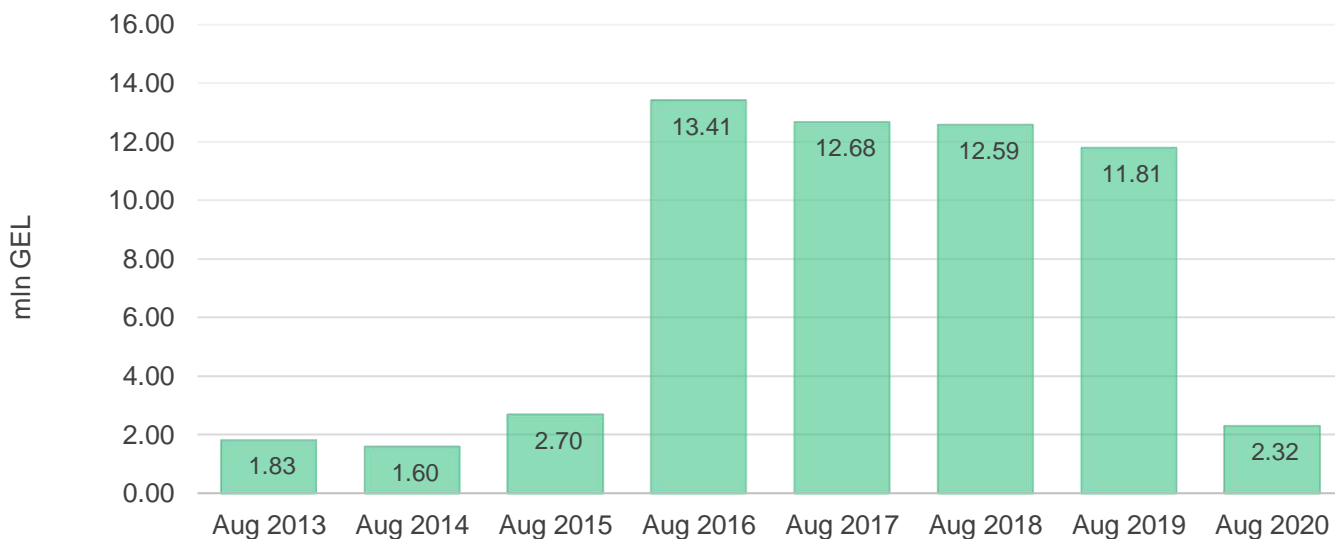
**Figure 14** - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in August 2020 were roughly 2.32 mln. GEL, which represents a 80.4% decrease compared to August 2019 (Figure 15).

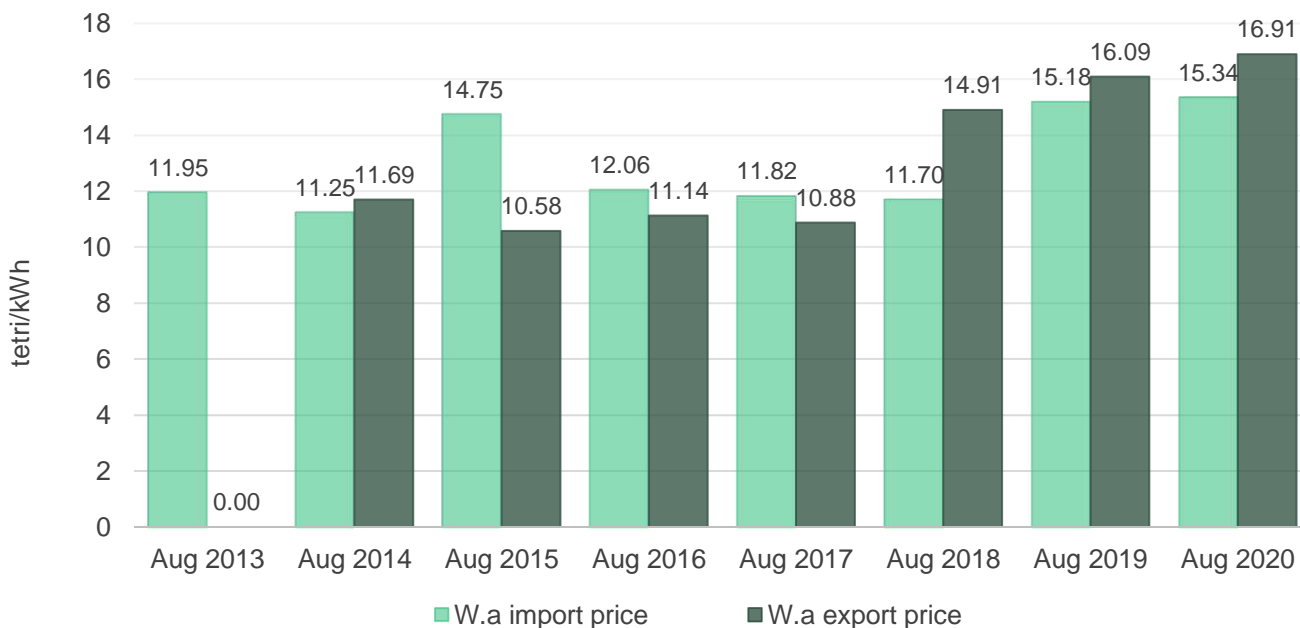
**Figure 15 - Cost of Guaranteed Capacity**



Source: ESCO

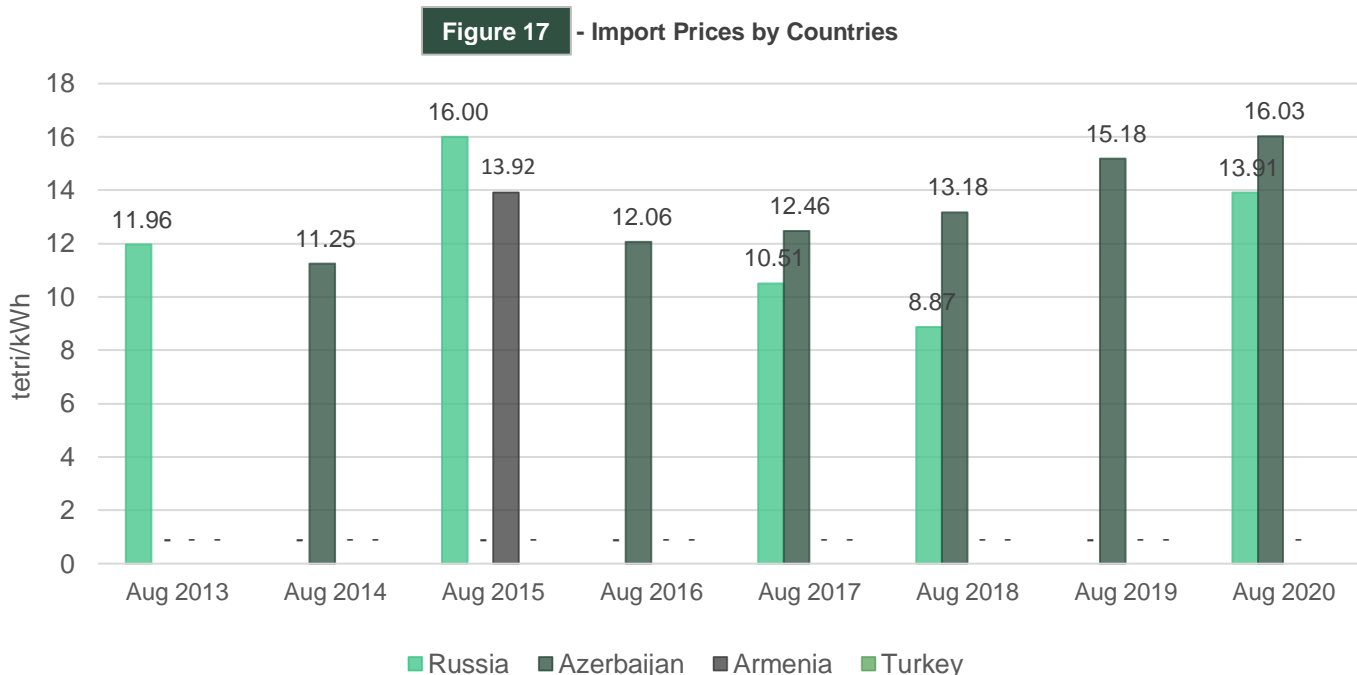
The weighted average electricity import price in August 2020 decreased by 3.8% in USD, on an annual basis, and increased by 1% in GEL (from 5.19 ¢ or 15.18 tetri per kWh in August 2019 to 4.99 ¢ or 15.34 tetri per kWh in August 2020) (Figure 16). The weighted average import price decreased by 0.18% and 0.53% in GEL and USD, respectively, on a monthly basis (import price was 5.02 ¢ or 15.37 tetri per kWh in July 2020). The weighted average electricity export price in August 2020 increased by 0.03% and 5.1% in USD and Gel, respectively, on an annual basis (from 5.5 ¢ or 16.09 tetri per kWh in August 2019 to 5.502 ¢ or 16.91 tetri per kWh in August 2020) (Figure 17). The weighted average export price increased by 19.98% and 20.4% in USD and GEL, respectively, on a monthly basis (export price was 4.59 ¢ or 14.04 tetri per kWh in July 2020).

**Figure 16 - Prices Import/Export**



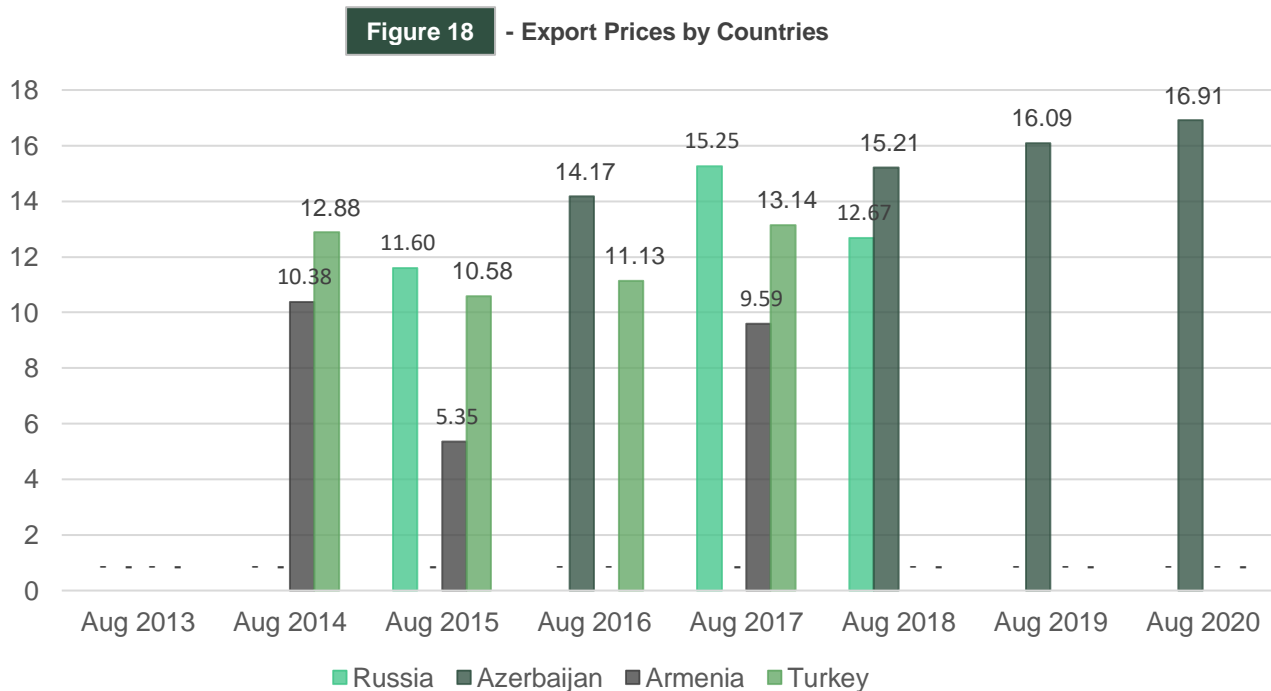
Source: ESCO/Geostat

Import prices from Azerbaijan and Russia stood at 5.22 ¢ or 16.03 tetri per kWh and 4.53 ¢ or 13.91 tetri per kWh, respectively (Figure 17).



Source: ESCO/Geostat

In August 2020, the electricity export price to Azerbaijan stood at 5.5 ¢ or 16.91 tetri per kWh (Figure 18).

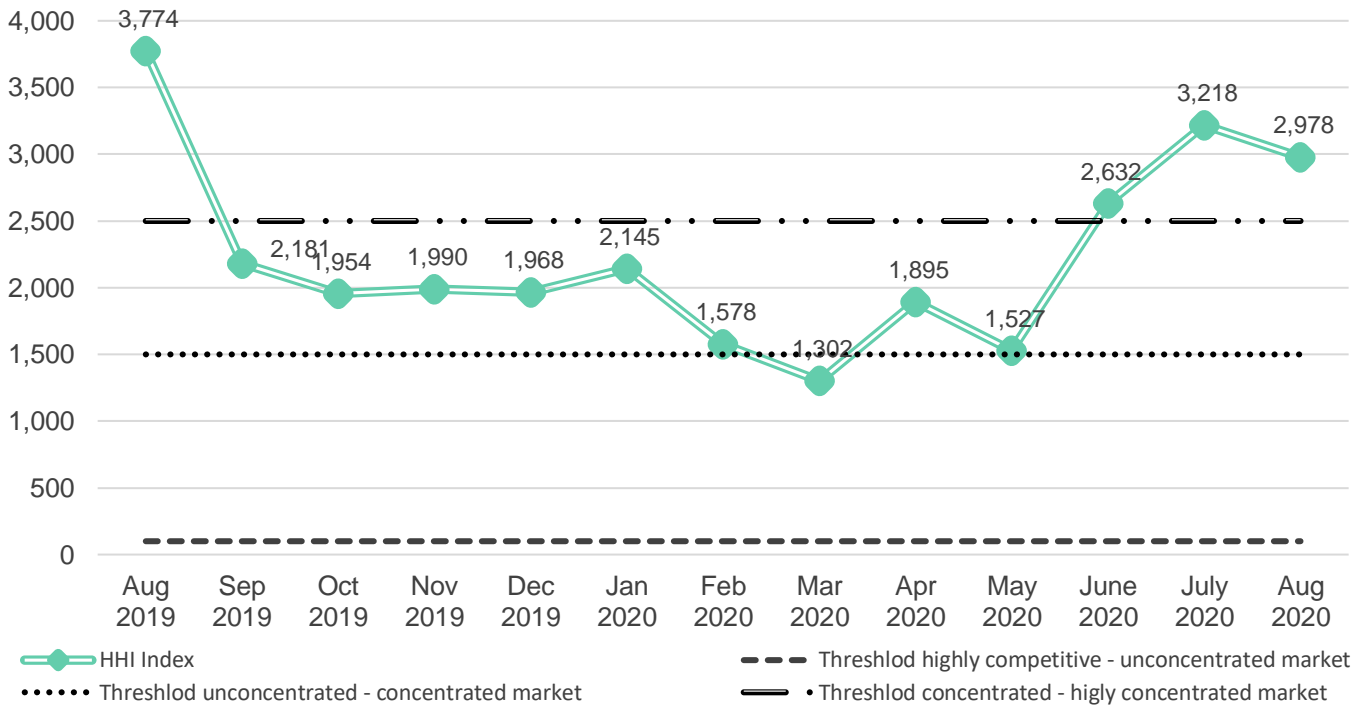


Source: ESCO/Geostat

## 2. Market Concentration

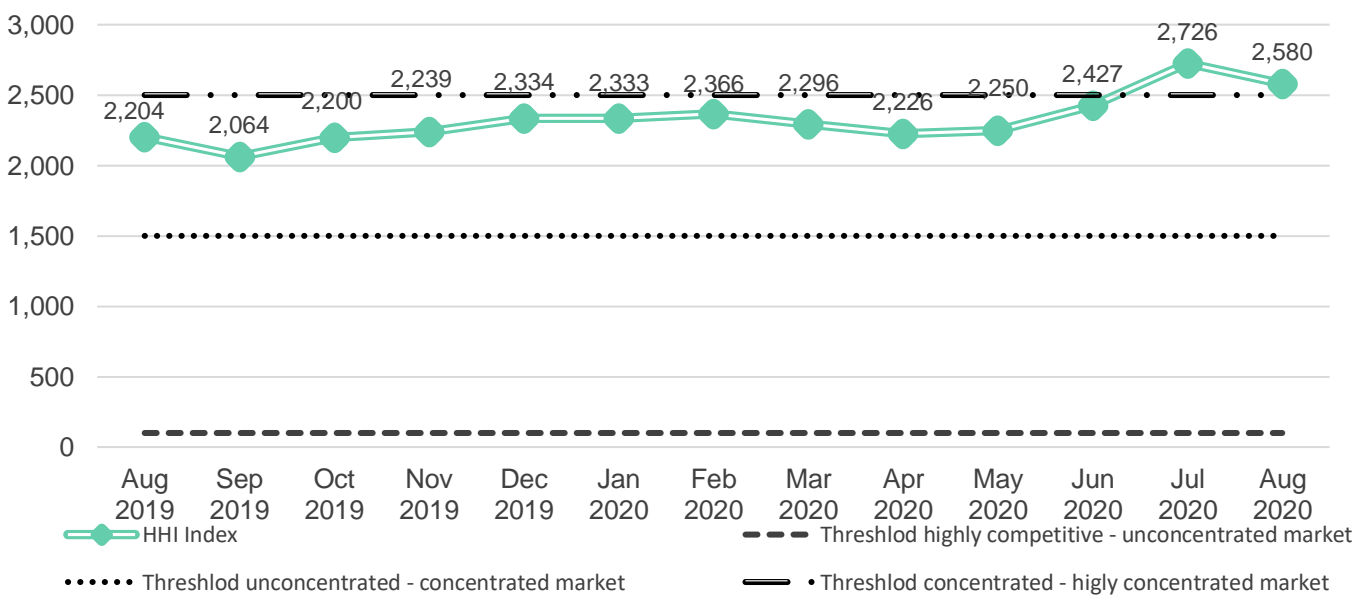
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In August 2020, the Georgian electricity generation market was above the threshold of a highly concentrated market, with an HHI value of 2,978 (Figure 19). This is lower than the level in August 2019 (with an HHI value of 3,774), and lower than the level in July 2020 (HHI was 3218). As for the consumption segment, in August also the HHI consumption index stayed above the threshold for a highly concentrated market, reaching the value of 2,580 (above the level for August 2019, but lower than the level for July 2020).

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



Source: ESCO

**Figure 20 - Hirschman-Herfindahl Index for Power Consumption**



Source: ESCO