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International School of Economics at TSU
Policy Institute

OCTOBER
2020



ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE

ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- There was an increase in total electricity generation on a yearly basis and a decrease on a monthly basis. The substantial annual increase in TPP and WPP generation has more than offset a sharp decline in HPP generation.
- Consumption decreased on a yearly basis and increased on a monthly basis.
- Consumption exceeded generation by 84 mln. kWh.
- The main import partner countries were Turkey and Azerbaijan.
- The main export partner country was Azerbaijan.
- The weighted average price of imports increased on a yearly and decreased on a monthly basis.
- The weighted average price of exports increased on a yearly and on a monthly basis.
- The HHI analysis suggests that the Georgian electricity generation market is highly concentrated.
- The HHI analysis suggests that the Georgian electricity consumption market is concentrated.

ABBREVIATION USED

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

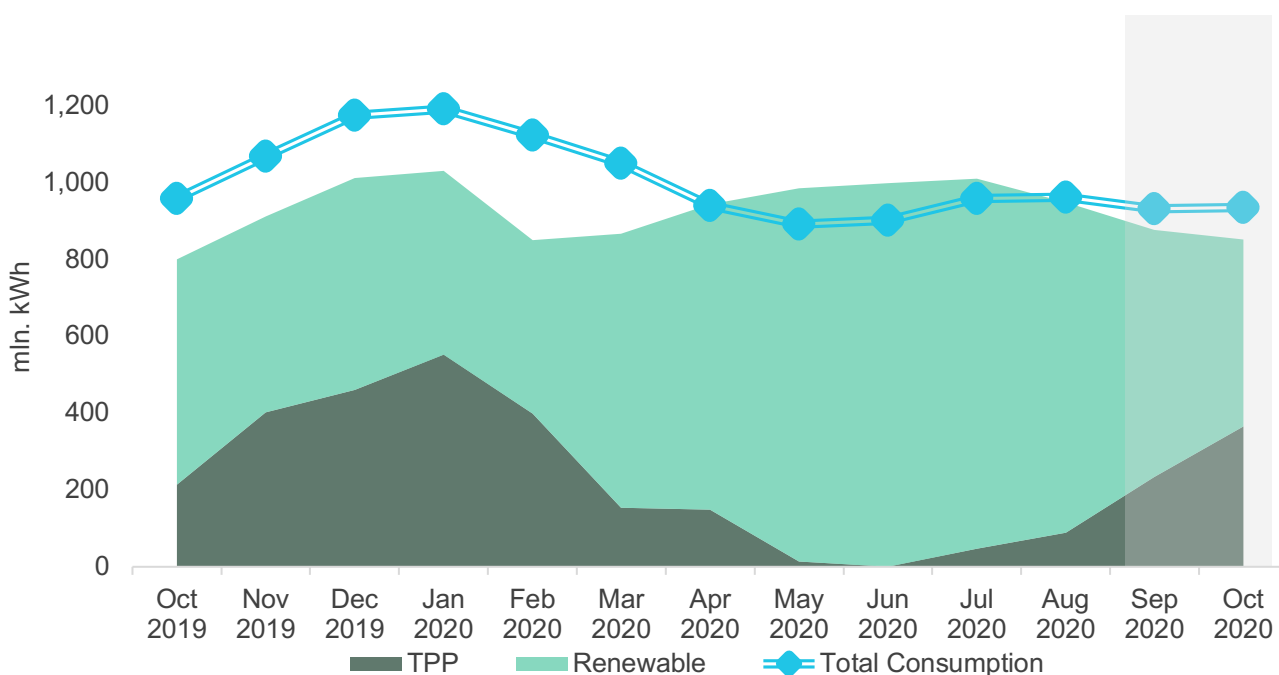
Generation – Consumption – Trade

In October 2020, Georgian power plants generated 852 mln. kWh of electricity (Figure 1). This represents a 6% increase in total generation, compared to the previous year (in October 2019, the total generation was 800 mln. kWh). The increase in generation on a yearly basis comes from the increase of 17% in wind power generation and 71% in thermal power generation, more than offsetting the decrease of 17% in hydro power generation.

On a monthly basis, generation decreased by 3% (in September 2020, total generation was 877 mln. kWh) (Figure 1). The monthly decrease in total generation was the result of the decrease of 24%, and 19% in hydro and wind power generation, respectively, while there was an increase of 56% in thermal power generation.

The consumption of electricity on the local market was 935 mln. kWh (-2% and +0.3% compared to October 2019, and September 2020, respectively) (Figure 1). In October 2020, power consumption exceeded generation by 84 mln. kWh which was 10% of total generation. In October 2019 difference between total generation and consumption resulted in a shortage of 159 mln. kWh which was around 20% of the total generation for the month.

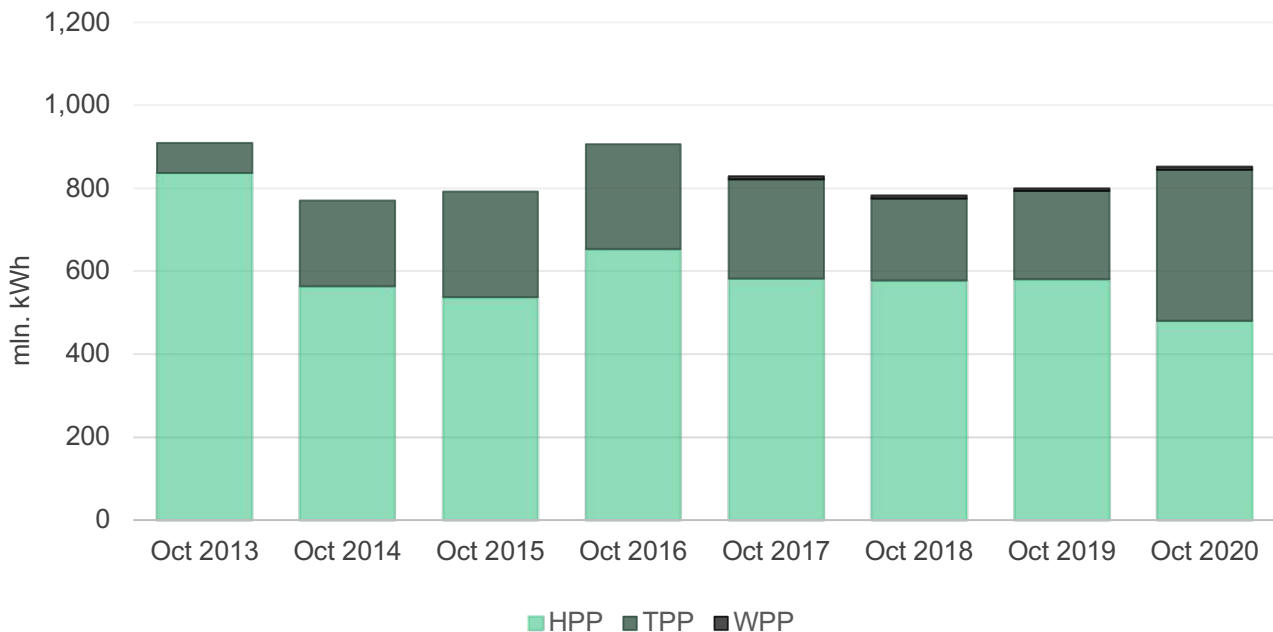
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

Most generation came from hydro power plants. In October 2020, hydro power (HPP) generation amounted to 480 mln. kWh (56% of total), while thermal power (TPP) generation was 365 mln. kWh (43% of total), and wind power (WPP) generation was 7 mln. kWh (1% of total) (Figure 2).

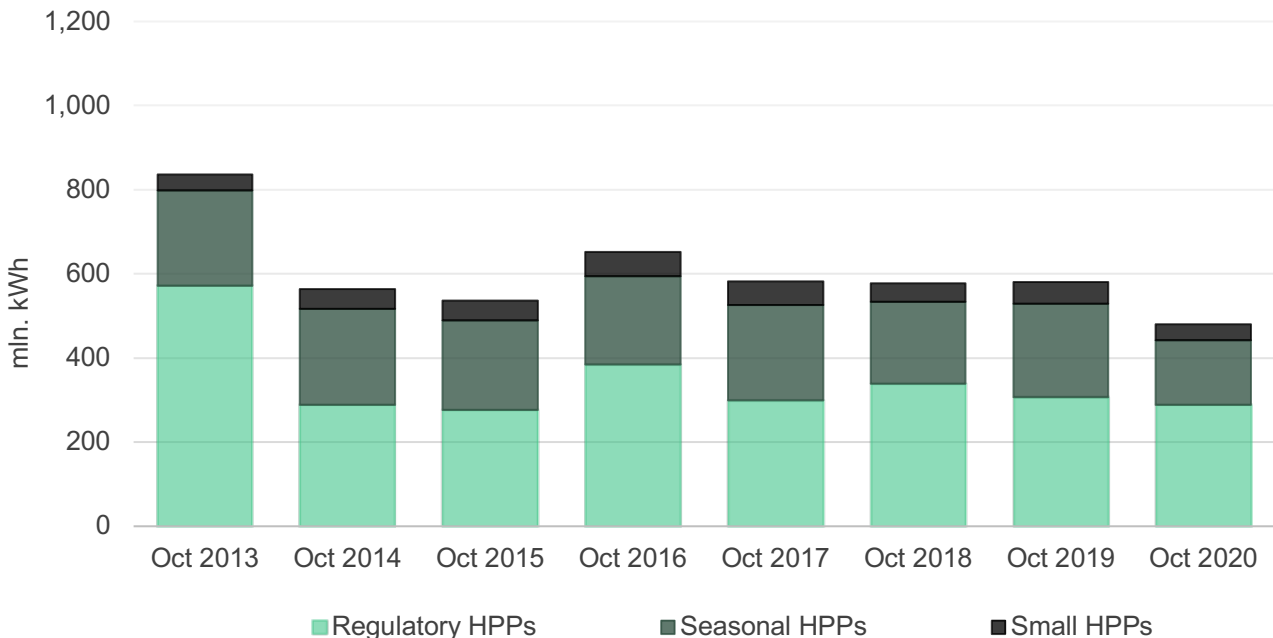
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 60% (288 mln. kWh) of electricity, while seasonal and small HPPs produced 32% (154 mln. kWh) and 8% (38 mln. kWh), respectively (Figure 3).

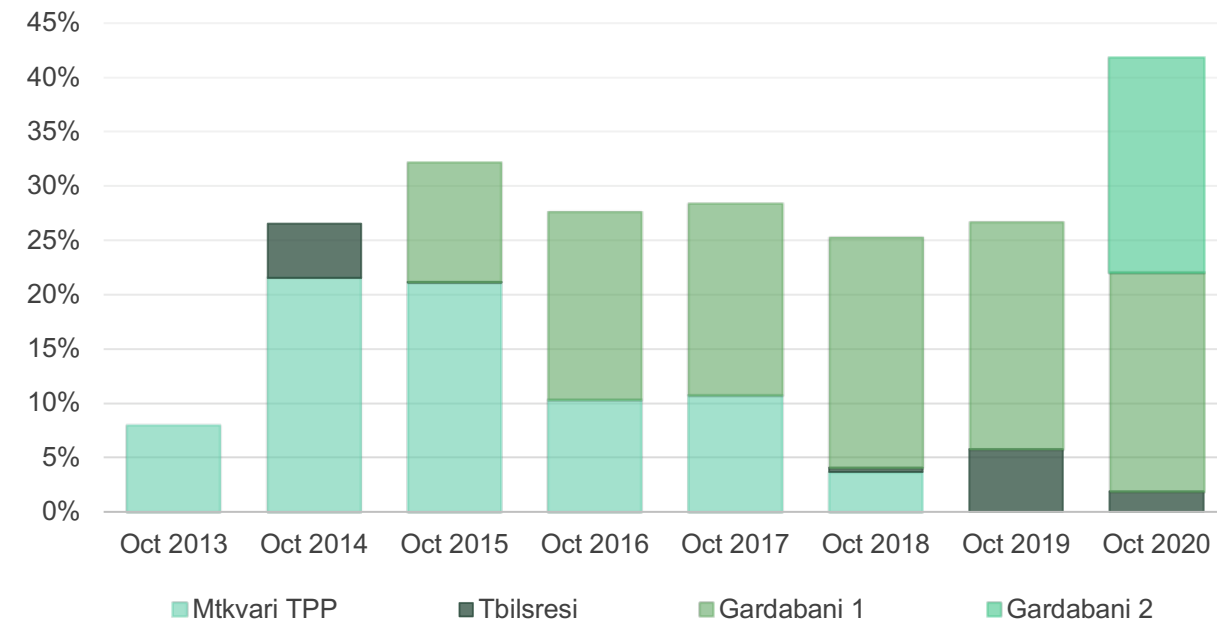
Figure 3 - HPP Generation by Type



Source: ESCO

Among thermal power plants, Gardabani 1 TPP generated 172 mln. kWh, 47% of total thermal power generation and just 20% of total generation. Gardabani 2 TPP generated 168 mln. kWh, 46% of total thermal power generation and 20% of total generation (Figure 4).

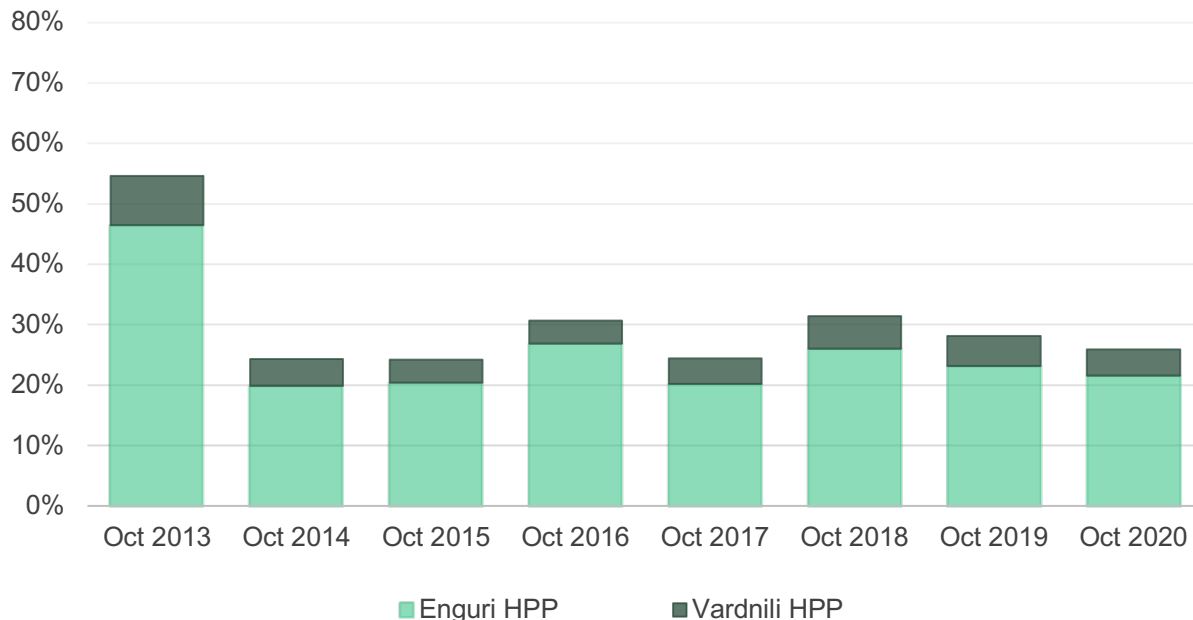
Figure 4 - Share of Large TPPs in Total Generation



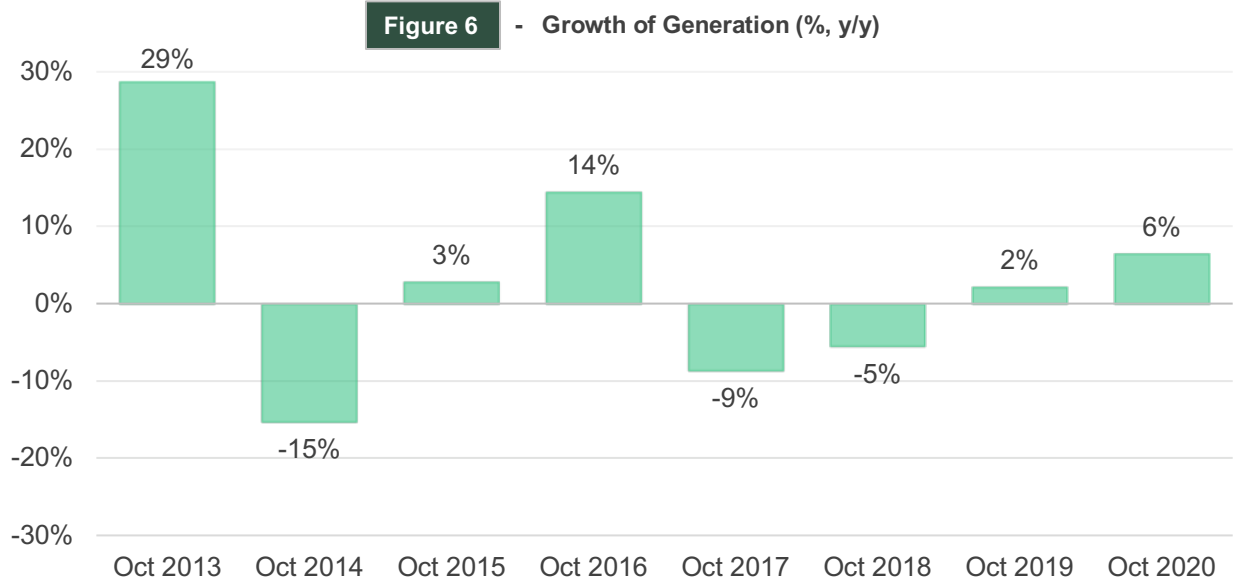
Source: ESCO

As for HPP generation, the large HPPs, Enguri and Vardnili generated 221 mln. kWh (77% of generation for regulatory HPPs), with 184 mln. kWh and 37 mln. kWh, respectively. Power generated by Enguri and Vardnili represented around 26% of the total generation (Figure 5). Overall, total generation increased by 6% compared to October 2019 (Figure 6).

Figure 5 - Share of Enguri and Vardnili in Total Generation

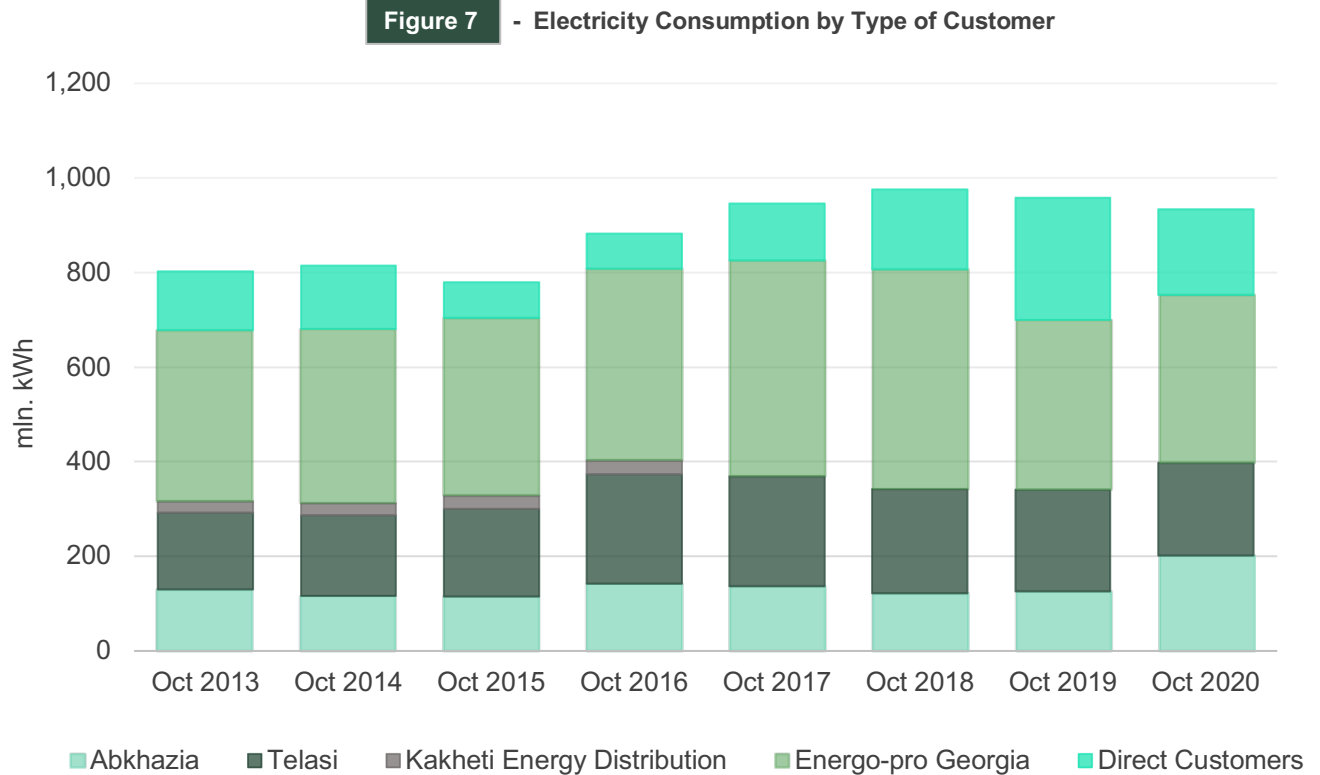


Source: ESCO



Source: ESCO

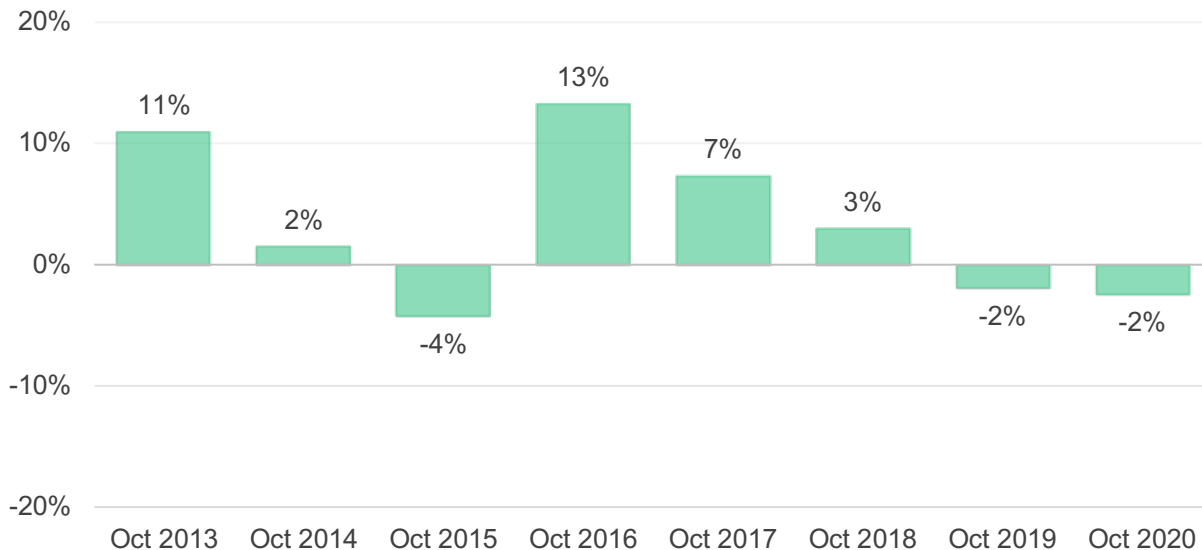
Total electricity demand came from: Energo-Pro Georgia¹ (38% - 355 mln. kWh), Telasi (21% - 197 mln. kWh), Abkhazia (22% - 201 mln. kWh), and direct customers (19% - 181 mln. kWh) (Figure 7). Annual demand from Energo-Pro and Telasi and direct customers decreased by 1%, 8% and 0%, respectively, while the demand from Abkhazia increased by 60%. Overall, there was an annual decrease of 2% in the total electricity consumption in October 2020, compared to October 2019 (Figure 8).



Source: ESCO

¹ Energo-Pro Georgia acquired Kakheta Energy Distribution in September 2017.

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

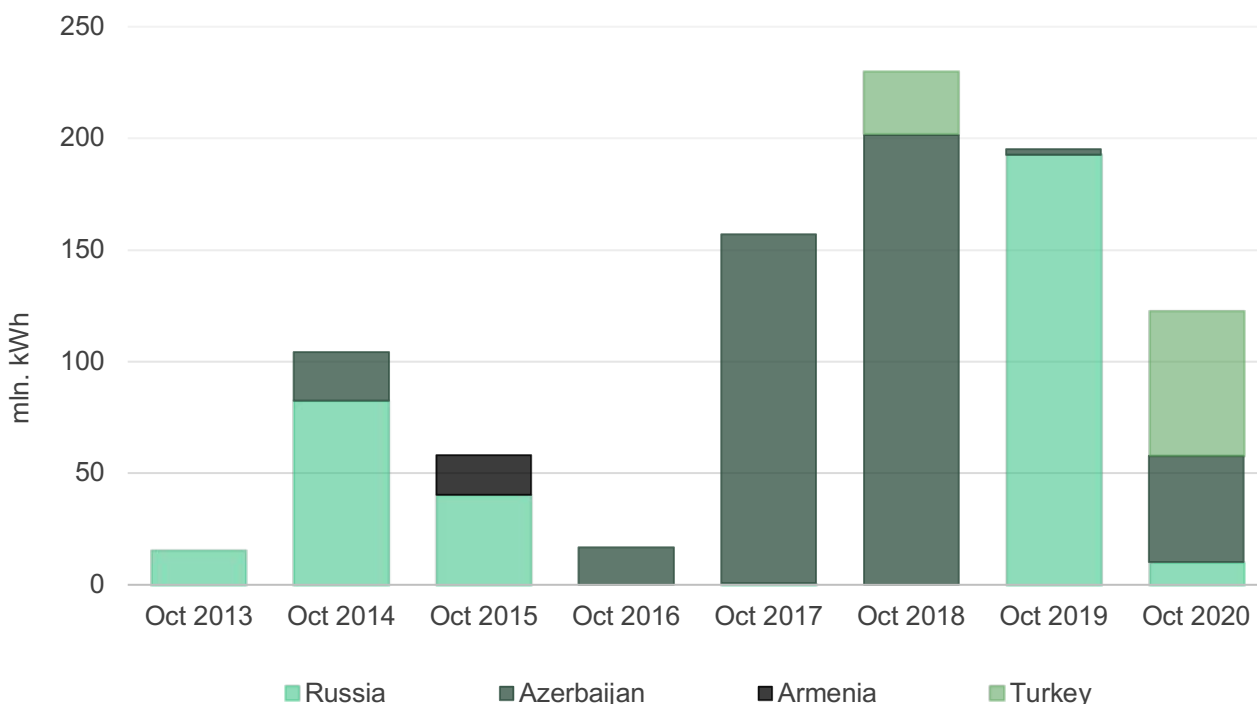


Source: ESCO

In October 2020, Georgia imported 123 mln. kWh of electricity (compared to 195 mln. kWh October 2019), 8% of which came from Russia, 53% came from Turkey, and 39% came from Azerbaijan (Figure 9). In October 2020, Georgia exported 1 mln. kWh (3 mln. kWh in October 2019), 100% of which was exported to Azerbaijan (Figure 10). There was no transit of electricity neither in October 2020 nor in October 2019.

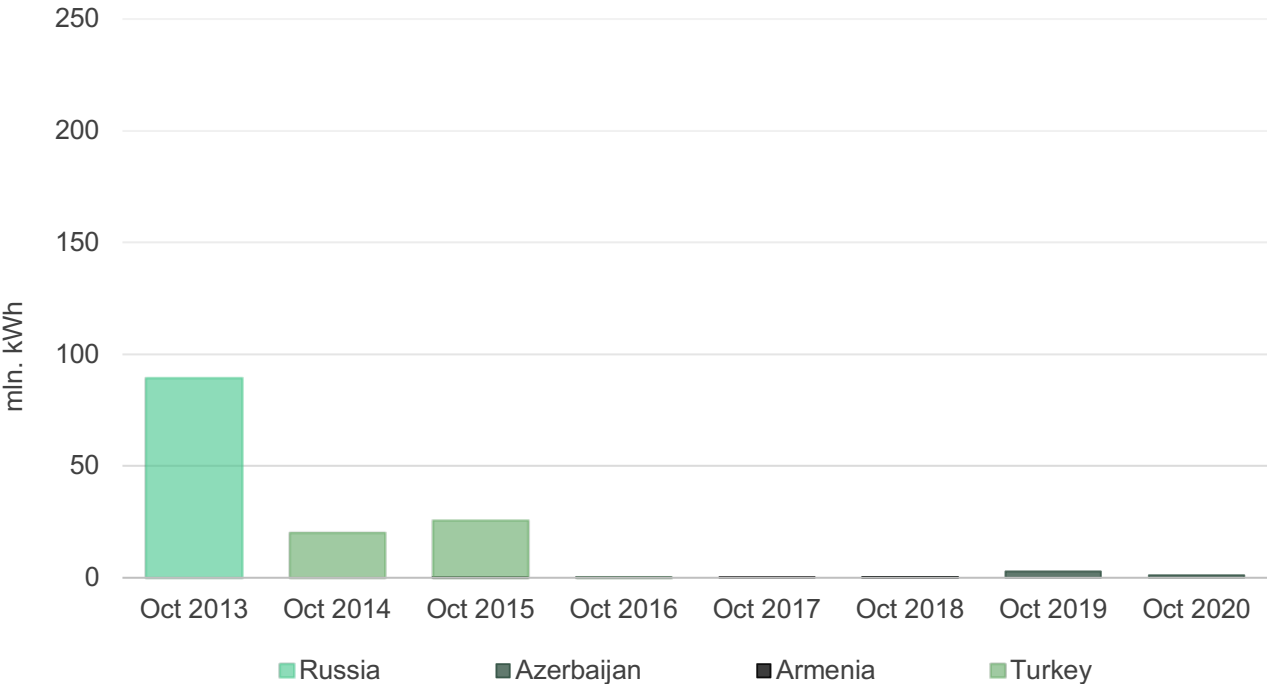
In this month, electricity imports have substantially decreased compared to the previous year due to economic slowdown induced by COVID-related restrictions. The same trend was observed in July, August, and September.

Figure 9 - Imports by Year



Source: ESCO

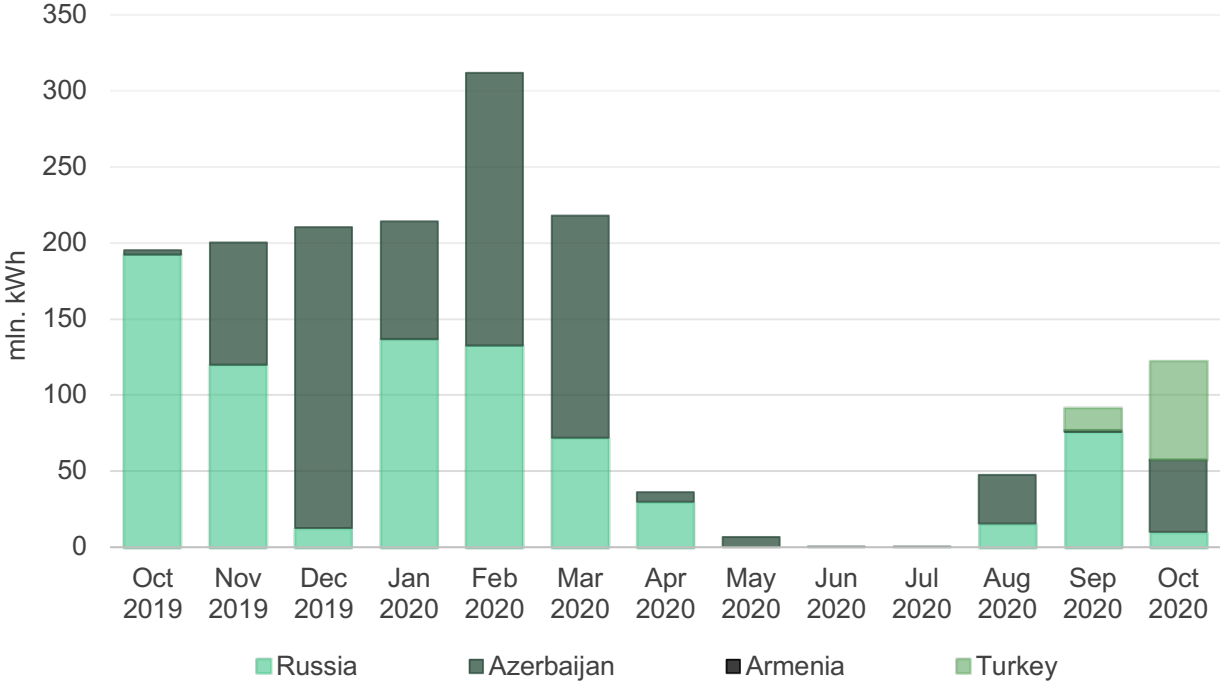
Figure 10 - Exports by Year



Source: ESCO

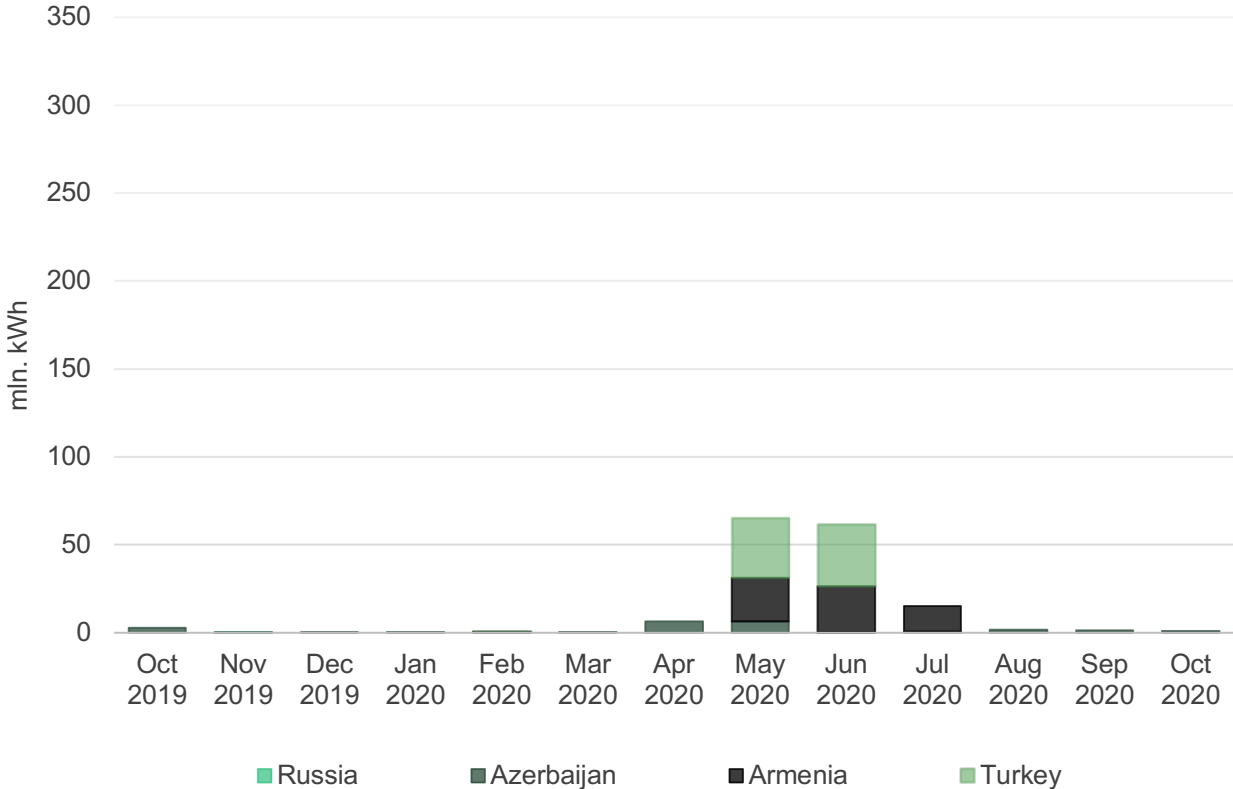
In October 2020 electricity imports increased from 92 mln. kWh to 123 mln. kWh compared to September 2020 (Figure 11), while electricity export decreased from 1.44 mln. kWh to 1.09 mln. kWh (Figure 12).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

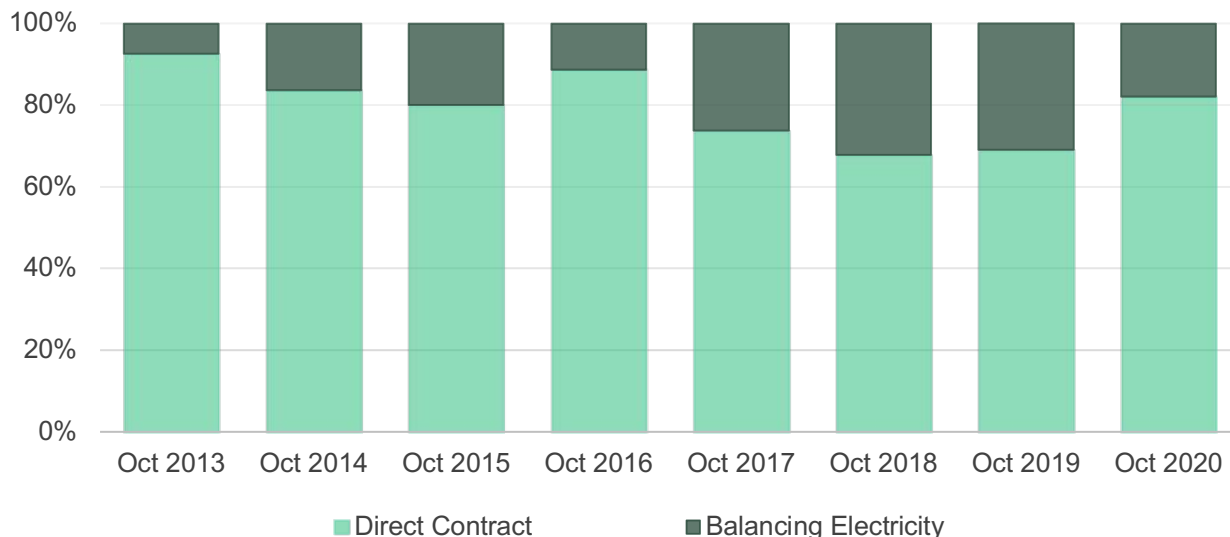


Source: ESCO

1. Market Operations

In October 2020, 82% of the electricity sold on/from the local market was sold through direct contracts. The remaining 18% was sold as balancing electricity (Figure 13).

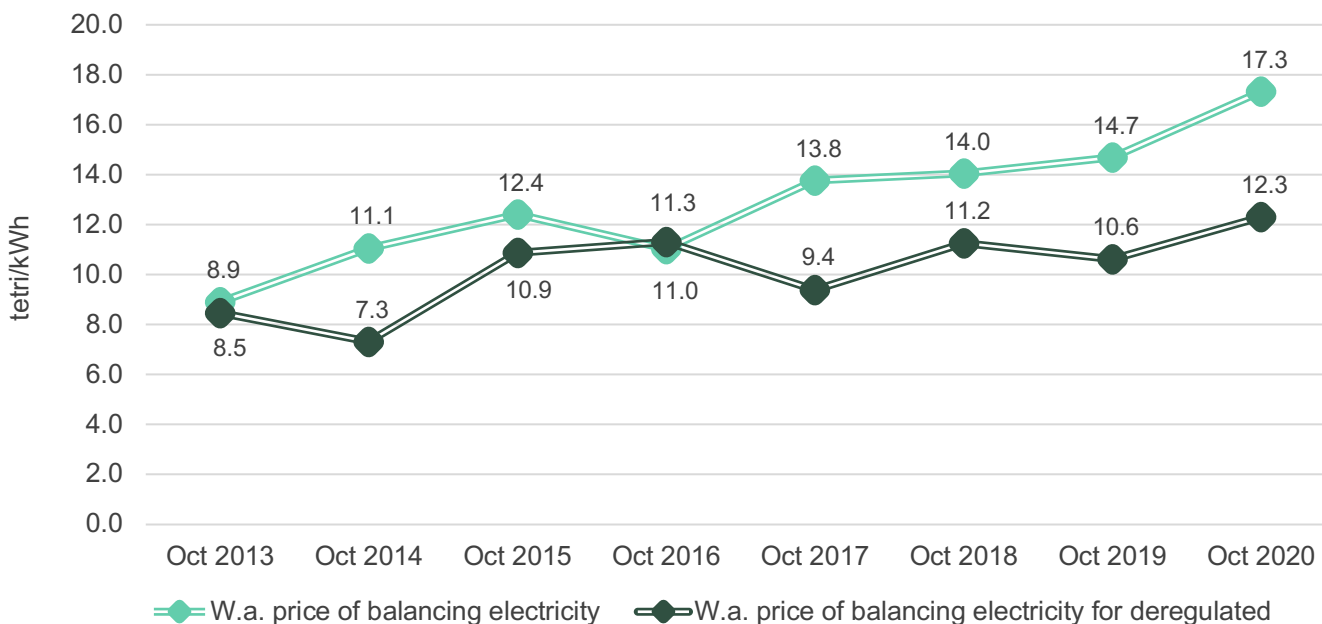
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In October 2020, the weighted average price of balancing electricity was 17.3 tetri/kWh, which corresponds to an annual increase of 18% compared to October 2019. As for the weighted average price for deregulated (small) HPPs, it was 12.3 tetri/kWh, increased by 16% compared to the corresponding month of the previous year (Figure 14).

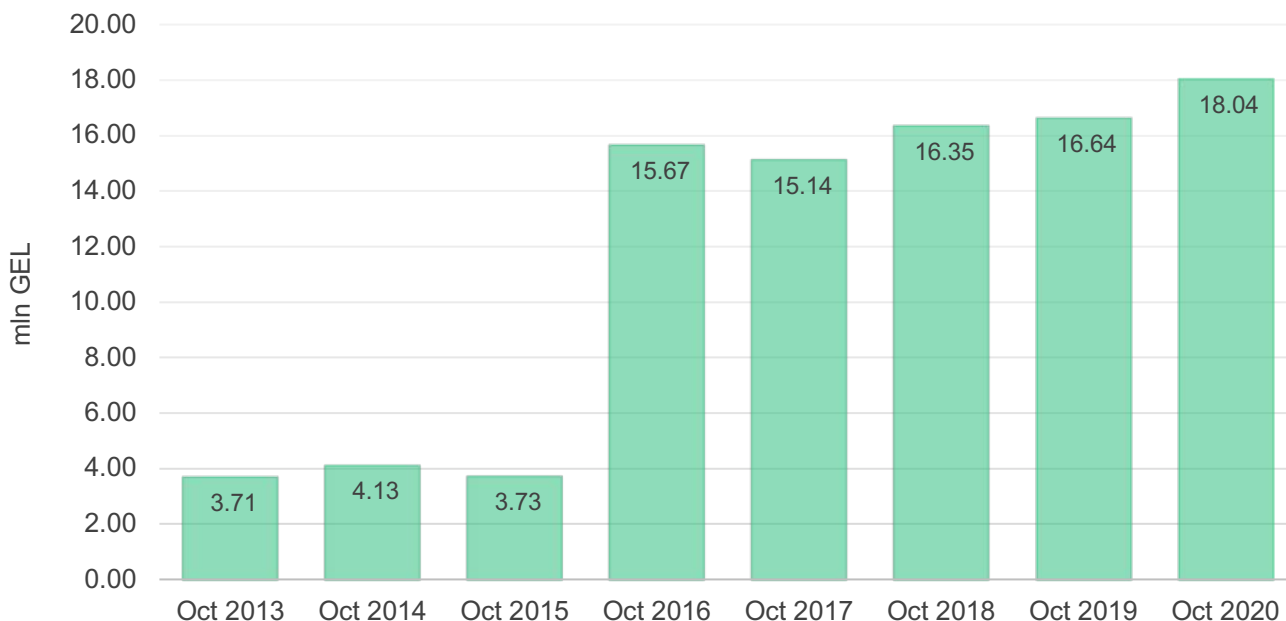
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in October 2020 were roughly 18.04 mln. GEL, which represents a 8.4% increase compared to October 2019 (Figure 15).

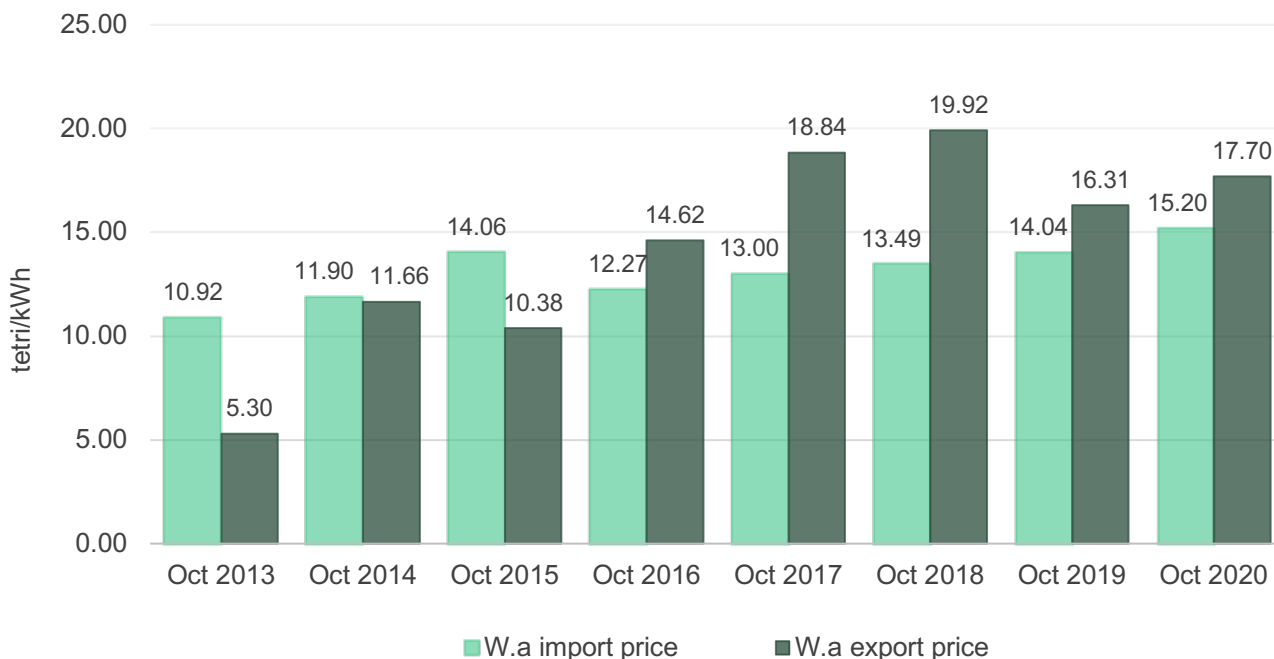
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The weighted average electricity import price in October 2020 decreased by 0.18% in USD, on an annual basis, and increased by 8.31% in GEL (from 4.73 ¢ or 14.04 tetri per kWh in October 2019 to 4.73 ¢ or 15.20 tetri per kWh in October 2020) (Figure 16). The weighted average import price decreased by 1.54% and 0.13% in USD and GEL, respectively, on a monthly basis (import price was 4.80 ¢ or 15.22 tetri per kWh in September 2020). The weighted average electricity export price in October 2020 increased by 0.01% in USD and 8.52% in GEL on an annual basis (from 5.50 ¢ or 16.31 tetri per kWh in October 2019 to 5.50 ¢ or 17.70 tetri per kWh in October 2020) (Figure 17). The weighted average export price decreased by 0.01% in USD and increased by 1.42% in GEL on a monthly basis (export price was 5.50 ¢ or 17.45 tetri per kWh in September 2020).

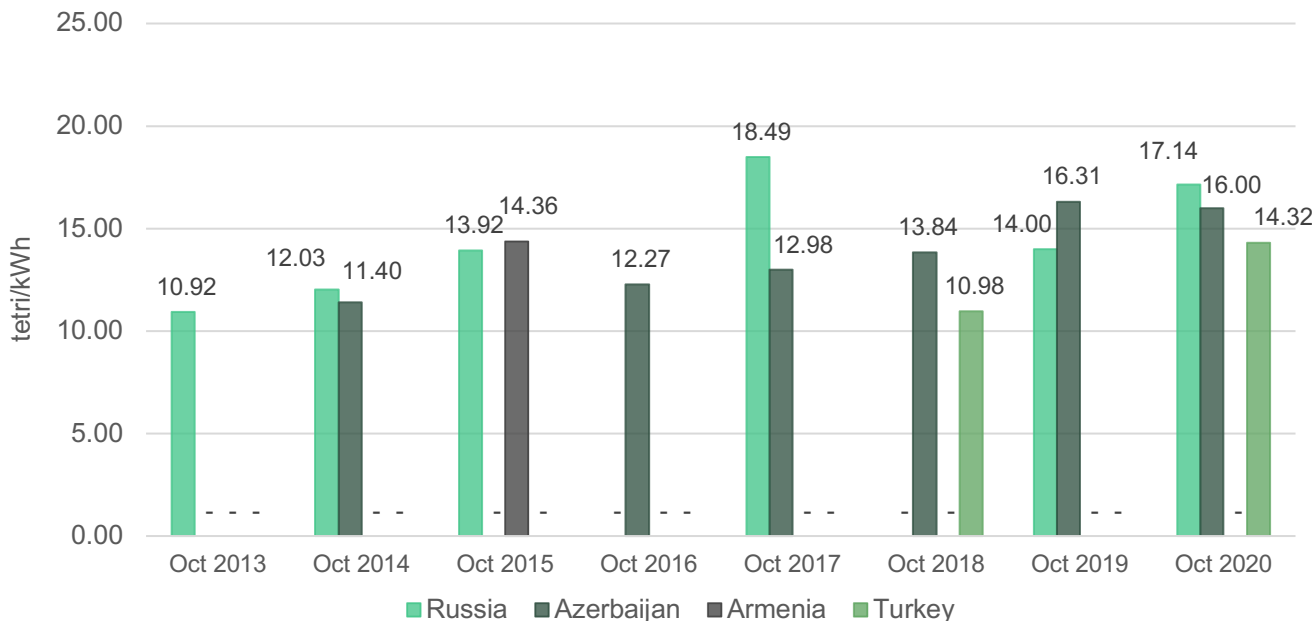
Figure 16 - Prices Import/Export



Source: ESCO

Import prices from Russia, Azerbaijan, and Turkey stood at 5.33 ¢ or 17.14 tetri per kWh, 4.97 ¢ or 16.00 tetri per kWh, and 4.45 ¢ or 14.32 tetri per kWh, respectively (Figure 17).

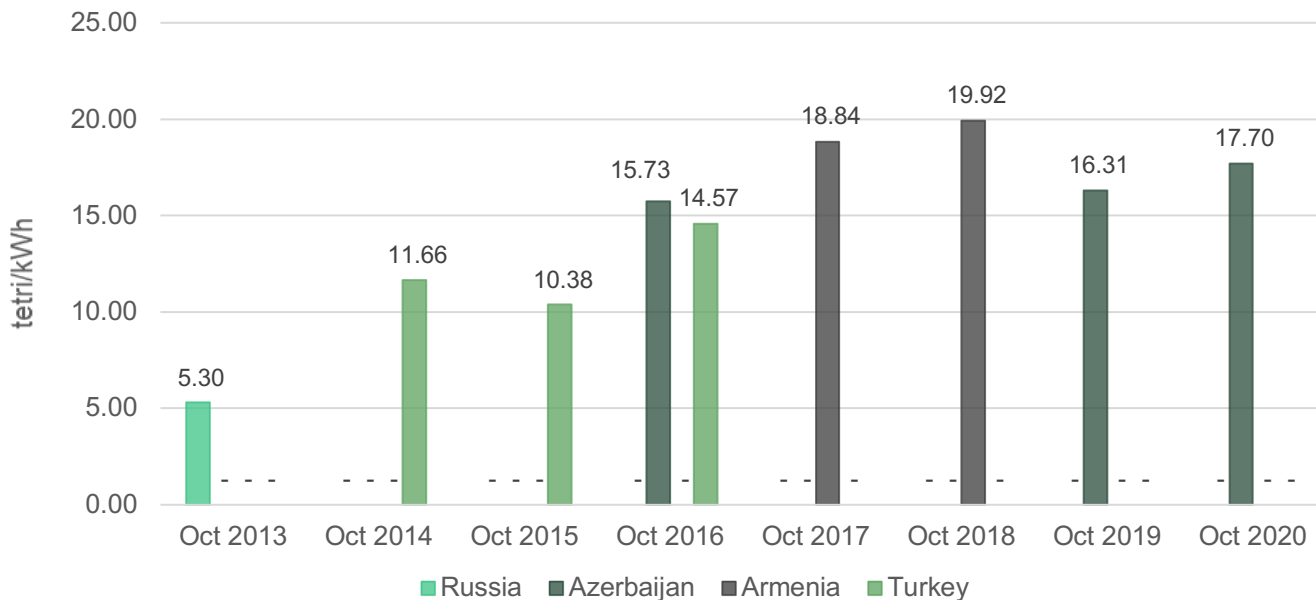
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In October 2020, the electricity export price to Azerbaijan stood at 5.50 ¢ or 17.70 tetri per kWh (Figure 18).

Figure 18 - Export Prices by Countries

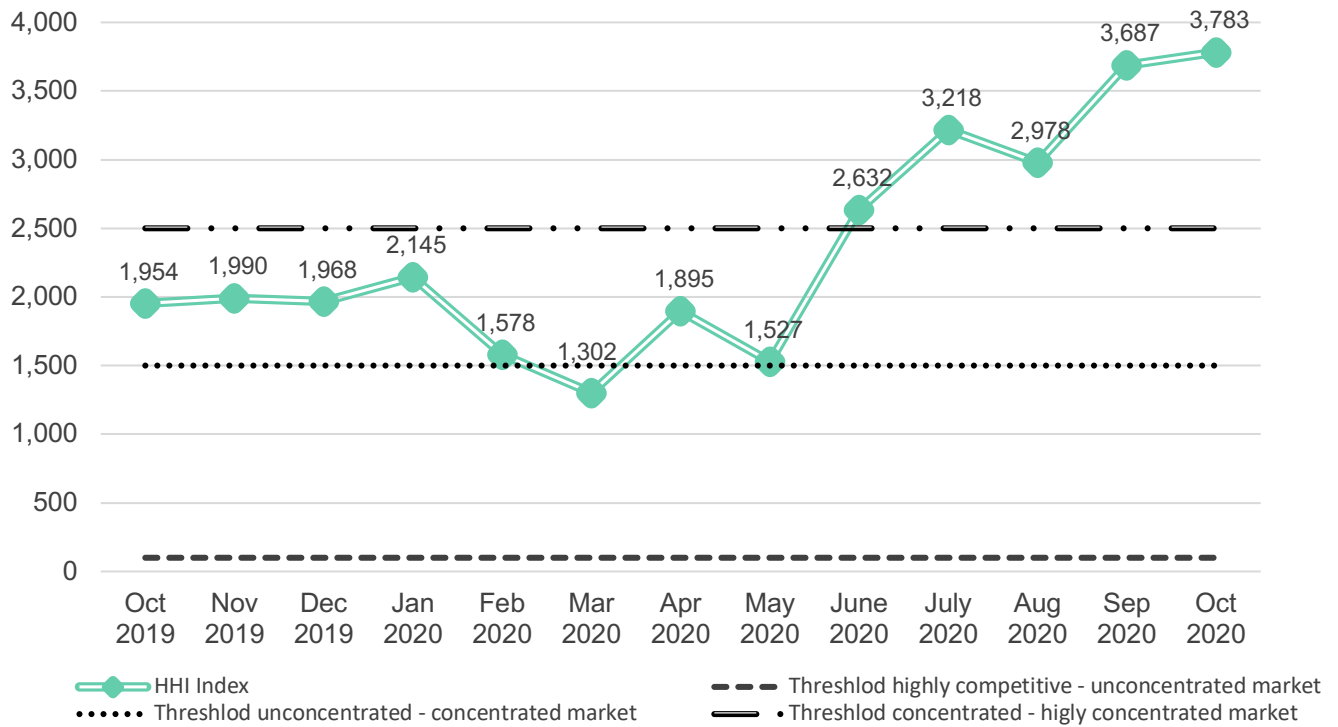


Source: ESCO/Geostat

2. Market Concentration

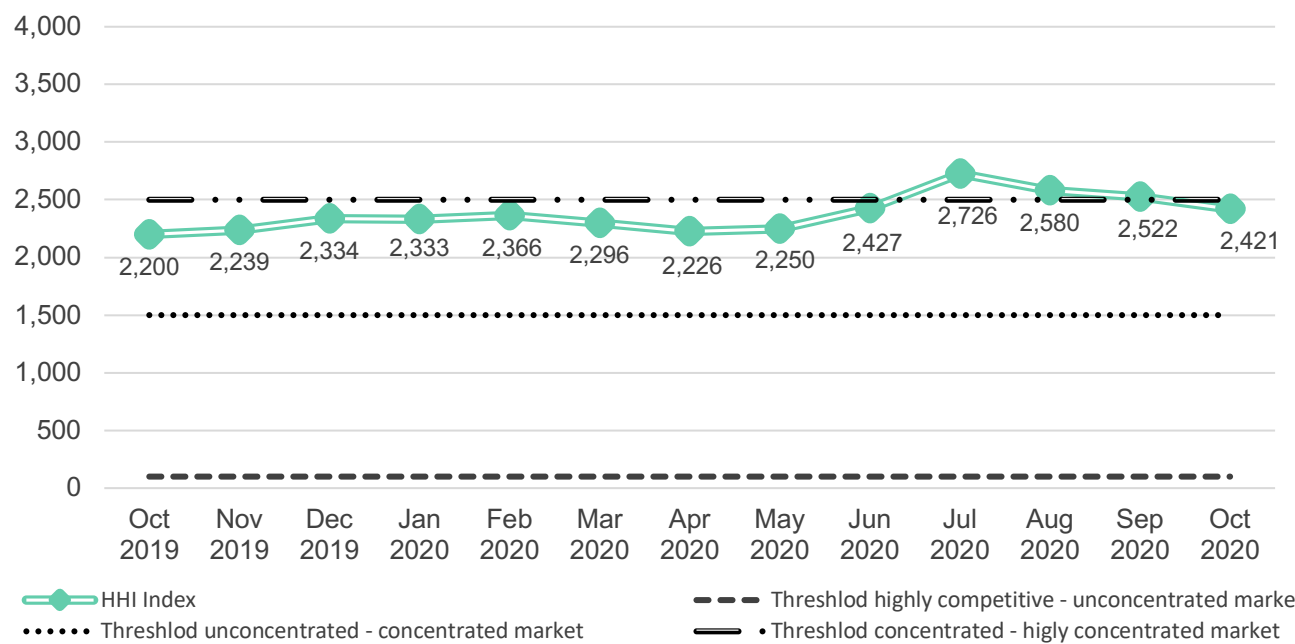
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In October 2020, the Georgian electricity generation market was above the threshold of a highly concentrated market, with an HHI value of 3,783 (Figure 19). This is significantly higher than the level in October 2019 (with an HHI value of 1,954), and slightly higher than the level in September 2020 (HHI was 3,687). As for the consumption segment, in October 2020 the HHI consumption index was below the threshold for a highly concentrated market, with an HHI value of 2,421 (above the level for October 2019 – 2,200, but lower than the level for September 2020 – 2,522).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO