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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In September 2020, both power generation (-7%) and consumption (-4%) have decreased compared to the same month in 2019.
- The substantial decrease in consumption on an annual basis is clearly caused by the COVID 19 lockdown. Compared to the last month, consumption decreased by 3%.
- In September 2020 electricity consumption in Abkhazia was 52% higher, compared to September 2019, confirming the existing trend. On an annual basis, Consumption from Energo-Pro Georgia and Telasi increased by 4% and 1%, respectively. The overall decrease came from a 40% drop in consumption from direct customers.
- In September 2020, cross-border electricity trade included imports from Azerbaijan, Turkey and Russia (1.6%, 15.8% and 82.6% of total import, respectively) and exports to Azerbaijan. On an annual basis, total imports decreased by around 50%.
- In September 2020 the concentration in the Supply side of the market substantially increased compared to the last month, while the HHI for Demand decreased. Both, the HHI for Supply and Demand sides remain 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

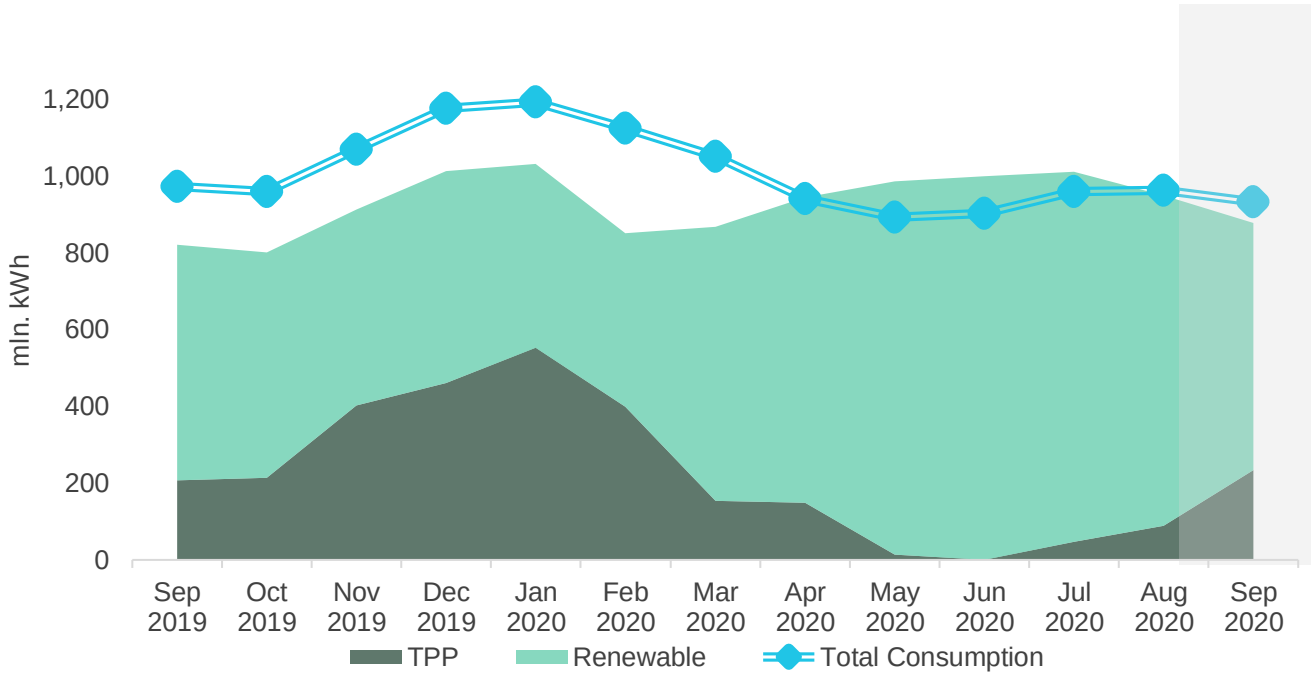
Generation – Consumption – Trade

In September 2020, Georgian power plants generated 877 mln. kWh of electricity (Figure 1). This represents a 7% increase in total generation, compared to the previous year (September 2019, the total generation was 821 mln. kWh). The increase in generation on a yearly basis comes from the increase of 15% in wind power generation, 13% in thermal power generation, and 5% in hydro power generation.

On a monthly basis, generation decreased by 8% (in August 2020, total generation was 949 mln. kWh) (Figure 1). The monthly decrease in total generation was the result of the 25.5% decrease in hydro power generation more than offsetting the increase of 162%, and 11% in thermal and wind power generation, respectively.

The consumption of electricity on the local market was 933 mln. kWh (-4% and -3% compared to September 2019, and August 2020, respectively) (Figure 1). In September 2020, power consumption exceeded generation by 56 mln. kWh which was 6% of total generation (in September 2019 difference between total generation and consumption resulted in a shortage of 151 mln. kWh which was around 18% of the total generation for the month).

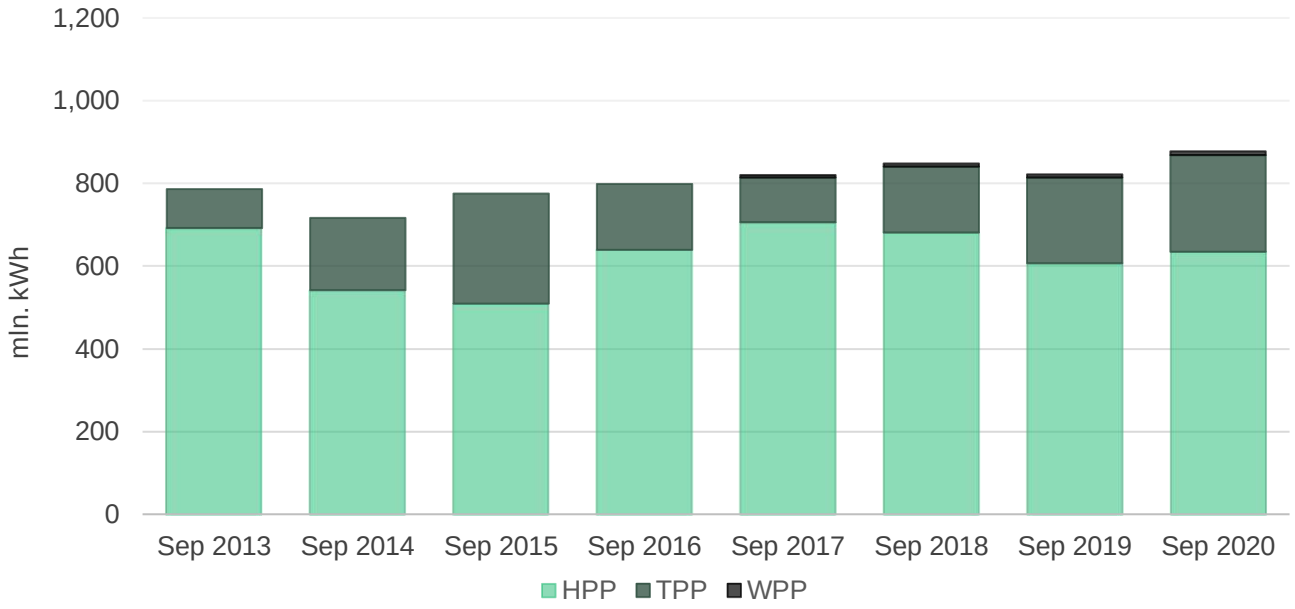
Figure 1 - **Electricity Consumption and Generation**



Source: Electricity System Commercial Operator (ESCO)

Most generation came from hydro power plants. In September 2020, hydro power (HPP) generation amounted to 635 mln. kWh (72% of total), while thermal power (TPP) generation was 234 mln. kWh (27% of total), and wind power (WPP) generation was 8 mln. kWh (1% of total) (Figure 2).

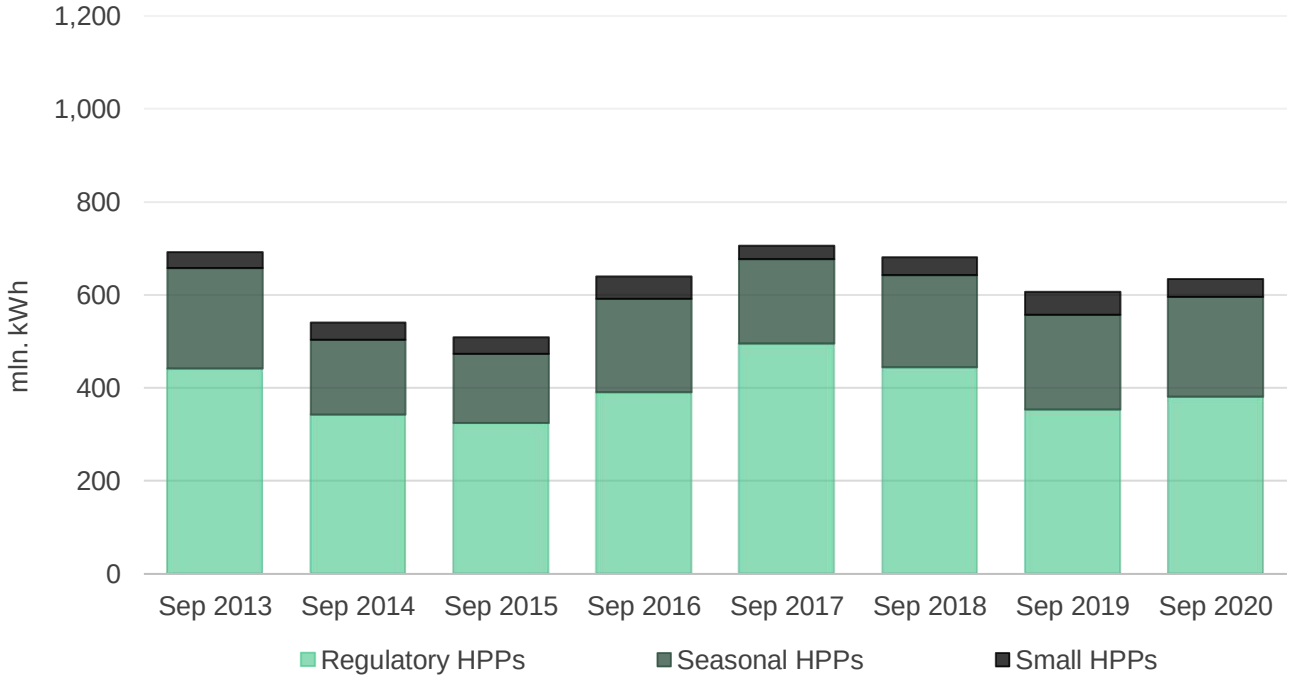
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 60% (382 mln. kWh) of electricity, while seasonal and small HPPs produced 34% (215 mln. kWh) and 6% (39 mln. kWh), respectively (Figure 3).

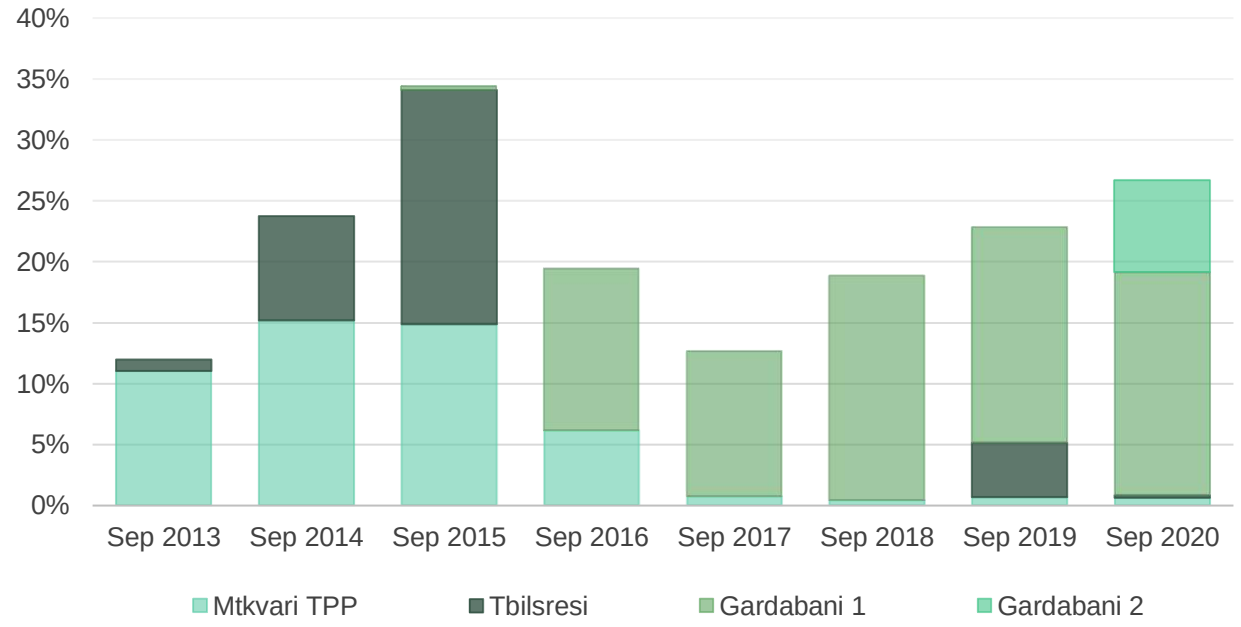
Figure 3 - HPP Generation by Type



Source: ESCO

Among thermal power plants, Gardabani 1 TPP generated 160 mln. kWh, 68% of total thermal power generation and just 18% of total generation. Gardabani 2 TPP generated 66 mln. kWh, 28% of total thermal power generation and 8% of total generation (Figure 4).

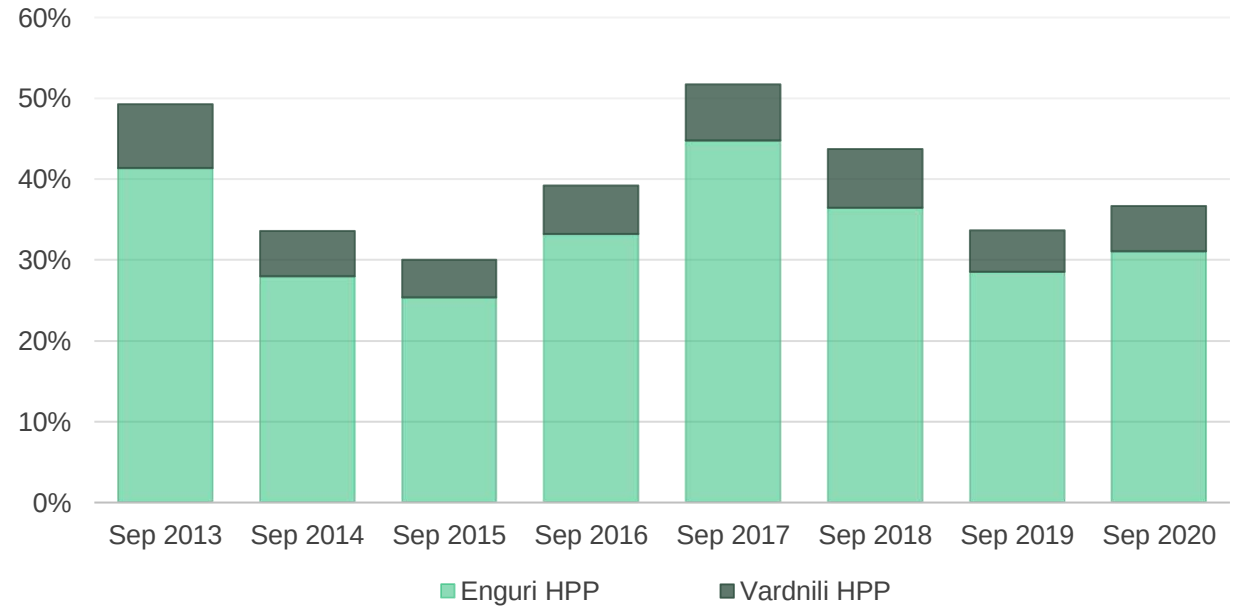
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

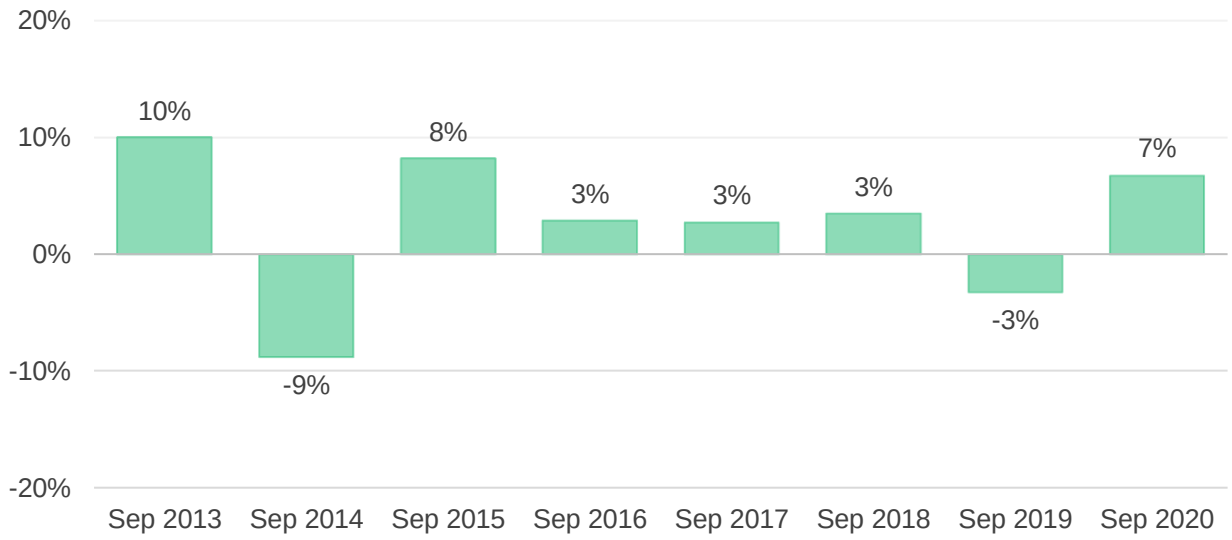
As for HPP generation, the large HPPs, Enguri and Vardnili generated 322 mln. kWh (84% of generation for regulatory HPPs), with 272 mln. kWh and 49 mln. kWh, respectively. Power generated by Enguri and Vardnili represented around 37% of the total generation (Figure 5). Overall, total generation increased by 7% compared to September 2019 (Figure 6).

Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

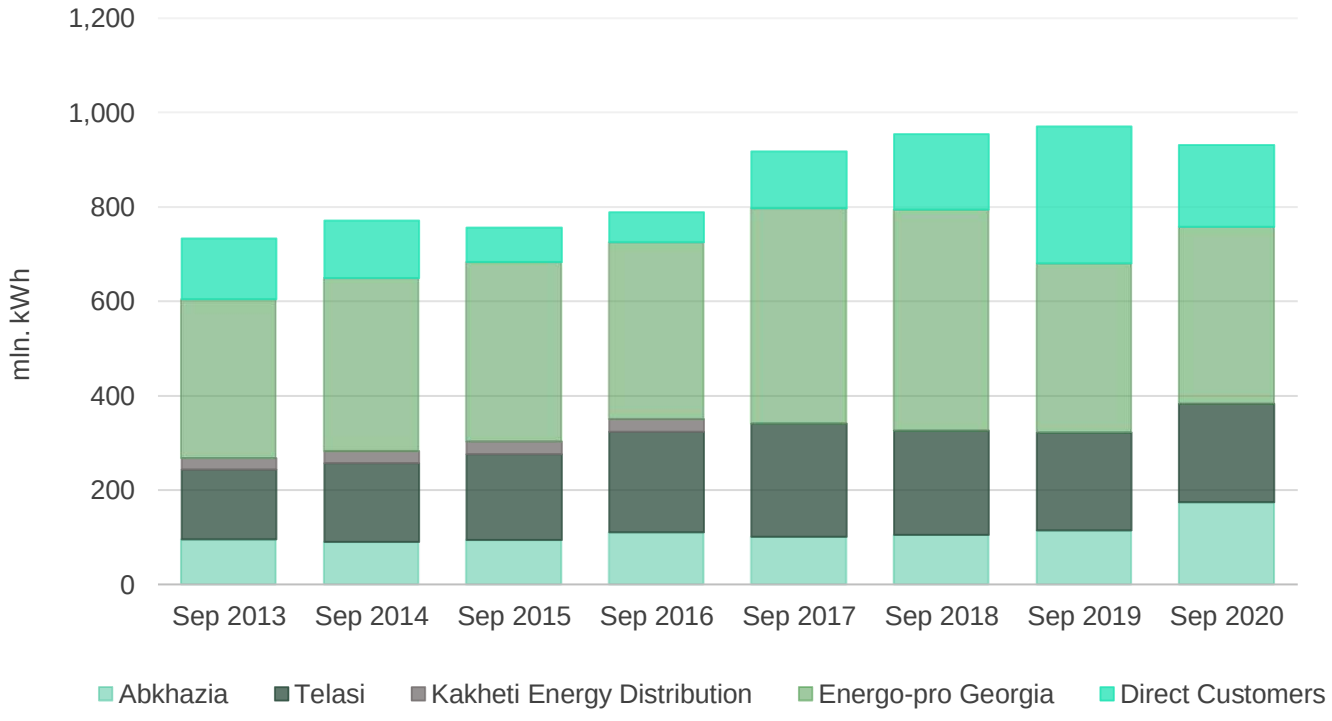
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia[1] (40% - 374 mln. kWh), Telasi (22% - 209 mln. kWh), Abkhazia (19% - 174 mln. kWh), and direct customers (19% - 174 mln. kWh) (Figure 7). Annual demand from direct customers decreased by 40% more than offsetting the increase in annual demand from Abkhazia (+52%), from Energo-Pro Georgia (+4%), and from Telasi (+1%). Overall, there was an annual decrease of 4% in the total electricity consumption in September 2020, compared to September 2019 (Figure 8).

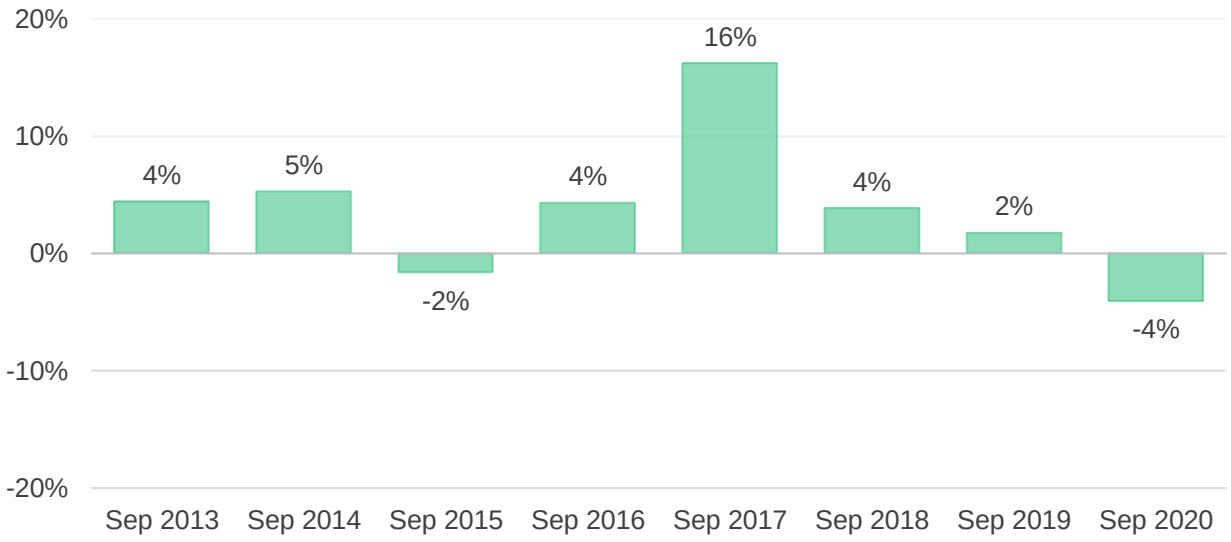
Figure 7 - Electricity Consumption by Type of Customer



Source: ESCO

[1] Energo-Pro Georgia acquired Kakheti Energy Distribution in September 2017.

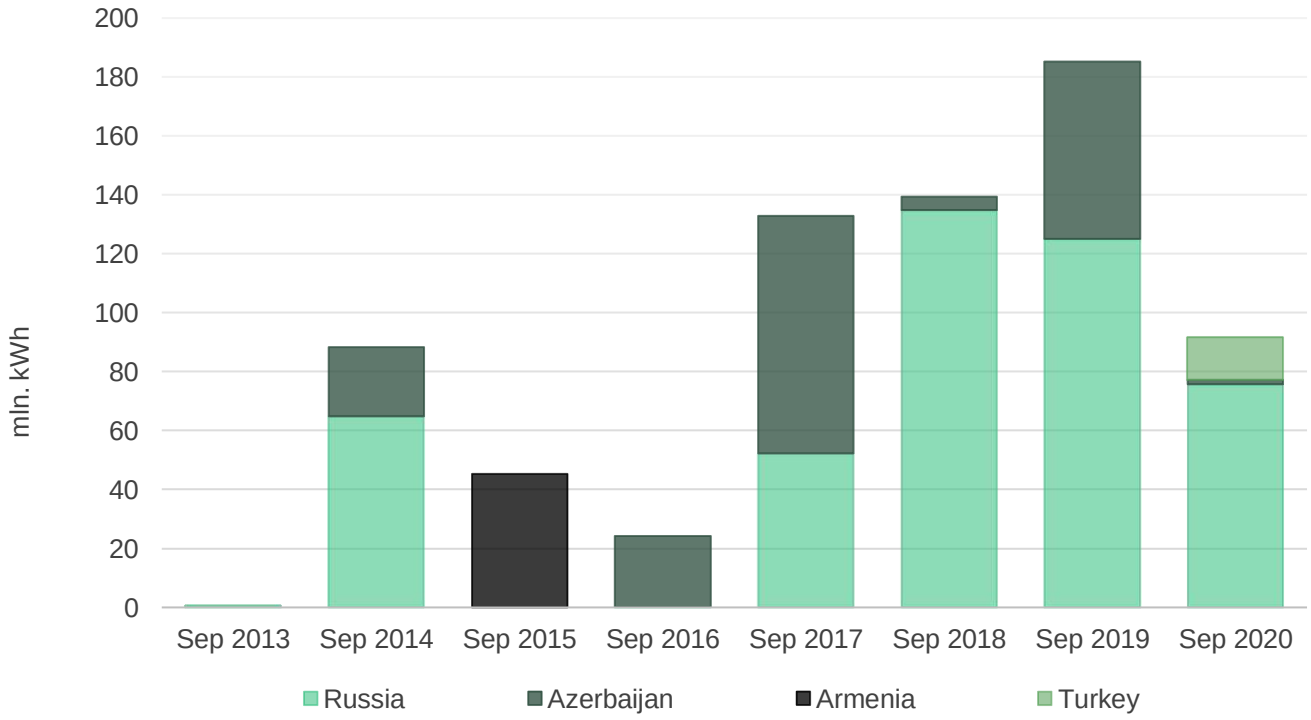
Figure 8 - Electricity Consumption Growth (%, y/y)



Source: ESCO

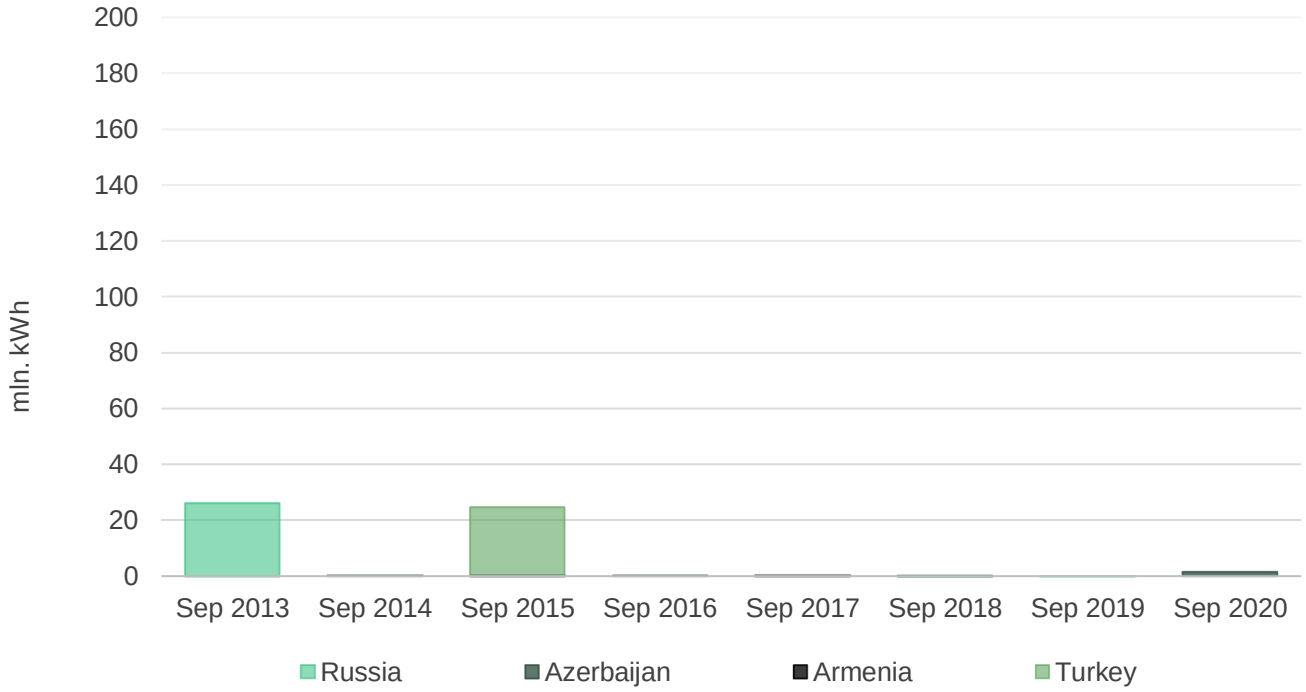
In September 2020, Georgia imported 92 mln. kWh of electricity (compared to 185 mln. kWh September 2019), 82.6% of which came from Russia, 15.8% came from Turkey, and 1.6% came from Azerbaijan (Figure 9). In September 2020, Georgia exported 1.44 mln. kWh (0.001 mln. kWh in September 2019), 100% of which was exported to Azerbaijan (Figure 10). There was no transit of electricity in September 2020 compared to 33 mln kWh transit from Azerbaijan to Turkey.

Figure 9 - Imports by Year



Source: ESCO

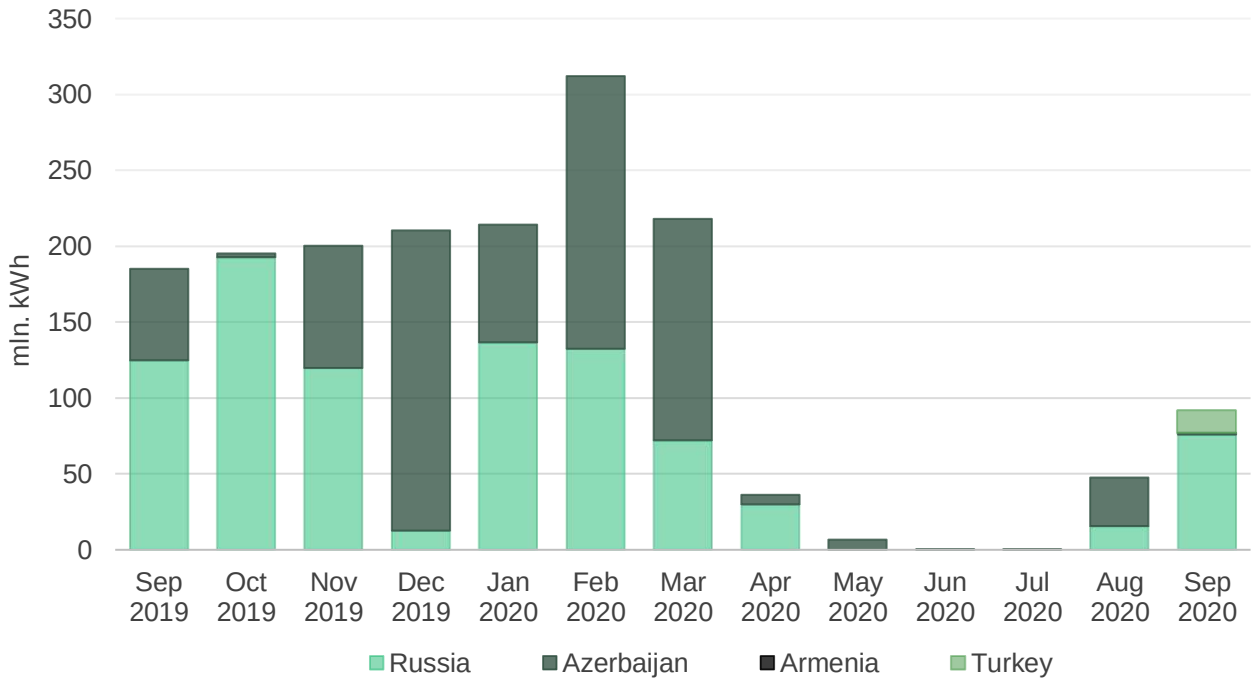
Figure 10 **- Exports by Year**



Source: ESCO

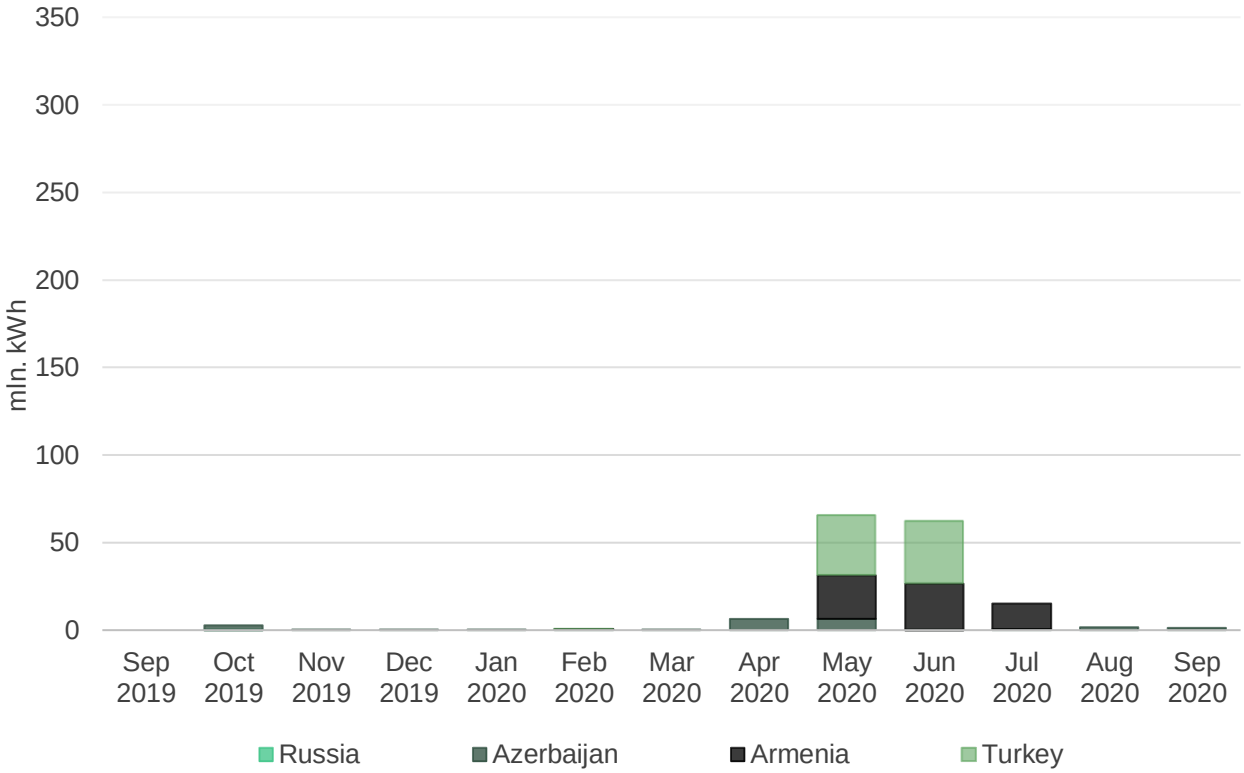
In September 2020, electricity imports have substantially decreased compared to the previous year due to economic slowdown induced by COVID-related restrictions (Figure 11, 12), while exports have increased. The same trend was observed in July and August, as well.

Figure 11 **- Imports by Month**



Source: ESCO

Figure 12 **- Exports by Month**

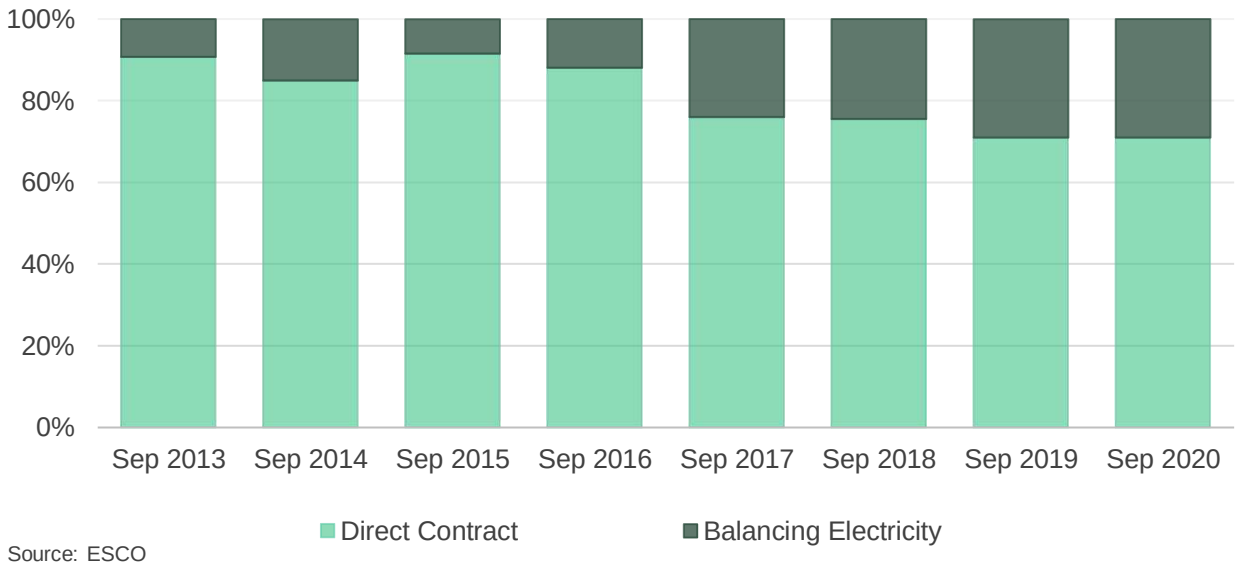


Source: ESCO

1. Market Operations

In September 2020, 71% of the electricity sold on/from the local market was sold through direct contracts. The remaining 29% was sold as balancing electricity (Figure 13).

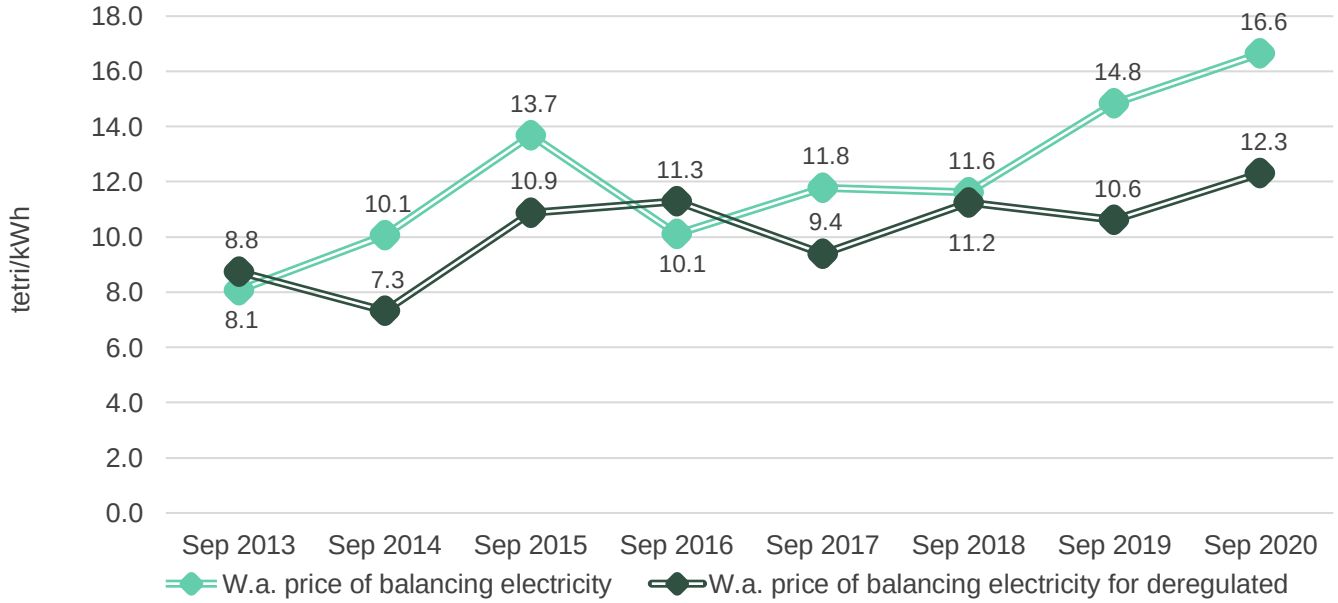
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In September 2020, the weighted average price of balancing electricity was 16.6 tetri/kWh, which corresponds to an annual increase of 12% compared to September 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).

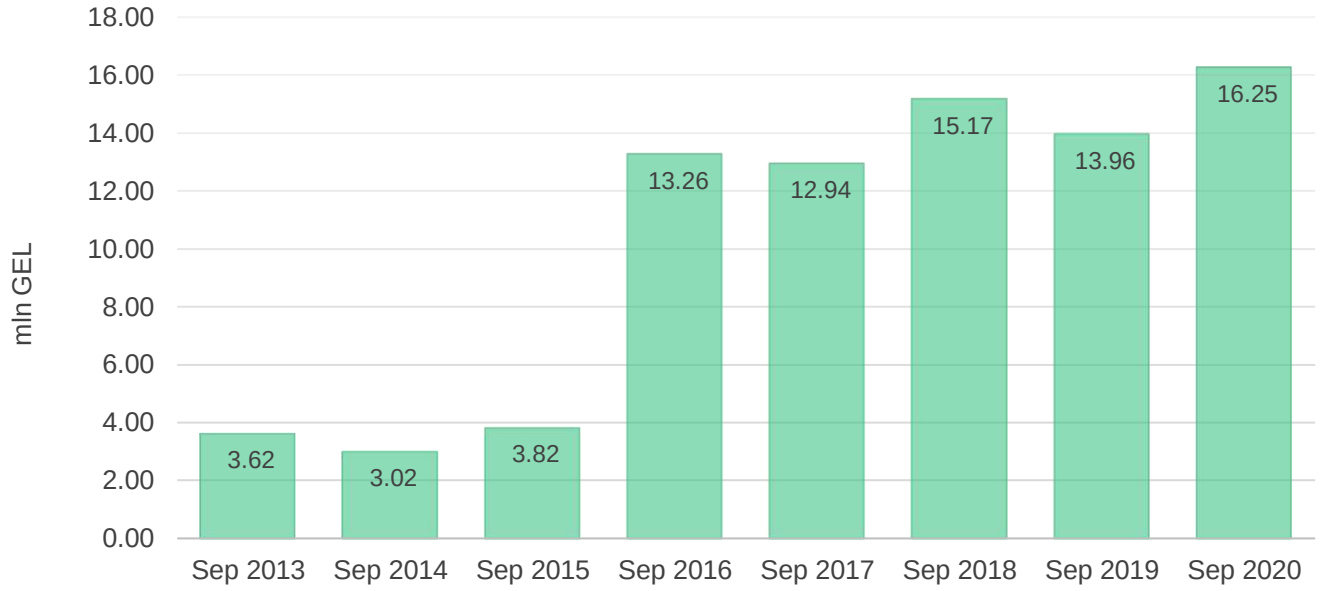
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in September 2020 were roughly 16.25 mln. GEL, which represents a 16.4% increase compared to September 2019 (Figure 15).

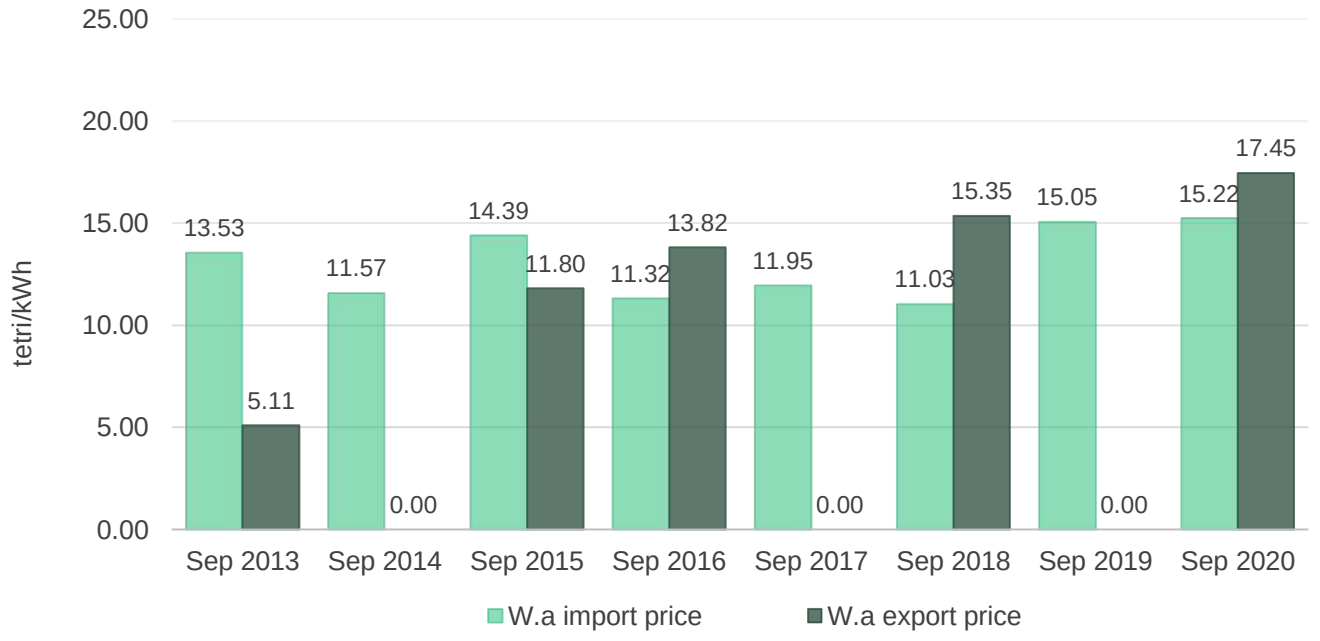
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The weighted average electricity import price in September 2020 decreased by 5.46% in USD, on an annual basis, and increased by 1.16% in GEL (from 5.08 ¢ or 15.05 tetri per kWh in September 2019 to 4.80 ¢ or 15.22 tetri per kWh in September 2020) (Figure 16). The weighted average import price decreased by 0.77% and 3.86% in GEL and USD, respectively, on a monthly basis (import price was 4.99 ¢ or 15.34 tetri per kWh in August 2020). The weighted average electricity export price in September 2020 was 5.50 ¢ or 17.45 tetri per kWh (Figure 17). The weighted average export price increased by 3.18% in GEL and decreased by 0.03% in USD on a monthly basis (export price was 5.50 ¢ or 16.91 tetri per kWh in August 2020). There were no electricity exports in September 2019.

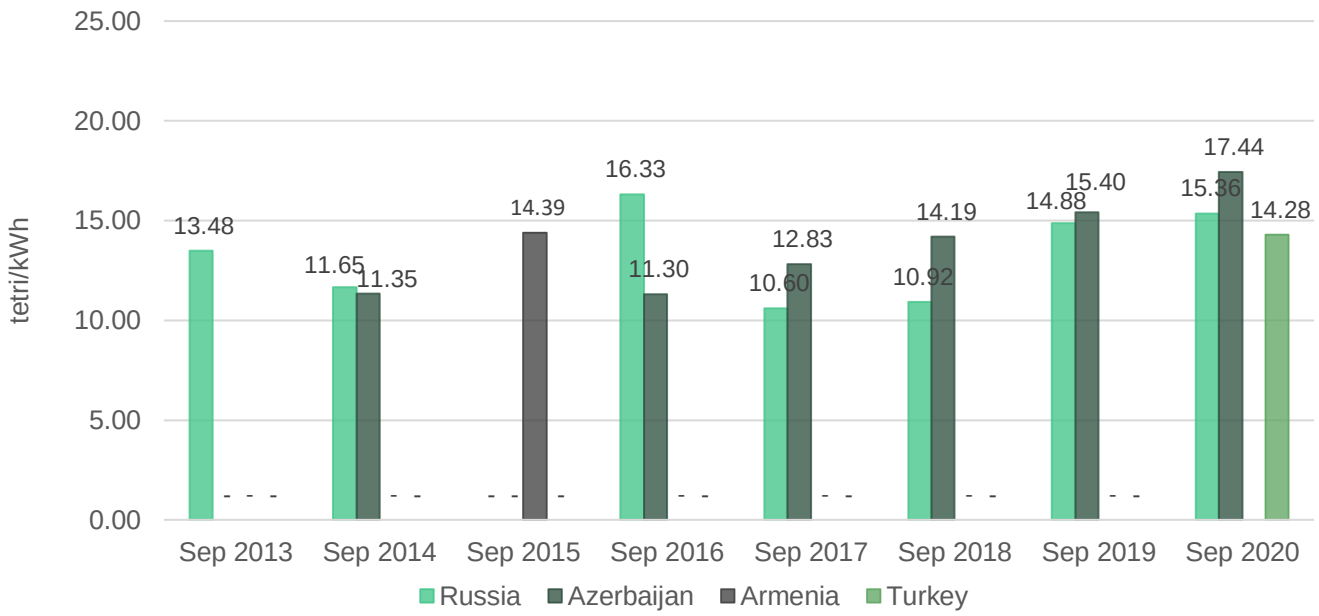
Figure 16 - Prices Import/Export



Source: ESCO

Import prices from Azerbaijan, Russia, and Turkey stood at 5.50 ¢ or 17.44 tetri per kWh, 4.84 ¢ or 15.36 tetri per kWh, and 4.50 ¢ or 14.28 tetri per kWh, respectively (Figure 17).

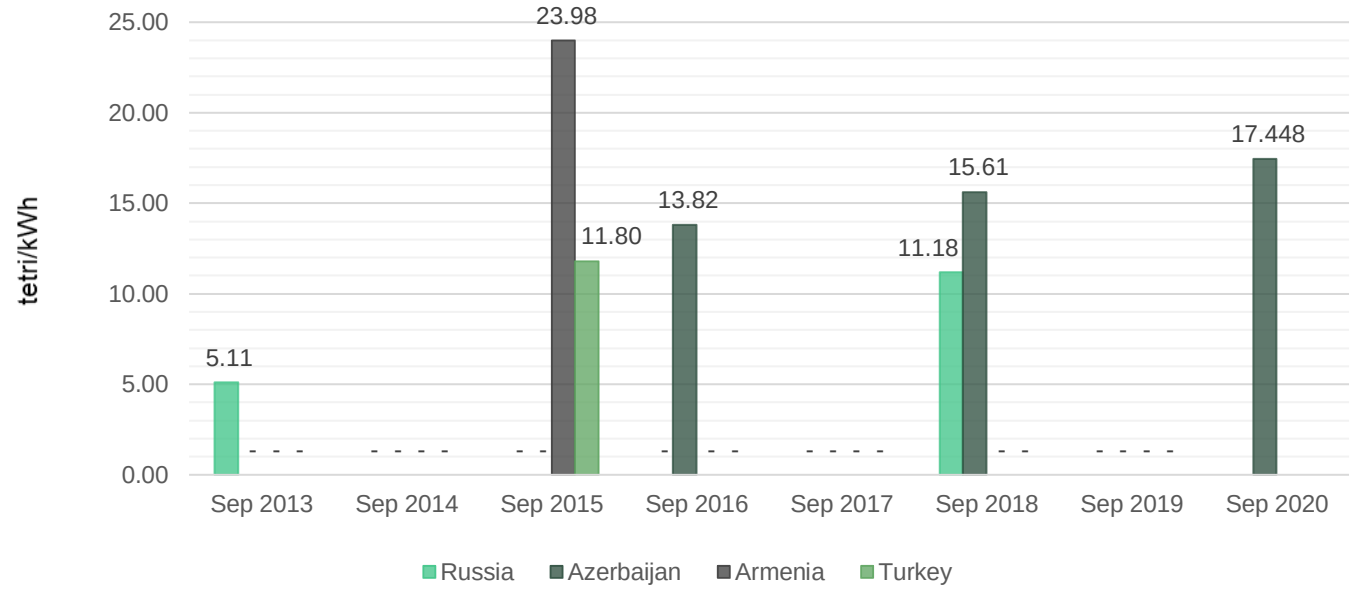
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In September 2020, the electricity export price to Azerbaijan stood at 5.50 ¢ or 17.45 tetri per kWh (Figure 18).

Figure 18 - Export Prices by Countries

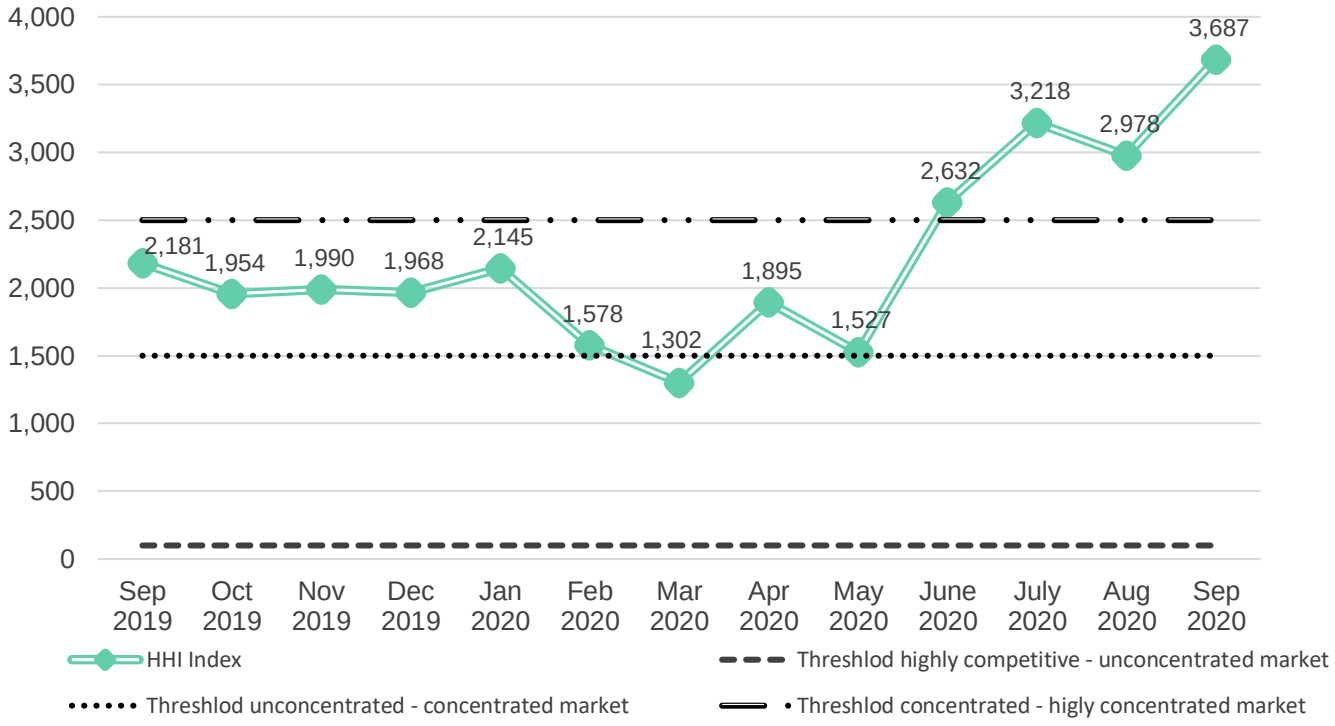


Source: ESCO/Geostat

2. Market Concentration

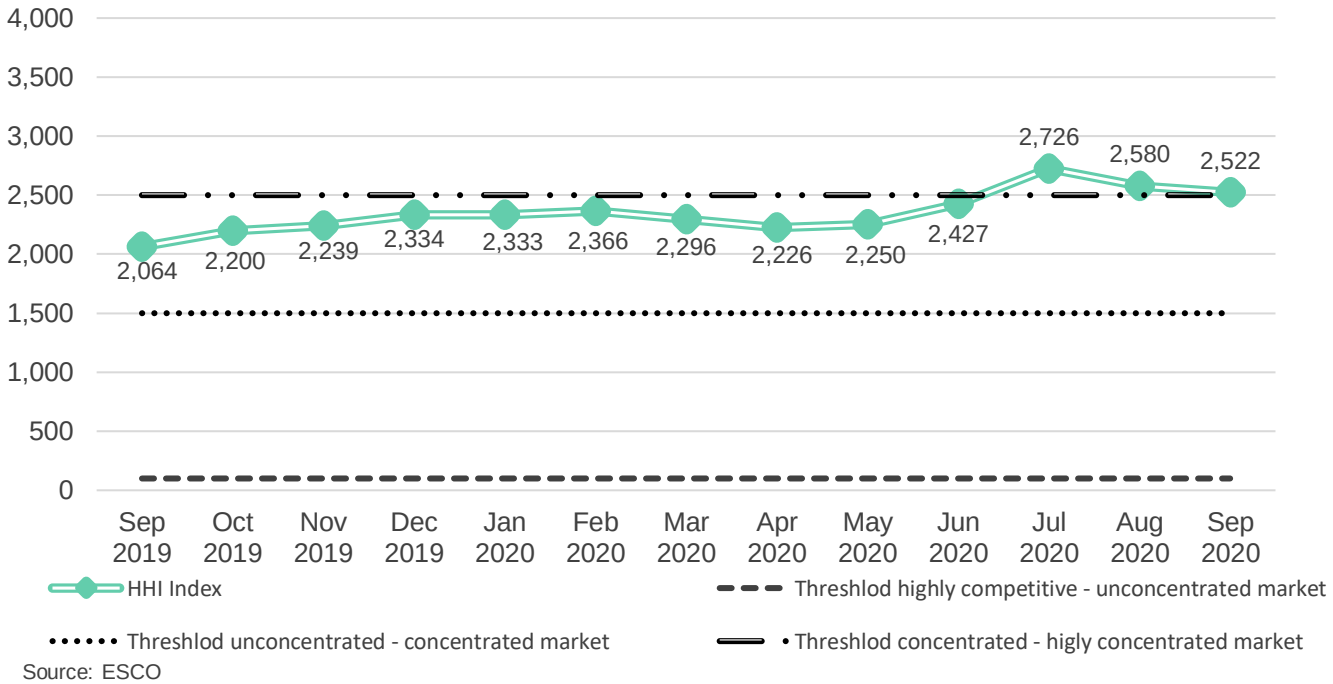
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In September 2020, the Georgian electricity generation market was above the threshold of a highly concentrated market, with an HHI value of 3,687 (Figure 19). This is significantly higher than the level in September 2019 (with an HHI value of 2,181), and higher than the level in August 2020 (HHI was 2,978). As for the consumption segment, in September 2020 the HHI consumption index stayed above the threshold for a highly concentrated market, reaching the value of 2,522 (above the level for September 2019, but lower than the level for August 2020).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO