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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE

ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- There was a decrease in total electricity generation on a yearly basis and an increase on a monthly basis. The annual decrease in HPP generation more than offset an increase in TPP and WPP generation.
- Consumption increased on a yearly and increased on a monthly basis, driven by Abkhazian demand.
- Consumption exceeded generation by 289 mln. kWh.
- The main import partner country was Azerbaijan.
- The (cheaper) imports from Russia reached an historic high.
- The main export partner country was Azerbaijan.
- The weighted average price of imports decreased on a yearly and on a monthly basis.
- The weighted average price of exports increased on a monthly basis.
- The Georgian electricity generation market was below the threshold of highly concentrated market.
- The Georgian electricity consumption market was slightly below the threshold of highly concentrated market.

ABBREVIATION USED

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

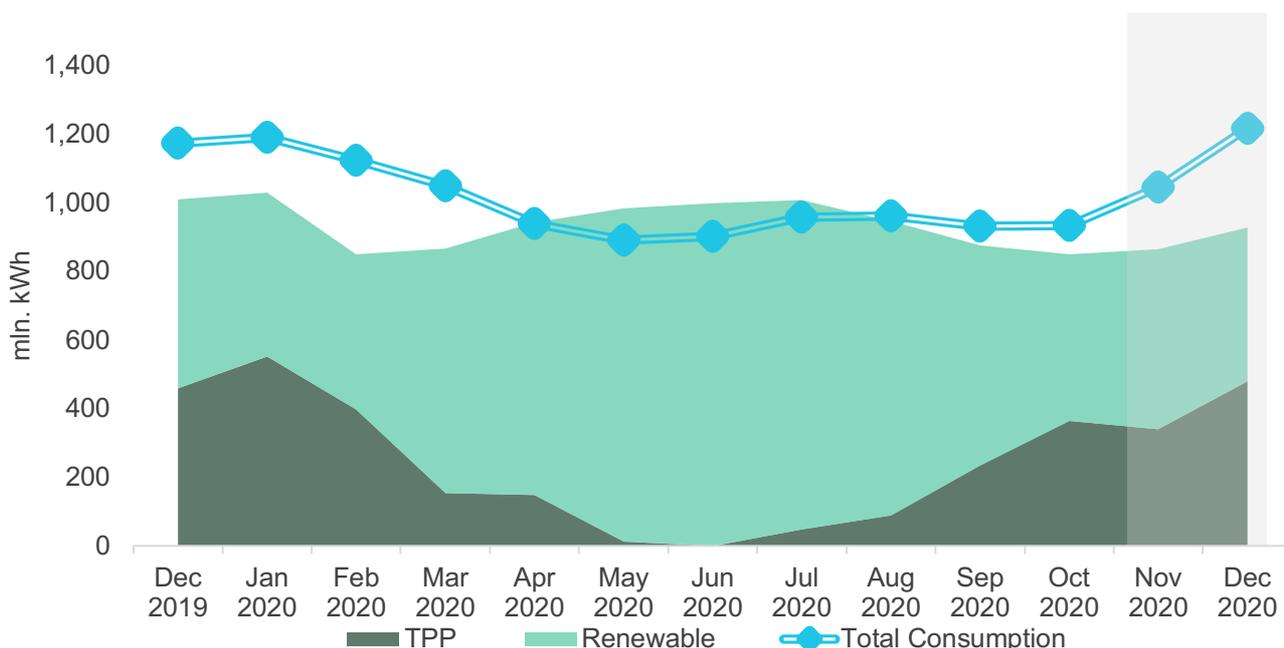
Generation – Consumption – Trade

In December 2020, Georgian power plants generated 930 mln. kWh of electricity (Figure 1). This represents an 8% decrease in total generation, compared to the previous year (December 2019, the total generation was 1,012 mln. kWh). The decrease in generation on a yearly basis comes from the decrease of 19% in hydro power generation, offsetting the 4% annual increases in thermal and wind power generation each.

On a monthly basis, generation increased by approximately 7% (in November 2020, total generation was 865 mln. kWh) (Figure 1). The monthly increase in total generation was the result of the increase of 41% in thermal power generation, while there was a decrease of 1% and 14% in wind and hydro power generation, respectively.

The consumption of electricity on the local market was 1,219 mln. kWh (+4% and +16% compared to December 2019, and November 2020, respectively) (Figure 1). In December 2020, power consumption exceeded generation by 289 mln. kWh which was 31% of total generation (in December 2019 difference between total generation and consumption resulted in a shortage of 164 mln. kWh, around 16% of the total generation for the month).

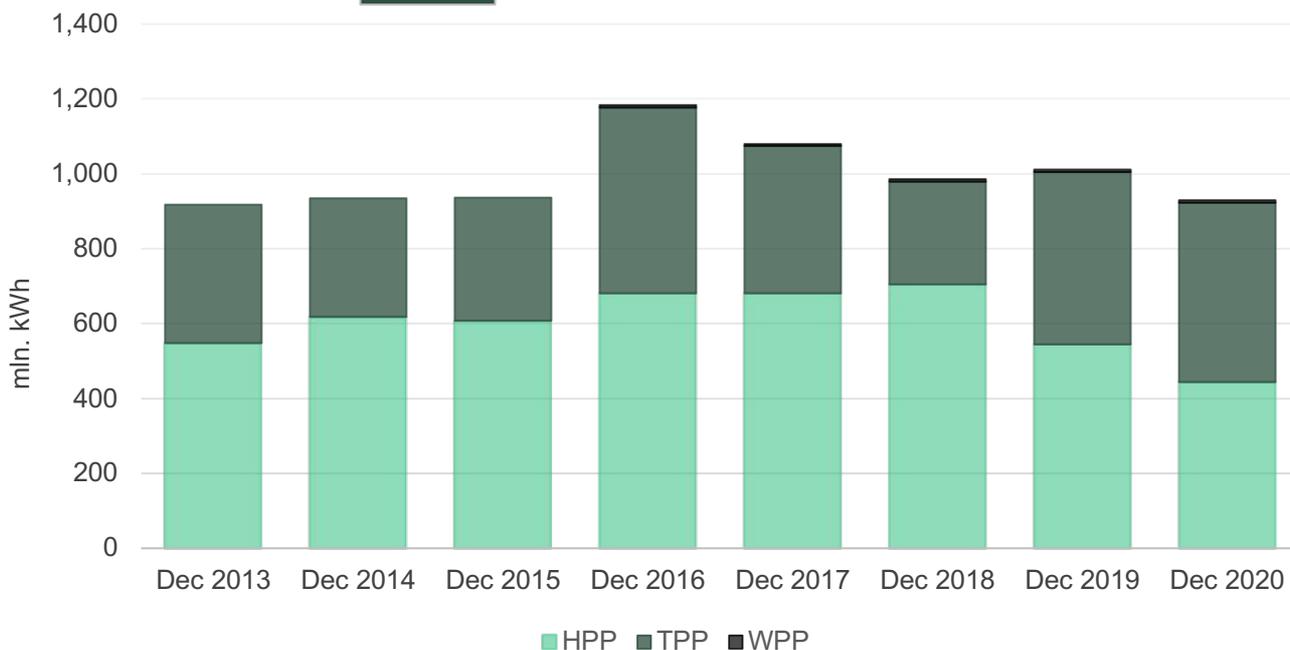
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

Most generation came from thermal power plants. In December 2020, thermal power (TPP) generation amounted to 479 mln. kWh (51.57% of total), while hydro power (HPP) generation was 443 mln. kWh (47.67% of total), and wind power (WPP) generation was 7 mln. kWh (0.76% of total) (Figure 2).

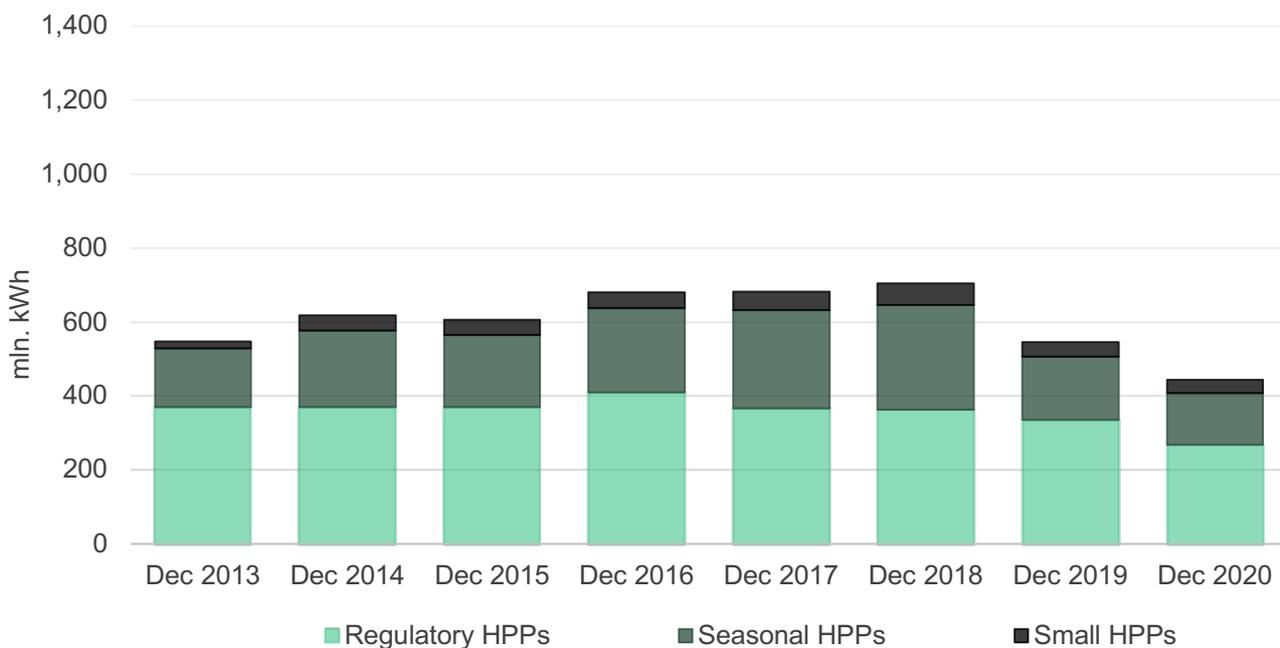
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 60% (268 mln. kWh) of electricity, while seasonal and small HPPs produced 32% (141 mln. kWh) and 8% (35 mln. kWh), respectively (Figure 3).

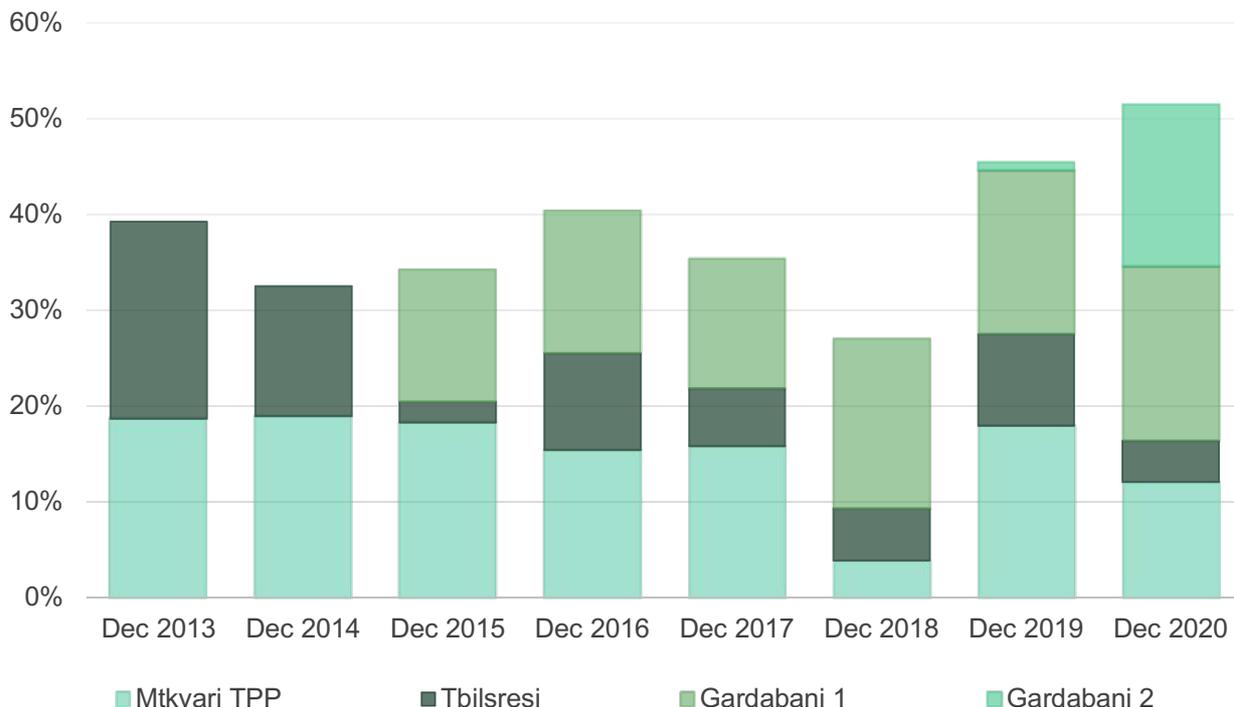
Figure 3 - HPP Generation by Type



Source: ESCO

Among thermal power plants, Gardabani 1 TPP generated 169 mln. kWh, 35% of total thermal power generation and just 18% of total generation. Gardabani 2 TPP generated 157 mln. kWh, 33% of total thermal power generation and 17% of total generation (Figure 4).

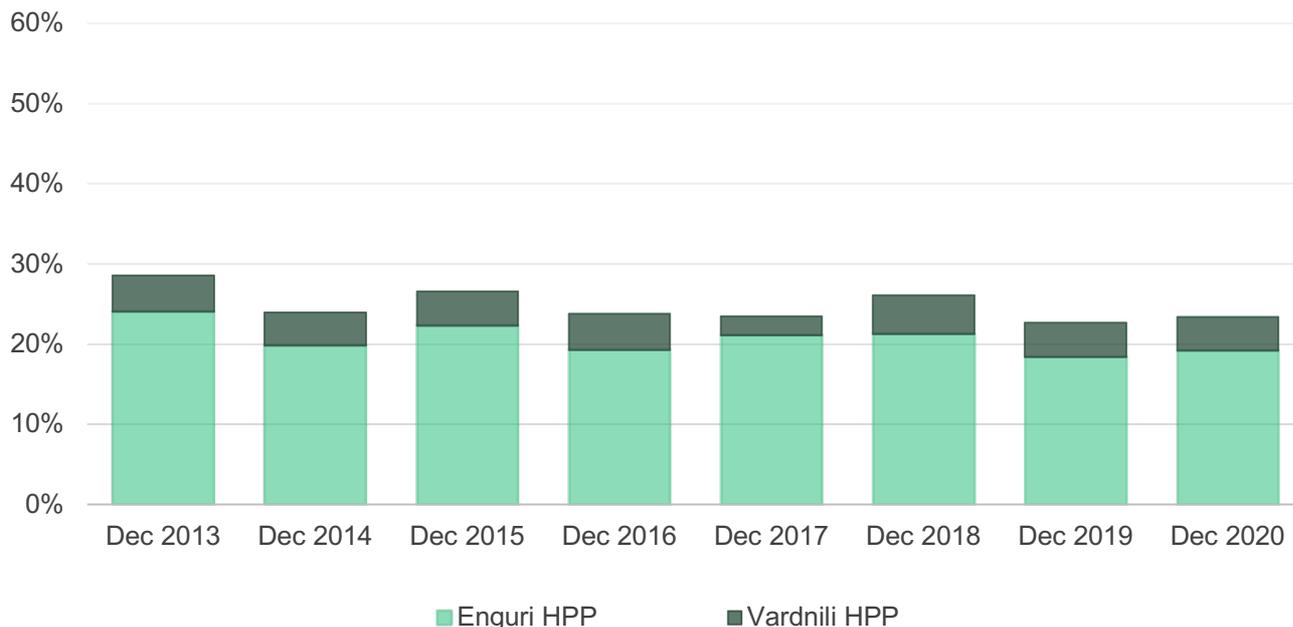
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

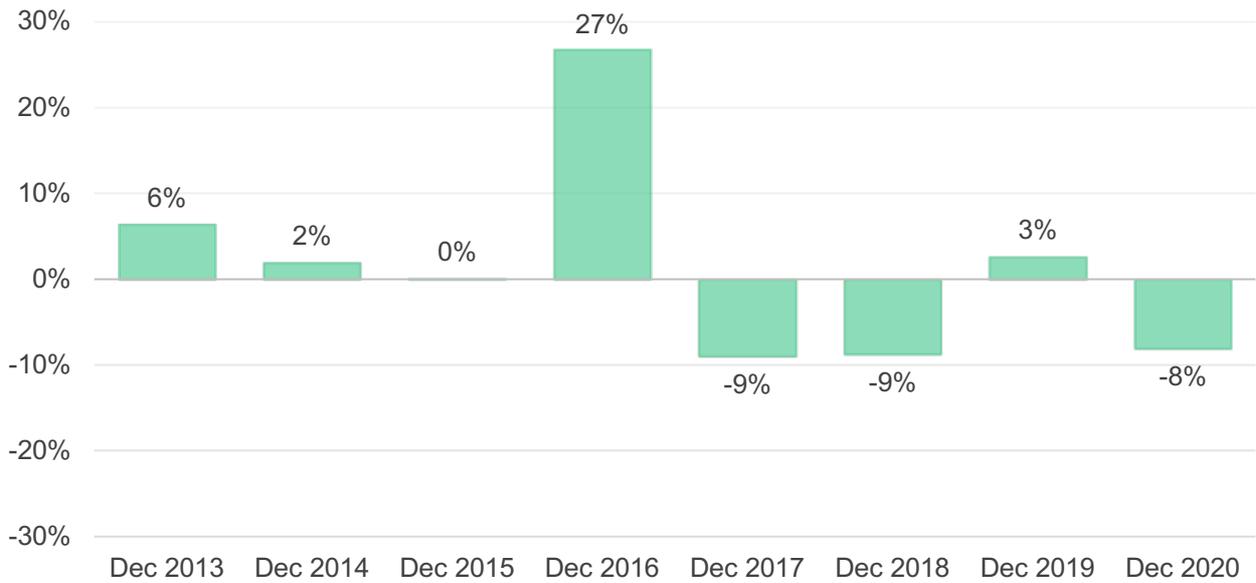
As for HPP generation, the large HPPs, Enguri and Vardnili generated 218 mln. kWh (81% of generation for regulatory HPPs), with 178 mln. kWh and 39 mln. kWh, respectively. Power generated by Enguri and Vardnili represented around 23% of the total generation (Figure 5). Overall, total generation decreased by 8% compared to December 2019 (Figure 6).

Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

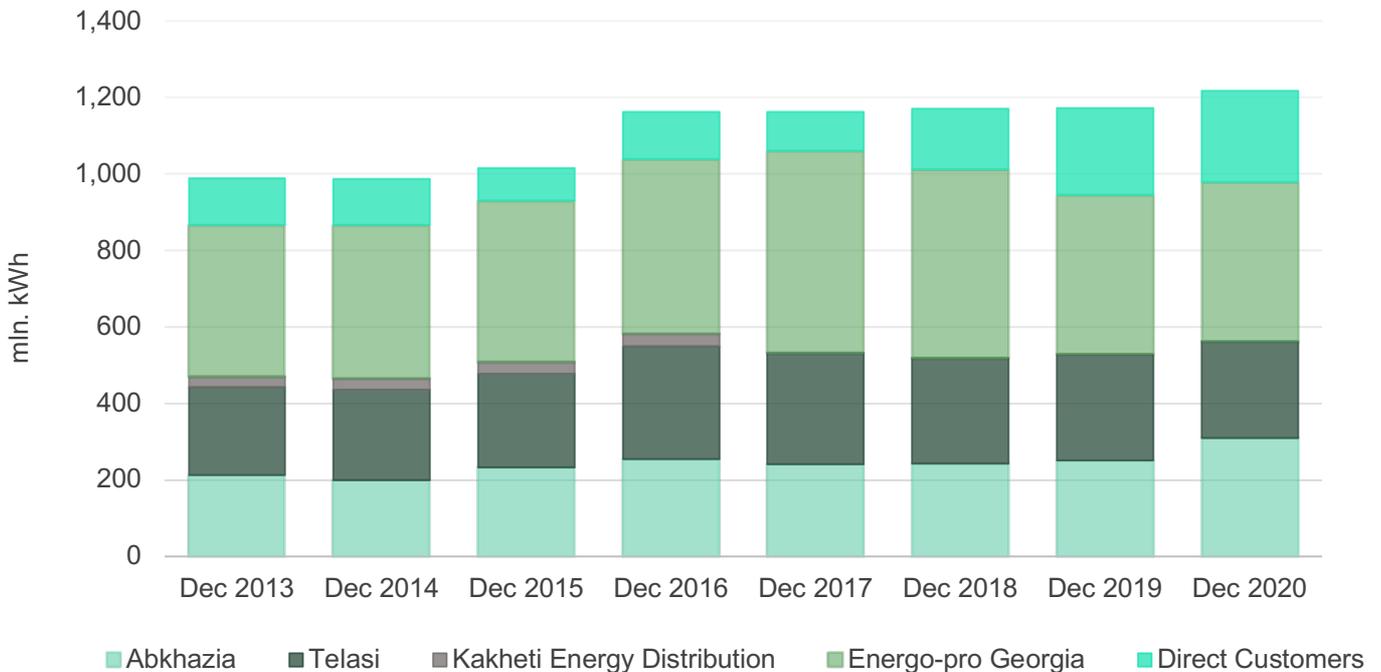
Figure 6 - Growth of Generation (% , y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia¹ (34% - 415 mln. kWh), Abkhazia (25% - 310 mln. kWh), Telasi (21% - 253 mln. kWh), and direct customers (20% - 239 mln. kWh) (Figure 7). Annual demand from Energo-Pro and Telasi decreased by 0.2% and 9.3%, respectively, while the demand from Abkhazia and direct customers increased by 23.5% and 5.2%, respectively. Overall, there was an annual increase of 4% in the total electricity consumption in December 2020, compared to December 2019 (Figure 8).

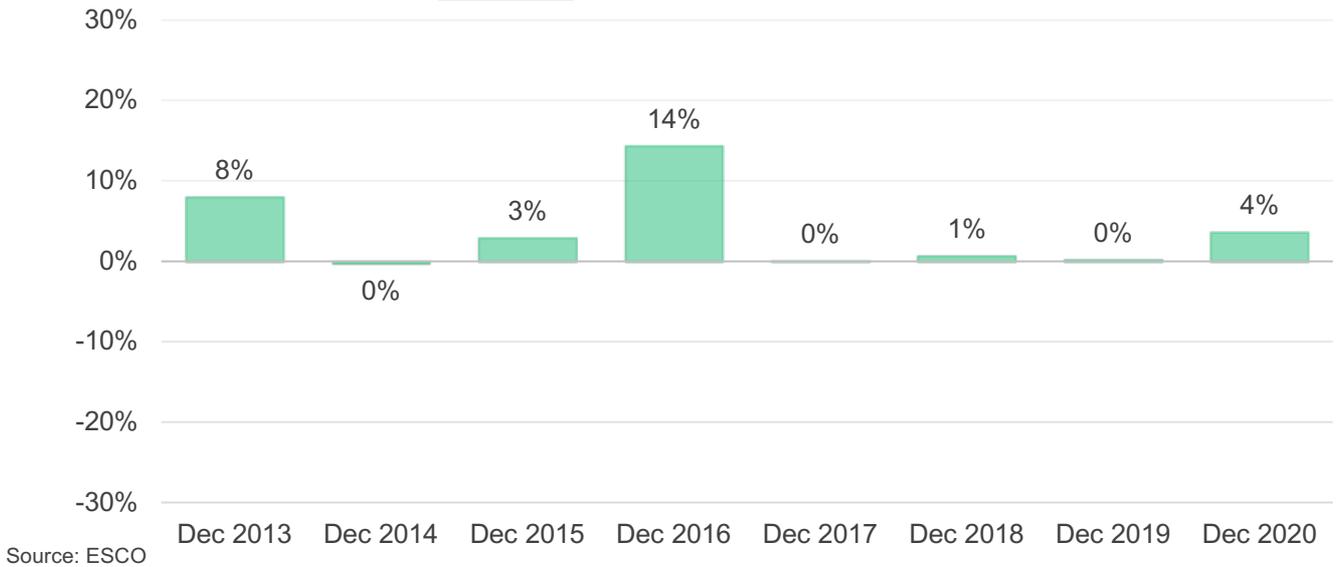
Figure 7 - Electricity Consumption by Type of Customer



Source: ESCO

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

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



In December 2020, Georgia imported 339 mln. kWh of electricity (compared to 211 mln. kWh December 2019), 45% of which came from Azerbaijan, 26% came from Turkey and 29% came from Russia (Figure 9). In December 2020, Georgia exported 0.085 mln. kWh (0.0001 mln. kWh in December 2019), 100% of which was exported to Azerbaijan (Figure 10). There was no transit of electricity in December 2020, while in December 2019, the electricity transit from Azerbaijan to Turkey comprised 19 mln. kWh.

November and December 2020 are two consecutive months after May 2020 characterized by an annual increase in imports. Compared to December 2019, imports increased by approximately 61% (Figure 9).

Figure 9 - Imports by Year

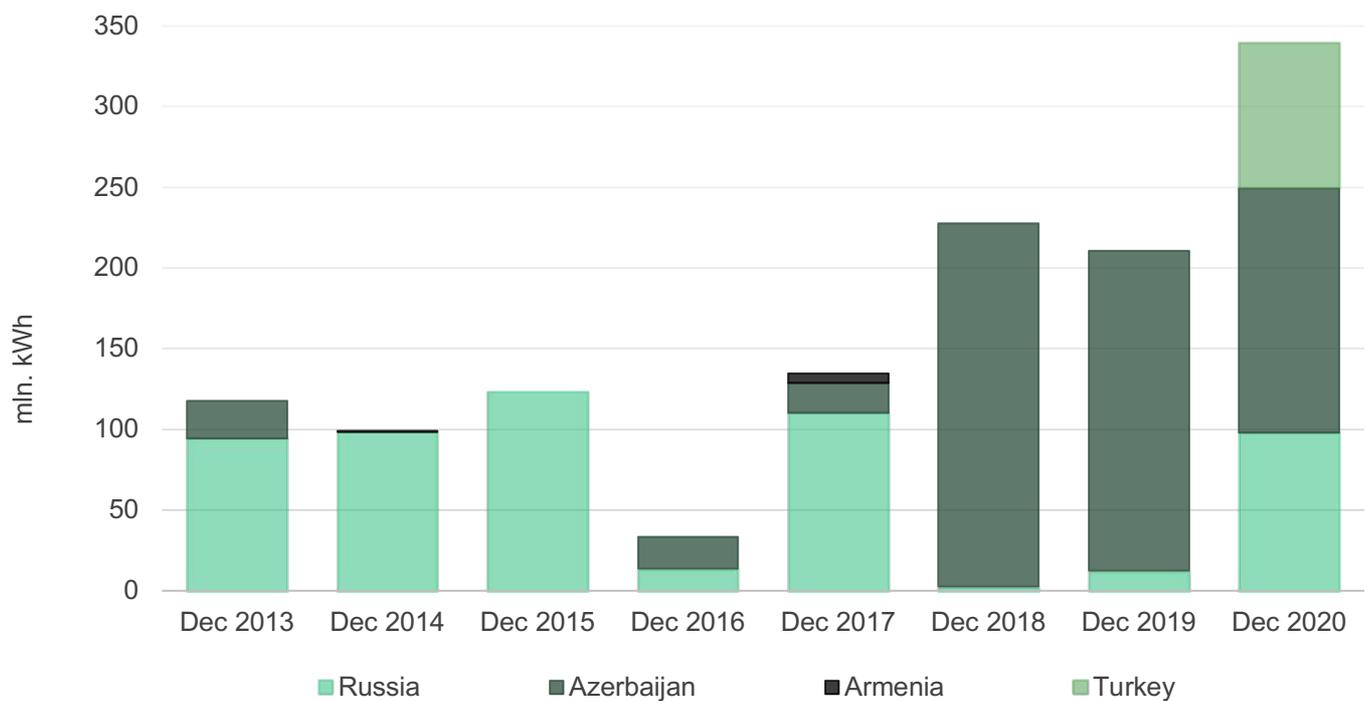
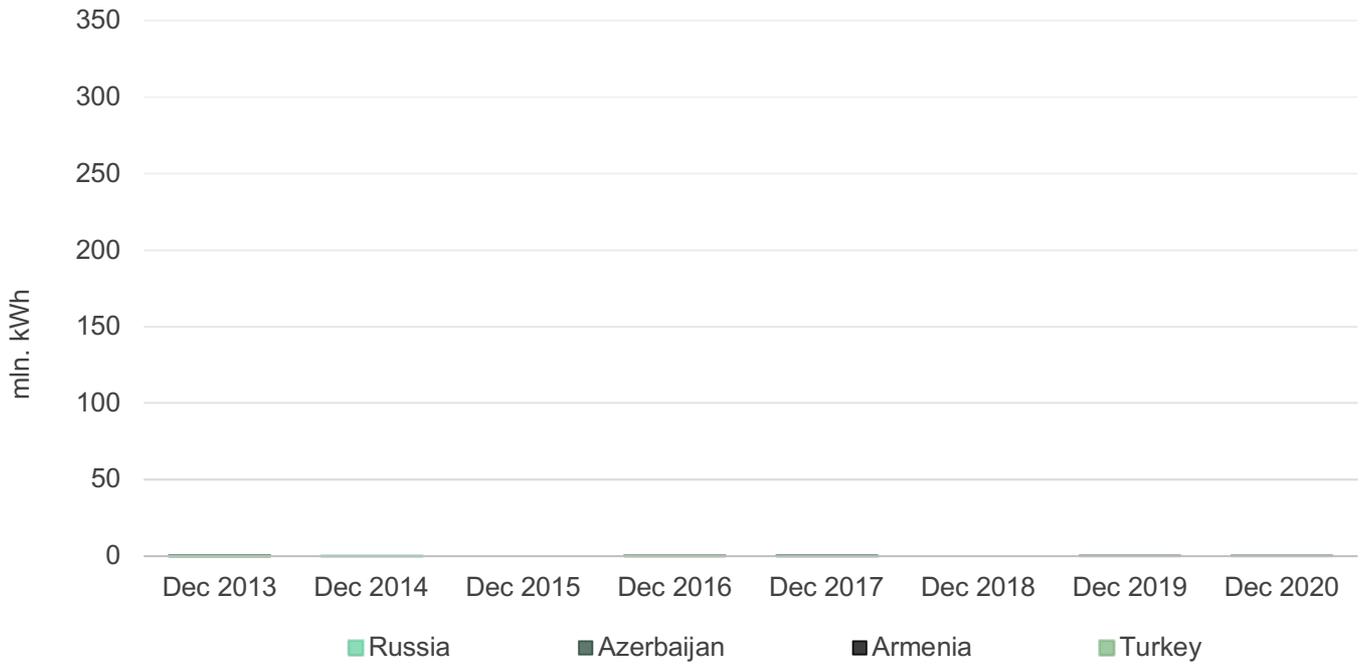


Figure 10

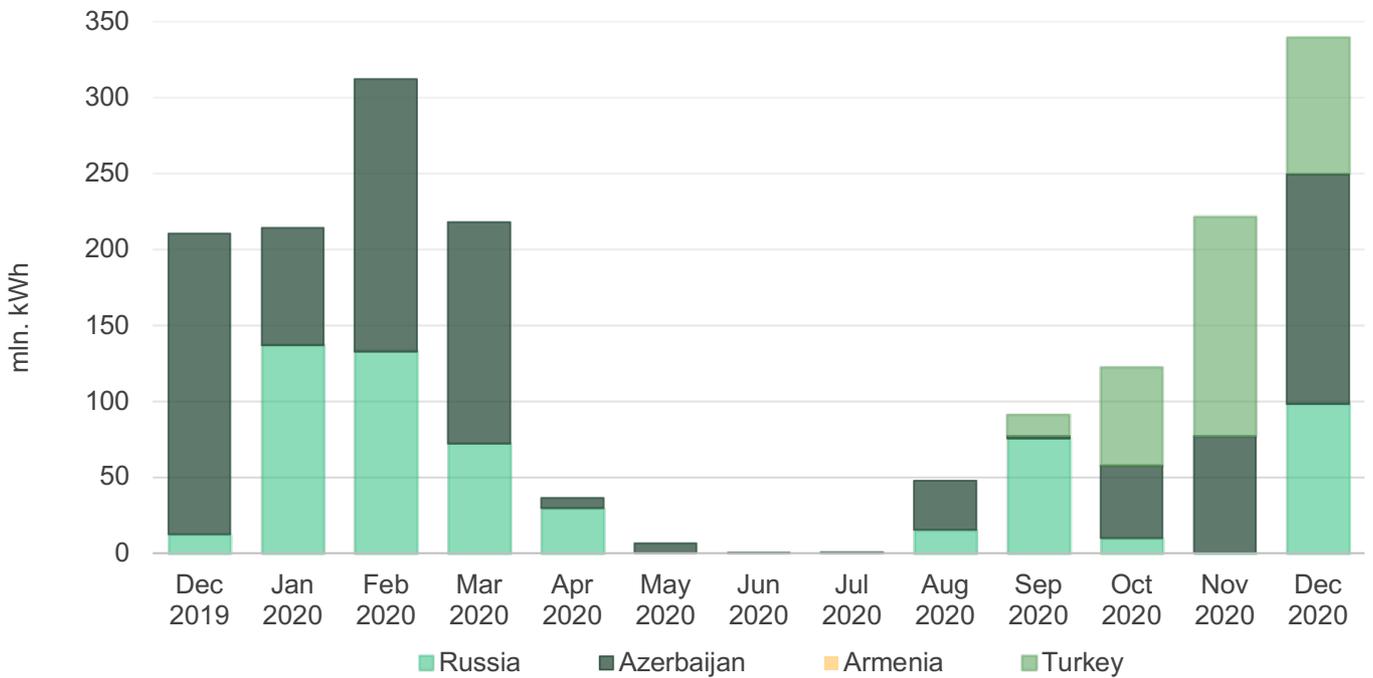
- Exports by Year



Source: ESCO

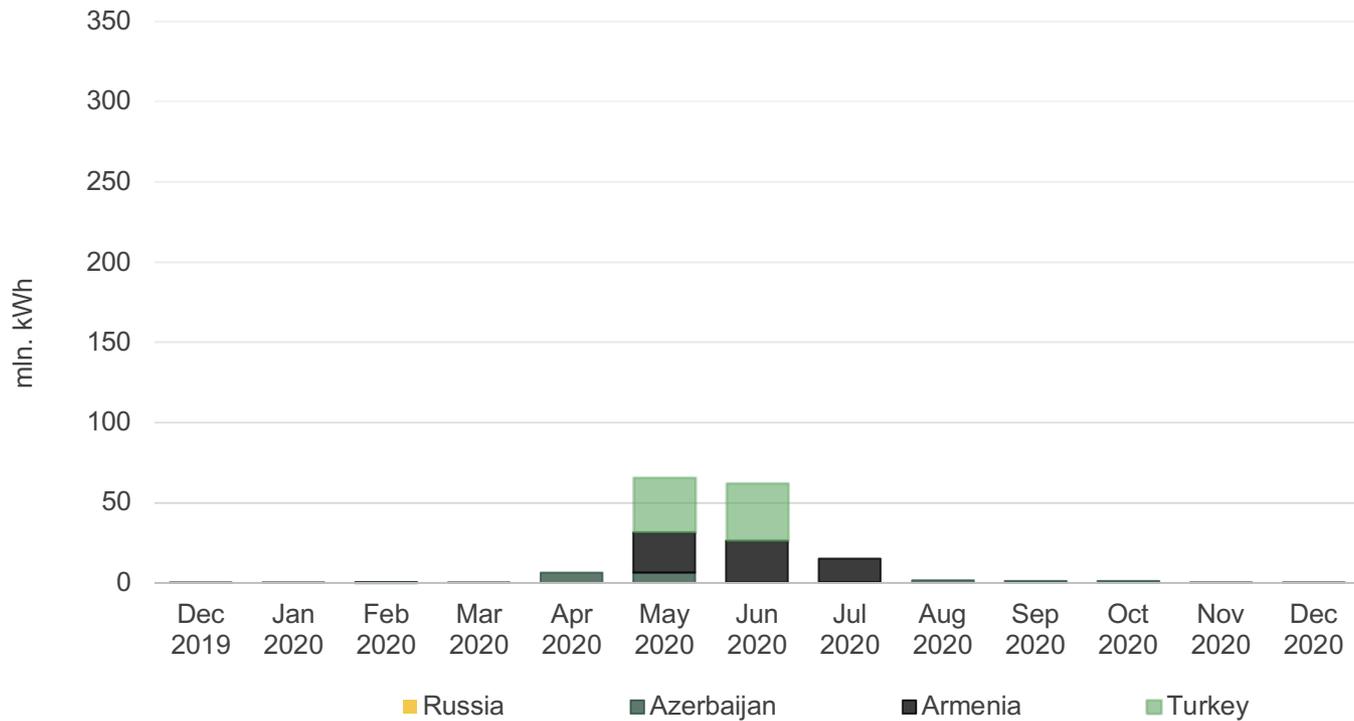
In December 2020 electricity imports increased from 221 mln. kWh to 339 mln. kWh compared to November 2020 (Figure 11), while electricity export increased from 0.008 mln. kWh to 0.085 mln. kWh (Figure 12).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

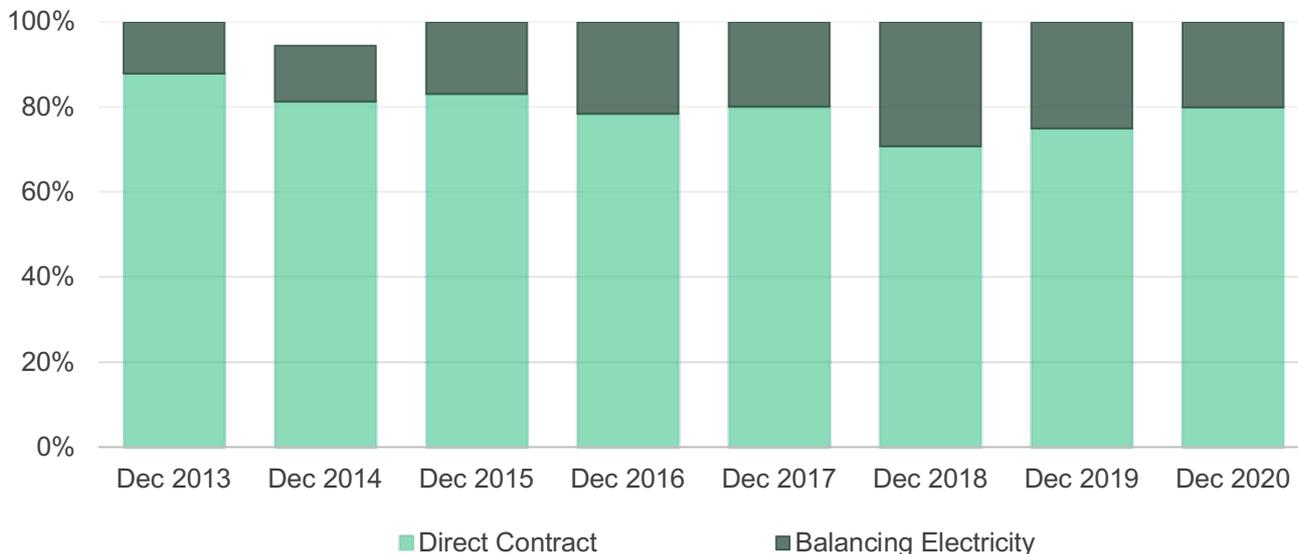


Source: ESCO

1. Market Operations

In December 2020, 80% of the electricity sold on/from the local market was sold through direct contracts. The remaining 20% was sold as balancing electricity (Figure 13).

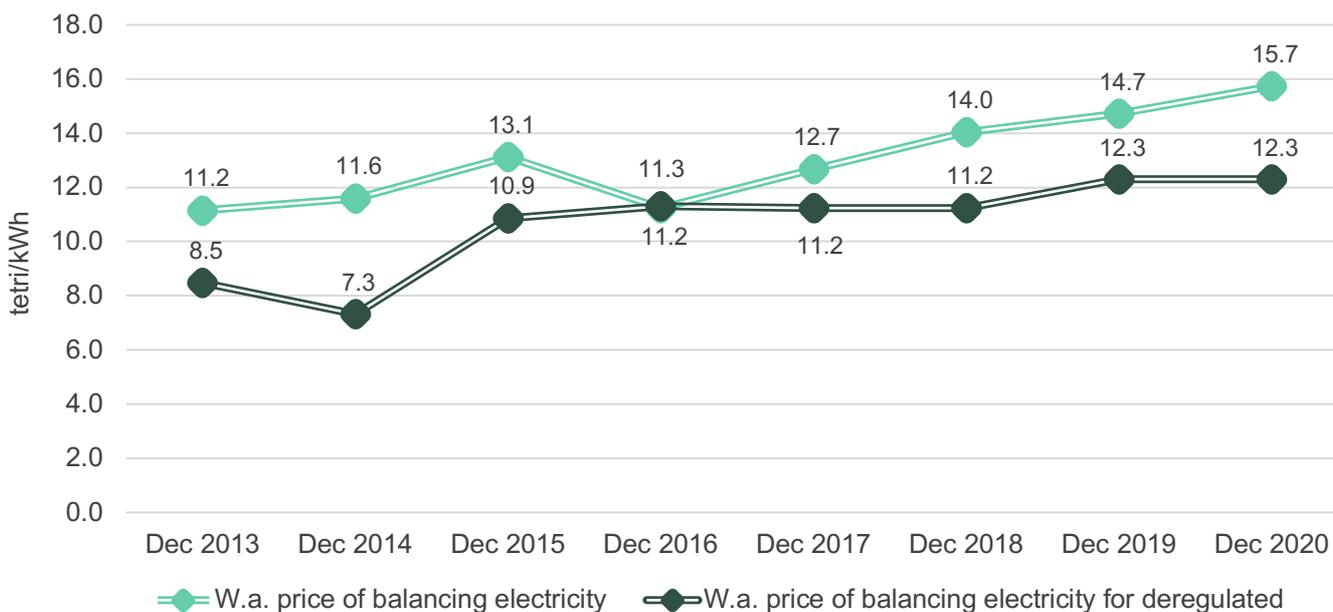
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In December 2020, the weighted average price of balancing electricity was 15.7 tetri/kWh, which corresponds to an annual increase of 7% compared to December 2019. As for the weighted average price for deregulated (small) HPPs, it was 12.3 tetri/kWh, and remained the same as the corresponding month of the previous year (Figure 14).

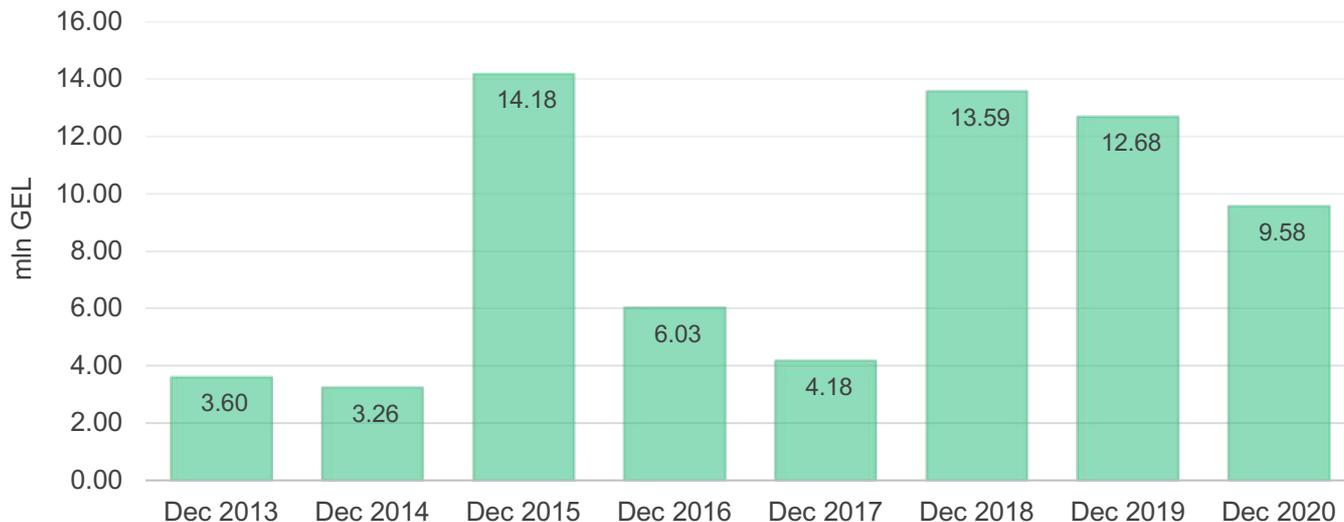
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in December 2020 were roughly 9.58 mln. GEL, which represents a 24% decrease compared to December 2019 (Figure 15).

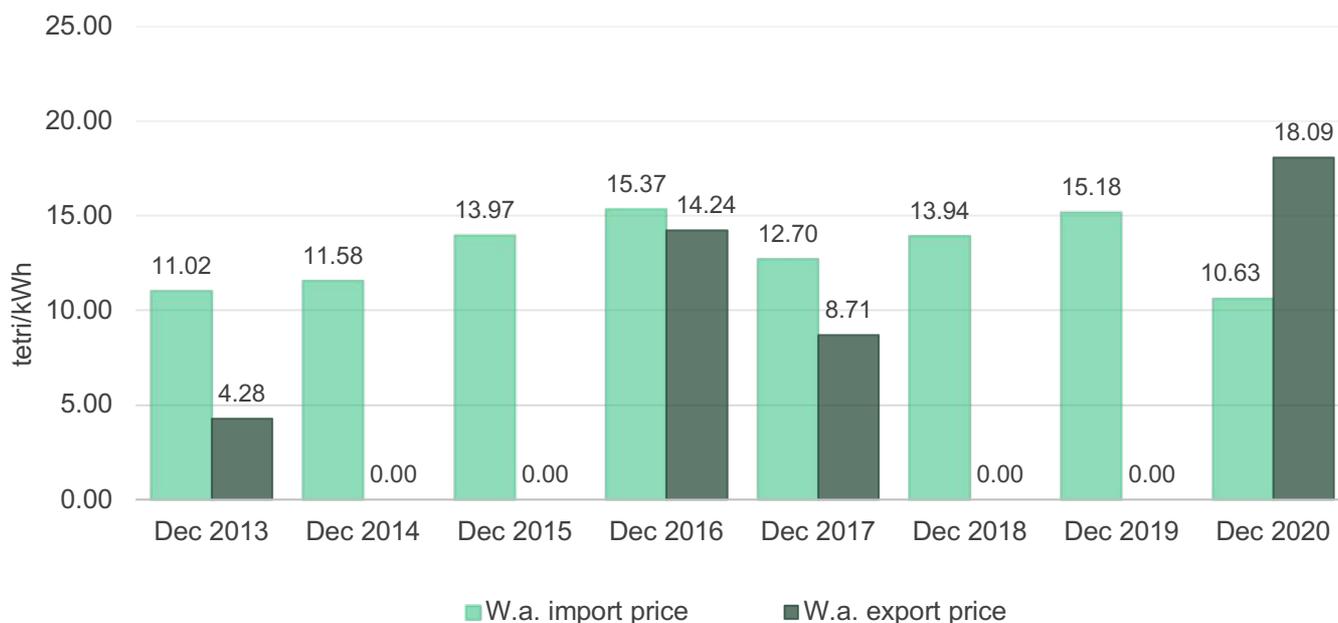
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The weighted average electricity import price in December 2020 decreased by 38% in USD, on an annual basis, and decreased by approximately 30% in GEL (from 5.22 ¢ or 15.18 tetri per kWh in December 2019 to 3.24 ¢ or 10.63 tetri per kWh in December 2020) (Figure 16). The weighted average import price decreased by 28% and 29% in USD and GEL, respectively, on a monthly basis (import price was 4.51 ¢ or 14.92 tetri per kWh in November 2020). The weighted average electricity export price in December 2020 increased by 0.11% in USD and decreased by 0.57% in GEL on a monthly basis (from 5.50 ¢ or 18.20 tetri per kWh in November 2020 to 5.51 ¢ or 18.09 tetri per kWh in December 2020) (Figure 17). There was virtually no export in December 2019, so it is impossible to assess the annual growth rate of export prices.

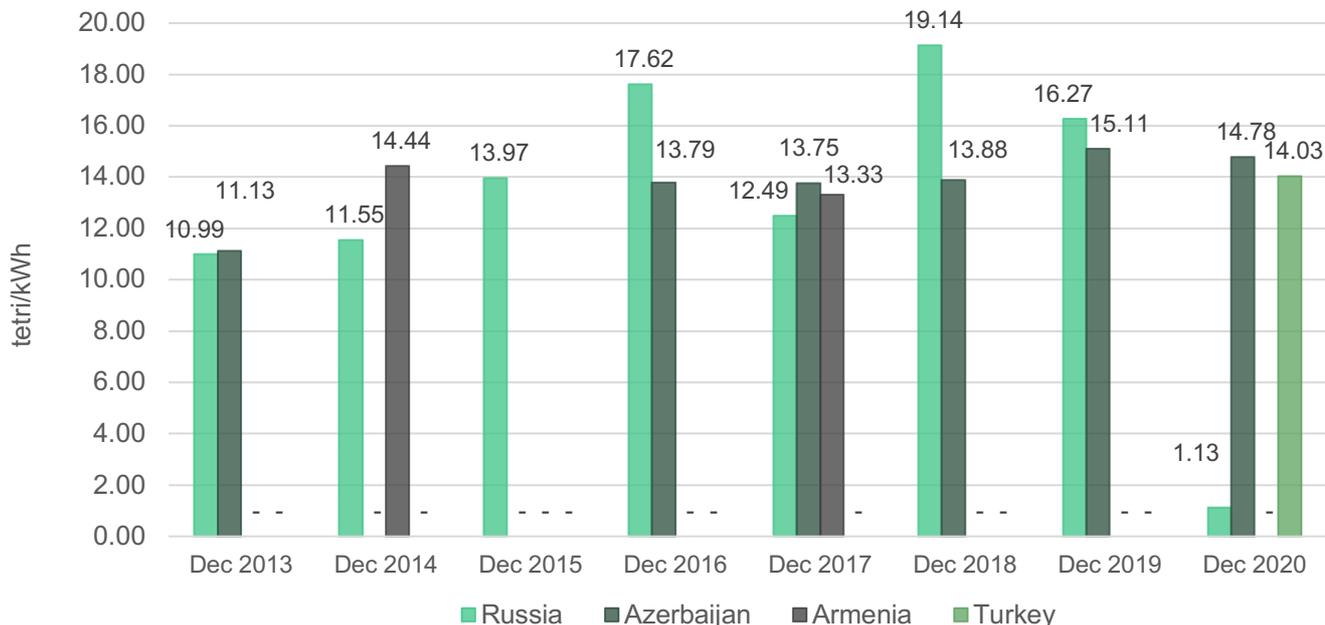
Figure 16 - Prices Import/Export



Source: ESCO

Import prices from Russia, Azerbaijan, and Turkey stood at 0.34 ¢ or 1.13 tetri per kWh, 4.50 ¢ or 14.78 tetri per kWh, and 4.27 ¢ or 14.03 tetri per kWh, respectively (Figure 17).

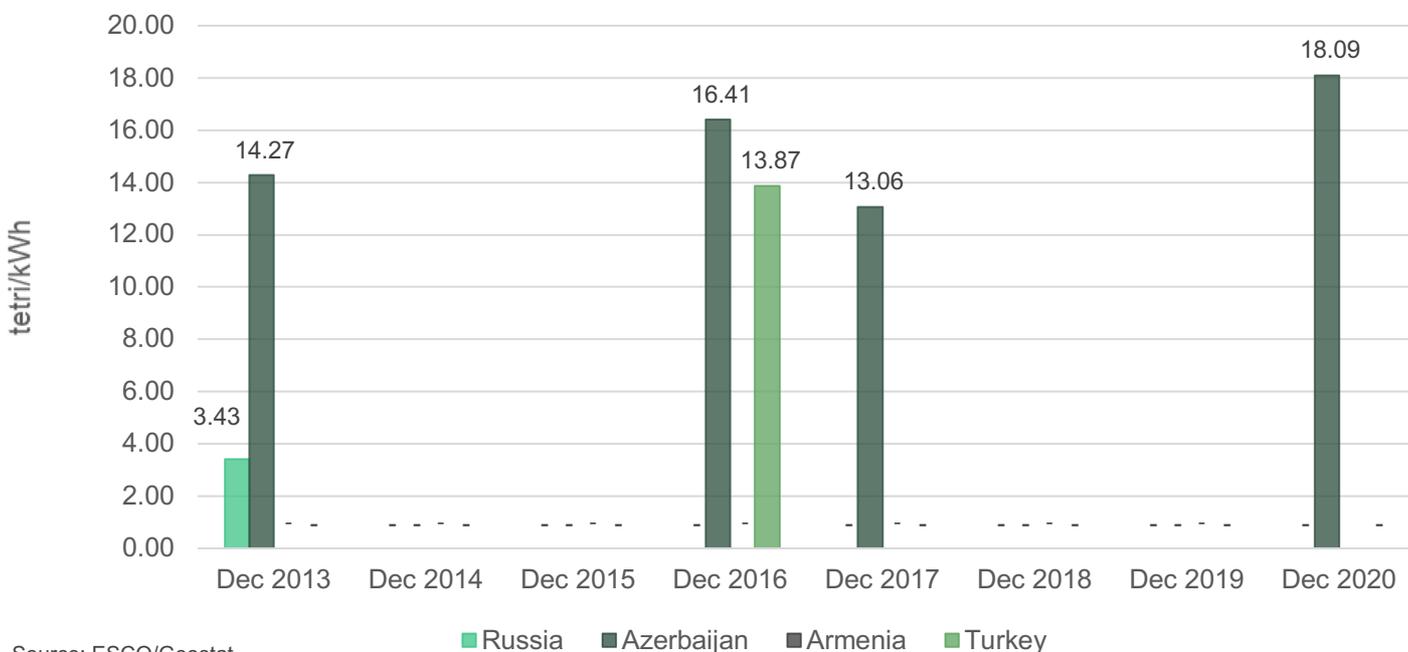
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In December 2020, the electricity export price to Azerbaijan stood at 5.51 ¢ or 18.09 tetri per kWh (Figure 18).

Figure 18 - Export Prices by Countries

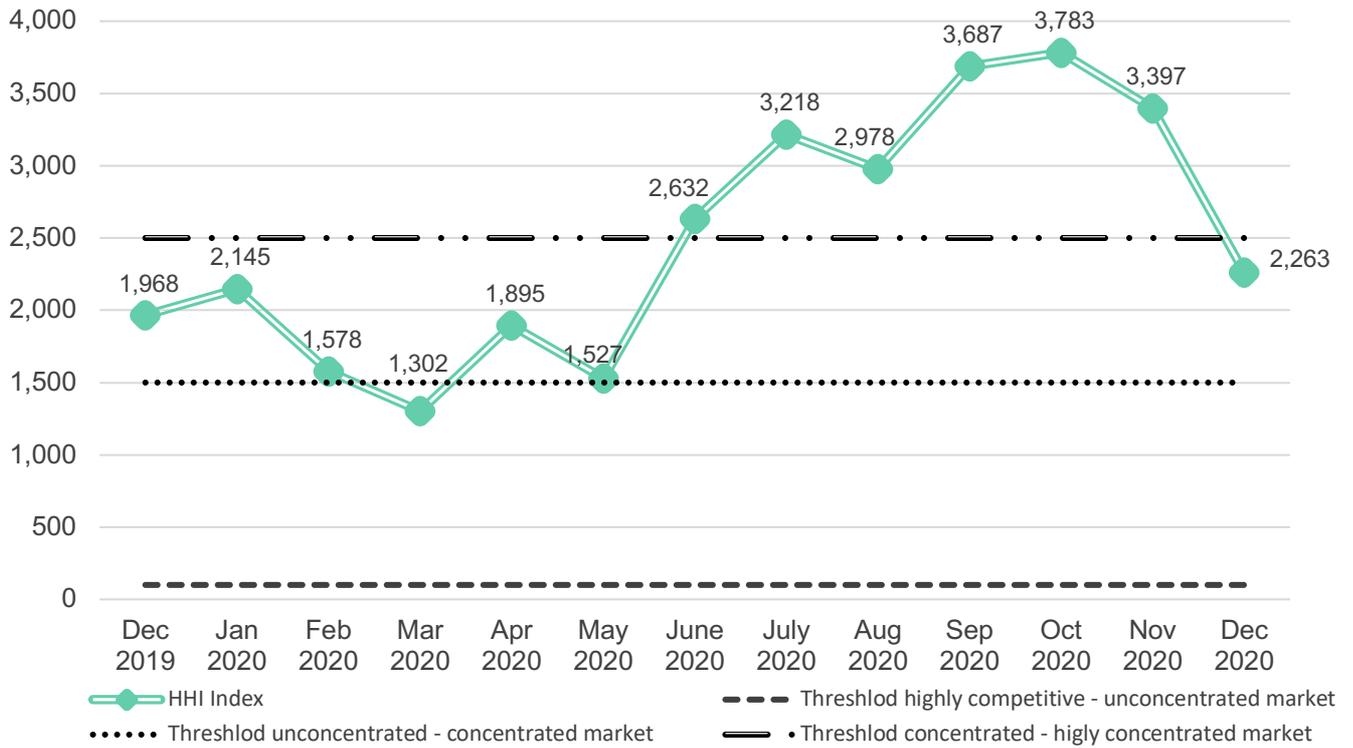


Source: ESCO/Geostat

2. Market Concentration

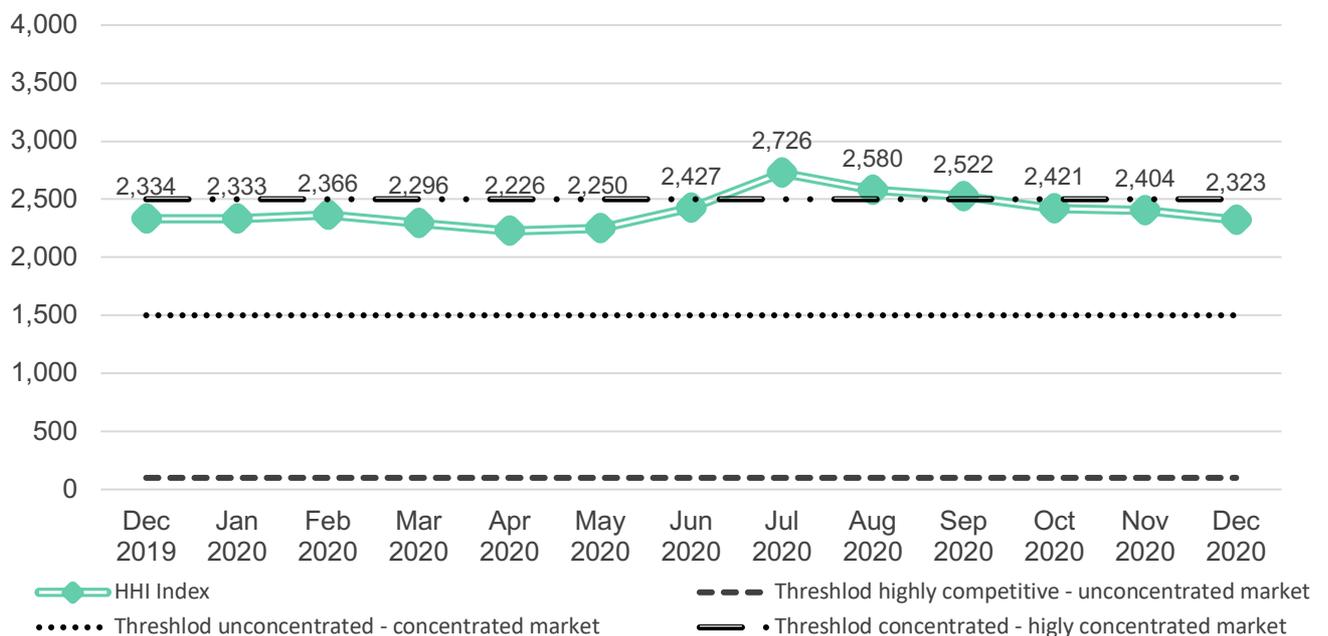
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In December 2020, for the first time in 7 months the Georgian electricity generation market fell below the threshold of a highly concentrated market, with an HHI value of 2,263 (Figure 19). This is higher than the level in December 2019 (with an HHI value of 1,968), and lower than the level in November 2020 (HHI was 3,397). As for the consumption segment, in December 2020 the HHI consumption index was slightly below the threshold for a highly concentrated market, with an HHI value of 2,323 (also slightly below the level for December 2019 – 2,334, and lower than the level for November 2020 – 2,404).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO