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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In April 2020, both power generation (-2%) and consumption (-7%) have decreased compared to the same month in 2019.
- Substantial decrease in consumption, both in monthly (-10% compared to March 2020) and annual basis (-7% compared to April 2019), is clearly caused by the COVID 19 lockdown.
- Interestingly, electricity consumption in Abkhazia has increased by a staggering 18%, while in the rest of the country consumption decreased with 18%.
- COVID-19 lockdown brought balance to Georgian electricity market with difference between generation and consumption being slightly positive, by 3 mln. kWh.
- In April 2020, cross-border electricity trade was unsubstantial, with imports from Russia and Azerbaijan slightly exceeding Georgian exports to Azerbaijan. This minor trade was primarily associated with technical issues related to operations of the neighboring systems.
- In April 2020 the concentration in the Demand side of the market dramatically increased, while it remained relative stable on the Generation side.

ABBREVIATION USED

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

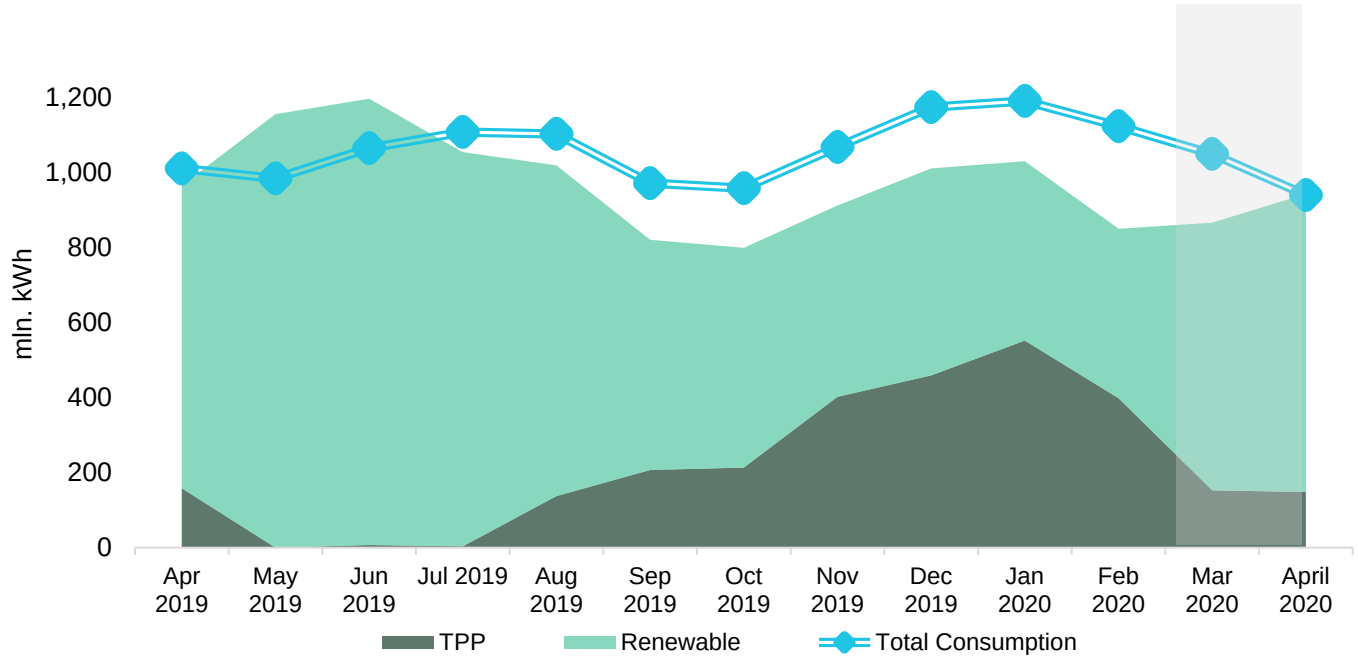
Generation – Consumption – Trade

In April 2020, Georgian power plants generated 944 mln. kWh of electricity (Figure 1). This represents a 2% decrease in total generation, compared to the previous year (April 2019, the total generation was 966 mln. kWh). The decrease in generation on a yearly basis comes from the decrease of 6% in thermal and 2% in hydro power generation. Interestingly, on a yearly basis, wind power generation increased by remarkable 23% compared to April 2019.

On a monthly basis, generation increased by 9% (in March 2020, total generation was 857 mln. kWh) (Figure 1). The monthly increase in total generation was the result of the increase of 12% in hydro, that offset 5% decrease in wind and 3% in thermal power generation.

The consumption of electricity on the local market was 941 mln. kWh (-7% and -10% compared to April 2019, and March 2020, respectively) (Figure 1). In April 2020, the total generation and consumption were nearly equal, with power generation exceeding by only 3 mln. kWh which just 0.3% of total generation (in contrast in April 2019 difference between total generation and consumption resulted in a deficit of 45 mln. kWh which was around 5% of the total generation for the month). The closure of the gap between consumption and generation is clearly the result of the COVID-19 lockdown of the economy, that influenced the energy market.

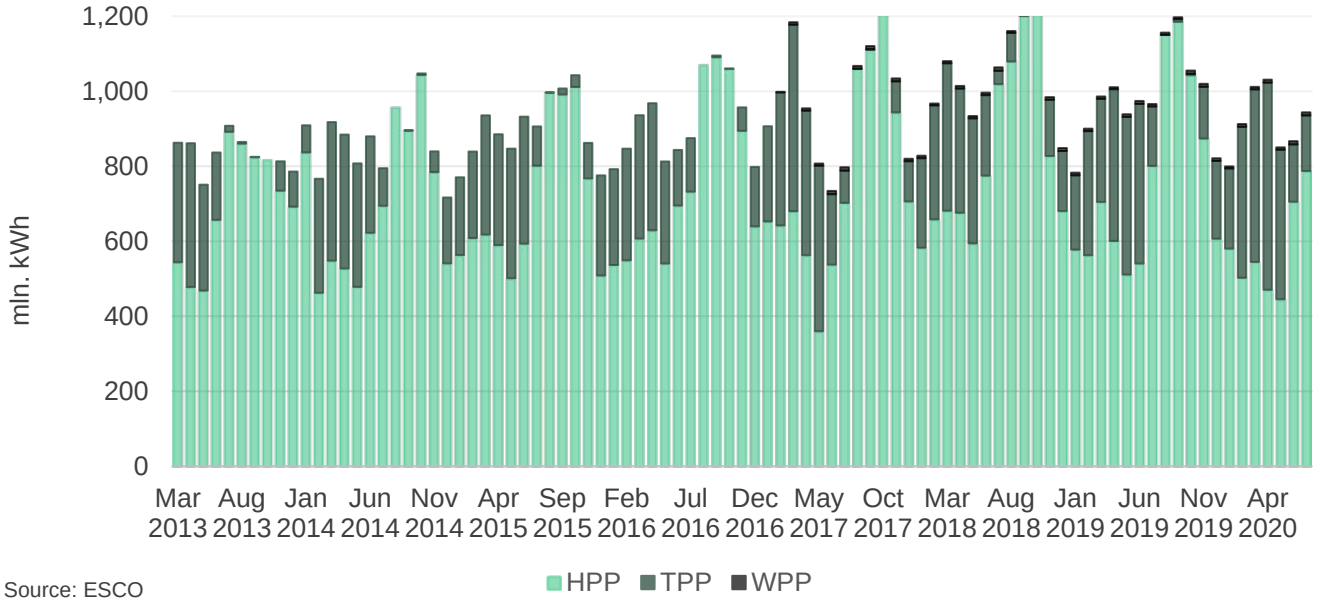
Figure 1 - **Electricity Consumption and Generation**



Source: Electricity System Commercial Operator (ESCO)

In this month most generation came from hydro power plants. In April 2020, hydro power (HPP) generation amounted to 787 mln. kWh (84% of total), while thermal power (TPP) generation was 148 mln. kWh (16% of total), and wind power (WPP) generation was 8 mln. kWh (1% of total) (Figure 2).

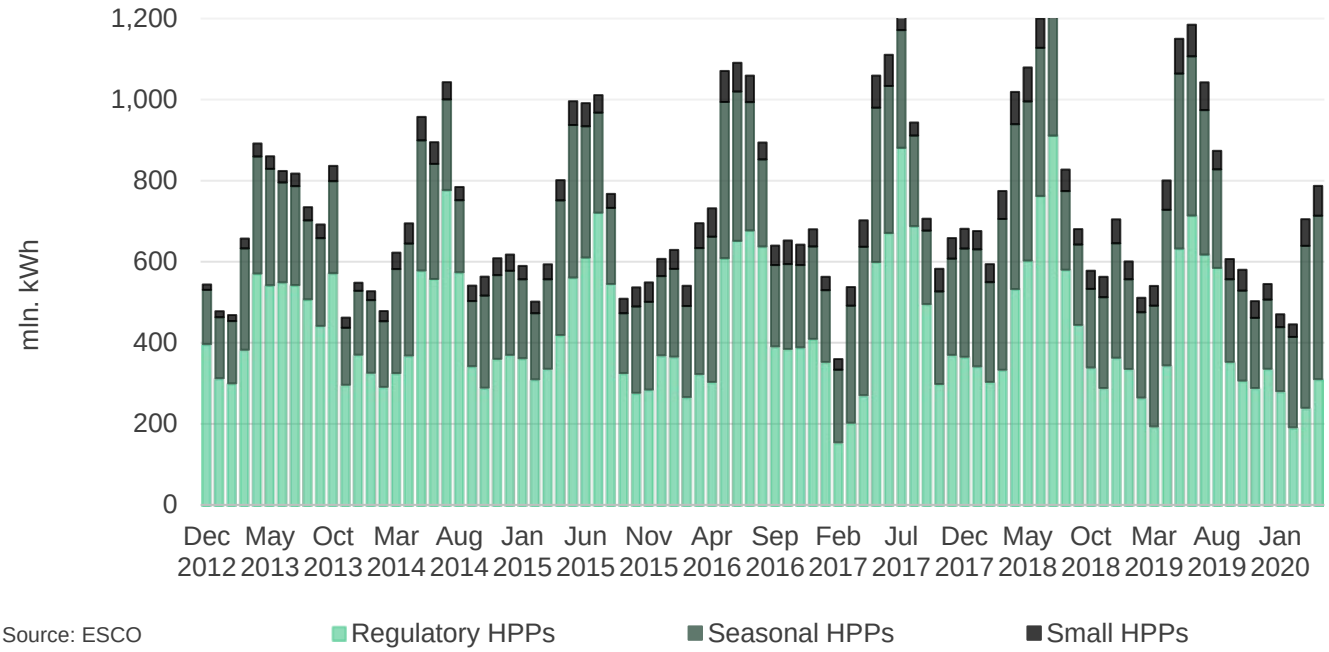
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 39% (310 mln. kWh) of electricity, while seasonal and small HPPs produced 51% (404 mln. kWh) and 9% (74 mln. kWh), respectively (Figure 3).

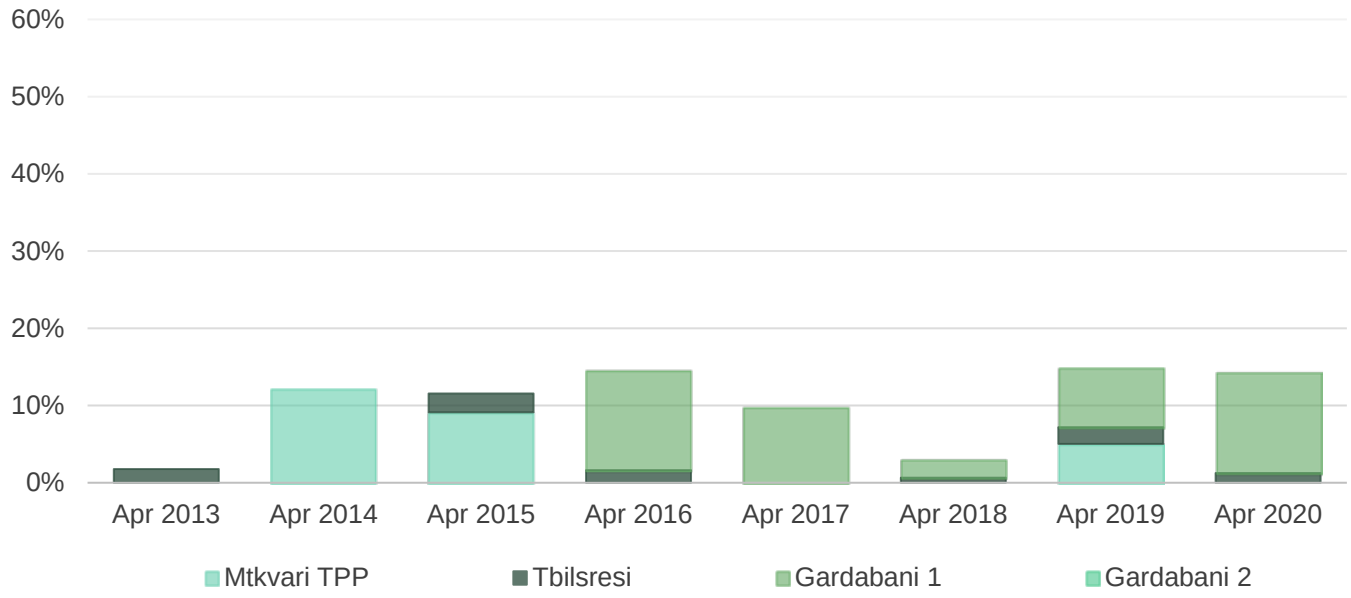
Figure 3 - HPP Generation by Type



Source: ESCO

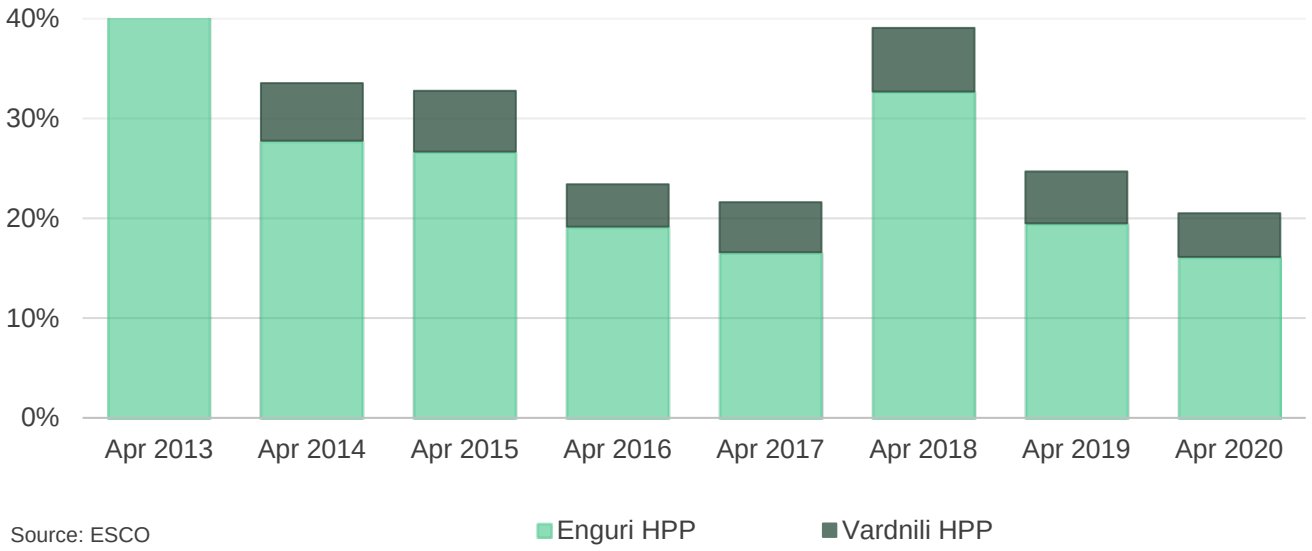
Among thermal power plants Gardabani 1 generated 123 mln. kWh, 83% of total thermal power generation and 13% of total generation (Figure 4). As for HPP generation, the large HPPs, Enguri and Vardnili generated 194 mln. kWh (62% of generation for regulatory HPPs), with 152 mln. kWh and 41 mln. kWh, respectively. Power generated by Enguri and Vardnili represents around 21% of the total generation (Figure 5). Overall, total generation decreased by 2% compared to April 2019 (Figure 6).

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



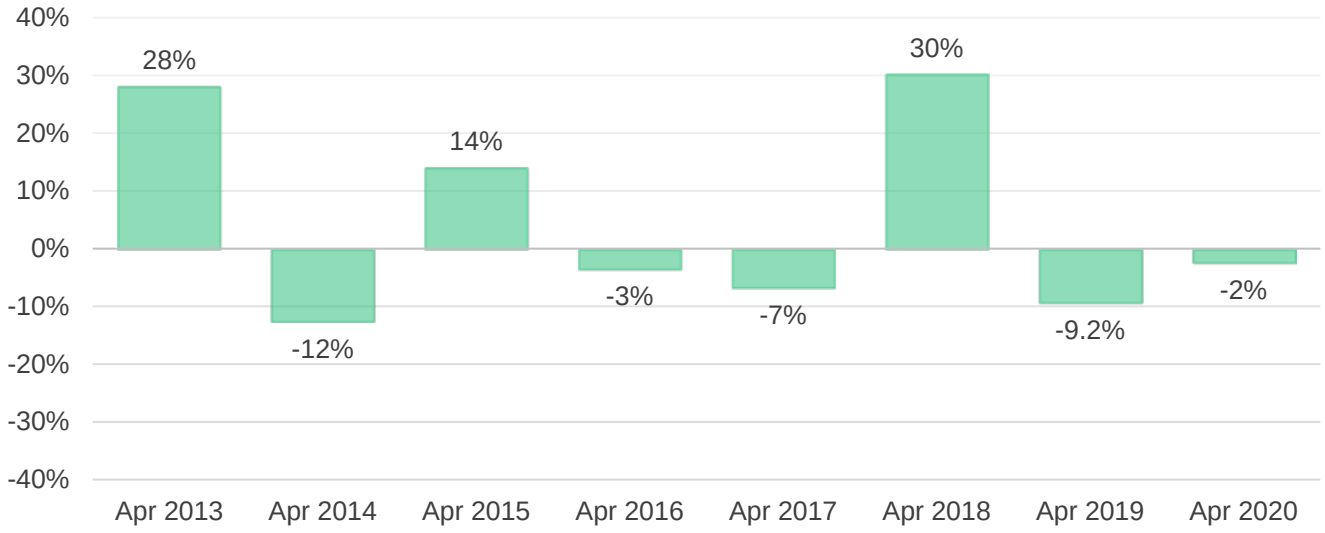
Source: ESCO

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



Source: ESCO

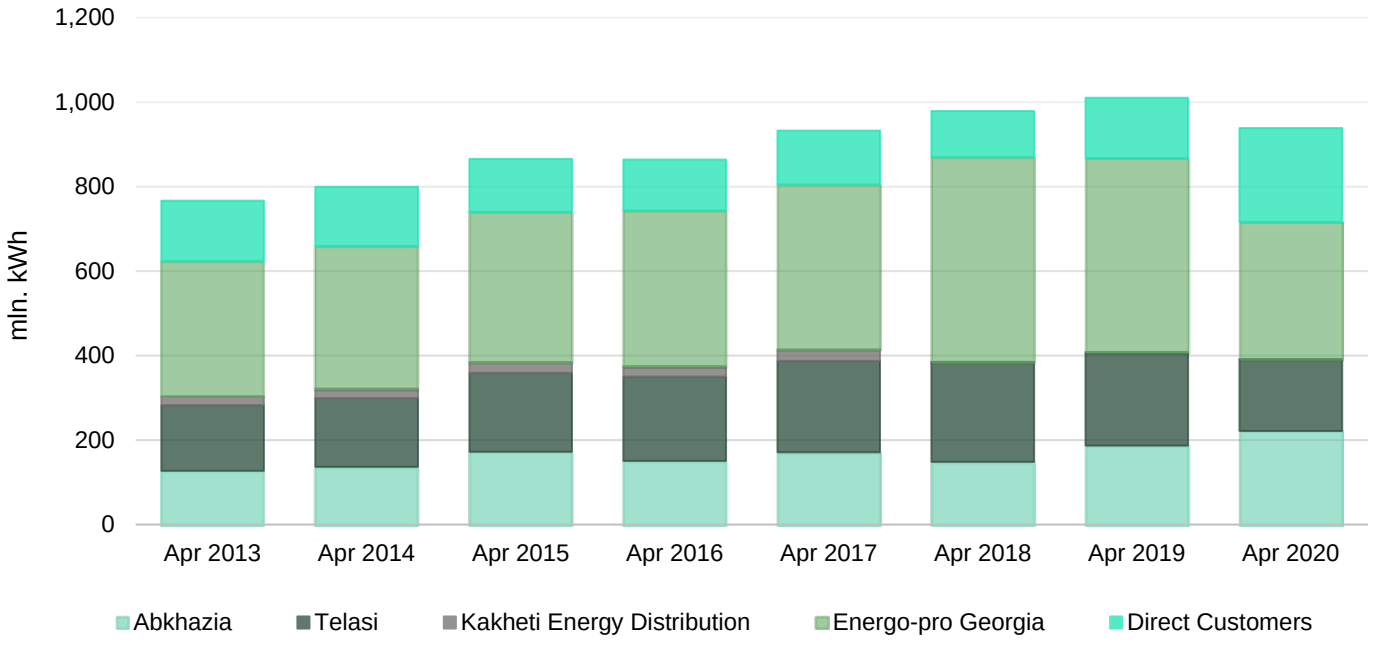
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia[1] (34% - 324 mln. kWh), Telasi (18% - 170 mln. kWh), Abkhazia (24% - 222 mln. kWh), and direct customers (24% - 223 mln. kWh) (Figure 7). Annual demand from Energo-Pro Georgia and Telasi, decreased by 29% and 23% respectively, while consumption in Abkhazia increased by a staggering 18%. Furthermore, consumption of direct customers increased by 55%.[2] Overall, there was an annual decrease of 7% in the total electricity consumption in April 2020, compared to April 2019 (Figure 8). Similar to March, consumption decreased due to the COVID-19 lockdown of the economy in April 2020 as well.

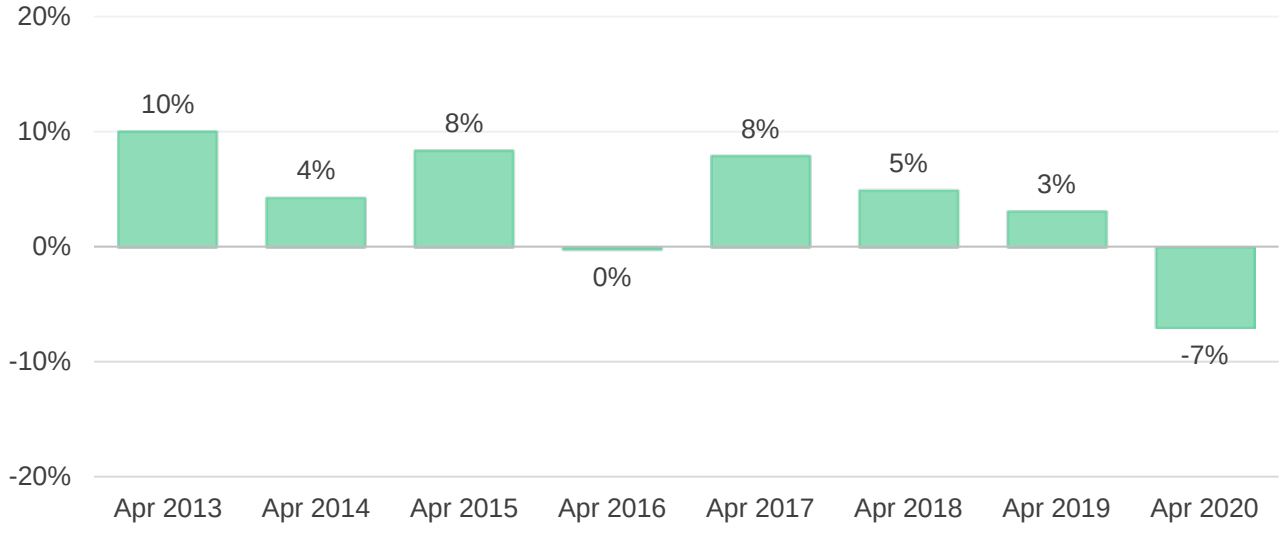
Figure 7 - Electricity Consumption by Type of Customer



Source: ESCO

[1] Energo-Pro Georgia acquired Kakheti Energy Distribution in September 2017.
[2] 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. This is the main reason behind decrease in electricity consumption from Energo-Pro Georgia and increase of direct consumption.

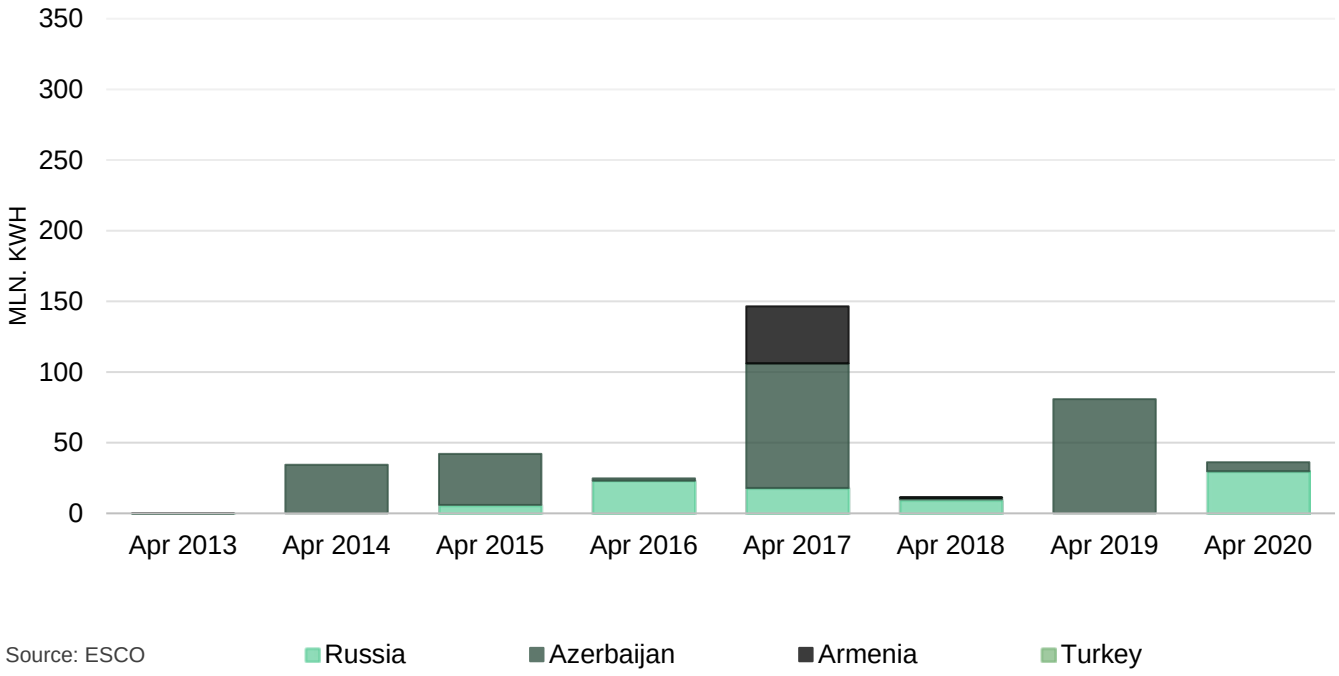
Figure 8 - Electricity Consumption Growth (%, y/y)



Source: ESCO

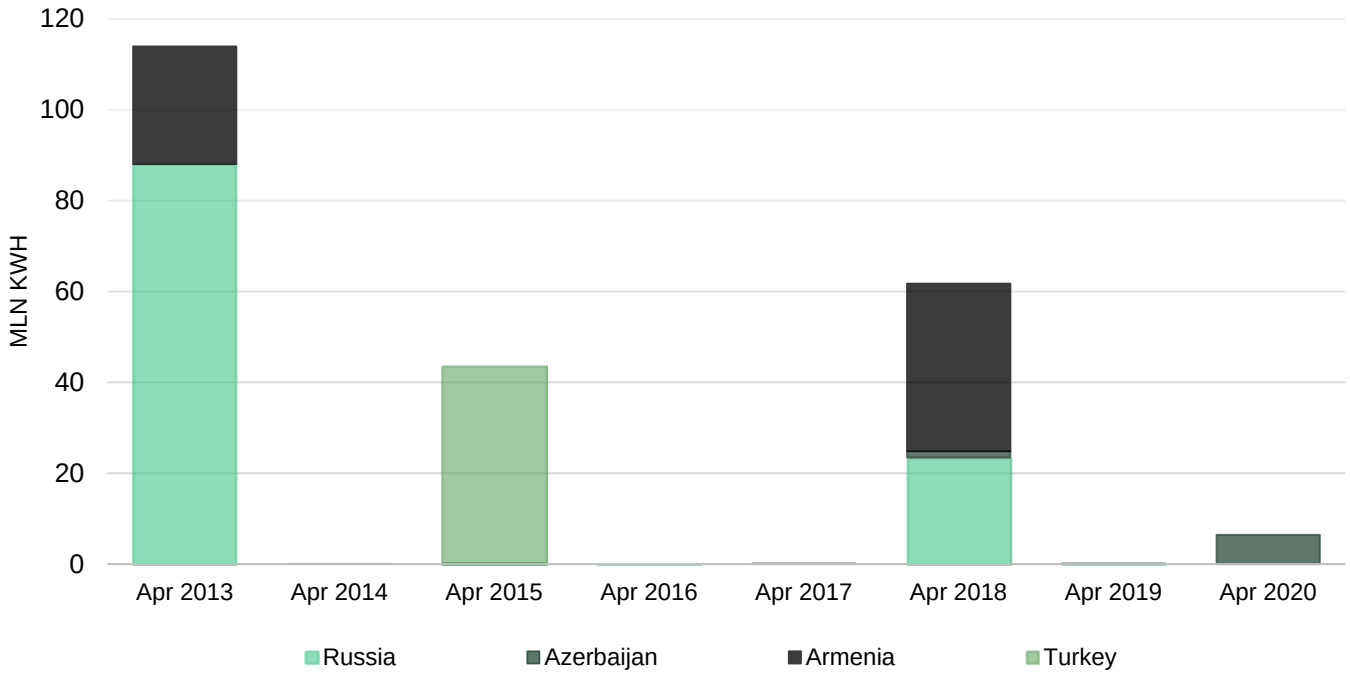
In April 2020, Georgia imported 36 mln. kWh of electricity (-55% compared to April 2019) 82% of which came from Russia, while the remaining 18% was provided by Azerbaijan (Figure 9). In April 2020, Georgia exported 6.4 mln. kWh of electricity to Azerbaijan. Furthermore, in April 2020 Georgia has not transited any electricity among neighboring electricity markets.

Figure 9 - Imports by Year



Source: ESCO

Figure 10 - Exports by Year

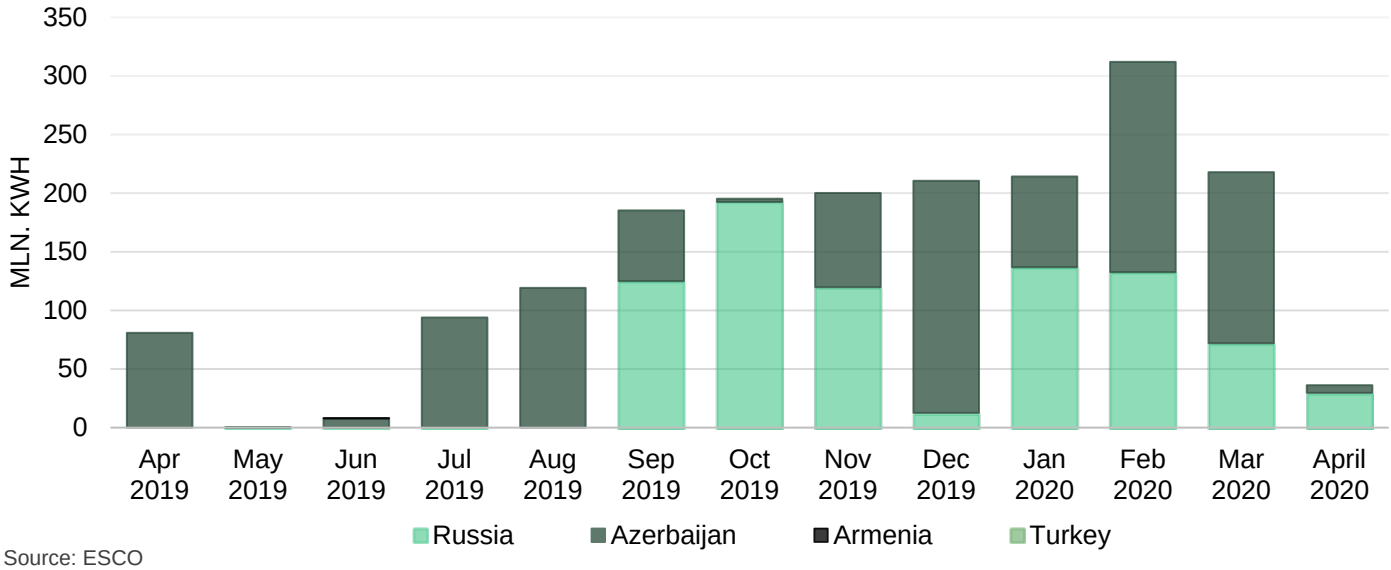


Source: ESCO

In April 2020, electricity imports have substantially decreased due to a combination of seasonal effects and economic slowdown induced by COVID-related restrictions (Figure 11). As for the exports, there were minor exports of 6 mln. kWh to Azerbijan (Figure 12).

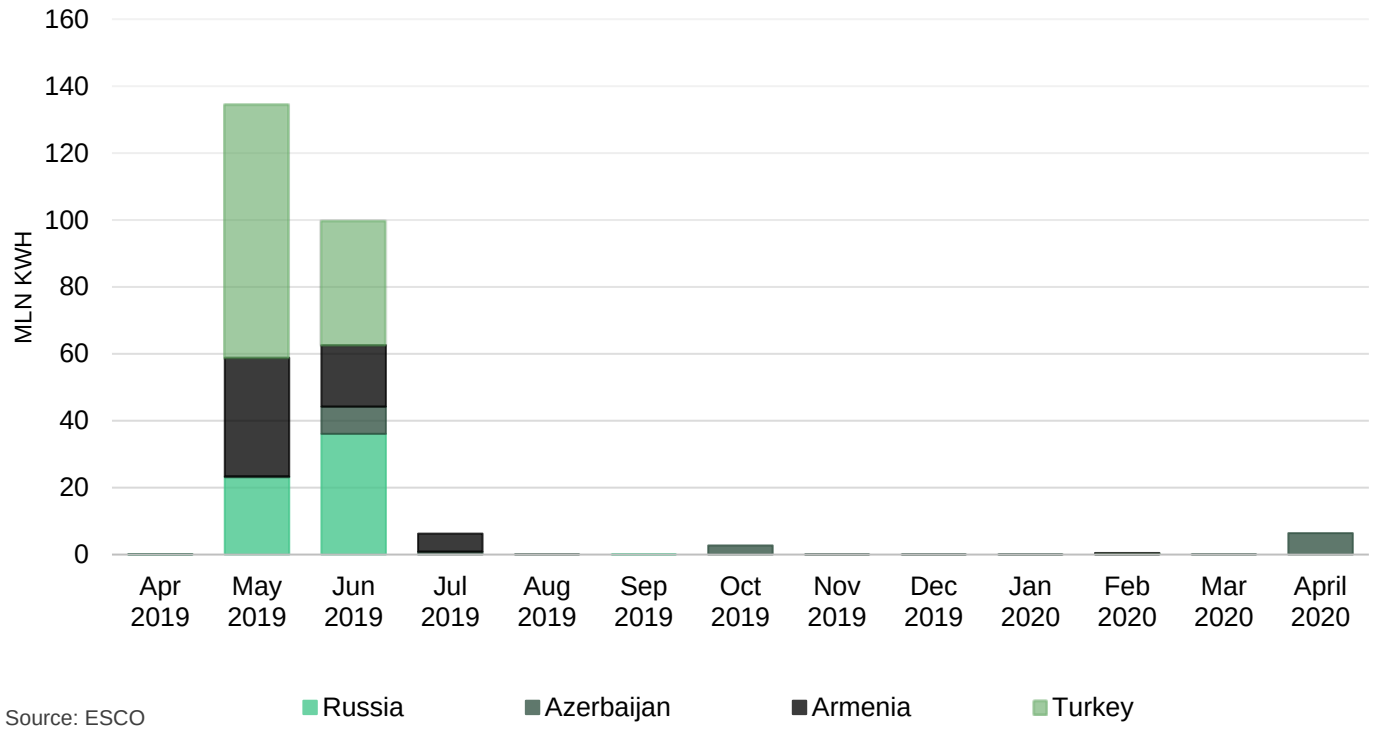
This month there was no electricity transit compared to the previous month (25 mln. kWh from Azerbaijan to Turkey).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

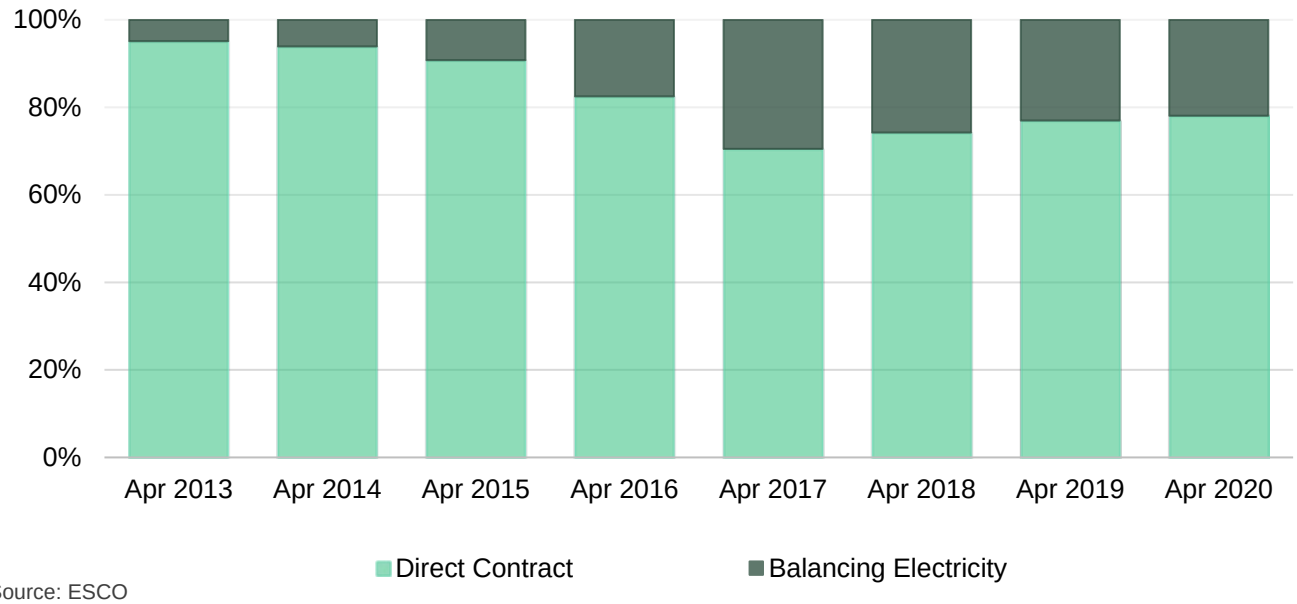


Source: ESCO

1. Market Operations

In April 2020, 78% of the electricity sold on/from the local market was sold through direct contracts. The remaining 22% was sold as balancing electricity (Figure 13).

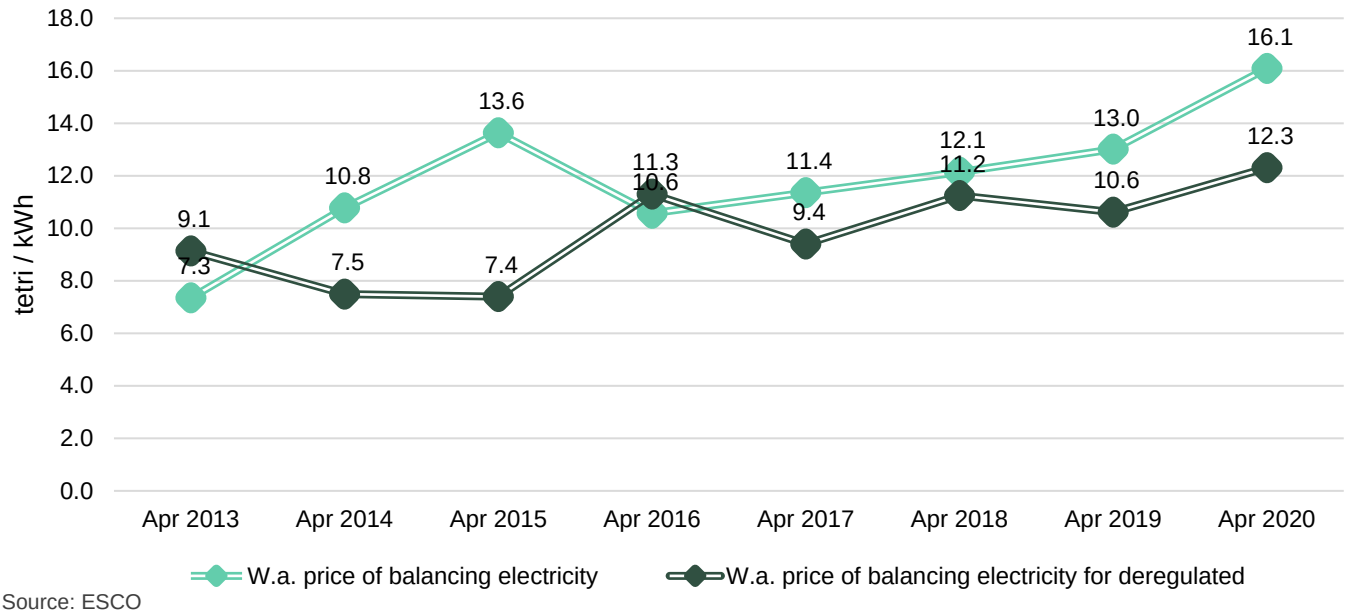
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In April 2020, the weighted average price of balancing electricity was 16.1 tetri/kWh, which corresponds to an annual increase of 24% compared to April 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).

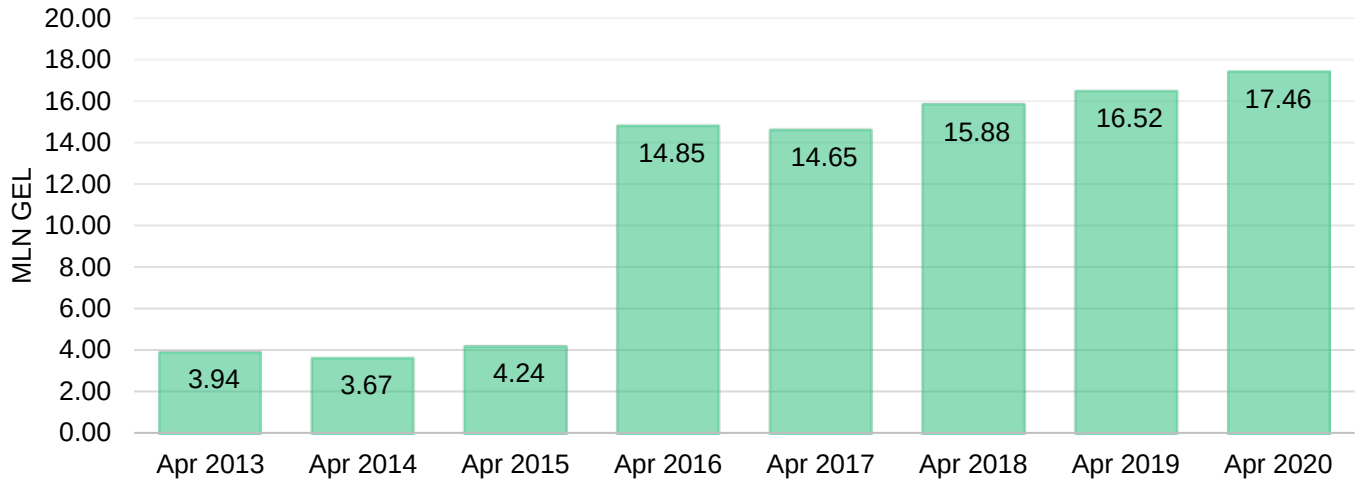
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in April 2020 were roughly 17.46 mln. GEL, which represents a 6% increase compared to April 2019 (Figure 15).

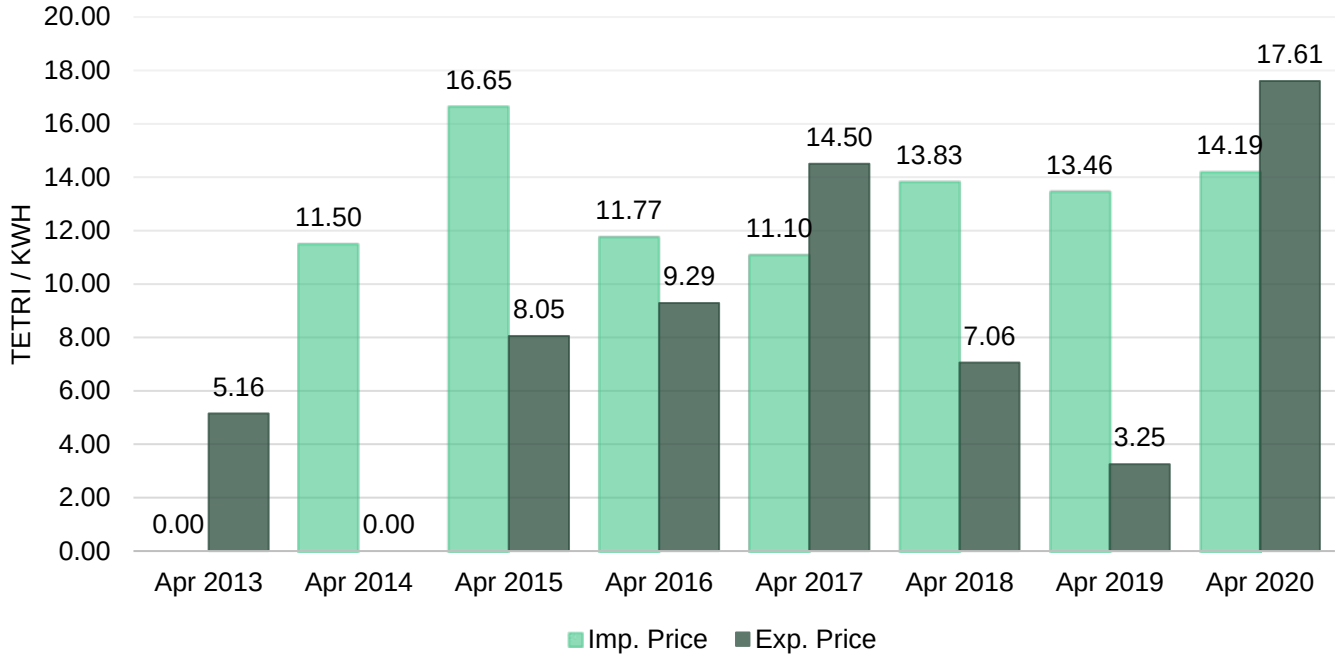
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The weighted average electricity import price in April 2020 decreased by 11% in USD, on an annual basis, while increasing 5% in GEL due to the depreciation of the National Currency (from 5 ¢ or 13.46 tetri per kWh in April 2019 to 4.43 ¢ or 14.2 tetri per kWh in April 2020) (Figure 16). The weighted average import price increased by 18% in USD and by 24% in GEL on a monthly basis (import price was 3.75 ¢ or 11.40 tetri per kWh in March 2020). The weighted average electricity exports price in April 2020 was 5.46 ¢ or 16.61 tetri per kWh. As for the export prices they stood at 5.5 ¢ or 17.61 tetri per kWh in April 2020.

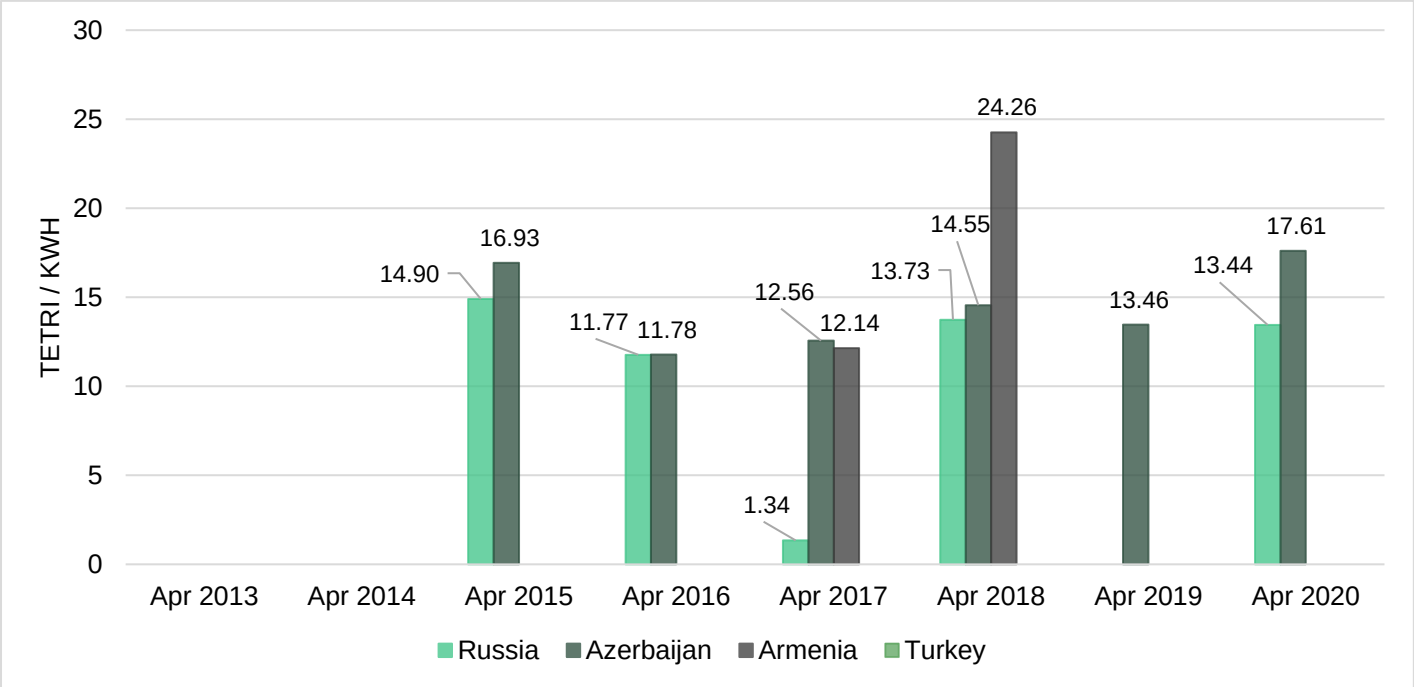
Figure 16 - Prices Import/Export



Source: ESCO

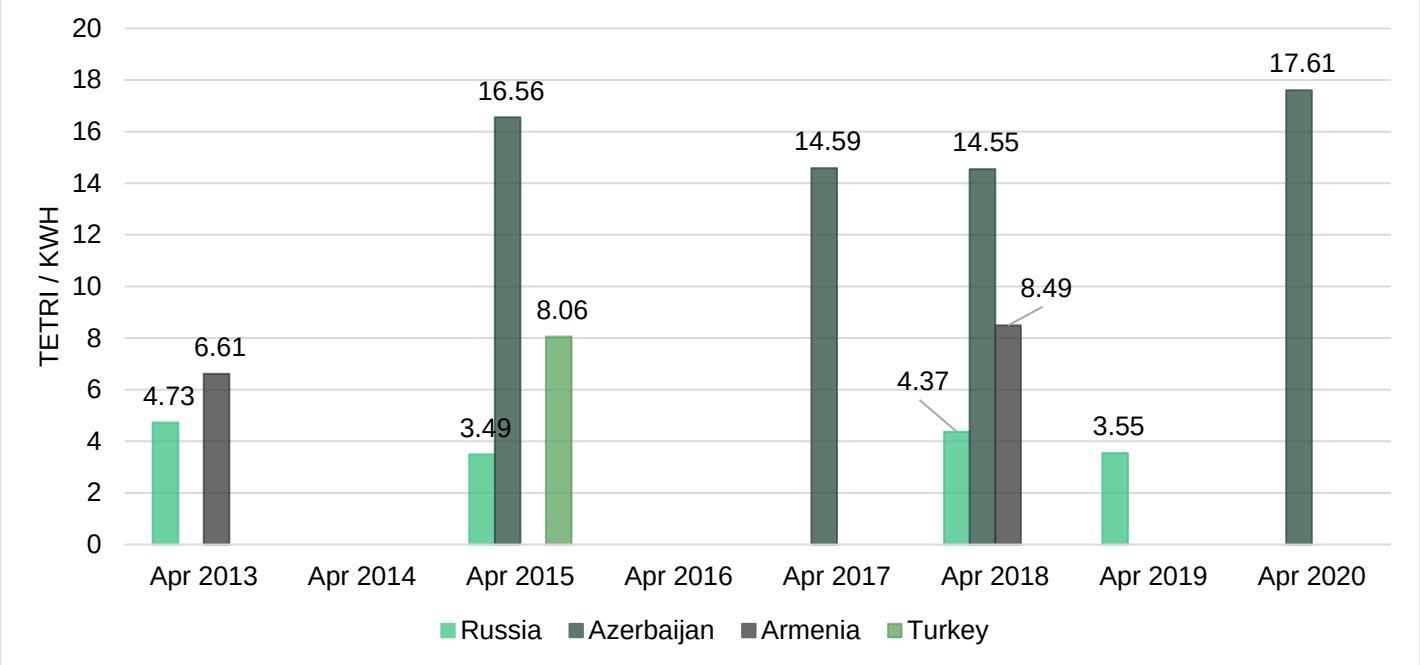
Import prices from Azerbaijan and Russia stood at 5.5 ¢ or 17.61 tetri per kWh and 4.2 ¢ or 13.44 tetri per kWh, respectively (Figure 17).

Figure 17 - Import Prices by Countries



In April 2020, the electricity export price to Azerbaijan stood at 5.5 ¢ or 17.61 tetri per kWh (Figure 18).

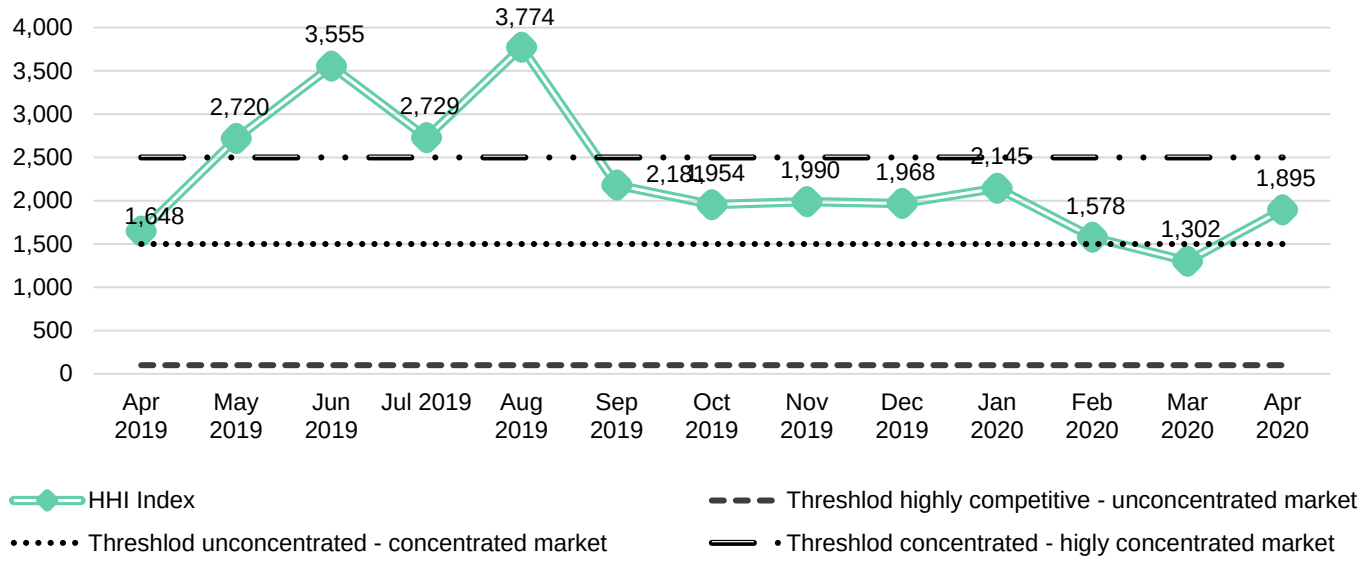
Figure 18 - Export Prices by Countries



2. Market Concentration

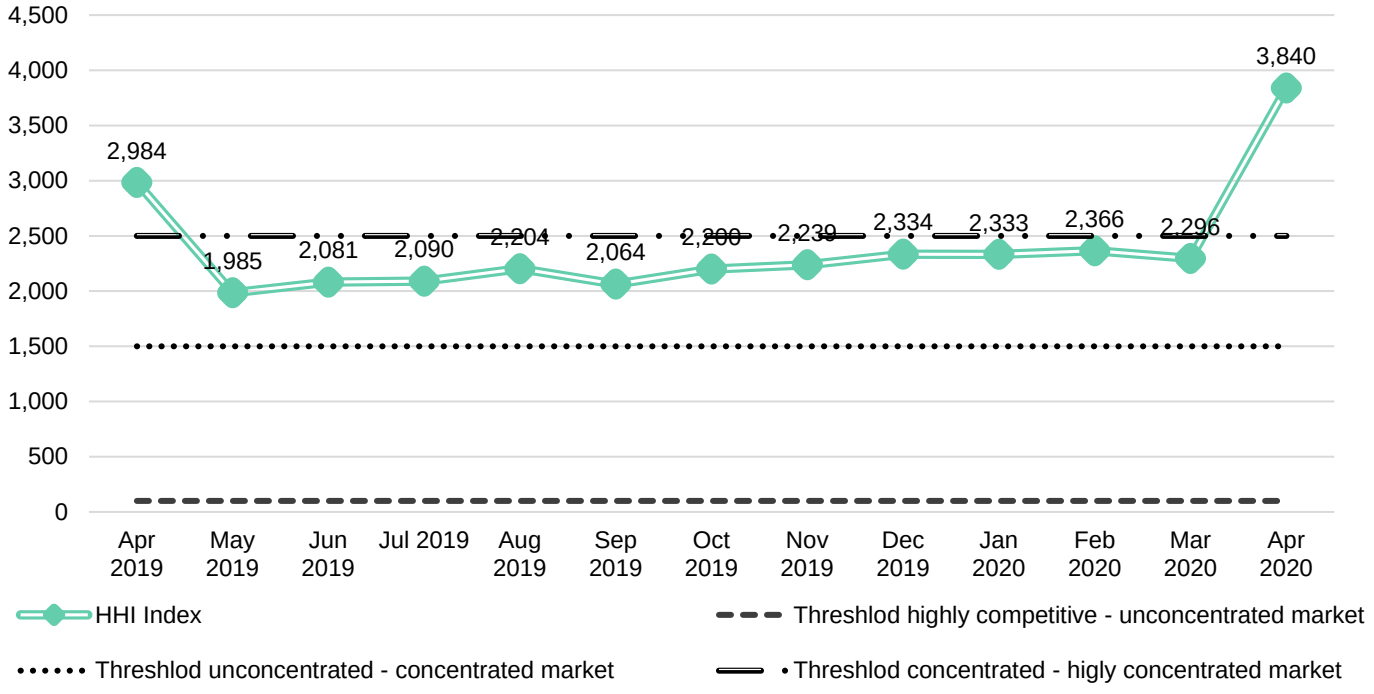
In conclusion, we utilize the Hirschmann-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In April 2020, the Georgian electricity generation market was below the threshold of a highly concentrated market, with an HHI value of 1,895 (Figure 19). This is a level similar to April 2019 (with an HHI value of 1,648) and higher than in March 2020 (HHI was 1,302 – below the threshold for a concentrated market). As for the consumption segment, in March 2020 the HHI consumption index was substantially above the threshold for a highly concentrated market, reaching the value of 3,840 (above the level for March 2020 and April 2019). The main cause of this was increased share of few customers in the total consumption (Figure 20).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO