

ISET

International School of Economics at TSU
Policy Institute

APRIL
2019



ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE

ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

Authors:

Norberto Pignatti
Policy Center Head

✉ n.pignatti@iset.ge

Mariam Chachava
Researcher

✉ m.chachava@iset.ge

Mariam Tsulukidze
Research Assistant

✉ m.tsulukidze@iset.ge

Mariam Lobjanidze
Research Assistant

✉ m.lobjanidze@iset.ge

INFORMATION

- There was an decrease in total electricity generation both on a monthly basis and on a yearly basis
- Consumption decreased on a monthly and increased on a yearly basis
- The negative generation-consumption gap decreased both on a monthly and on a yearly basis
- Imports have decreased on a monthly and increased on a yearly basis
- Imported electricity came from Azerbaijan
- Georgia exported a negligible amount of electricity to Russia and Azerbaijan
- According to the Hirschmann-Herfindahl Index (HHI) Georgian electricity market was concentrated with an HHI value of 1,644

ABBREVIATION USED

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

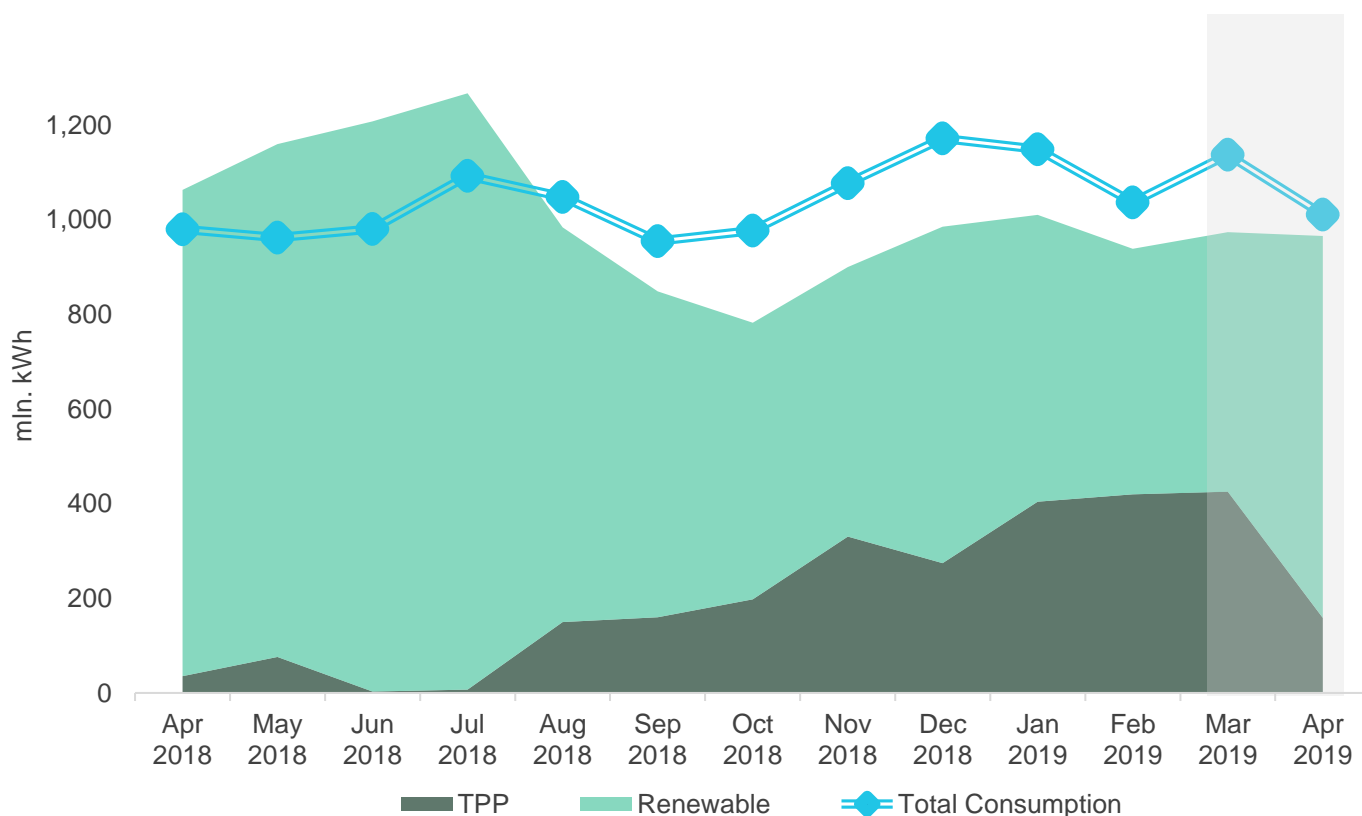
1. Generation – Consumption – Trade

In April 2019, Georgian power plants generated 966 mln. kWh of electricity (Figure 1). This represents a 9% decrease in total generation, compared to the previous year (in 2018, total generation in April was 1,064 mln. kWh). The decrease in generation on a yearly basis comes from the decrease in hydro and wind power generation (-21% and -27%), more than offsetting the increase in thermal power generation (+348%).

On a monthly basis, generation decreased by 1% (in March 2019, total generation was 974 mln. kWh). The monthly decrease in total generation was the result of a decrease in electricity produced by thermal and wind power plants (-63% and -17% with respect to March 2019) more than offsetting an increase in hydro power generation (+48% with respect to March 2019).

The consumption of electricity on the local market was 1012 mln. kWh (+3% and -11% compared to April 2018, and March 2019 respectively) (Figure 1). In April 2019, total consumption exceeded generation by 45 mln kWh, which is 4% of the total consumption and 5% of the amount generated (compared to 164 mln. kWh and 17% deficit of the total generation for March 2019 and 83 mln. kWh and 8% deficit of the total generation for April 2018).

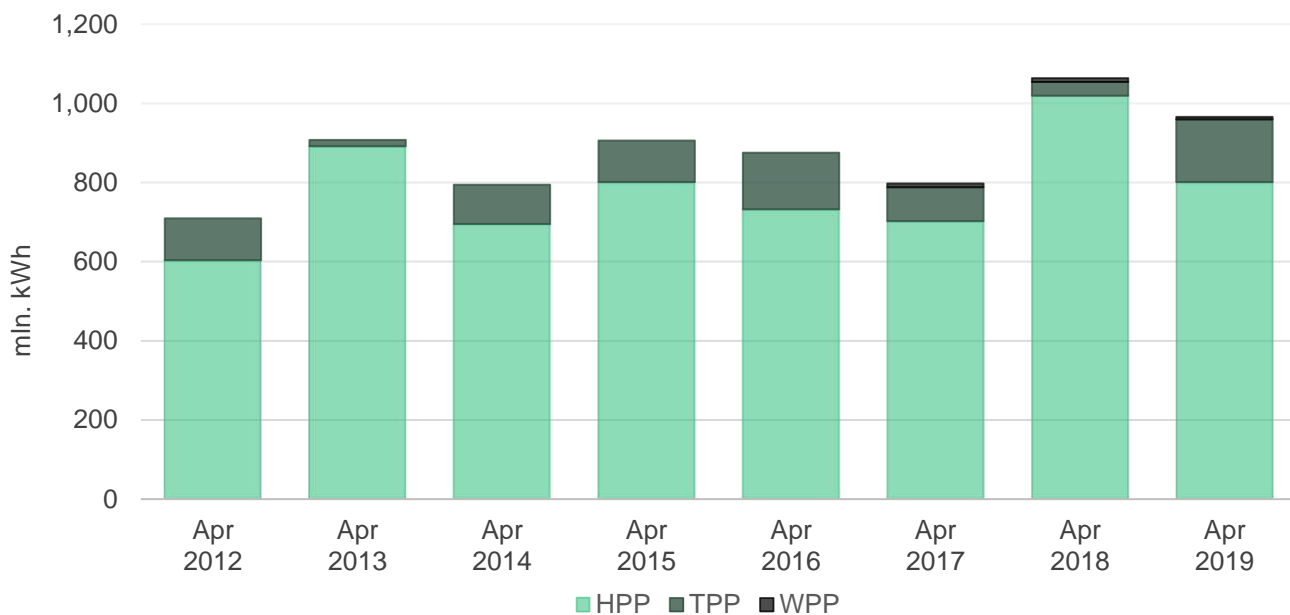
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

As usual, most generation came from hydropower plants (HPPs). In April 2019, hydropower (HPP) generation amounted to 801 mln. kWh (83% of total); wind power (WPP) generation was 7 mln. kWh (1% of total), and thermal power (TPP) generation was 159 mln. kWh (16% of total) (Figure 2).

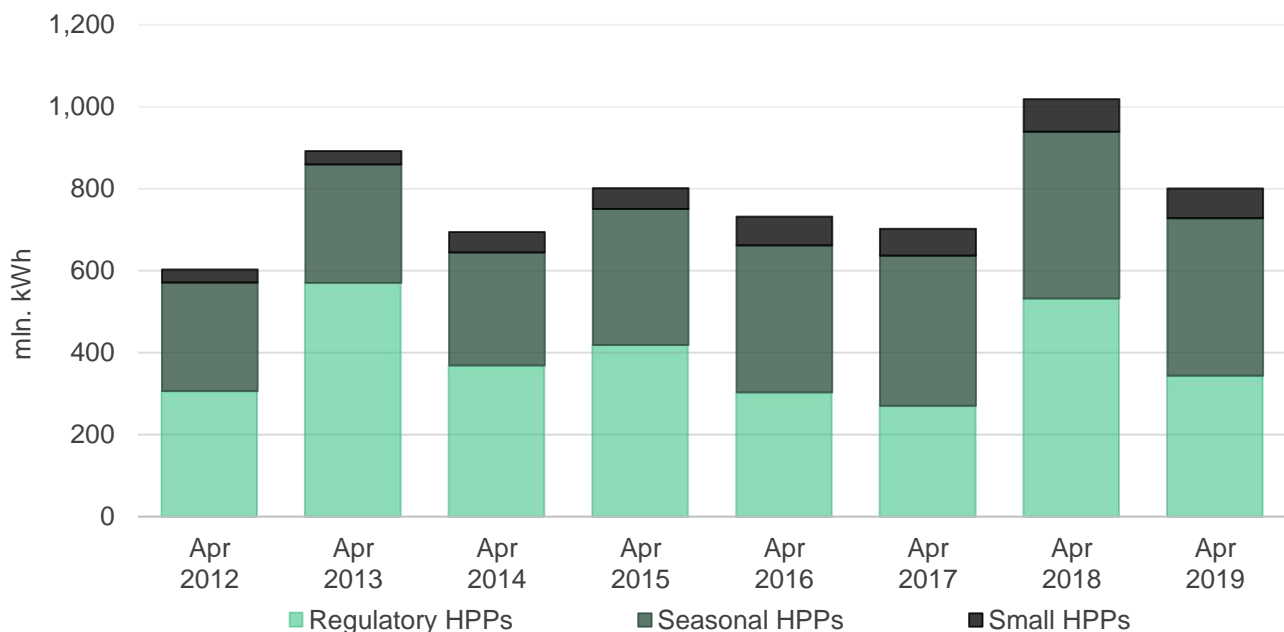
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 43% (344 mln. kWh) of electricity, while seasonal and small HPPs produced 48% (384 mln. kWh) and 9% (73 mln. kWh), respectively (Figure 3).

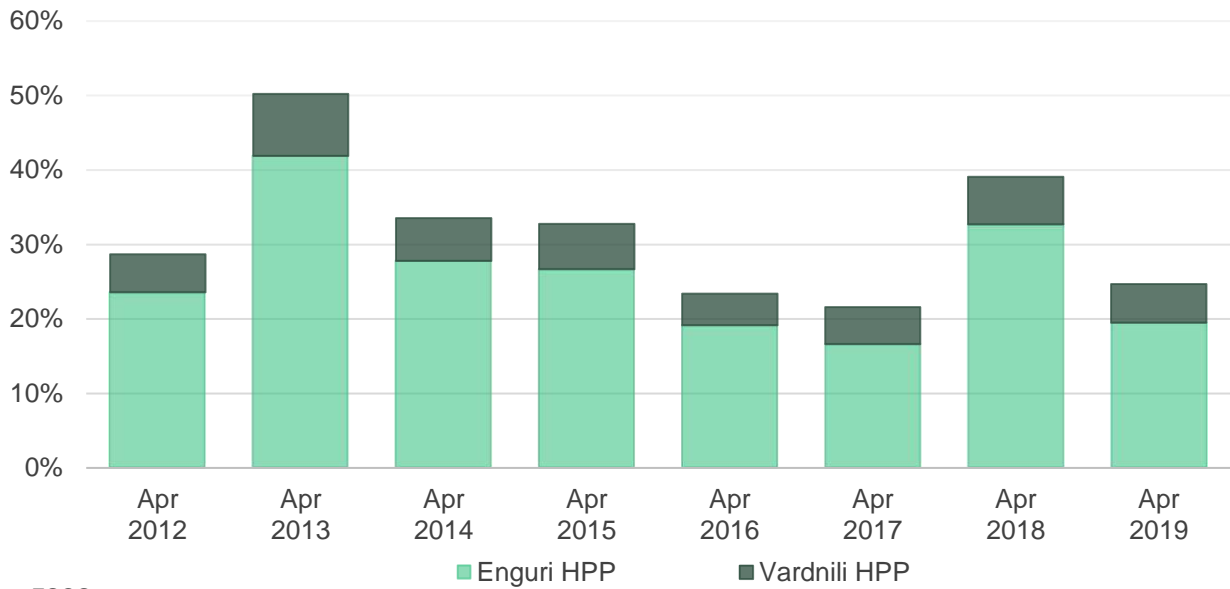
Figure 3 - HPP Generation by Type



Source: ESCO

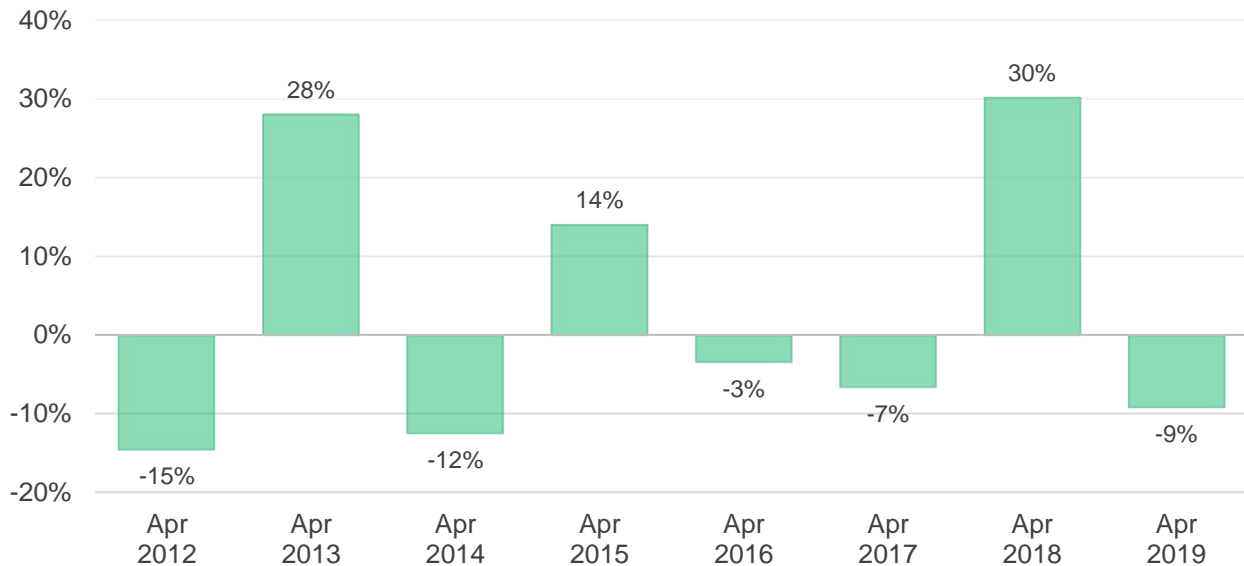
Among the large HPPs, Enguri and Vardnili generated the largest power, producing 239 mln. kWh (69% of generation for regulatory HPPs), with 188 mln. kWh and 50 mln. kWh, respectively. They represent around 25% of total generation (Figure 4).

Figure 4 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

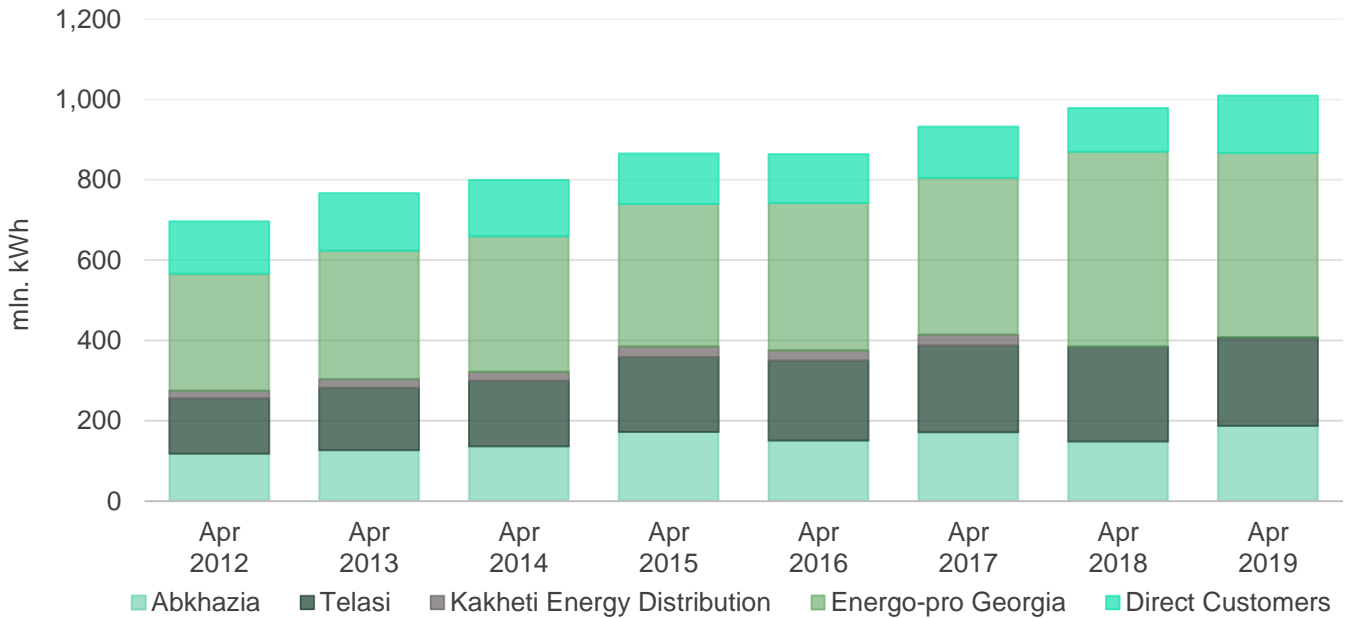
Figure 5 - Growth of Generation (% , y/y)



Source: ESCO

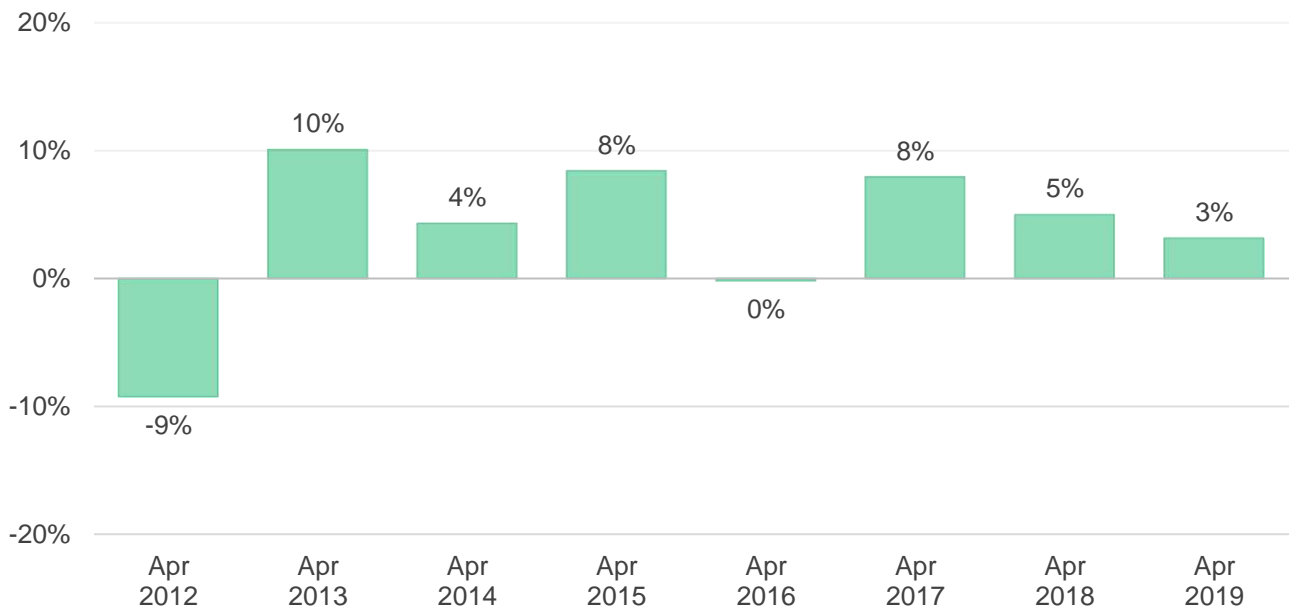
Total electricity demand came from: Energo-Pro Georgia¹ (45% - 458 mln. kWh), Telasi (22% - 221 mln. kWh), Abkhazia (18% - 187 mln. kWh), and direct customers (14% - 144 mln. kWh) (Figure 6). Overall, there was an annual increase of 3% in electricity consumption in April 2019, compared to April 2018 (Figure 7). Annual demand from Abkhazia and direct consumers increased by 26% and 31%, more than offsetting the 5% and 7% decrease from Energo-Pro Georgia and Telasi, respectively.

Figure 6 - Electricity Consumption by Type of Customer



Source: ESCO

Figure 7 - Electricity Consumption Growth (% y/y)

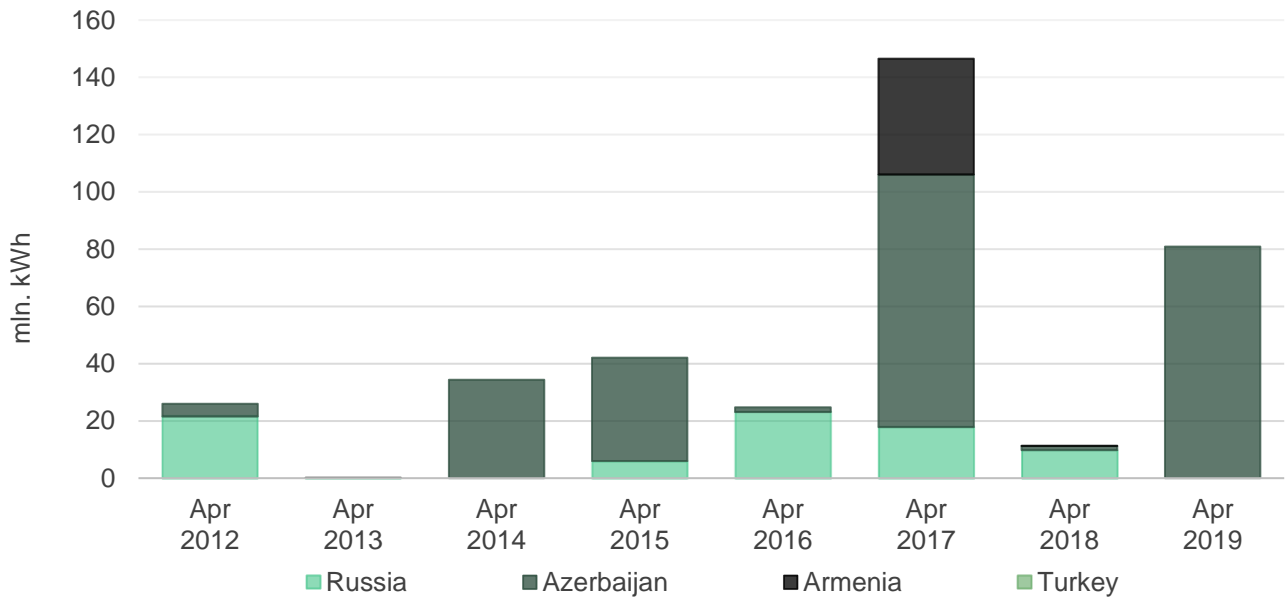


Source: ESCO

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

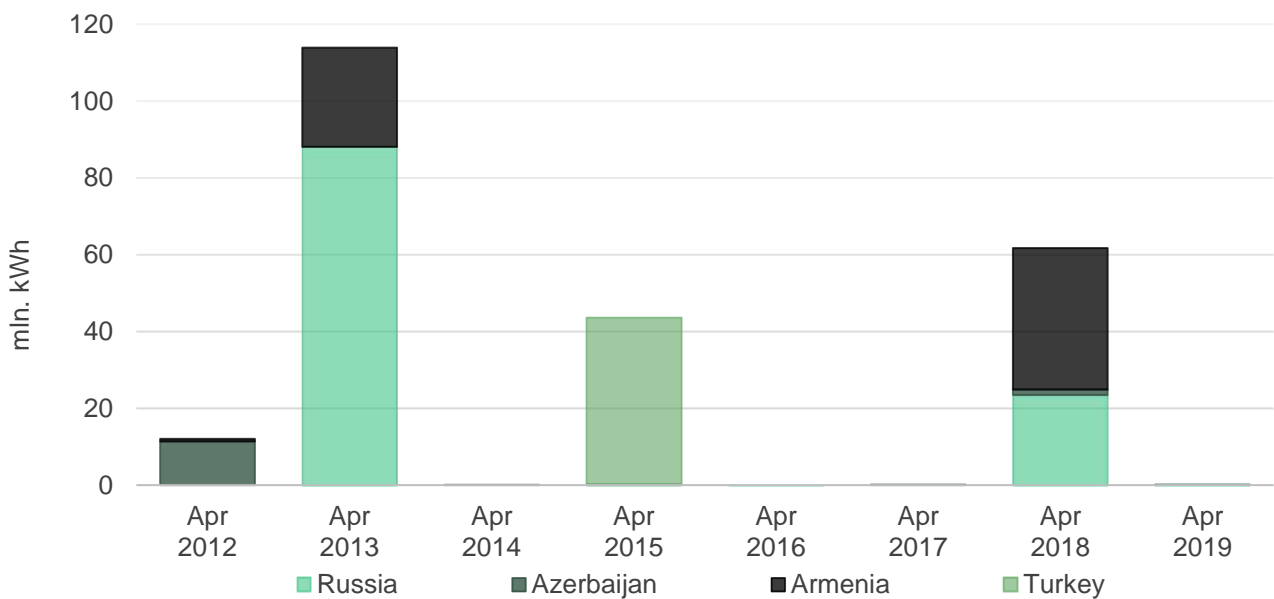
In April 2019, Georgia imported 81 mln. kWh of electricity from Azerbaijan (Figure 8), up from the 11 mln. kWh of April 2018. In April 2019, Georgia exported 0.0381 mln. kWh, out of which 99.7% was exported to Russia and 0.3% to Azerbaijan (Figure 9), with a dramatic reduction with respect to the 62 mln. kWh of April 2018. Total transit from Azerbaijan to Turkey amounted to 9 mln. kWh of electricity.

Figure 8 - Imports by Year



Source: ESCO

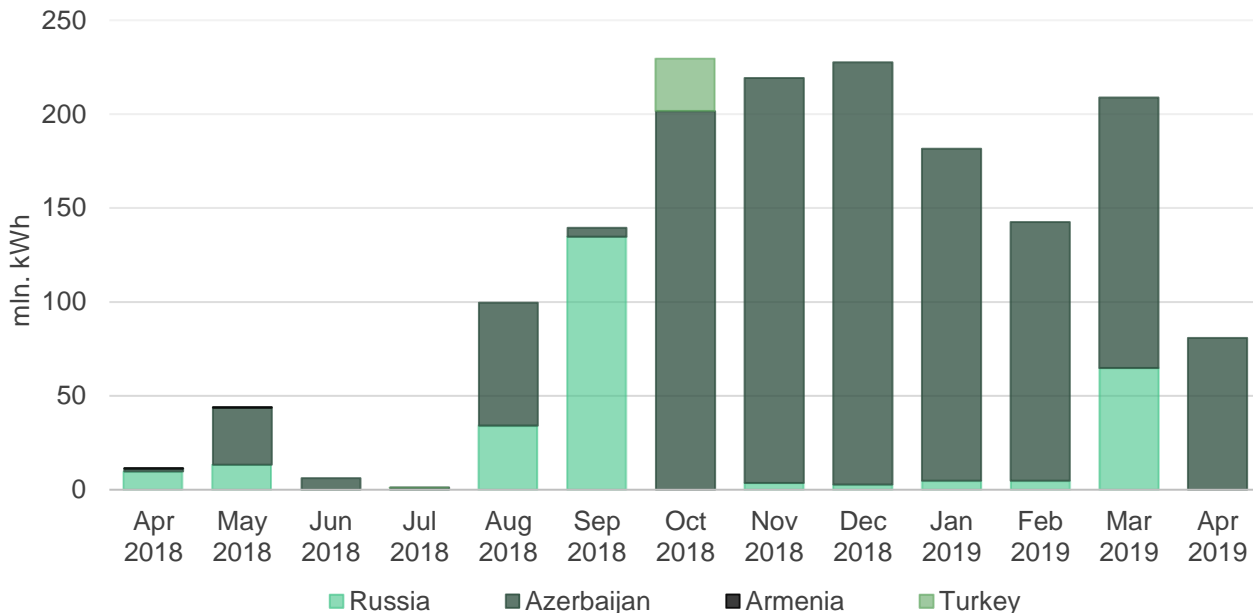
Figure 9 - Exports by Year



Source: ESCO

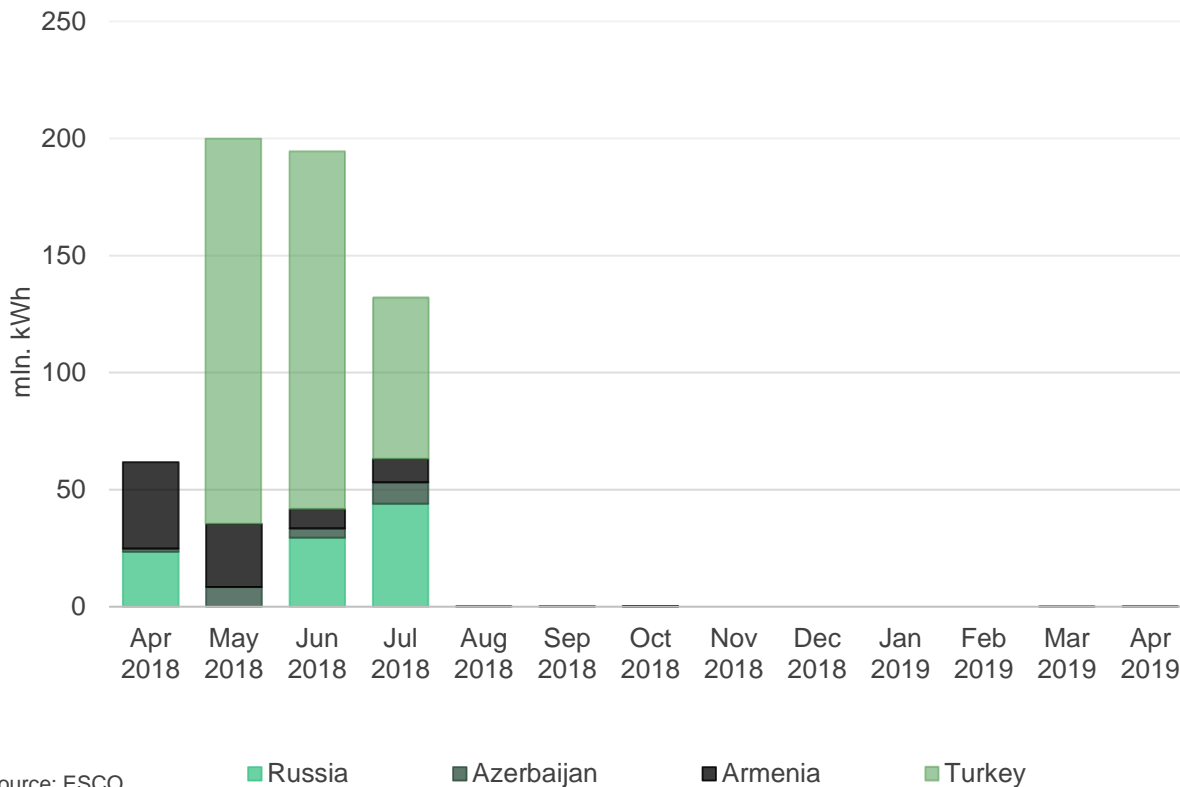
In April 2019, electricity imports reduced from 209 to 81 mln. kWh, which represents 61% decrease on a monthly basis (Figure 10). As for the exports, they increased from 0.002 to 0.0381 mln. kWh (Figure 11). As mentioned above, in this month the main electricity provider was Azerbaijan, confirming its role of the main electricity provider to the Georgian system.

Figure 10 - Imports by Month



Source: ESCO

Figure 11 - Exports by Month

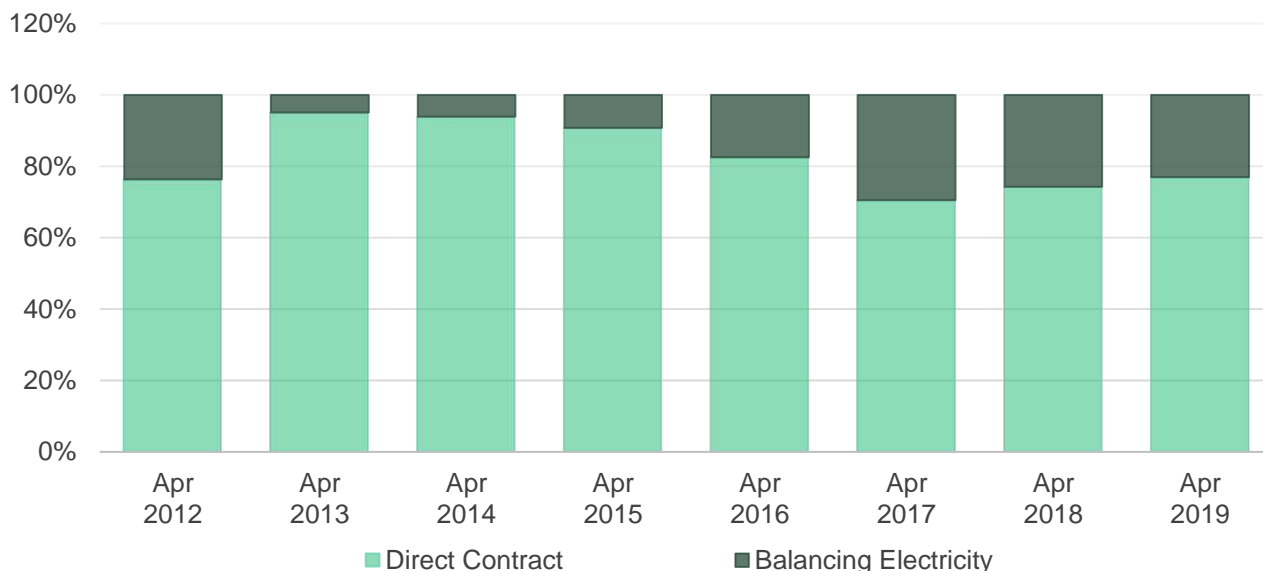


Source: ESCO

2. Market Operations

In April 2019, 77% of the electricity sold on/from the local market (792 mln. kWh) was sold through direct contracts. The remaining 23% (237 mln. kWh) was sold as balancing electricity (Figure 12).

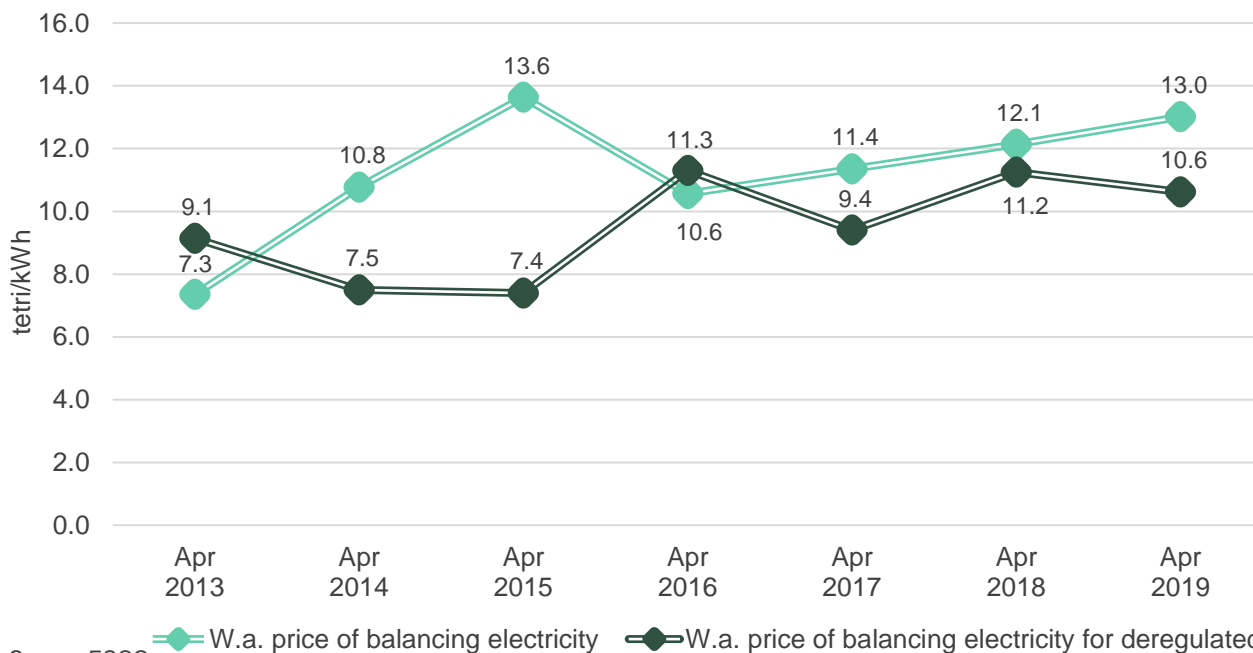
Figure 12 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

The weighted average price of balancing electricity was 13.0 tetri/kWh in April 2019, which is an annual increase of 7% compared to April 2018. As for the weighted average price for deregulated (small) HPPs, it was 10.6 tetri/kWh, which represented 6% decrease compared to the corresponding month of the previous year (Figure 13).

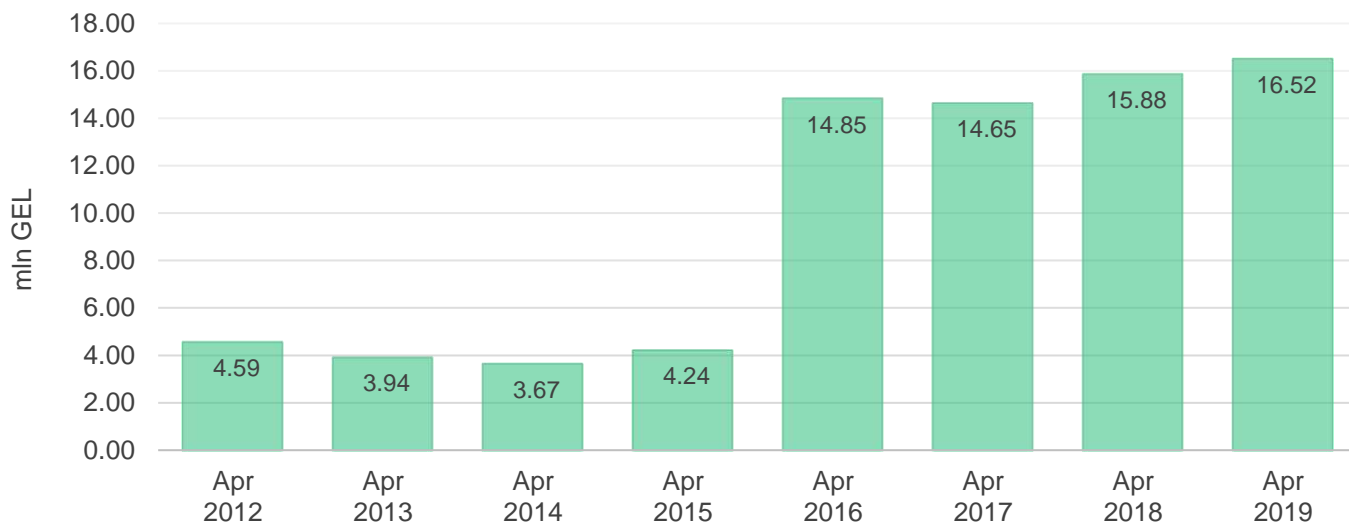
Figure 13 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in April 2019 were roughly 16.52 mln. GEL, which represents 4% increase compared to April 2018 (Figure 14).

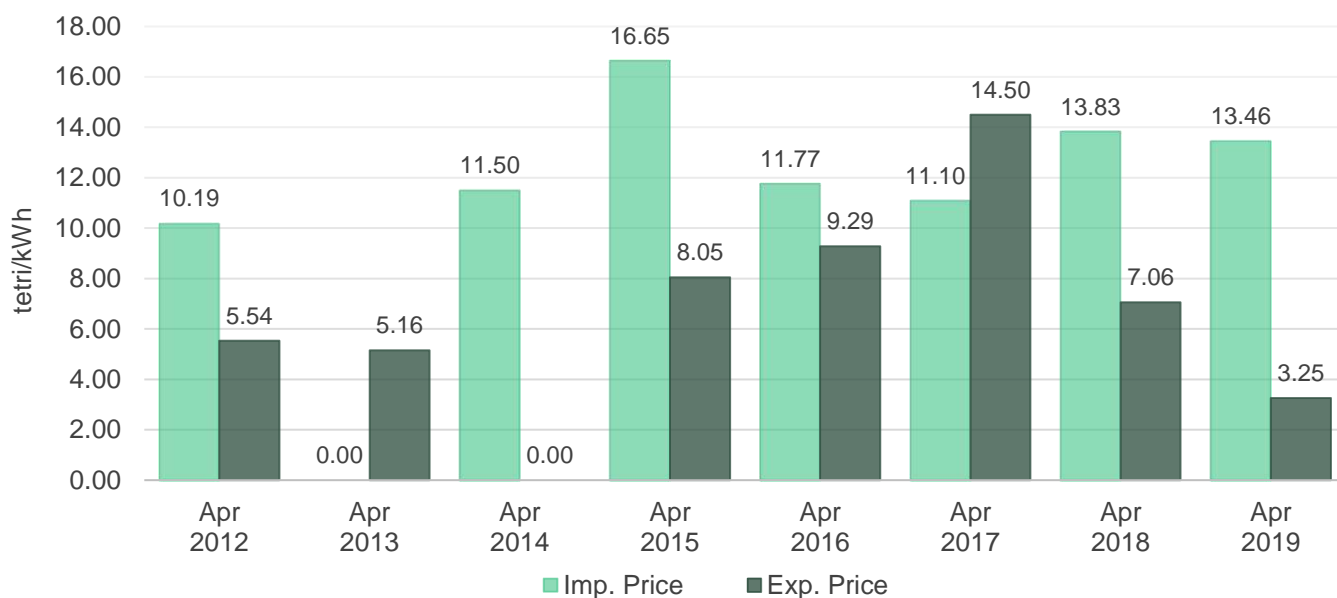
Figure 14 - Cost of Guaranteed Capacity



Source: ESCO

The average electricity import price in April 2019 decreased by 3% (from 5.7 ¢ or 13.83 tetri per kWh to 5 ¢ or 13.46 tetri per kWh) compared to April 2018 (Figure 15). Import prices increased on a monthly basis. The average import price was 3.6 ¢, or 9.8 tetri per kWh in March 2019. The average electricity export price in April 2019 decreased by 54% (from 3 ¢ or 7.06 tetri per kWh to 1 ¢ or 3.25 tetri per kWh) compared to April 2018 (Figure 15). Average export prices also declined on a monthly basis, 5.1 ¢, or 13.7 tetri per kWh in March 2019.

Figure 15 - Prices Import/Export

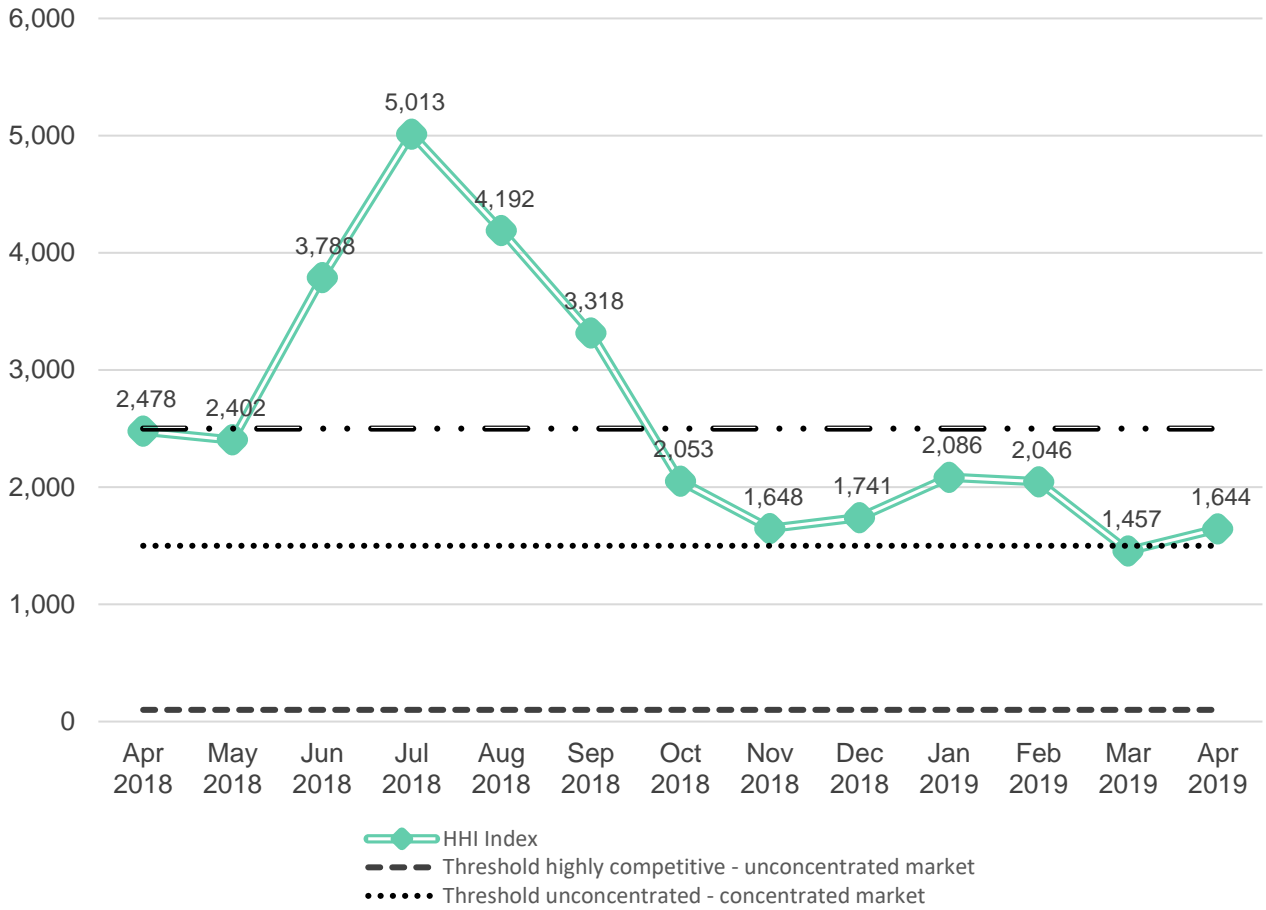


Source: ESCO

3. Market Concentration

In conclusion, we utilize the Hirschmann-Herfindahl (HHI) market concentration index to evaluate how competitive the generation segment of the market has been over the year. In April 2019, the Georgian electricity market was concentrated, with an HHI value of 1,644 (Figure 16). The level of concentration is lower, compared to the same period of the previous year and higher than of the previous month (with an HHI value of 2,478 in April 2018 and 1,457 in March 2019).

Figure 16 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO