ISET
International School of Economics at TSU
Policy Institute

MARCH
2020

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
Researcher
m.tsulukidze @iset.ge

Mariam Lobjanidze
Researcher
m.lobjanidze @iset.ge

INFORMATION

- There was adecreasein total electricity generationon ayearlybasis and an increase on a monthly basis. The substantial increase in HPP generation was more than offset by a sharp decline in TPP generation.
- Consumption decreasedon a yearly andon a monthly basis.
- Consumption exceeded generation by 183mln. kWh.
- The mainimport and 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 decreased on a monthly basis.
- The Georgian electricity generationmarket was below the threshold of concentrated market.
- The Georgian electricityconsumption market was 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

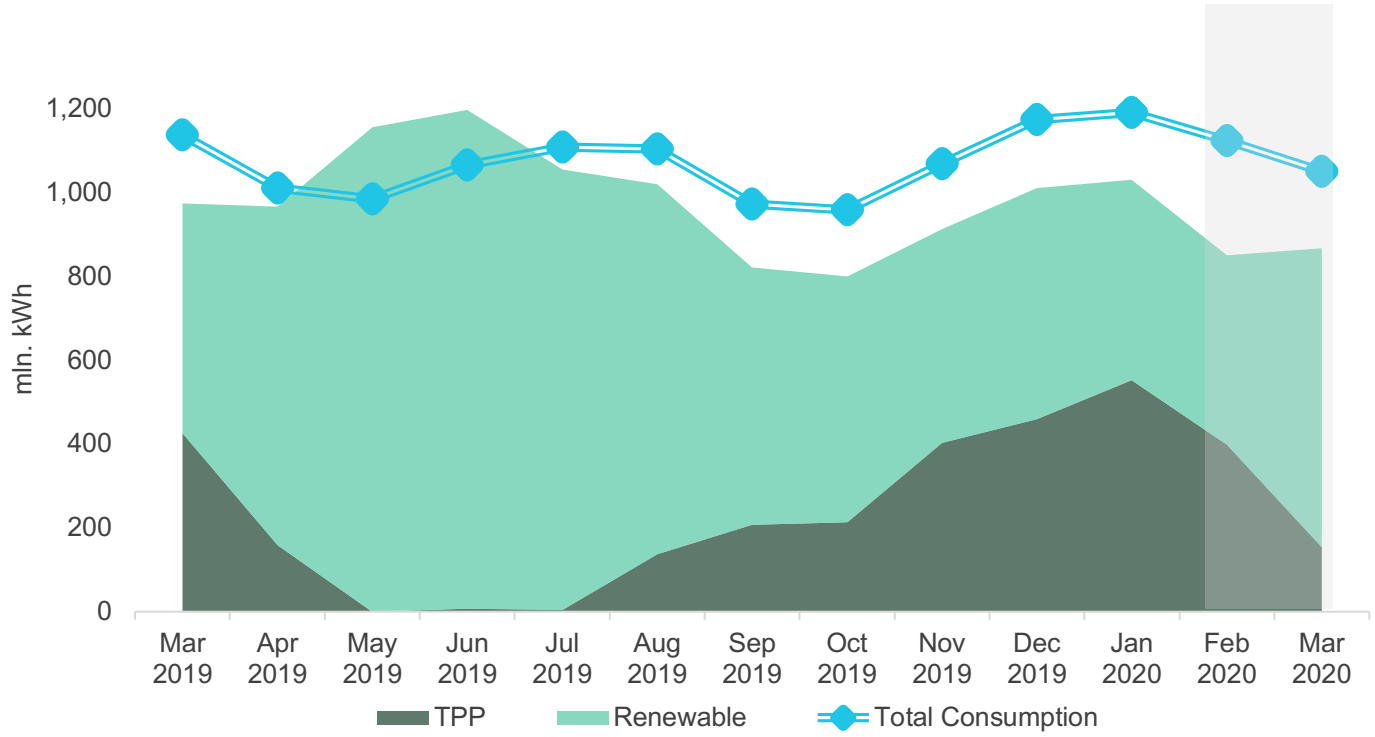
Generation – Consumption – Trade

In March 2020, Georgian power plants generated 867 mln. kWh of electricity (Figure 1). This represents a 11% decrease in total generation, compared to the previous year (in March 2019, the total generation was 974 mln. kWh). The decrease in generation on a yearly basis comes from the decrease of 64% in thermal power generation more than offsetting the increase of 30% in hydro and 7% in wind power generation.

On a monthly basis, generation increased by 2% (in February 2020, total generation was 851 mln. kWh) (Figure 1). The monthly increase in total generation was the result of the increase of 58% in hydro and 32% in wind more than offsetting the decrease of 62% in thermal power generation.

The consumption of electricity on the local market was 1,050 mln. kWh (-8% and -7% compared to March 2019, and February 2020, respectively) (Figure 1). In March 2020, the total consumption exceeded the total generation by 183 mln. kWh which is around 21% of total generation (in contrast in March 2019 difference between total generation and consumption resulted in a deficit of 164 mln. kWh which was around 17% of the total generation for the month).

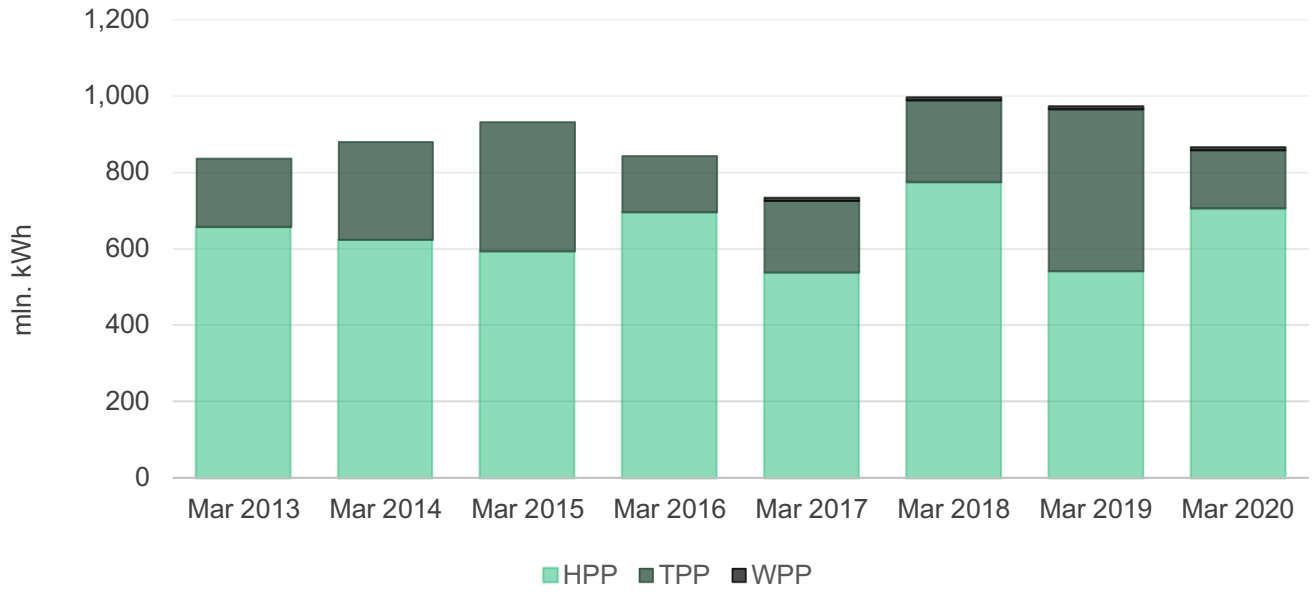
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

In this month most generation came from hydro power plants. In March 2020, hydro power (HPP) generation amounted to 705 mln. kWh (81% of total), thermal power (TPP) generation was 153 mln. kWh (18% of total), and wind power (WPP) generation was 9 mln. kWh (1% of total) (Figure 2).

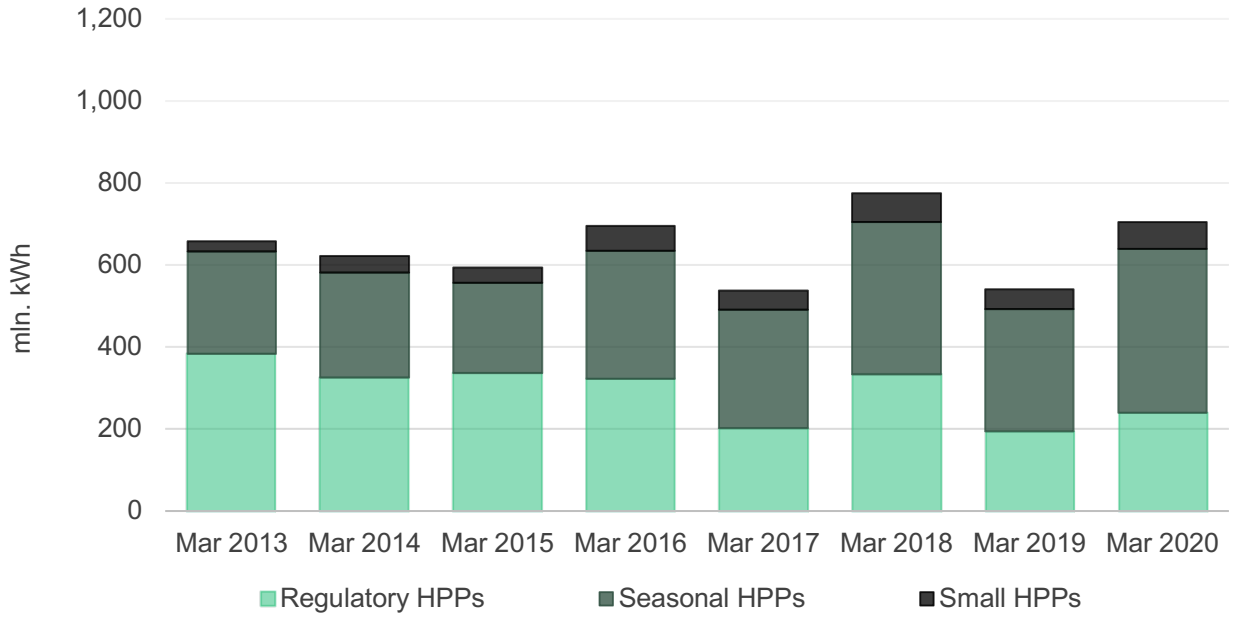
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 34% (239 mln. kWh) of electricity, while seasonal and small HPPs produced 57% (400 mln. kWh) and 9% (66 mln. kWh), respectively (Figure 3).

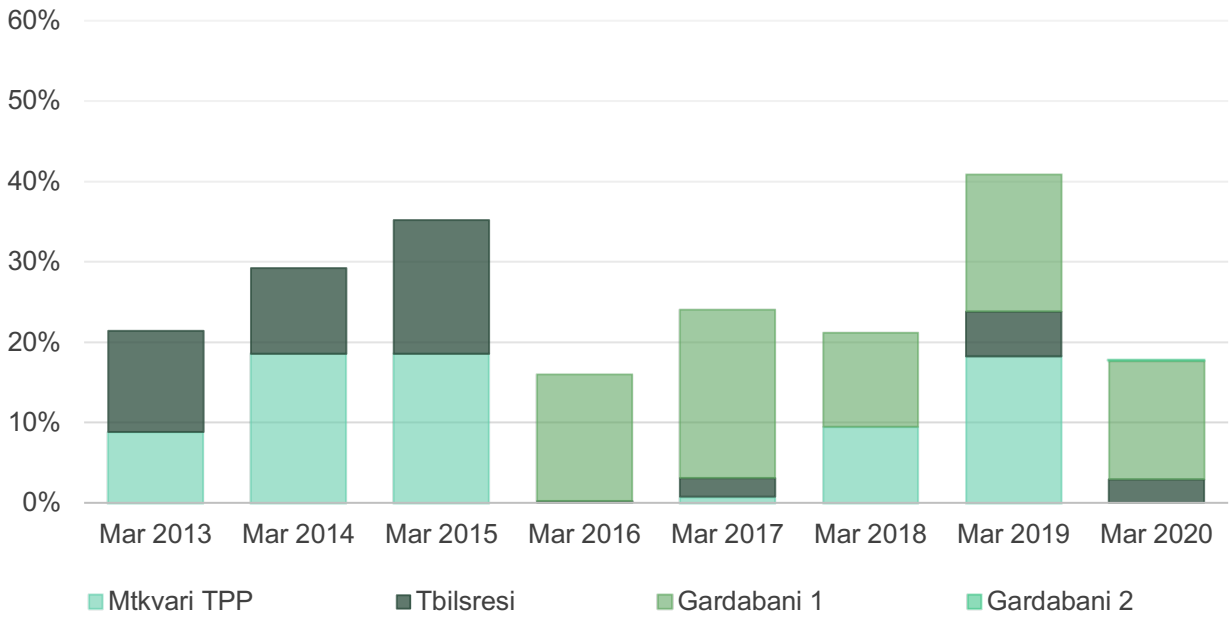
Figure 3 - HPP Generation by Type



Source: ESCO

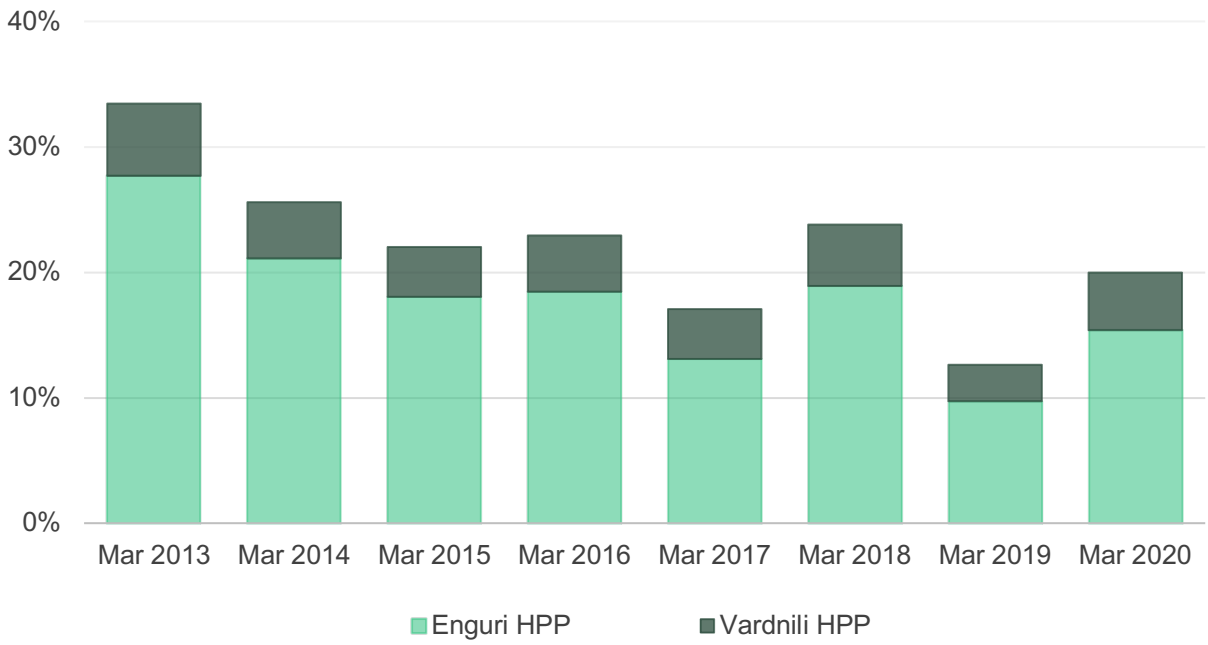
Among thermal power plants Gardabani 1 & 2 generated 128 mln. kWh, 84% of total thermal power generation and 15% of total generation (Figure 4). As for HPP generation, the large HPPs, Enguri and Vardnili generated 173 mln. kWh (72% of generation for regulatory HPPs), with 133 mln. kWh and 40 mln. kWh, respectively. Power generated by Enguri and Vardnili represents around 20% of the total generation (Figure 5). Overall, total generation has decreased by 11% compared to March 2019 (Figure 6).

Figure 4 - Share of Large TPPs in Total Generation



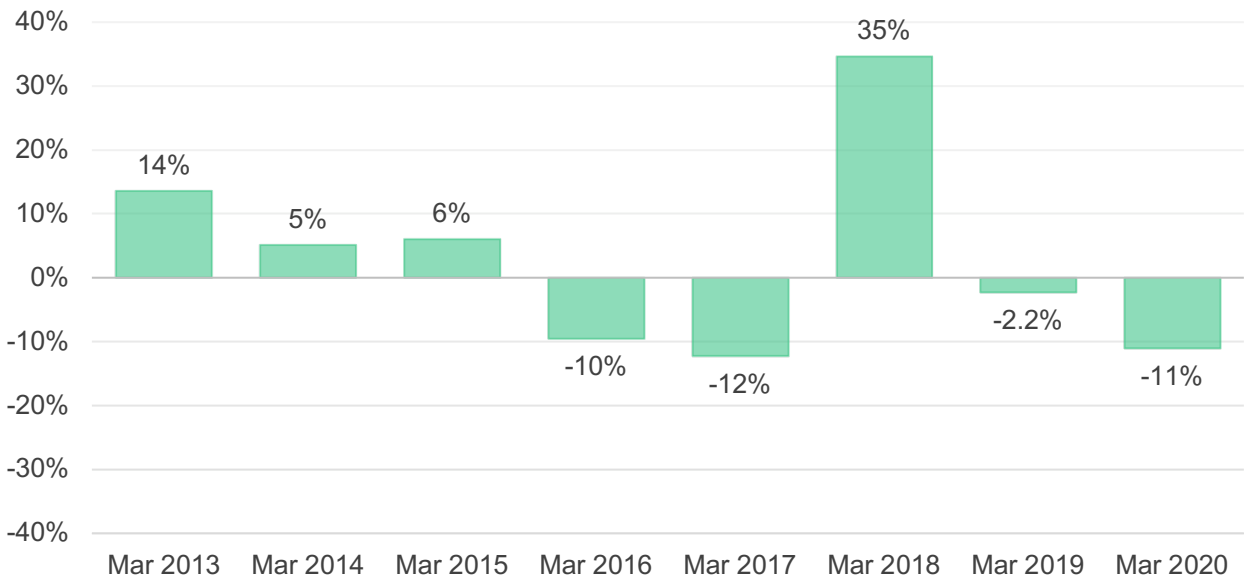
Source: ESCO

Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

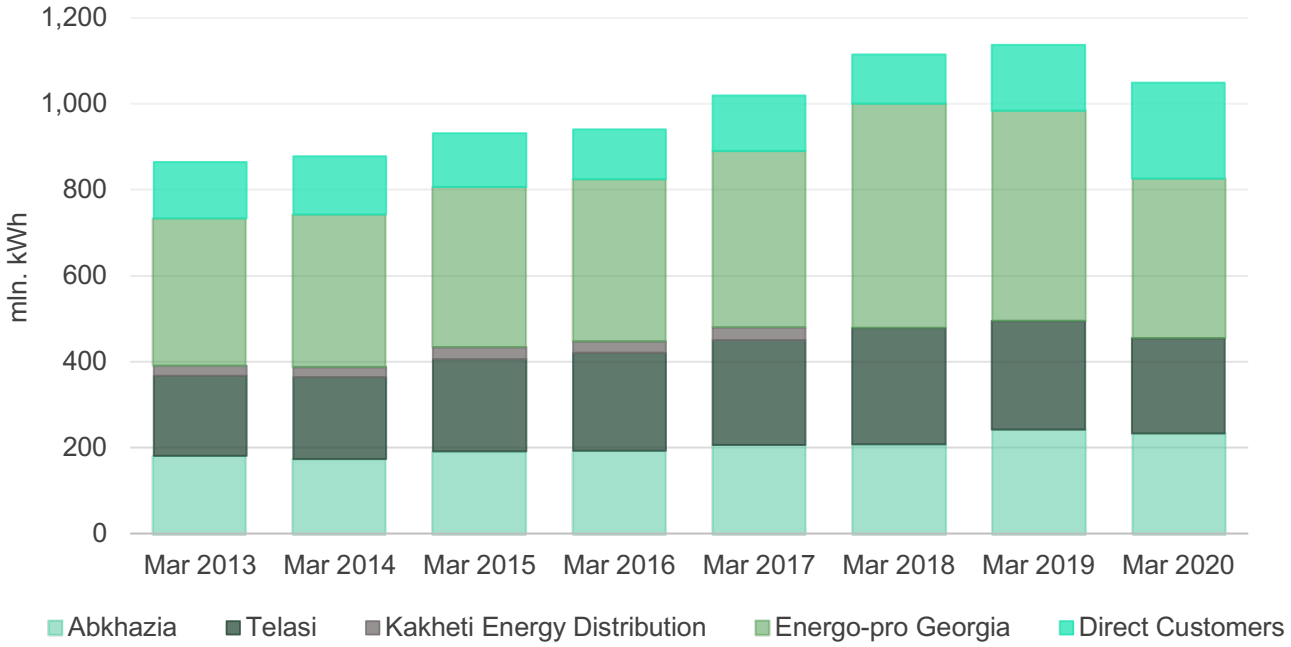
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia[1] (35% - 370 mln. kWh), Telasi (21% - 222 mln. kWh), Abkhazia (22% - 233 mln. kWh), and direct customers (21% - 224 mln. kWh) (Figure 7). Annual demand from Energo-Pro Georgia, Telasi, Abkhazia and decreased by 24% , 12%, and 4% respectively, more than offsetting the increase of 45% from direct consumers.[2] Overall, there was an annual decrease of 8% in the total electricity consumption in March 2020, compared to March 2019 (Figure 8). This was the first time since 2013 that consumption decline relative to the previous year.

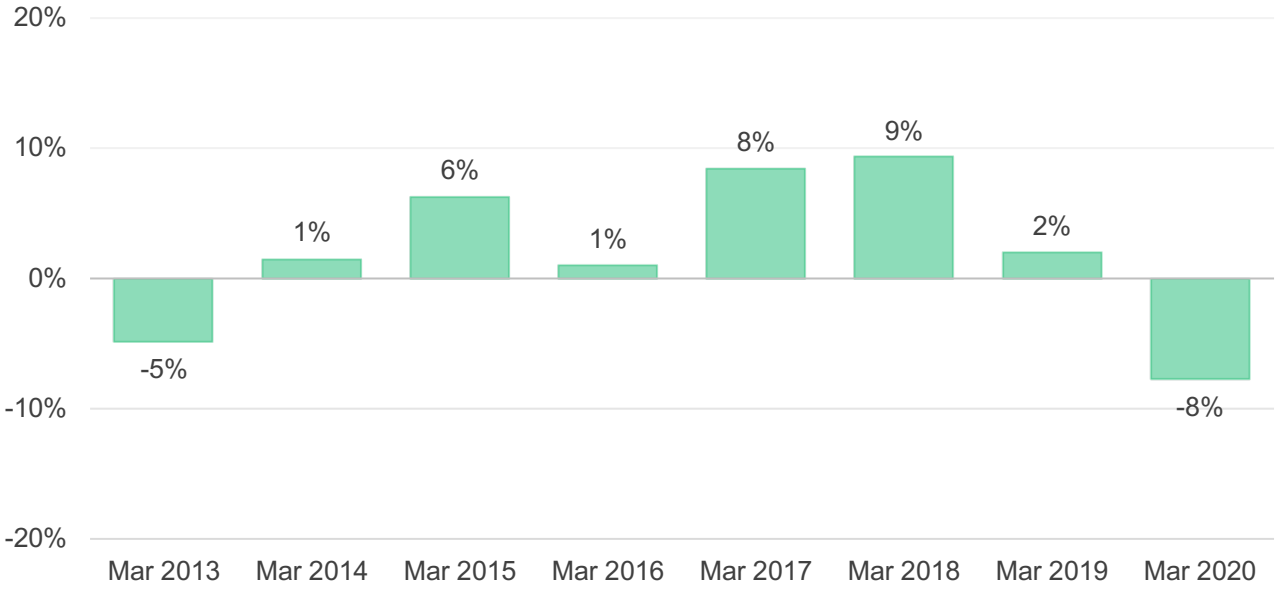
Figure 7 - Electricity Consumption by Type of Customer



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)

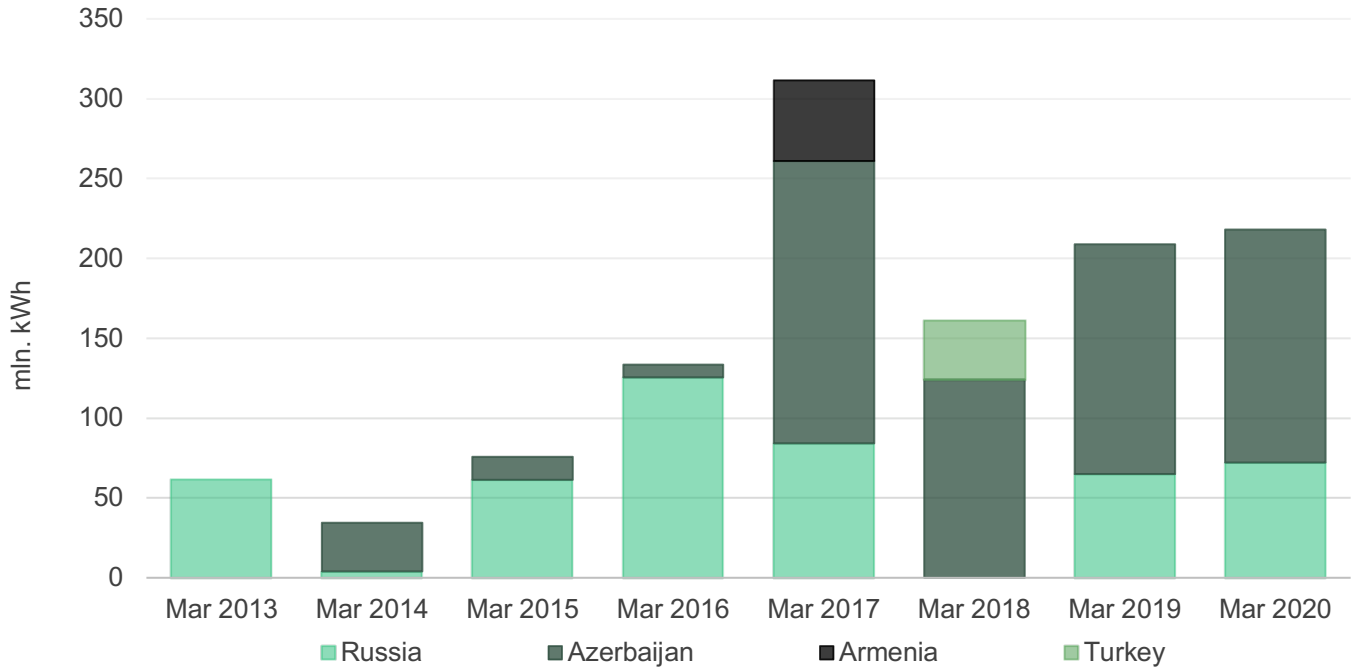


Source: ESCO

In March 2020, Georgia imported 218 mln. kWh of electricity (+4% compared to March 2019) 67% of which came from Azerbaijan, while the remaining 33% was provided by Russia (Figure 9). In March 2020, Georgia exported 0.108 mln. kWh of electricity; significant increase compared to March 2019, when exported electricity amounted up to 0.0017 mln. kWh (Figure 10). Similar to March 2019, in this month export partner country was Azerbaijan.

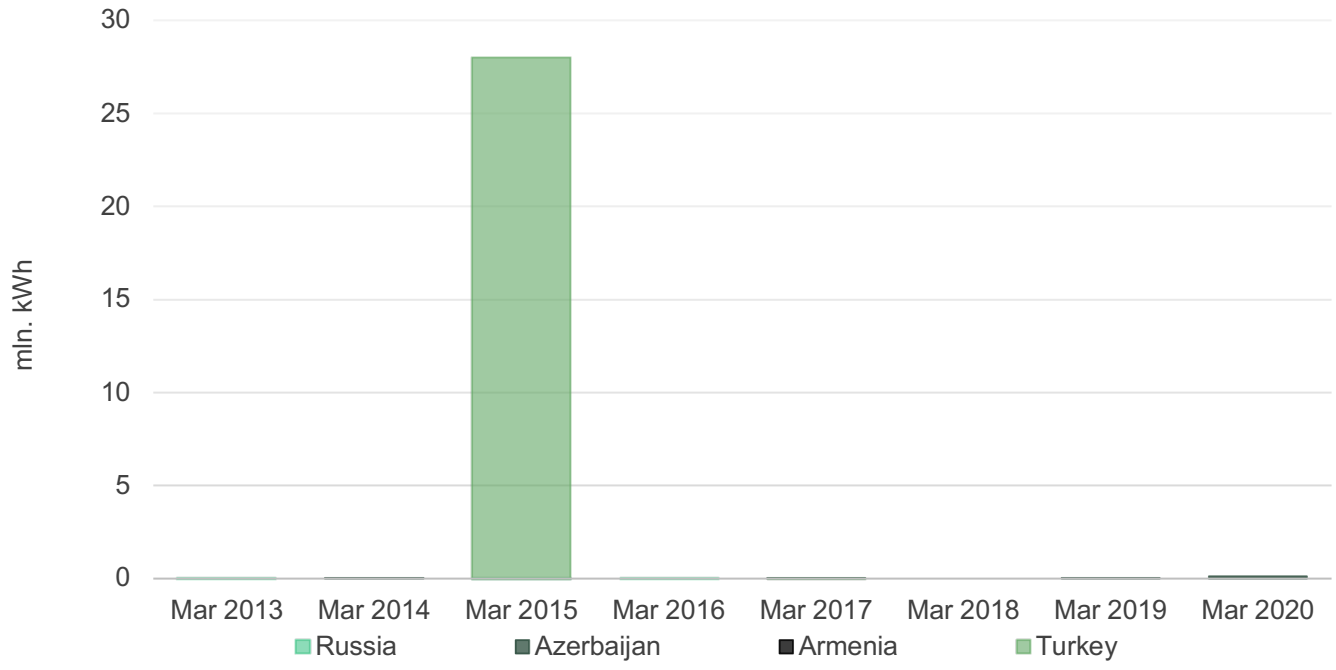
This month there was no electricity transit compared to the previous year (6 mln. kWh from Azerbaijan to Turkey).

Figure 9 - **Imports by Year**



Source: ESCO

Figure 10 - **Exports by Year**

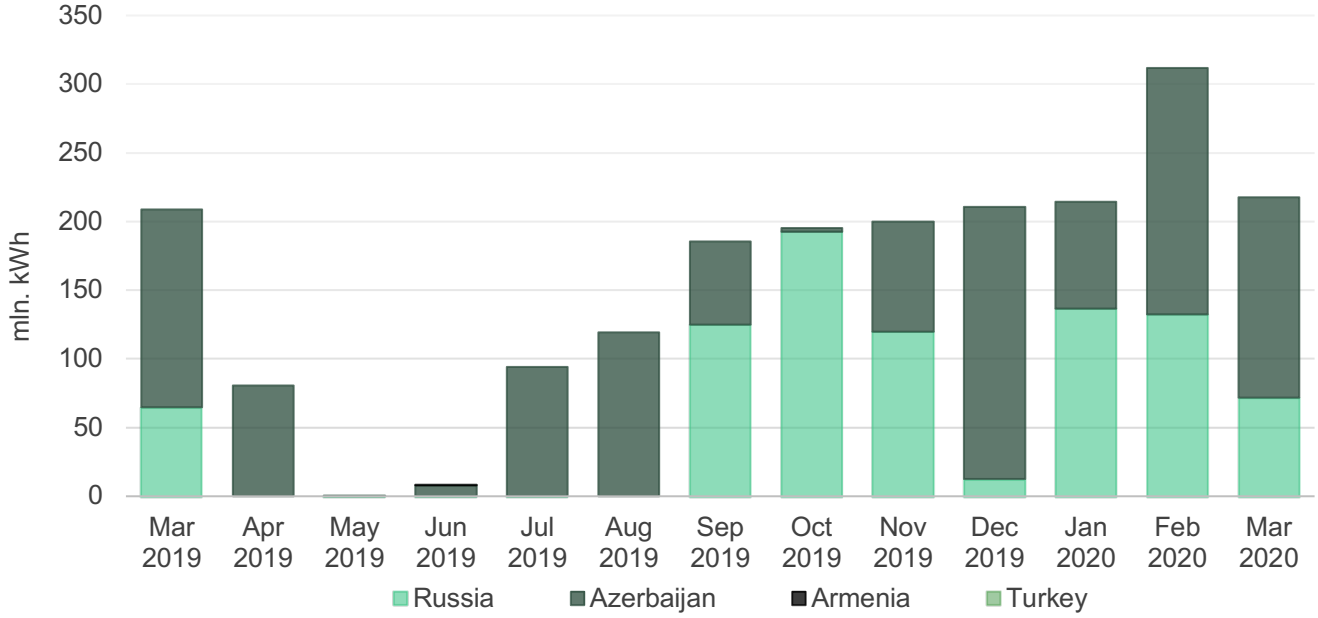


Source: ESCO

In March 2020, electricity imports decreased by 30% from 312 to 218 mln. kWh compared to the previous month (Figure 11). As for the exports, it more than halved compared to the previous month (from 0.506 to 0.108 mln. kWh) (Figure 12). As mentioned above, in this month the main import and export partner country was Azerbaijan.

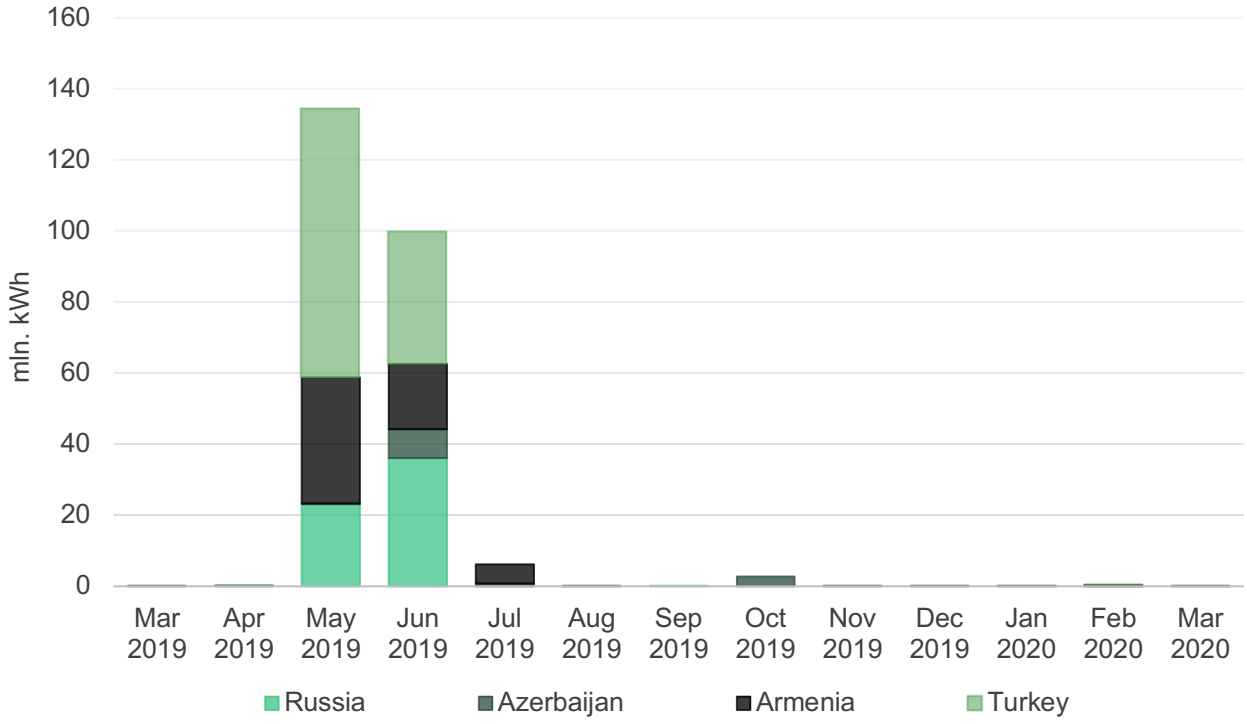
This month there was no electricity transit compared to the previous month (25 mln. kWh from Azerbaijan to Turkey).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

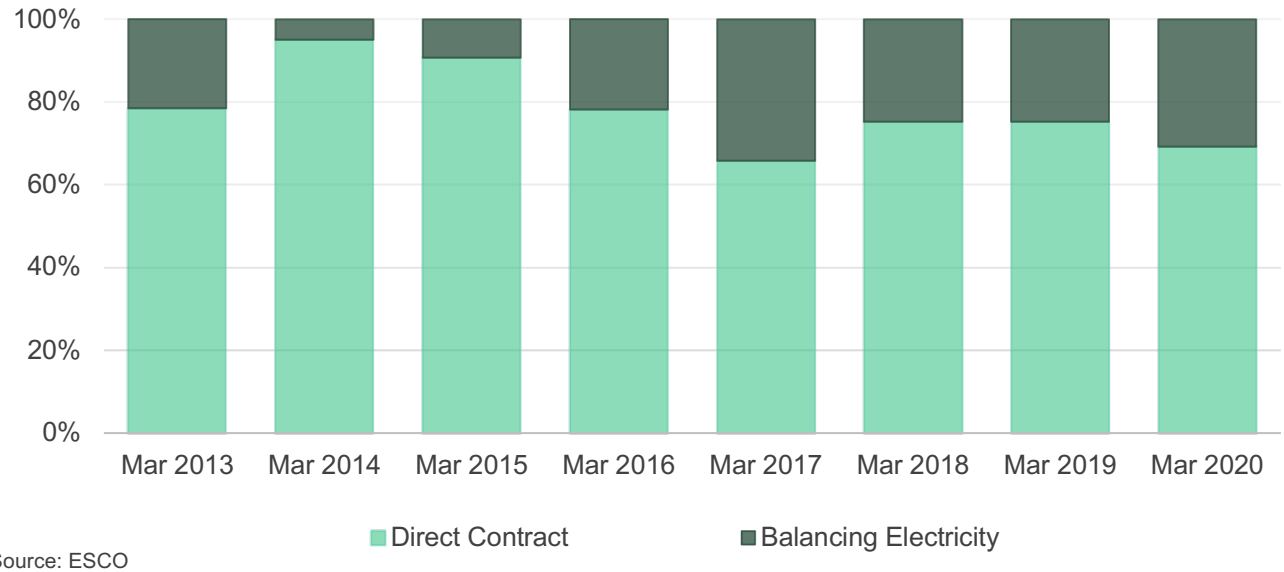


Source: ESCO

1. Market Operations

In March 2020, 69% of the electricity sold on/from the local market was sold through direct contracts. The remaining 31% was sold as balancing electricity (Figure 13).

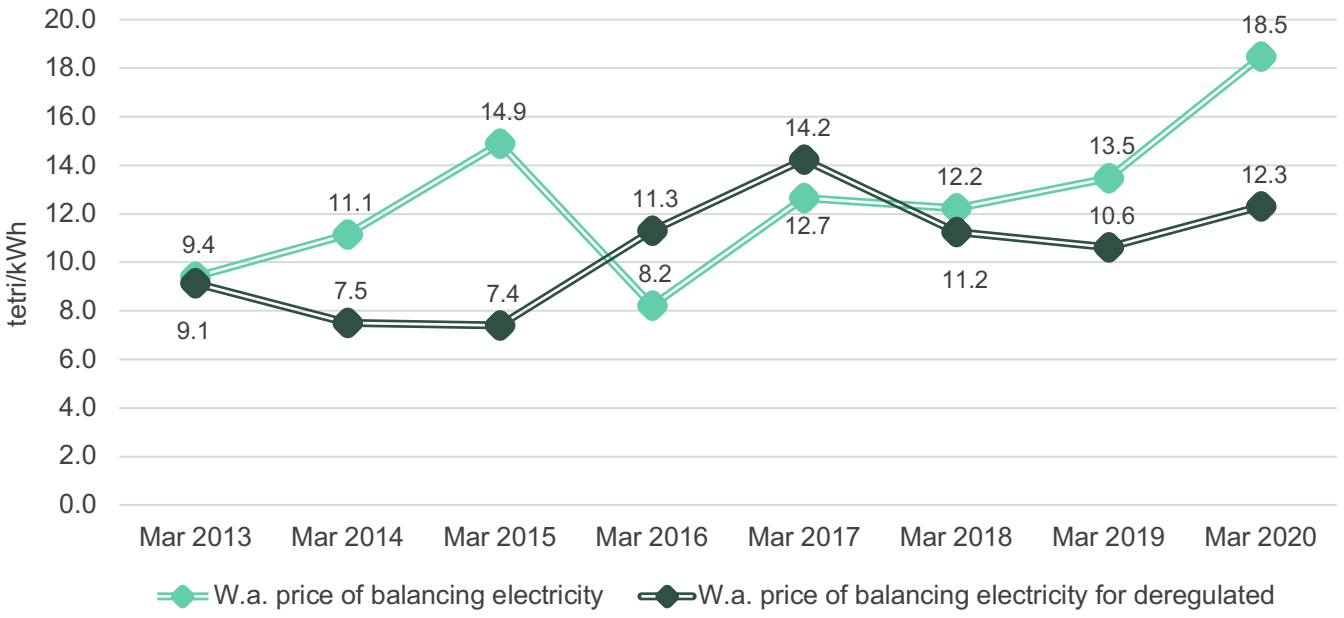
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In March 2020, the weighted average price of balancing electricity was 18.5 tetri/kWh in, which is an annual increase of 37% compared to March 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).

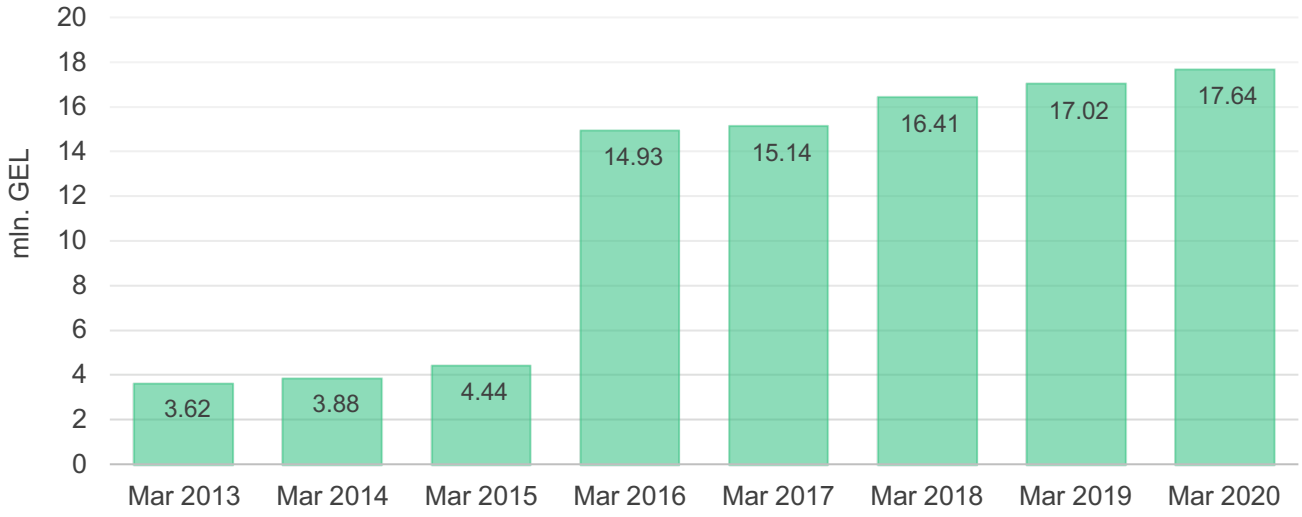
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in March 2020 were roughly 17.64 mln. GEL, which represents an 4% increase compared to March 2019 (Figure 15).

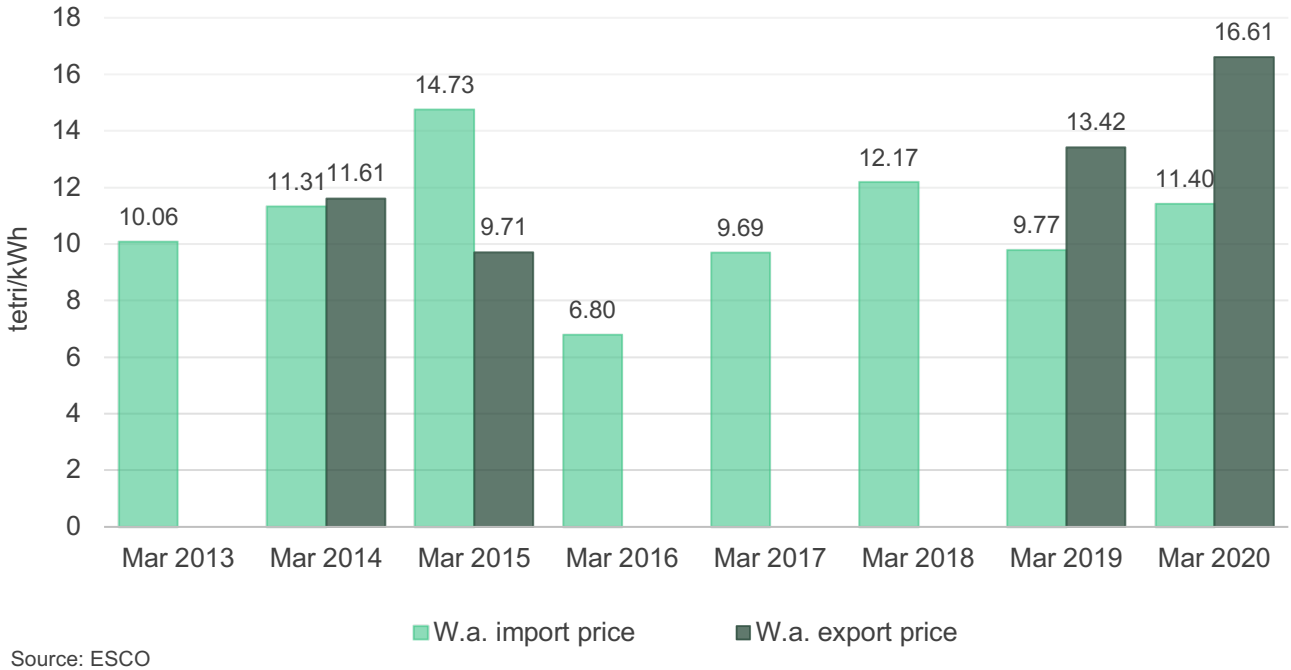
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The weighted average electricity import price in March 2020 increased by 17%[3] (from 3.64 ¢ or 9.77 tetri per kWh to 3.75 ¢ or 11.4 tetri per kWh) compared to March 2019 (Figure 16). The weighted average import price decreased by 20% on a monthly basis (import price was 4.99 ¢ or 14.22 tetri per kWh in February 2020). The weighted average electricity exports price in March 2020 was 5.46 ¢ or 16.61 tetri per kWh. The weighted average export price increased by 24% on a yearly basis and decreased by 7% on a monthly basis (export price was 5 ¢ or 13.42 tetri per kWh in March 2019 and 6.28 ¢ or 17.92 tetri per kWh in February 2020).

Figure 16 - Prices Import/Export

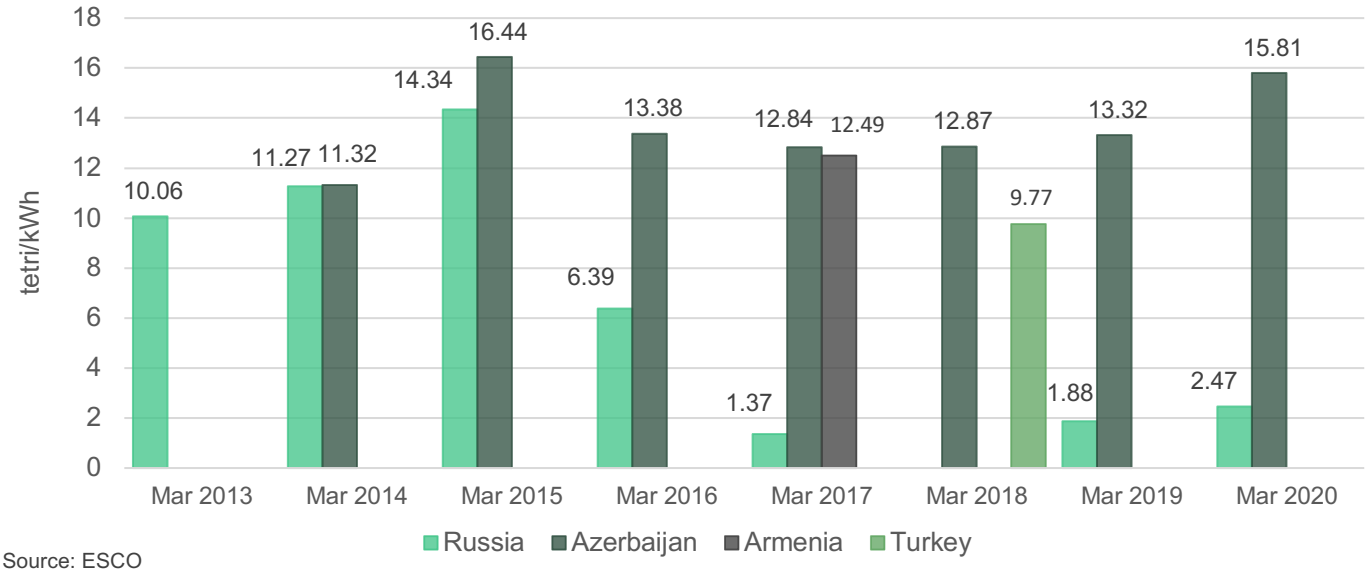


Source: ESCO

[3] Because of large depreciation of Georgian Lari.

Import prices for Azerbaijan and Russia amounted to 5.2 ¢ or 15.81 tetri per kWh and 0.81 ¢ or 2.47 tetri per kWh, respectively. The disaggregated prices show that import prices have increased for Azerbaijan by 31% (from 4.96 ¢ or 13.32 tetri per kWh) and for Russia by 19% (from 0.7 ¢ or 1.88 tetri per kWh) compared to March 2019. On a monthly basis, the electricity import price increased from Azerbaijan by 7% (from 5.2 ¢ or 14.83 tetri per kWh) and decreased from Russia by 82% (from 4.7 ¢ or 13.4 tetri per kWh) (Figure 17).

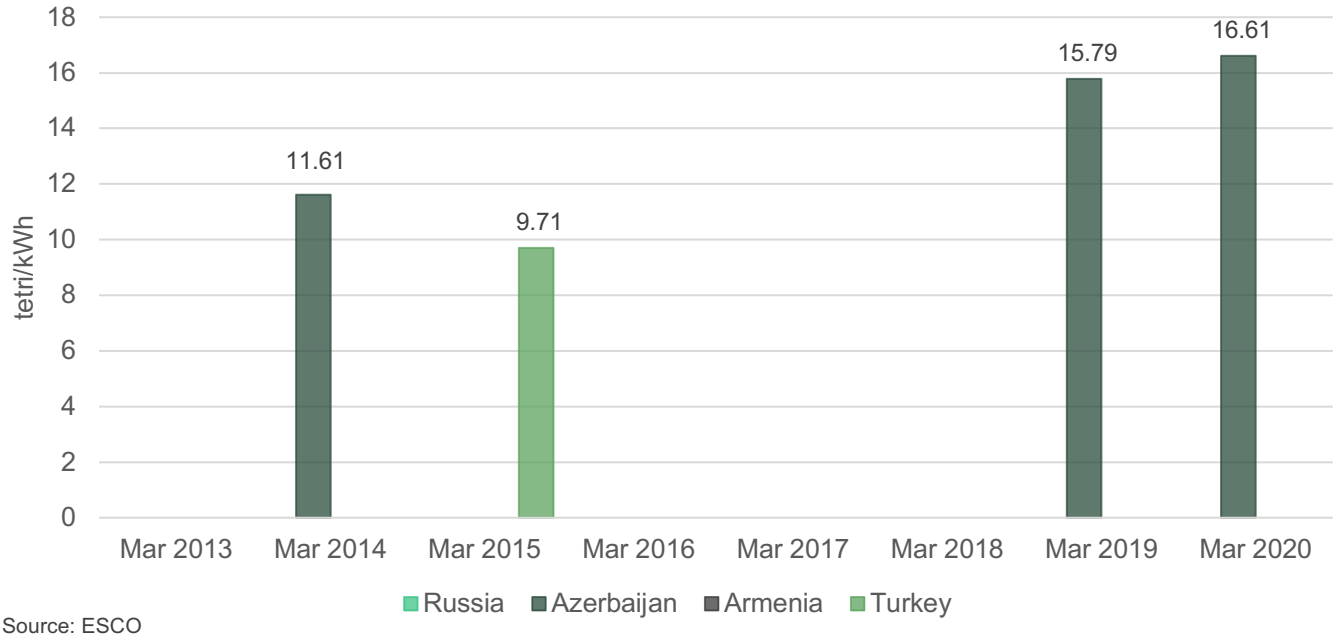
Figure 17 - Import Prices by Countries



Source: ESCO

The electricity export price to Azerbaijan increased by 5% (from 5.88 ¢ or 15.79 tetri per kWh to 5.46 ¢ or 16.61 tetri per kWh) on a yearly and a monthly basis (from 5.52 ¢ or 15.75 tetri per kWh) (Figure 18).

Figure 18 - Export Prices by Countries

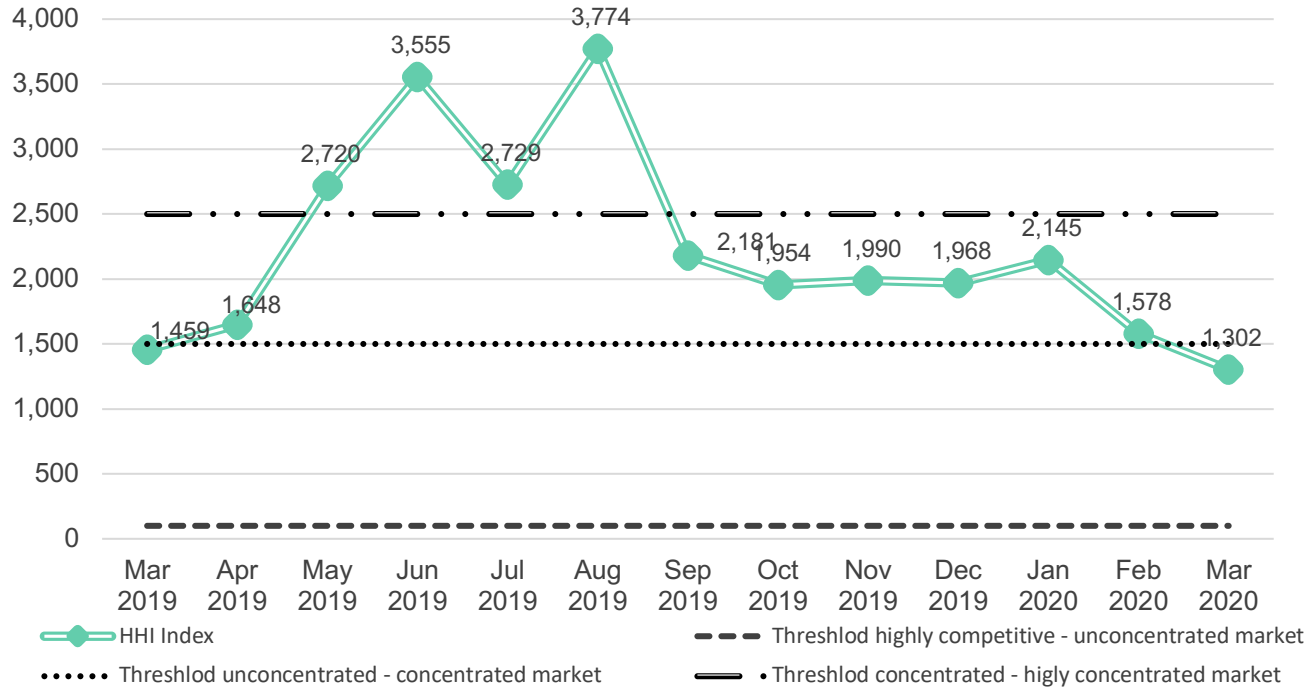


Source: ESCO

2. Market Concentration

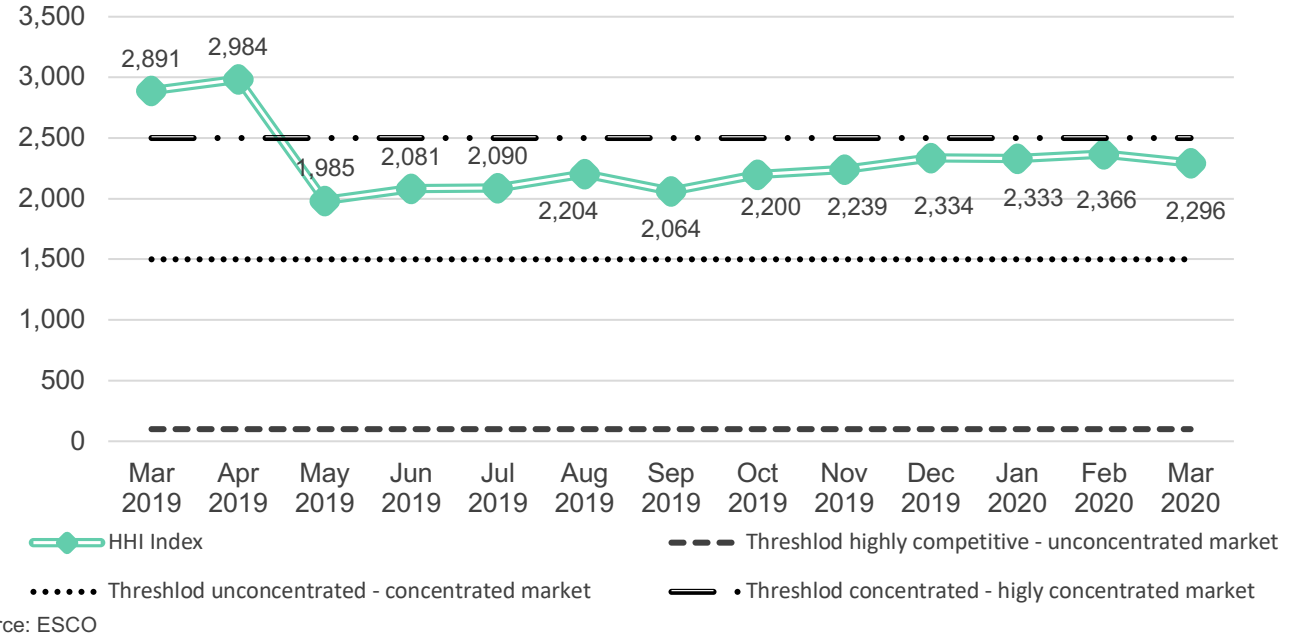
In conclusion, we utilize the Hirschmann-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In March 2020, the Georgian electricity generation market was below the threshold of a concentrated market, with an HHI value of 1,302 (Figure 19), it was a bit more concentrated with an HHI value of 1,459 in March 2019 and more concentrated in February 2020 (HHI was 1,578). As for the consumption segment, in March 2020 the HHI consumption index was below the threshold for a highly concentrated market, reaching the value of 2,296 (slightly lower than in February 2020 and much lower than in March 2019) which corresponds to a concentrated market (Figure 20).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO