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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- There was a large decrease in total electricity generation, on both yearly and monthly basis.
- Consumption increased, on both yearly and monthly basis.
- Consumption exceeded generation by 566 mln. kWh – 86% of total generation for March.
- The main import partner country was Russia.
- The cost of Russian imports was 2.32 tetri per kWh.
- The weighted average price of imports decreased on a yearly, but increased on a monthly basis.
- The weighted average price of exports decreased on a yearly and monthly basis (there was a slight increase annually in GEL, due to depreciation of national currency).
- HHI index for the Georgian electricity generation market approached the threshold between not concentrated and highly-competitive markets, indicating that the generation side of the market is increasingly competitive.
- HHI for 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

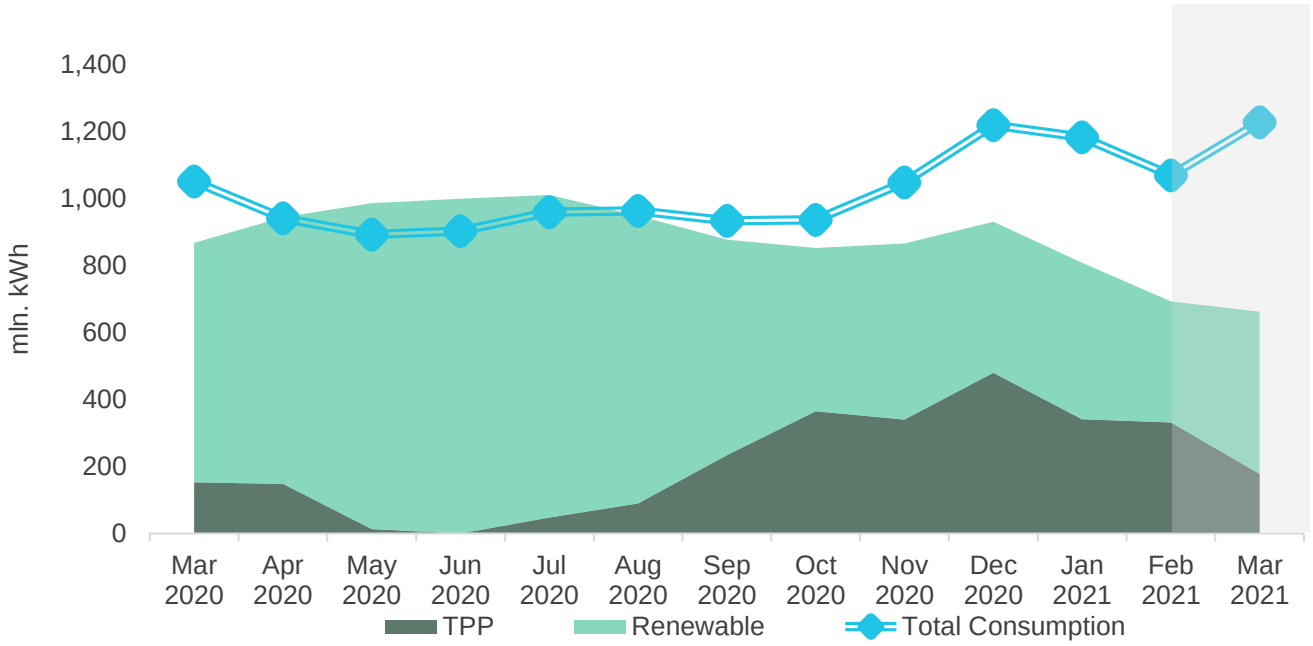
Generation – Consumption – Trade

In March 2021, Georgian power plants generated 661 mln. kWh of electricity (Figure 1). This represents a 24% decrease in total generation, compared to the previous year (March 2020, the total generation was 867 mln. kWh). The decrease in generation on a yearly basis comes from the decrease of 33% in hydro power generation, however, the generation of thermal and wind power have increased by 16% and 0.9%, respectively.

On a monthly basis, generation decreased by approximately 4% (in February 2021, total generation was 692 mln. kWh) (Figure 1). The monthly decrease in total generation was the result of a 47% reduction in thermal power generation. The hydro and wind power generation increased by 34% and 54% on a monthly basis.

The consumption of electricity on the local market was 1,227 mln. kWh (+17% and +15% compared to March 2020, and February 2021, respectively) (Figure 1). In March 2021, power consumption exceeded generation by 566 mln. kWh which was 86% of total generation (in March 2020 difference between total generation and consumption resulted in a shortage of 183 mln. kWh, around 21% of the total generation for the month).

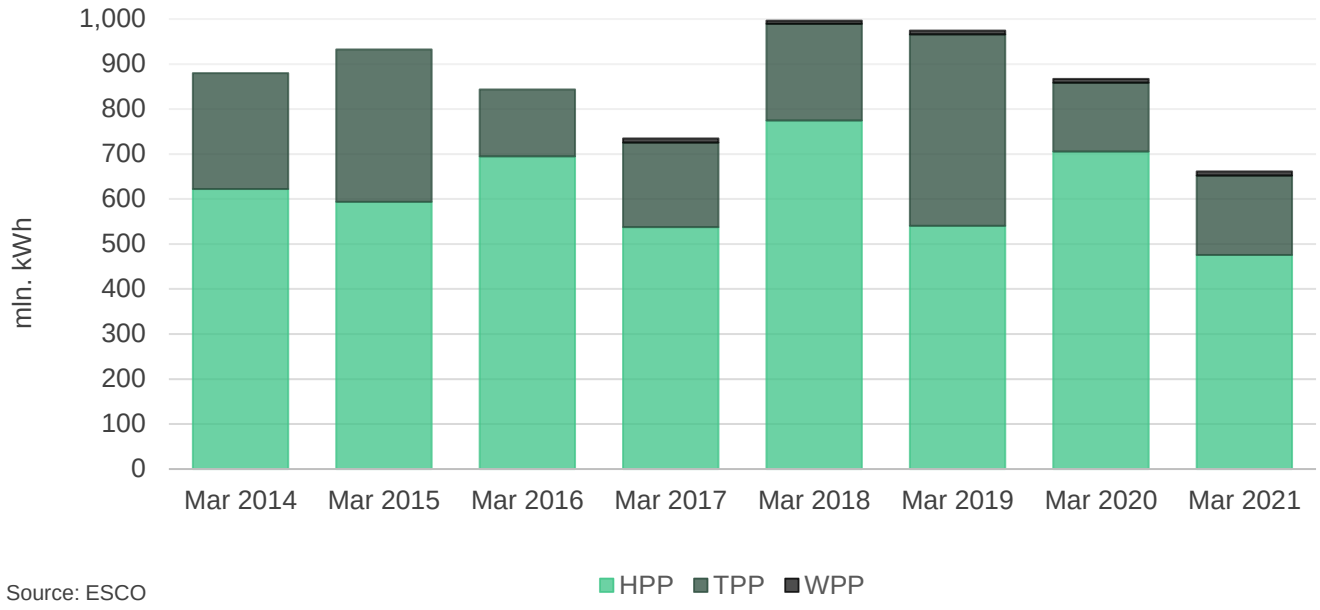
Figure 1 - **Electricity Consumption and Generation**



Source: Electricity System Commercial Operator (ESCO)

Most generation came from hydro power plants. In March 2021, hydro power (HPP) generation amounted to 475 mln. kWh (72% of total), while thermal power (TPP) generation was 177 mln. kWh (27% of total), and wind power (WPP) generation was 9 mln. kWh (1% of total) (Figure 2).

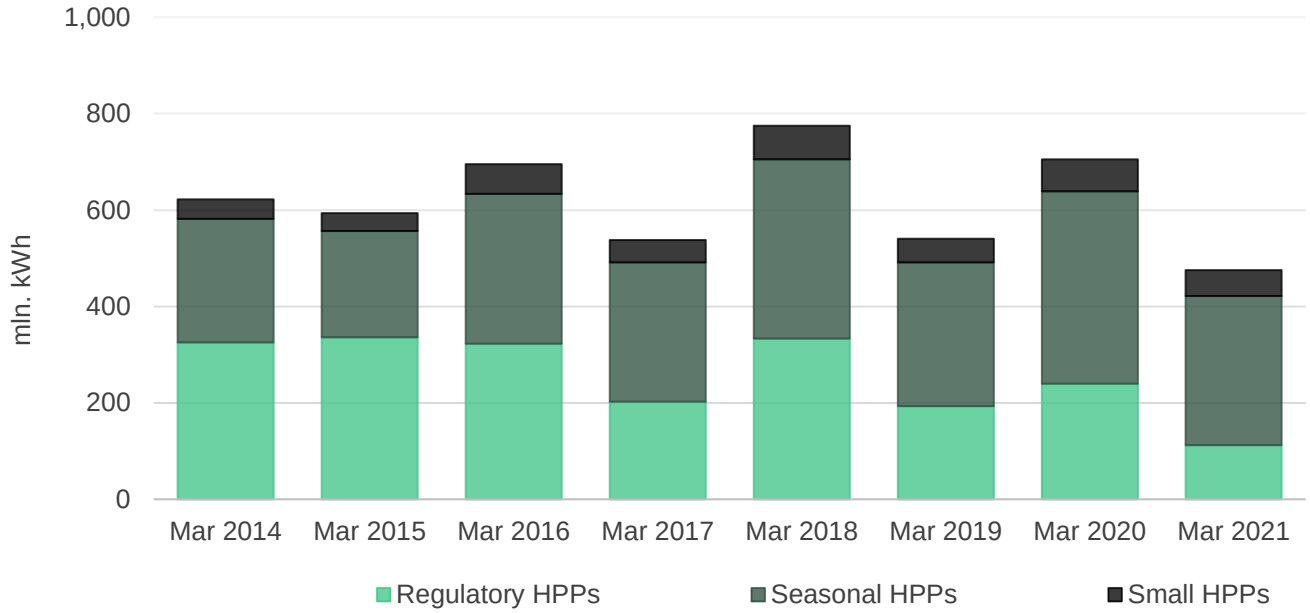
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 24% (112 mln. kWh) of electricity, while seasonal and small HPPs produced 65% (310 mln. kWh) and 11% (54 mln. kWh), respectively (Figure 3).

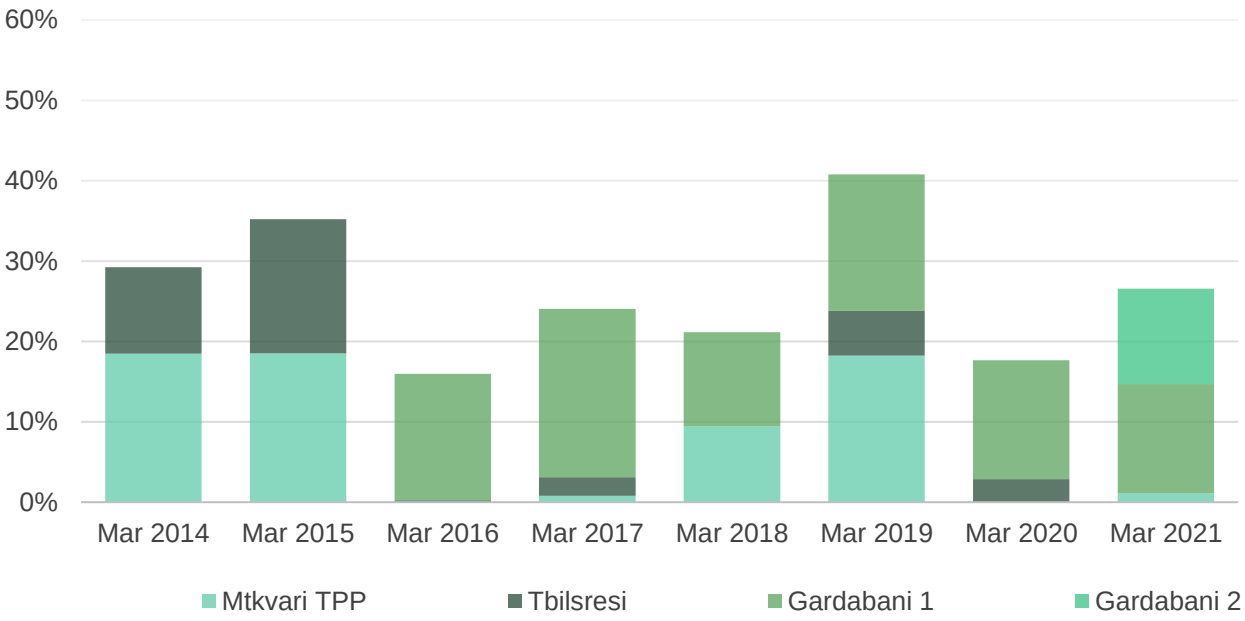
Figure 3 - HPP Generation by Type



Source: ESCO

Among thermal power plants, Gardabani 1 TPP generated 90 mln. kWh, 51% of total thermal power generation and 14% of total generation. Gardabani 2 TPP generated 78 mln. kWh, 44% of total thermal power generation and 12% of total generation (Figure 4).

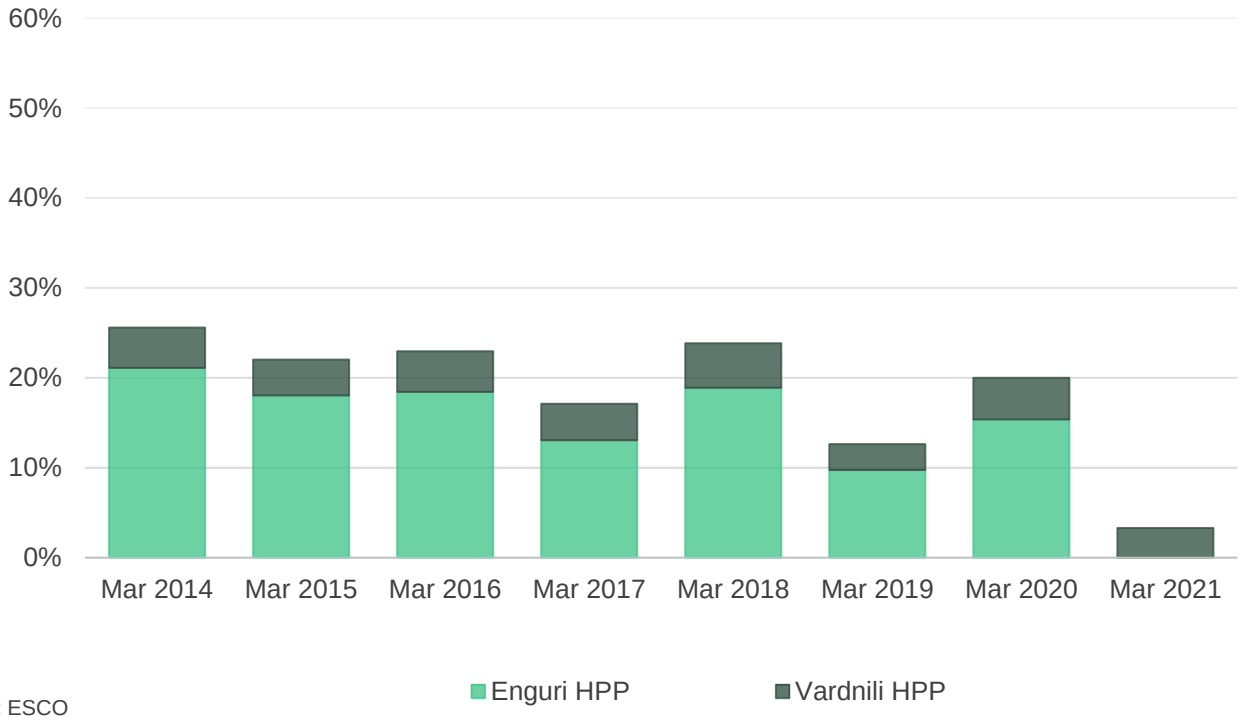
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 22 mln. kWh (19% of generation for regulatory HPPs). Enguri HPP was fully stopped during March 2021. Power generated by Vardnili represented around 3% of the total generation (Figure 5).

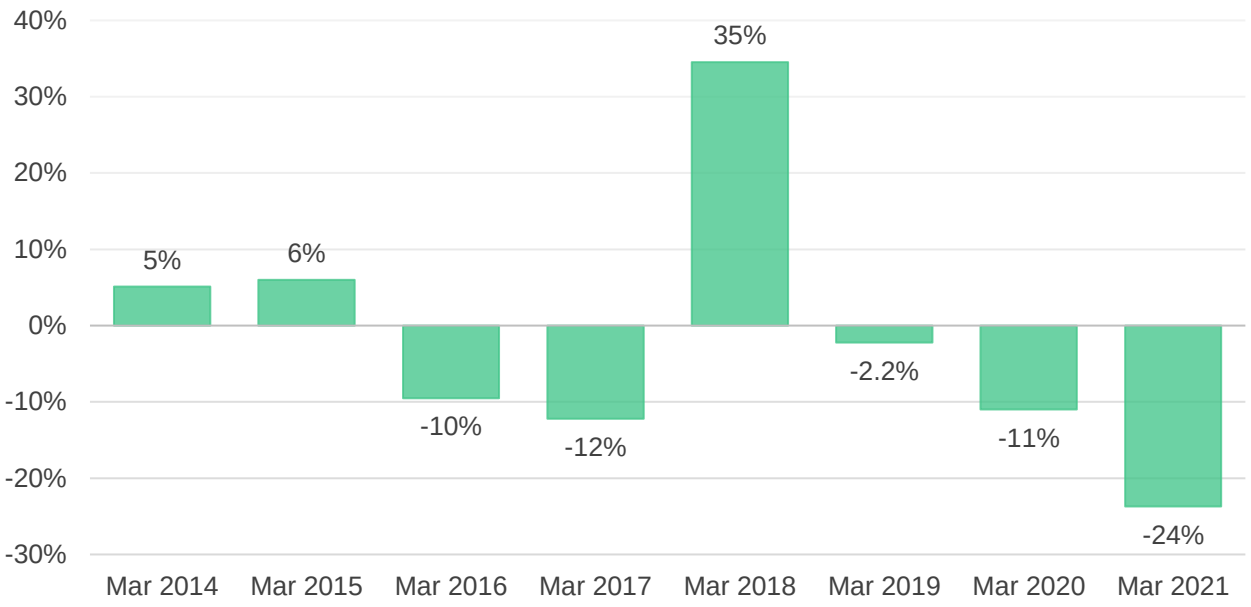
Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, total generation decreased by 24% compared to March 2020 (Figure 6).

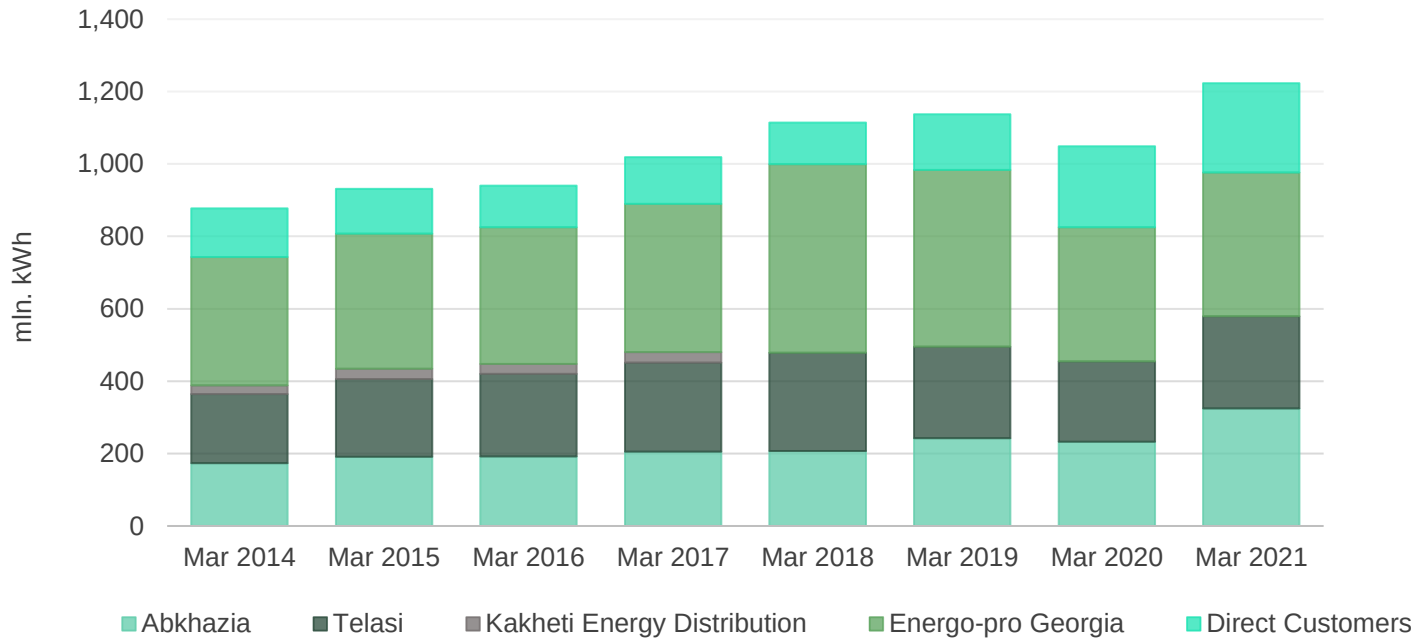
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia[1] (32% - 397 mln. kWh), Abkhazia (26% - 325 mln. kWh), Telasi (21% - 255 mln. kWh), and direct customers (20% - 246 mln. kWh) (Figure 7). Annual demand from Energo-Pro, Telasi, Abkhazia and direct customers increased by 7%, 15%, 39% and 10%, respectively. Overall, there was an annual growth of 17% in the total electricity consumption in March 2021, compared to March 2020 (Figure 8).

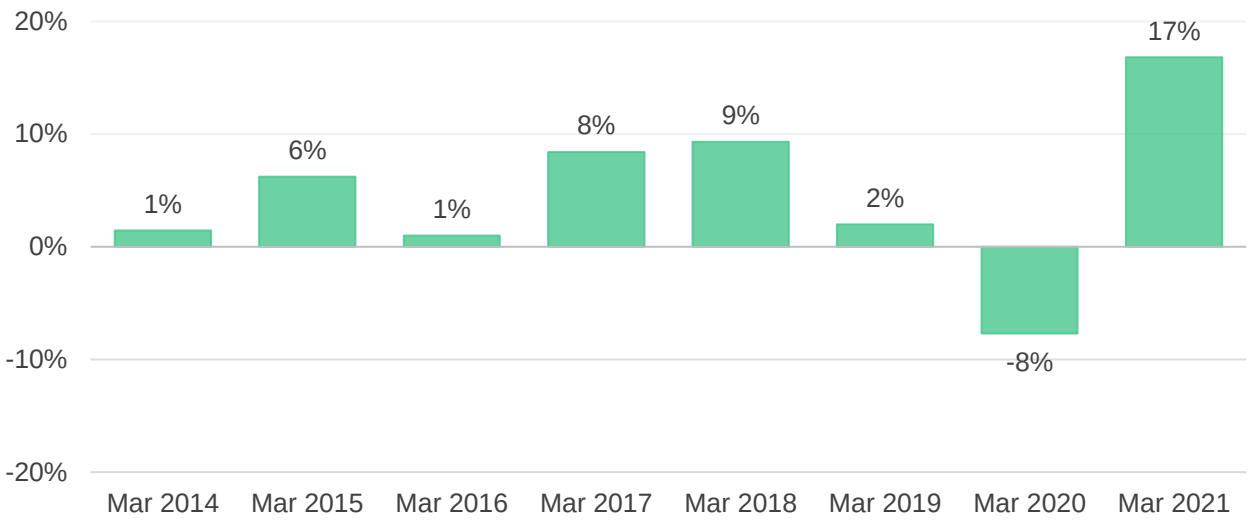
Figure 7 - Electricity Consumption by Type of Customer



Source: ESCO

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

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

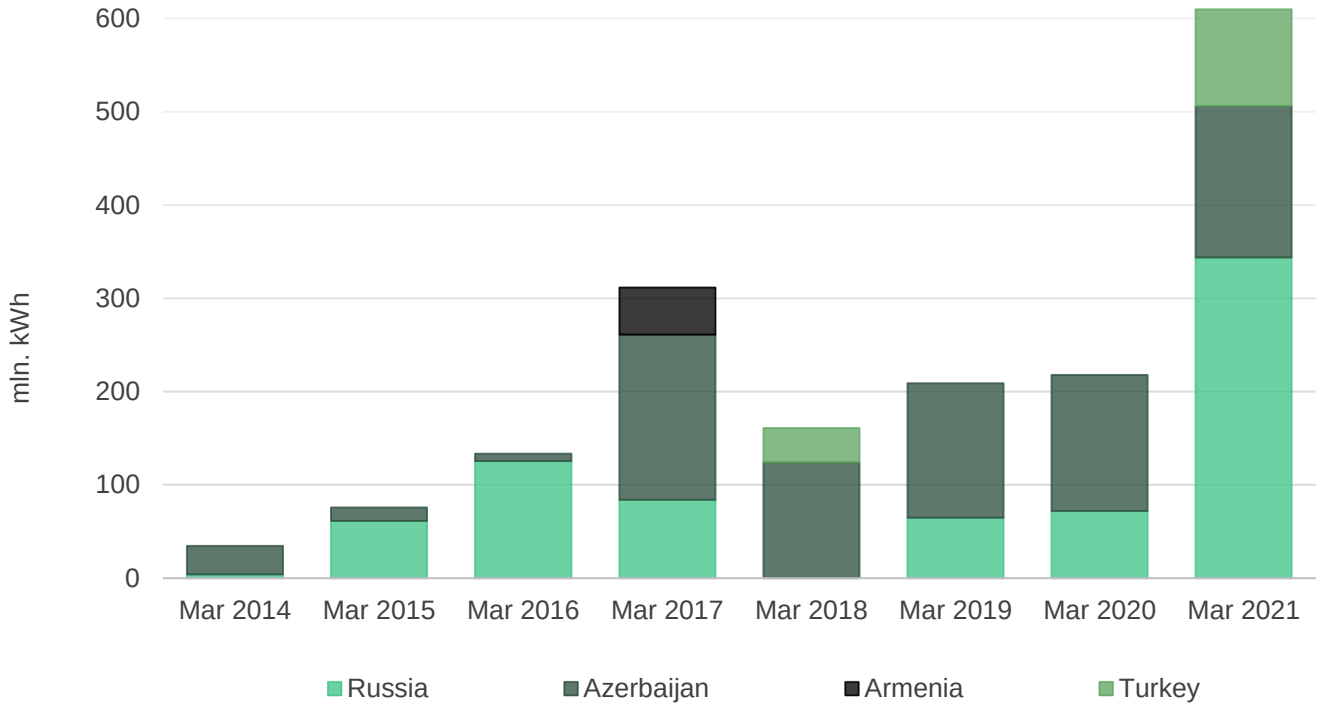


Source: ESCO

In March 2021, Georgia imported 610 mln. kWh of electricity (compared to 218 mln. kWh March 2020), 56% of which came from Russia, 27% came from Azerbaijan and 17% came from Turkey (Figure 9). In March 2021, Georgia exported 7.5 mln. kWh (0.1 mln. kWh in March 2020), 99.9% of which was exported to Turkey and 0.1% to Azerbaijan (Figure 10). There was no electricity transit in March 2021 (In March 2020, there was no electricity transit as well).

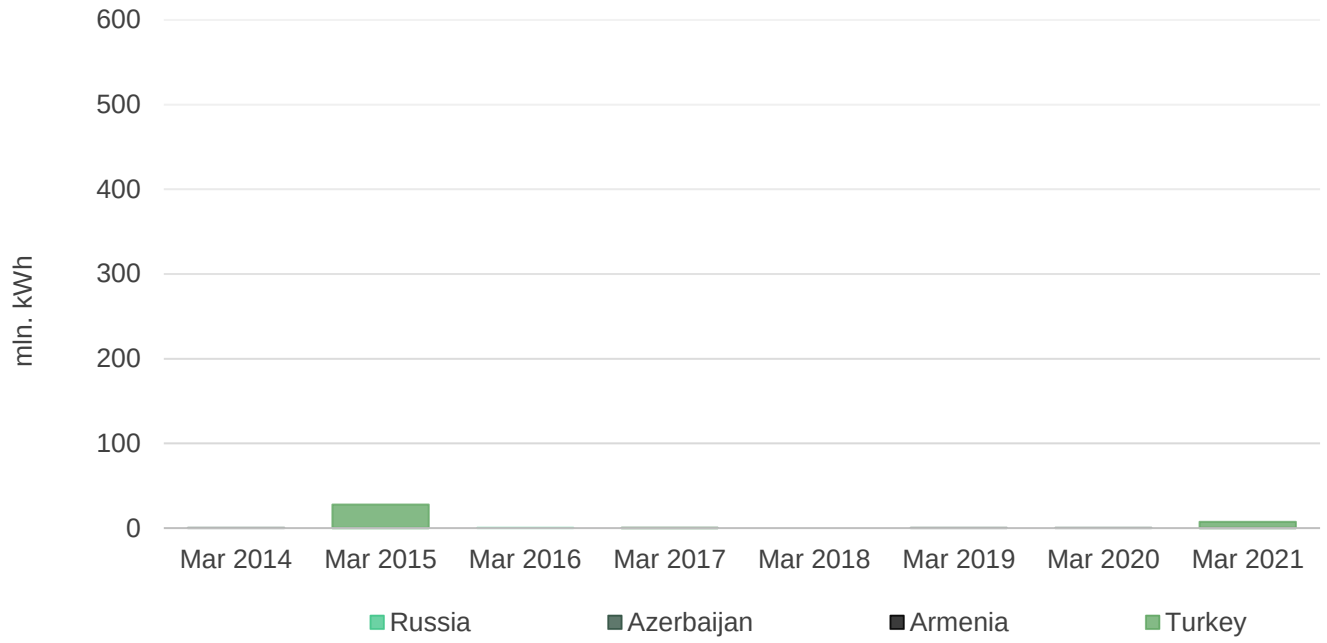
March 2021 is the fifth consecutive month that was characterized by the increased annual imports. Compared to March 2020, imports increased by approximately 180% (Figure 9).

Figure 9 - Imports by Year



Source: ESCO

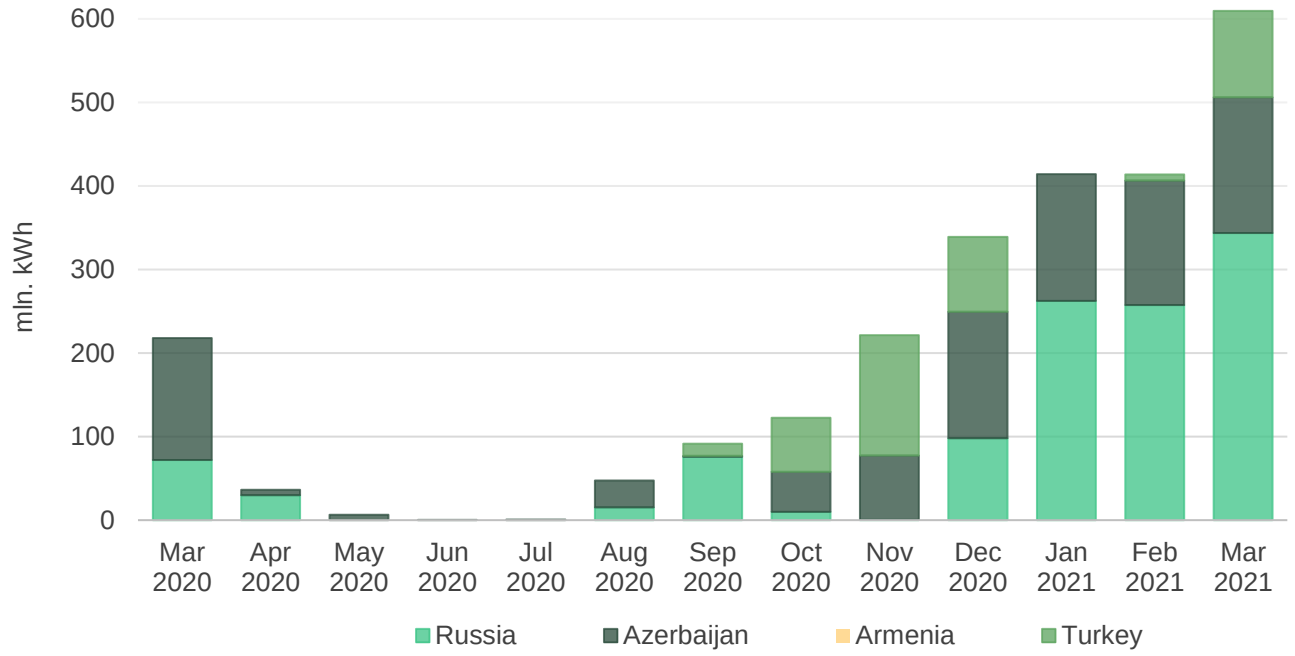
Figure 10 **- Exports by Year**



Source: ESCO

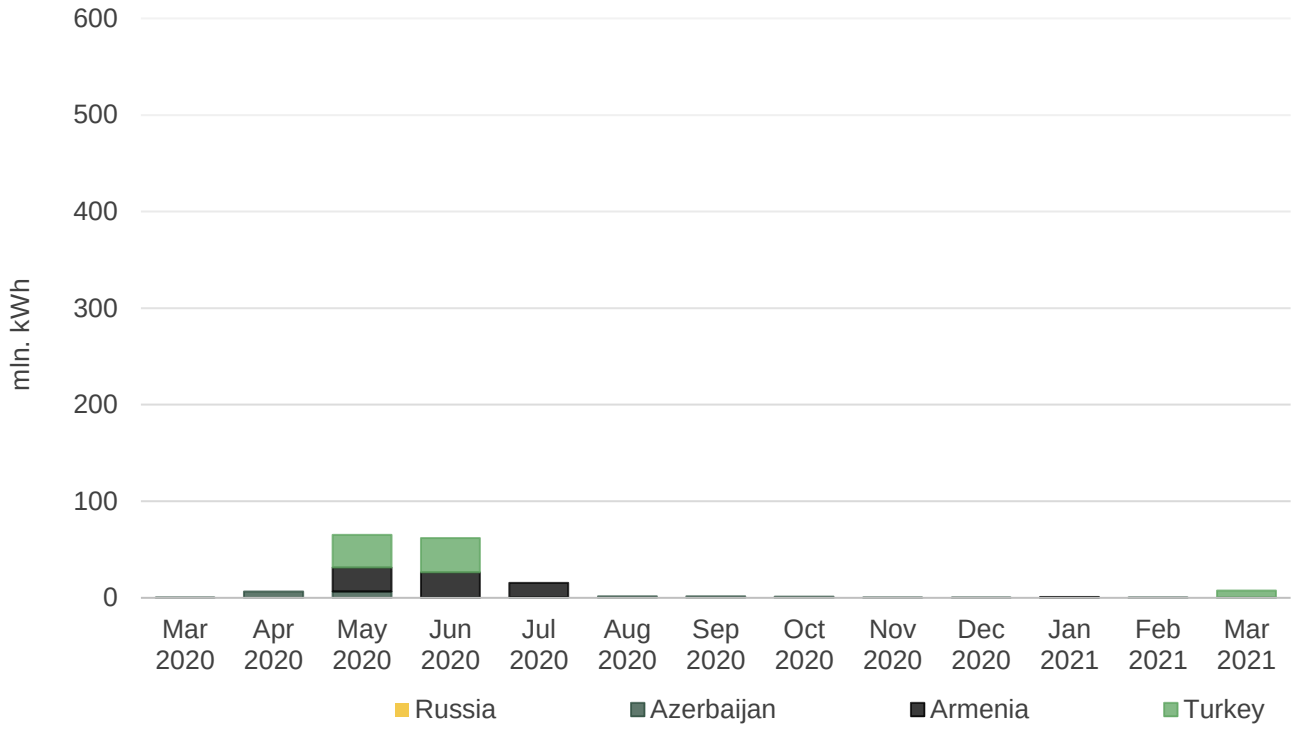
In March 2021, electricity imports increased by 47% compared to February 2021 (Figure 11), while electricity export increased from 0.017 mln. kWh to 7.52 mln. kWh (Figure 12).

Figure 11 **- Imports by Month**



Source: ESCO

Figure 12 **- Exports by Month**

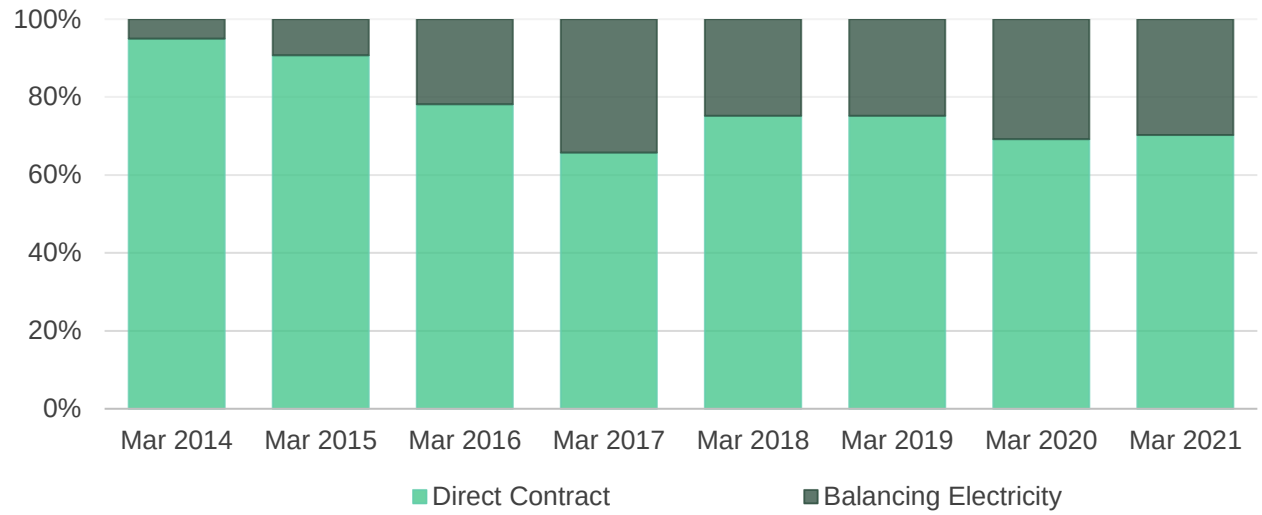


Source: ESCO

1. Market Operations

In March 2021, 70% of the electricity sold on/from the local market was sold through direct contracts. The remaining 30% was sold as balancing electricity (Figure 13).

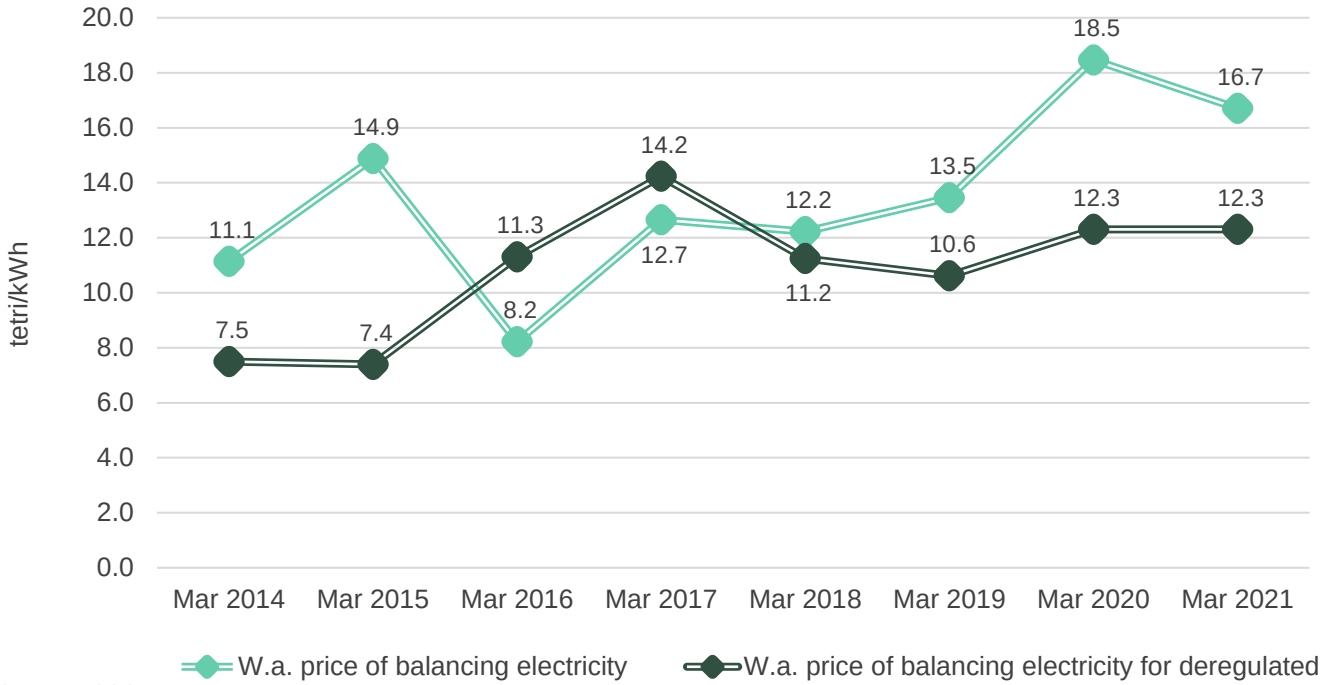
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In March 2021, the weighted average price of balancing electricity was 16.7 tetri/kWh, which corresponds to an annual decrease of 10% compared to March 2020. As for the weighted average price for deregulated (small) HPPs, it was 12.3 tetri/kWh, and remained the same as in the corresponding month of the previous year (Figure 14).

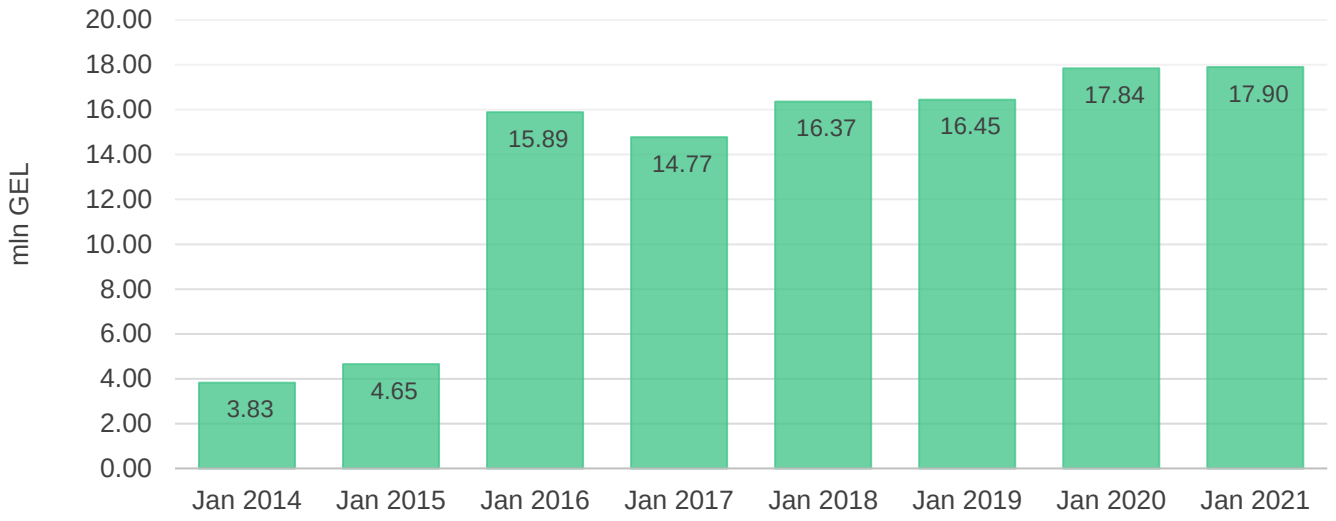
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in January 2021 were roughly 17.90 mln. GEL, which represents a 0.3% increase compared to January 2020 (Figure 15). The data for February and March 2021 are still not available, so we use the information from January.

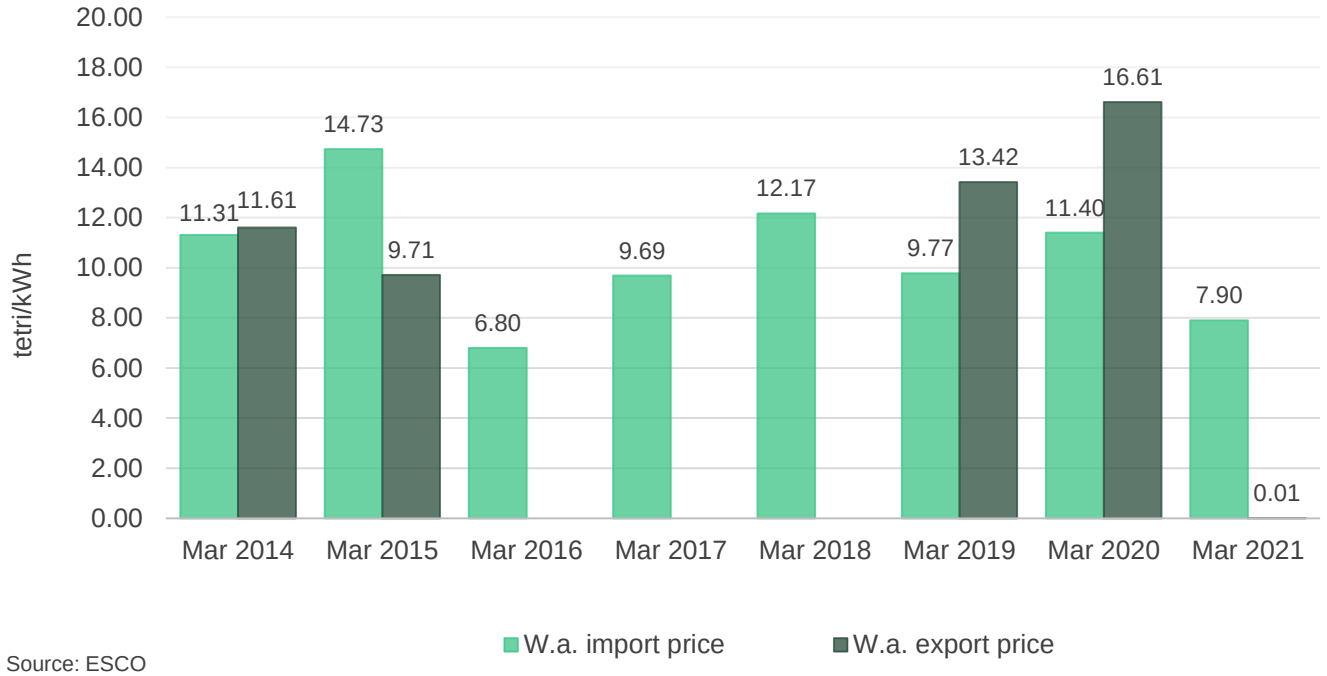
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The weighted average electricity import price in February 2021 decreased by 37% in USD, on an annual basis, and decreased by approximately 31% in GEL (from 3.75 ¢ or 11.40 tetri per kWh in March 2020 to 2.37 ¢ or 7.90 tetri per kWh in March 2021) (Figure 16). The weighted average import price increased by 37% in USD and 38% in GEL, on a monthly basis (import price was 1.73 ¢ or 5.74 tetri per kWh in February 2021). The weighted average electricity export price in March 2021 decreased from 5.46 ¢ or 16.61 tetri per kWh in March 2020 to 0.003 ¢ or 0.01 tetri per kWh on an annual basis (Figure 17). The weighted average export price decreased from 5.29 ¢ or 17.52 tetri per kWh to 0.003 ¢ or 0.01 tetri per kWh on a monthly basis.

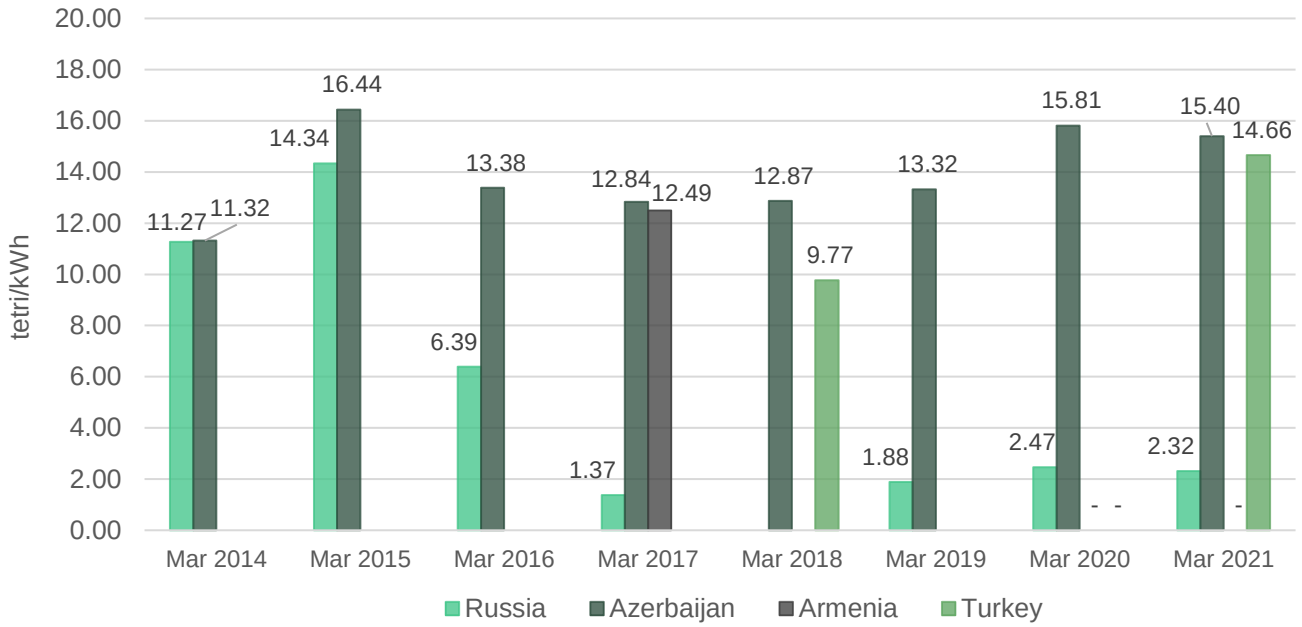
Figure 16 - Prices Import/Export



Source: ESCO

Import prices from Russia, Azerbaijan, and Turkey stood at 0.69 ¢ or 2.32 tetri per kWh, 4.62 ¢ or 15.40 tetri per kWh, and 4.39 ¢ or 14.66 tetri per kWh, respectively (Figure 17).

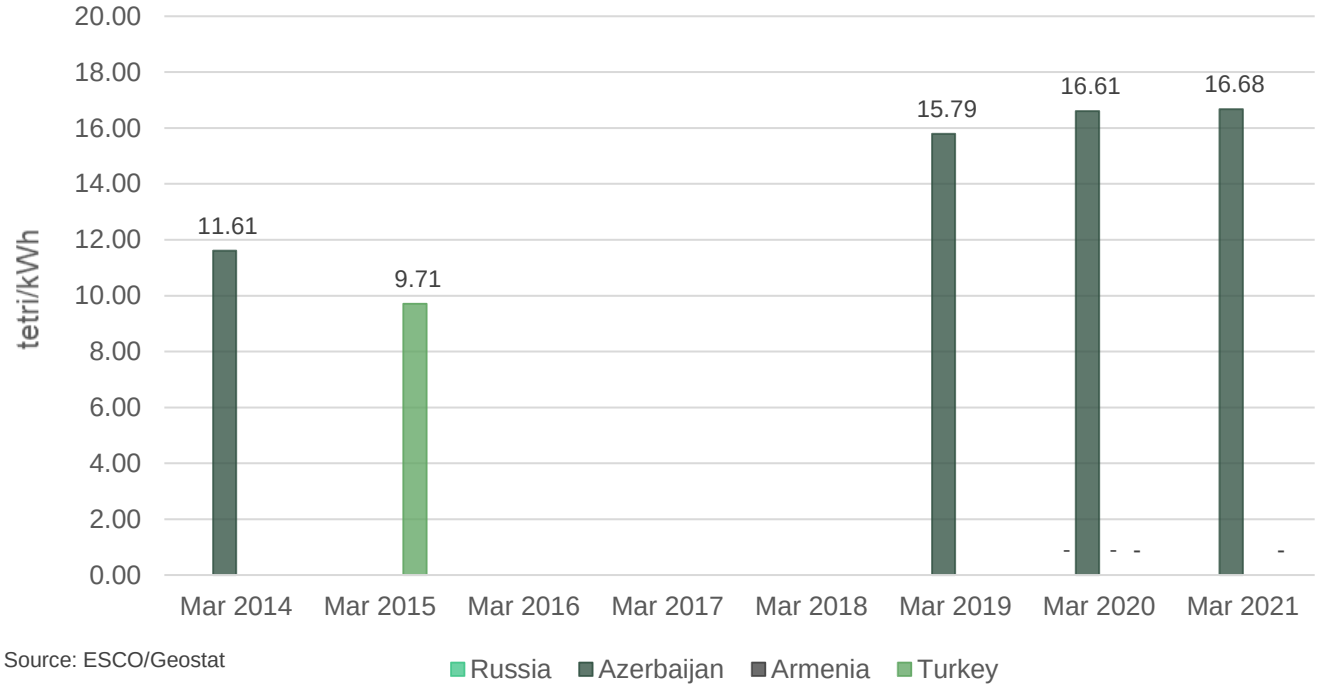
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In March 2021, the electricity export price to Azerbaijan stood at 5 ¢ or 16.68 (Figure 18).

Figure 18 - Export Prices by Countries

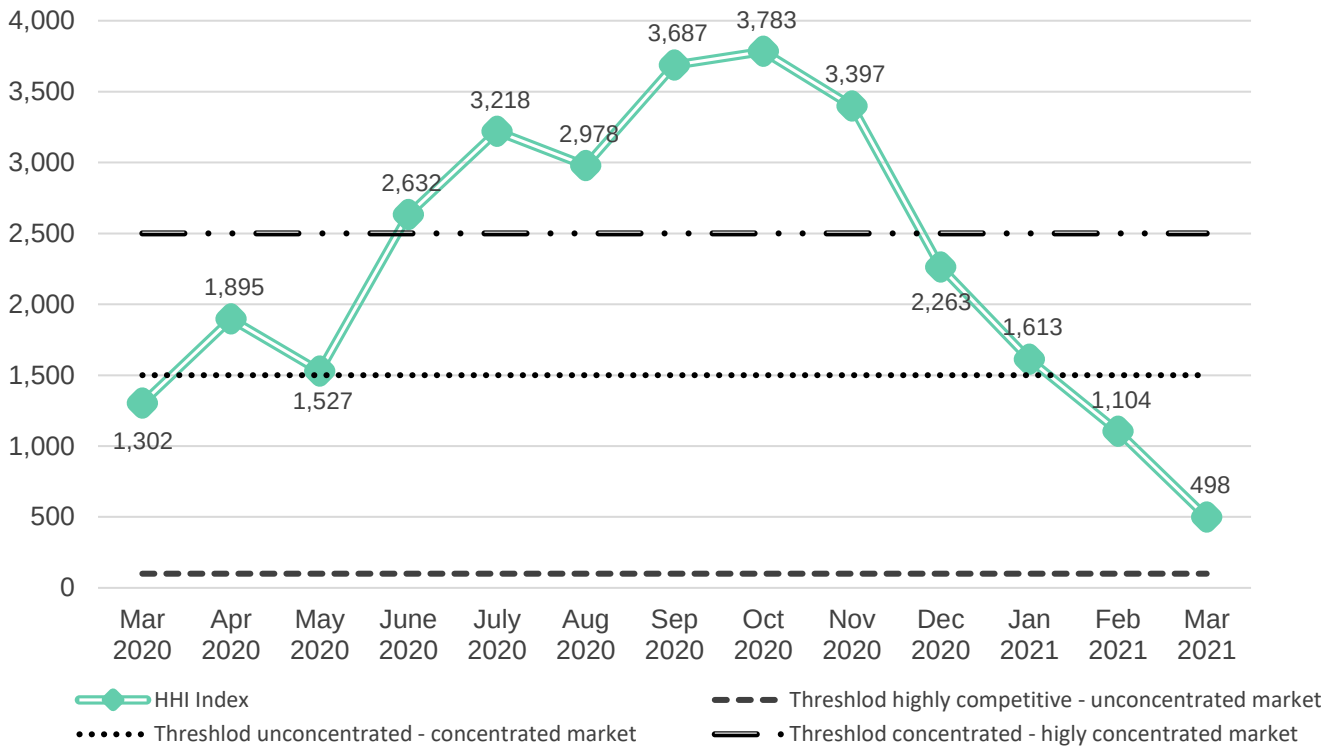


Source: ESCO/Geostat

2. Market Concentration

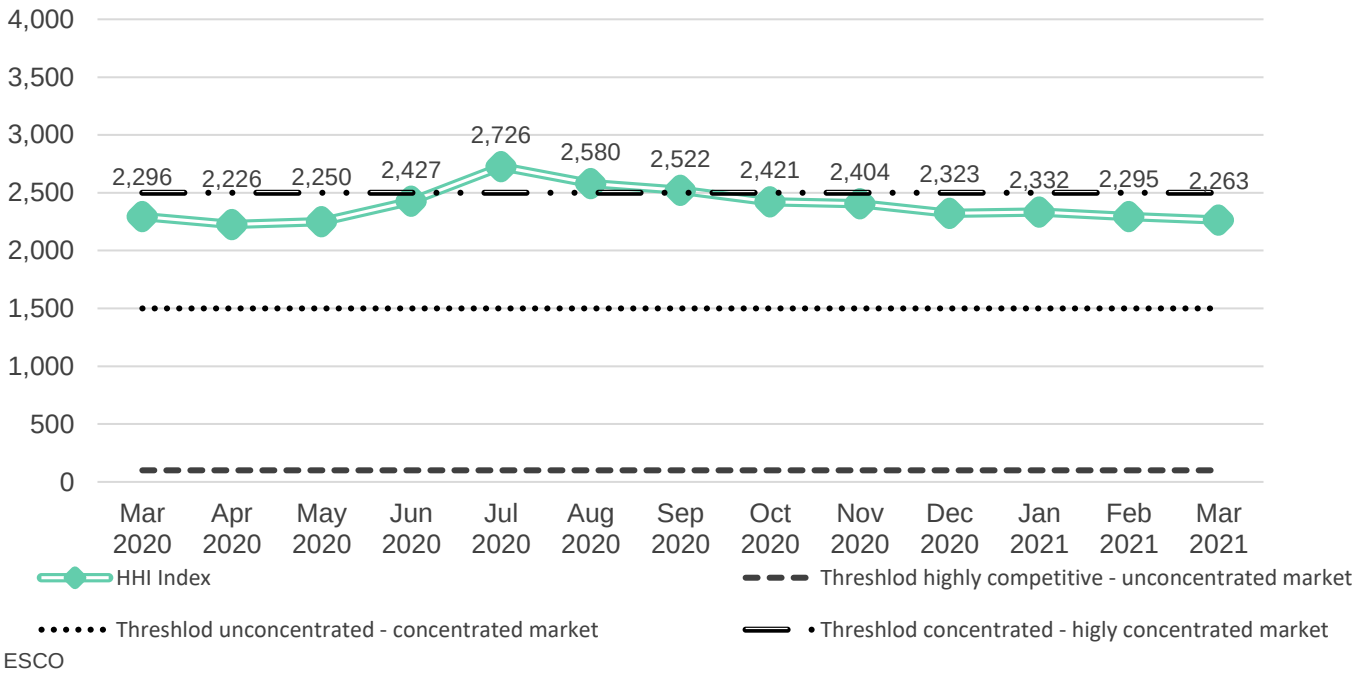
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In March 2021, the Georgian electricity generation market fell well below the threshold between concentrated and not concentrated markets, with an HHI value of 498 (Figure 19). This is lower than the level in March 2020 (with an HHI value of 1,302), and also lower than the level in February 2021 (HHI was 1,104). As for the consumption segment, in March 2021, the HHI consumption index was slightly below the threshold for a highly concentrated market, with an HHI value of 2,263 (also slightly below the level for March 2020 – 2,296 and for February 2021 – 2,295).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO