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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.
- The yearly decrease took place in HPP, TPP and WPP generation.
- Consumption decreased on both, yearly and monthly basis, despite a 16% growth of Abkhazian demand (on a yearly basis).
- Consumption exceeded generation by 374 mln. kWh.
- The main import partner country was Russia.
- The imports from Russia reached an historic high, as cost of Russian imports reached an historic low.
- The main export partner country was Armenia.
- The weighted average price of imports decreased on a yearly and monthly basis.
- The weighted average price of exports increased on a yearly and monthly basis.
- HHI index for the Georgian electricity generation market was slightly above the threshold between concentrated and not concentrated markets.
- 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

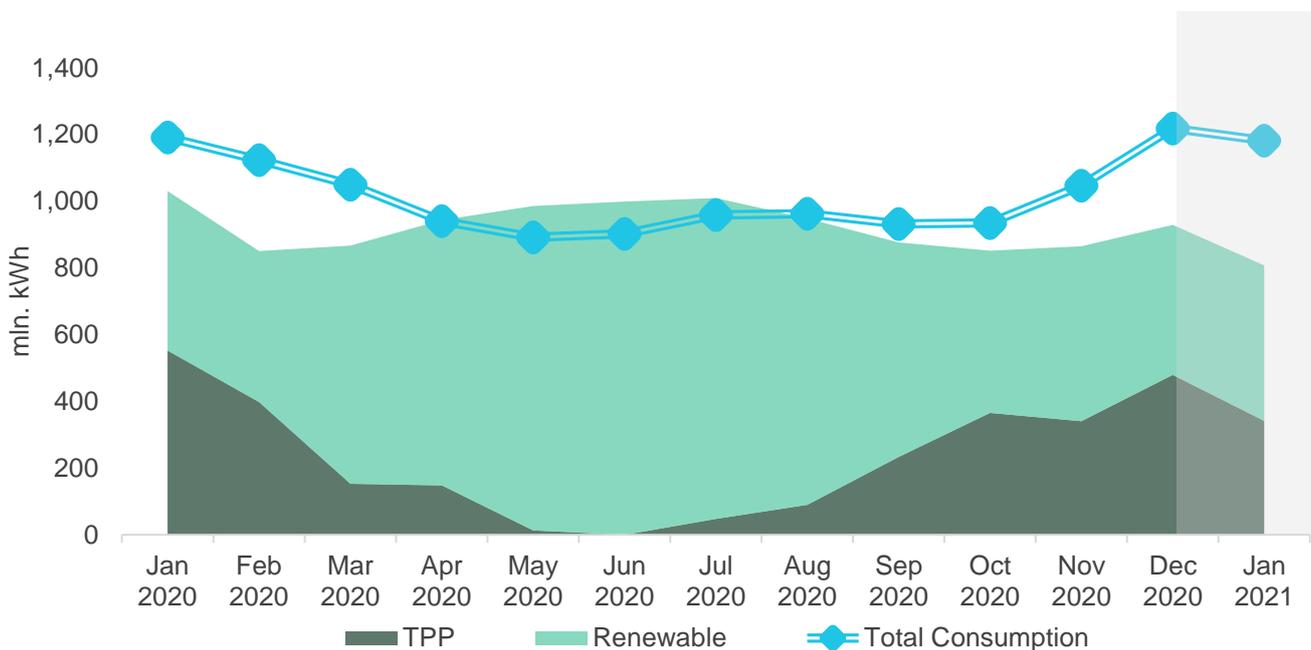
Generation – Consumption – Trade

In January 2021, Georgian power plants generated 808 mln. kWh of electricity (Figure 1). This represents a 22% decrease in total generation, compared to the previous year (January 2020, the total generation was 1,031 mln. kWh). The decrease in generation on a yearly basis comes from the decrease of 2%, 38% and 36% in hydro, thermal and wind power generation, respectively.

On a monthly basis, generation decreased by approximately 13% (in December 2020, total generation was 930 mln. kWh) (Figure 1). The monthly decrease in total generation was the result of a 4% reduction in hydro power generation and of a 29% and 28% decrease in thermal and wind power generation, respectively.

The consumption of electricity on the local market was 1,182 mln. kWh (-1% and -3% compared to January 2020, and December 2020, respectively) (Figure 1). In January 2021, power consumption exceeded generation by 374 mln. kWh which was 46% of total generation (in January 2020 difference between total generation and consumption resulted in a shortage of 161 mln. kWh, around 16% of the total generation for the month).

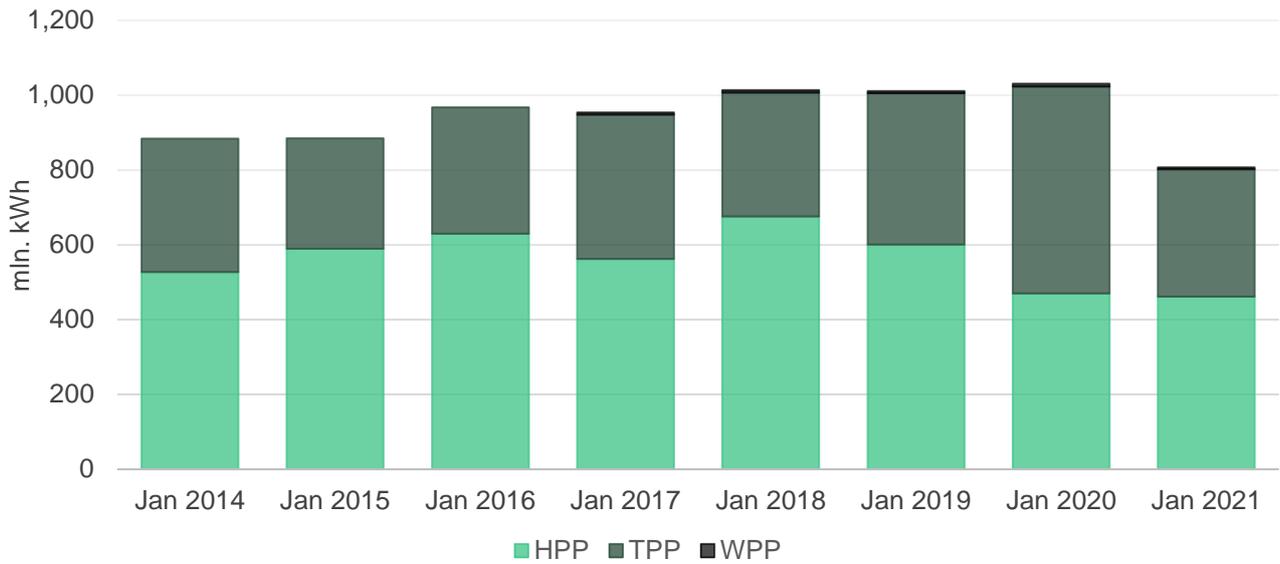
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

Most generation came from hydro power plants. In January 2021, hydro power (HPP) generation amounted to 461 mln. kWh (57% of total), while thermal power (TPP) generation was 341 mln. kWh (42% of total), and wind power (WPP) generation was 5 mln. kWh (less than 1% of total) (Figure 2).

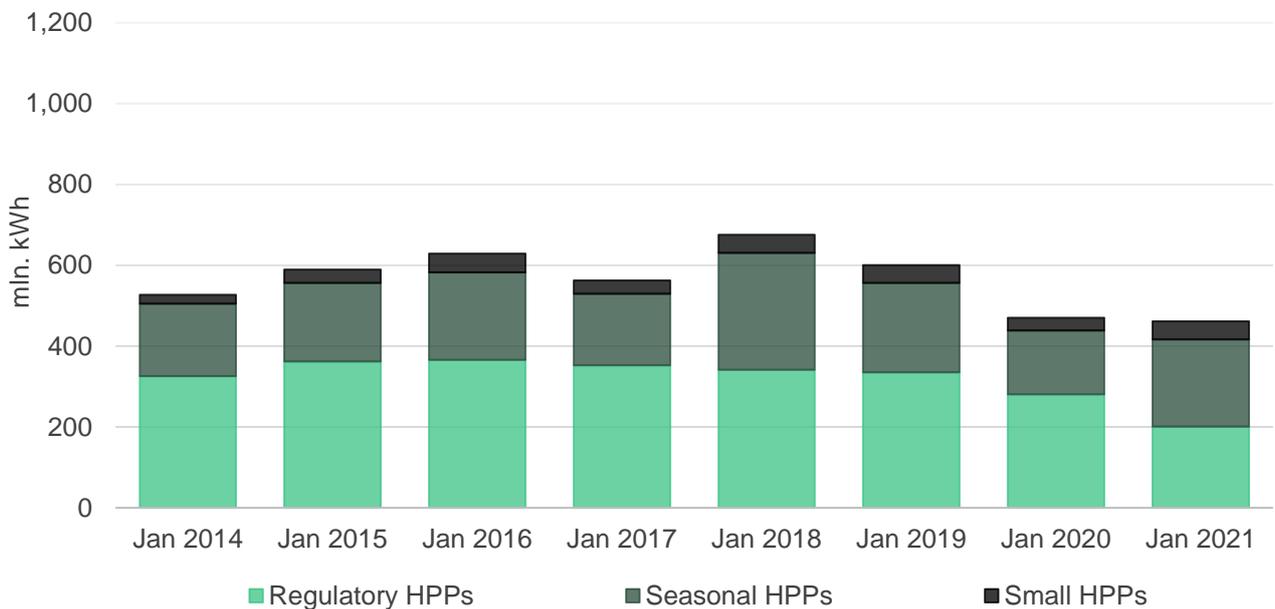
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 44% (201 mln. kWh) of electricity, while seasonal and small HPPs produced 47% (216 mln. kWh) and 10% (44 mln. kWh), respectively (Figure 3).

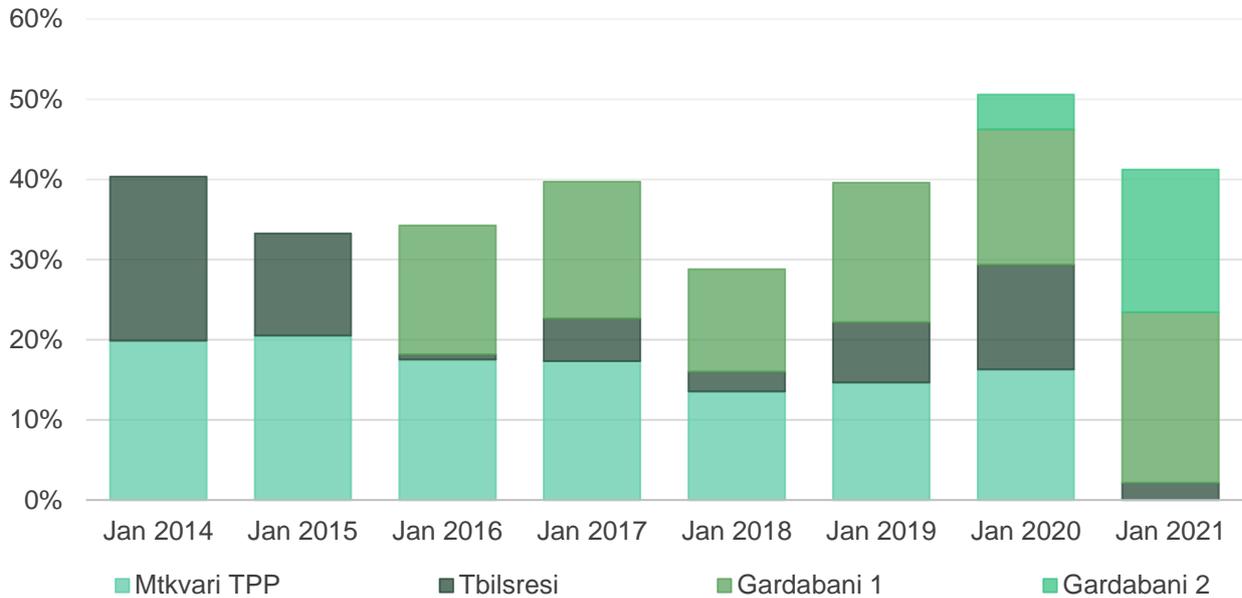
Figure 3 - HPP Generation by Type



Source: ESCO

Among thermal power plants, Gardabani 1 TPP generated 172 mln. kWh, 50% of total thermal power generation and 21% of total generation. Gardabani 2 TPP generated 144 mln. kWh, 42% of total thermal power generation and 18% of total generation (Figure 4).

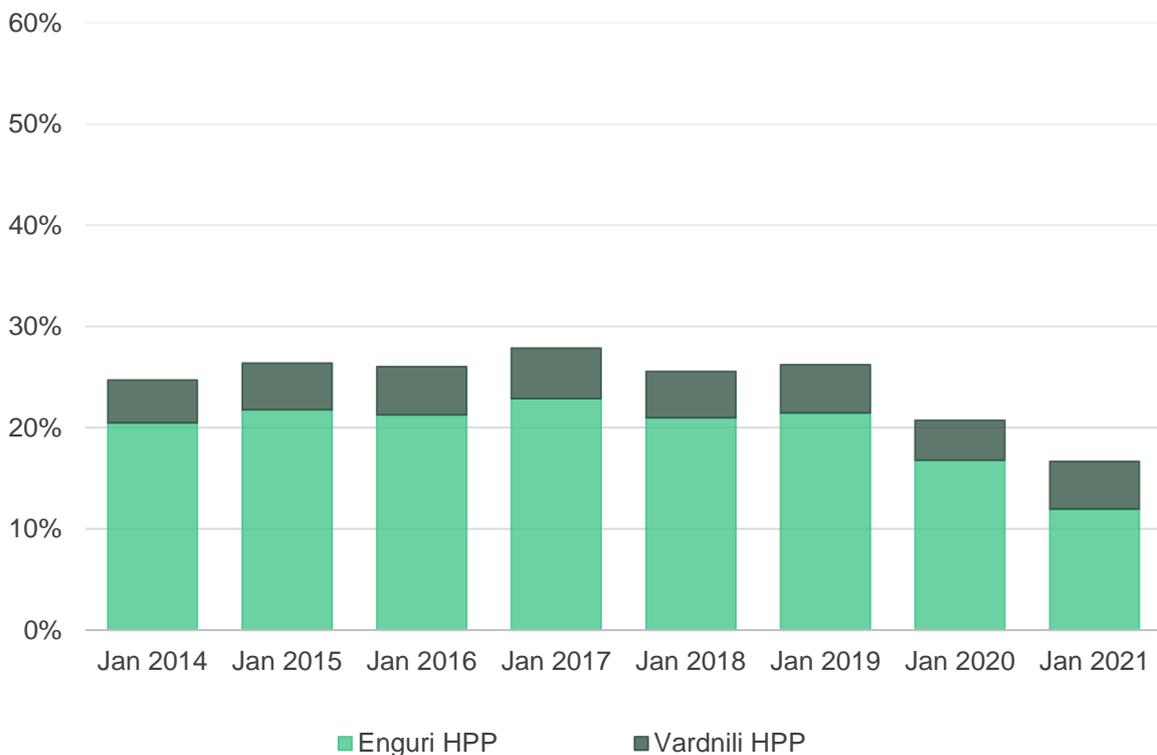
Figure 4 - Share of Large TPPs in Total Generation



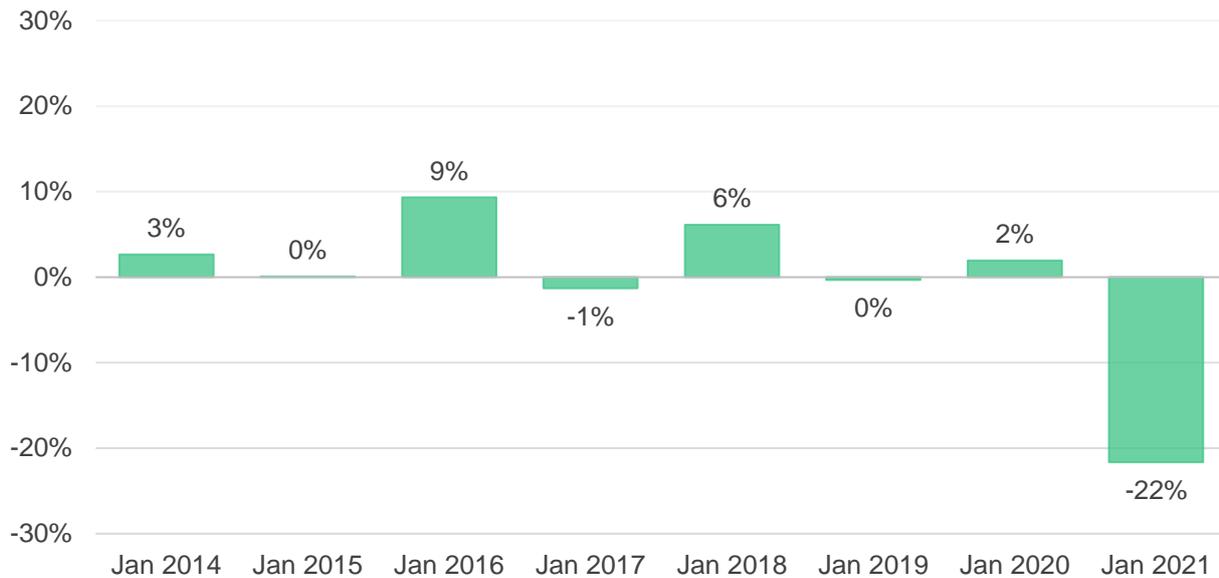
Source: ESCO

As for HPP generation, the large HPPs, Enguri and Vardnili generated 135 mln. kWh (67% of generation for regulatory HPPs), with 97 mln. kWh and 38 mln. kWh, respectively. Power generated by Enguri and Vardnili represented around 17% of the total generation (Figure 5). Overall, total generation decreased by 22% compared to January 2020 (Figure 6).

Figure 5 - Share of Enguri and Vardnili in Total Generation

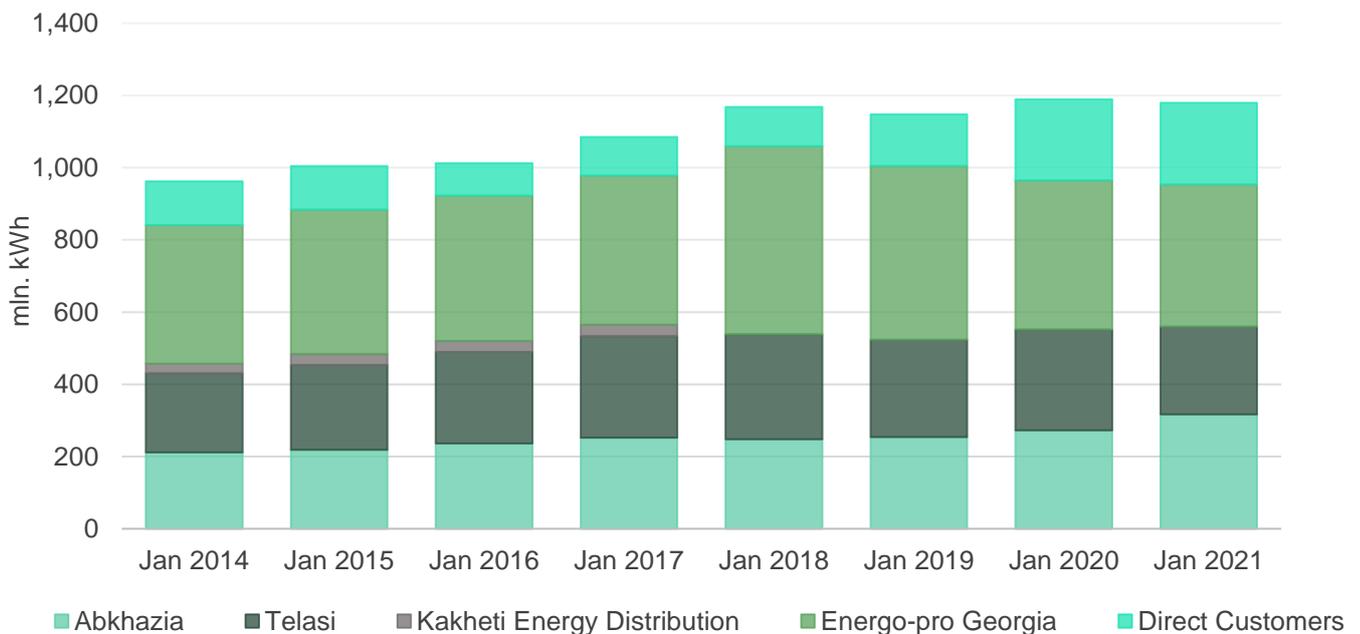


Source: ESCO

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

Source: ESCO

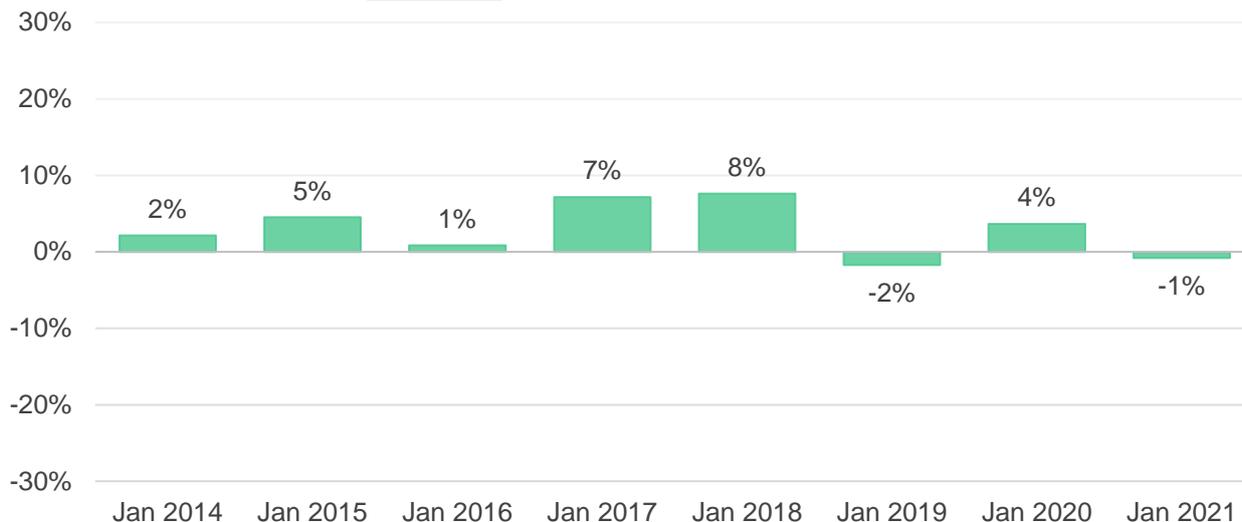
Total electricity demand came from: Energo-Pro Georgia¹ (33% - 394 mln. kWh), Abkhazia (27% - 317 mln. kWh), Telasi (21% - 243 mln. kWh), and direct customers (19% - 227 mln. kWh) (Figure 7). Annual demand from Energo-Pro and Telasi decreased by 4% and 13%, respectively, while the demand from Abkhazia and direct customers increased by 16% and 1%, respectively. Overall, there was an annual decrease of 1% in the total electricity consumption in January 2021, compared to January 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)

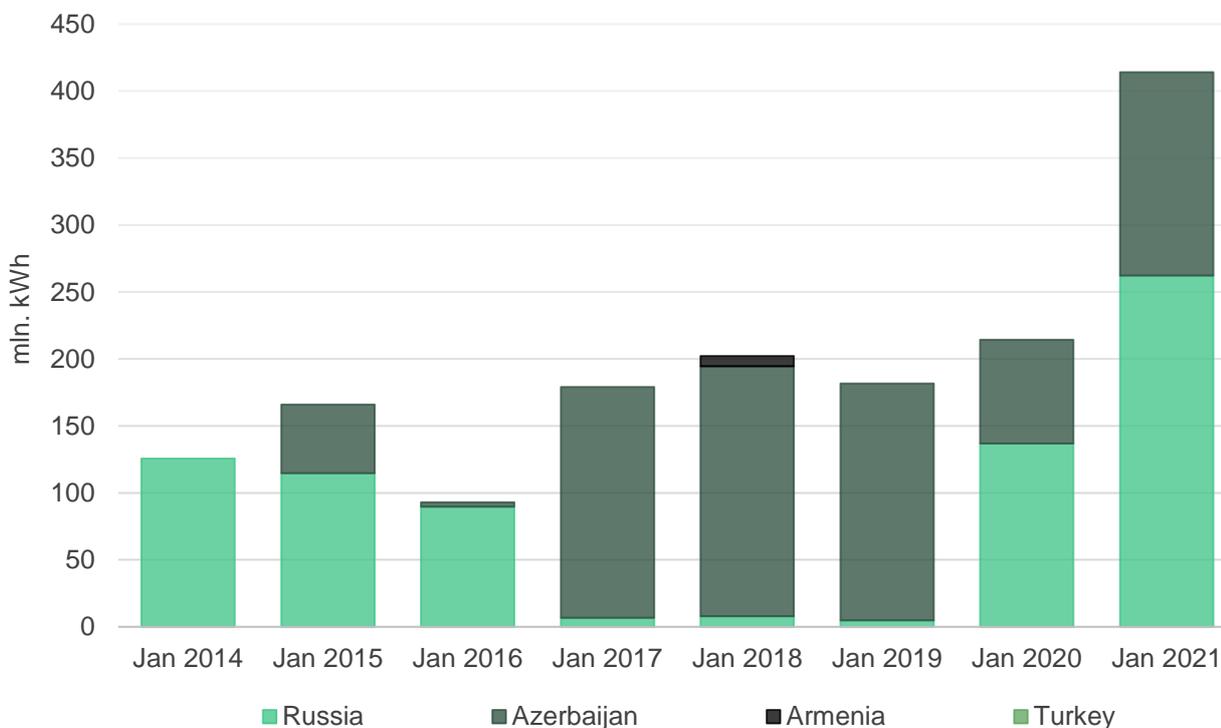


Source: ESCO

In January 2021, Georgia imported 414 mln. kWh of electricity (compared to 214 mln. kWh January 2020), 63% of which came from Russia and 37% came from Azerbaijan (Figure 9). In January 2021, Georgia exported 1 mln. kWh (0.01 mln. kWh in January 2020), 99.6% of which was exported to Armenia and 0.4% was exported to Azerbaijan (Figure 10). There was a 13 mln. kWh electricity transit from Azerbaijan to Turkey in January 2021 (In January 2020, the electricity transit from Azerbaijan to Turkey comprised 26 mln. kWh).

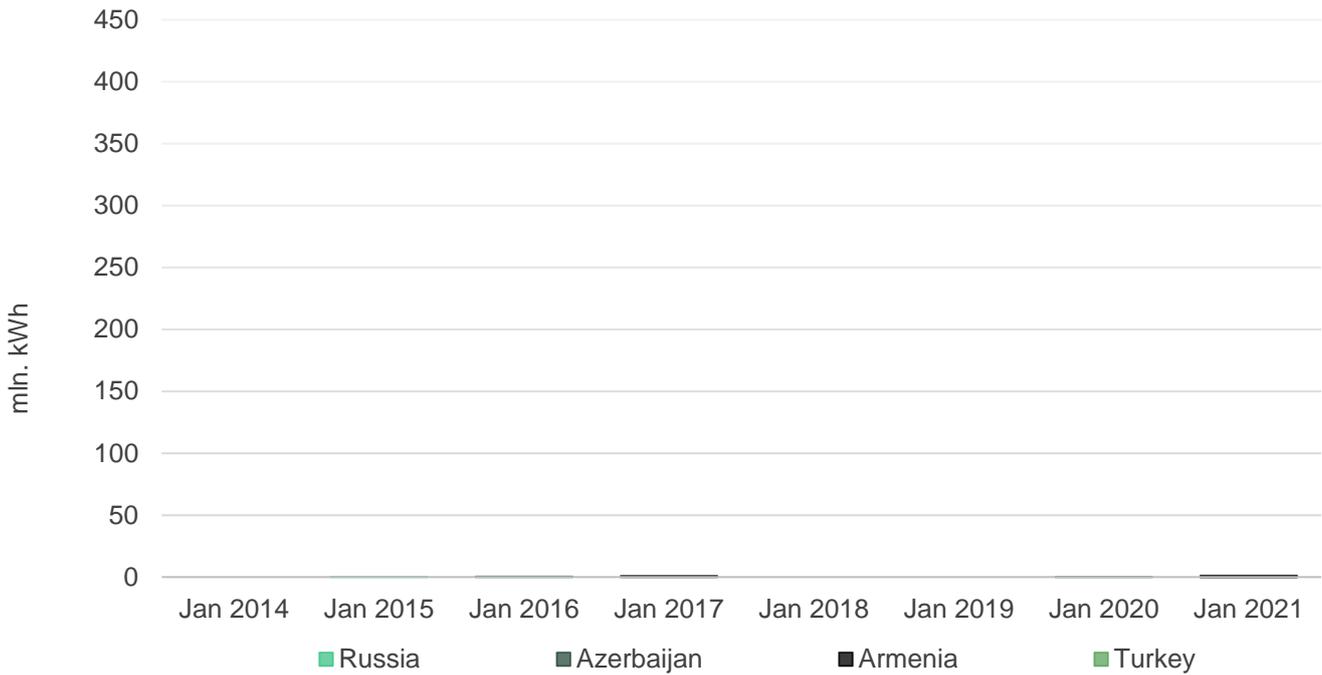
After November and December 2020, January 2021 was also characterized by the increased annual imports. Compared to January 2020, imports increased by approximately 93% (Figure 9).

Figure 9 - Imports by Year



Source: ESCO

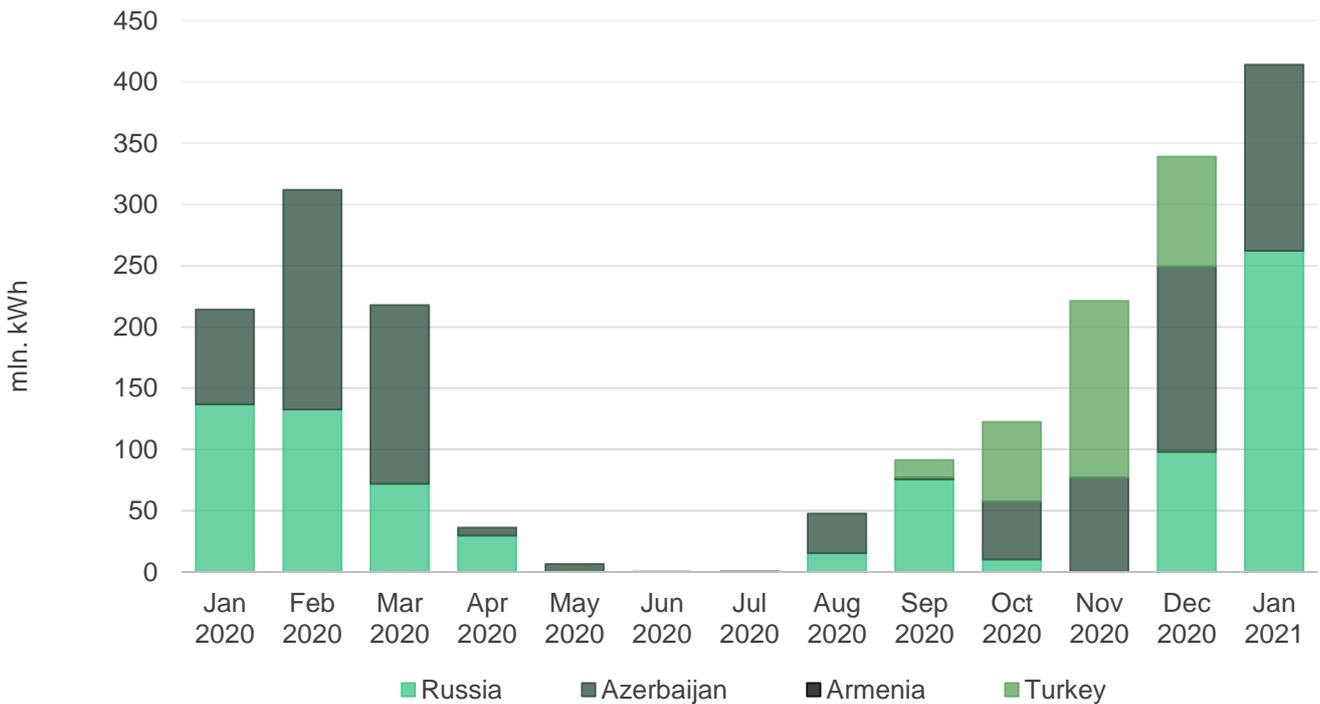
Figure 10 - Exports by Year



Source: ESCO

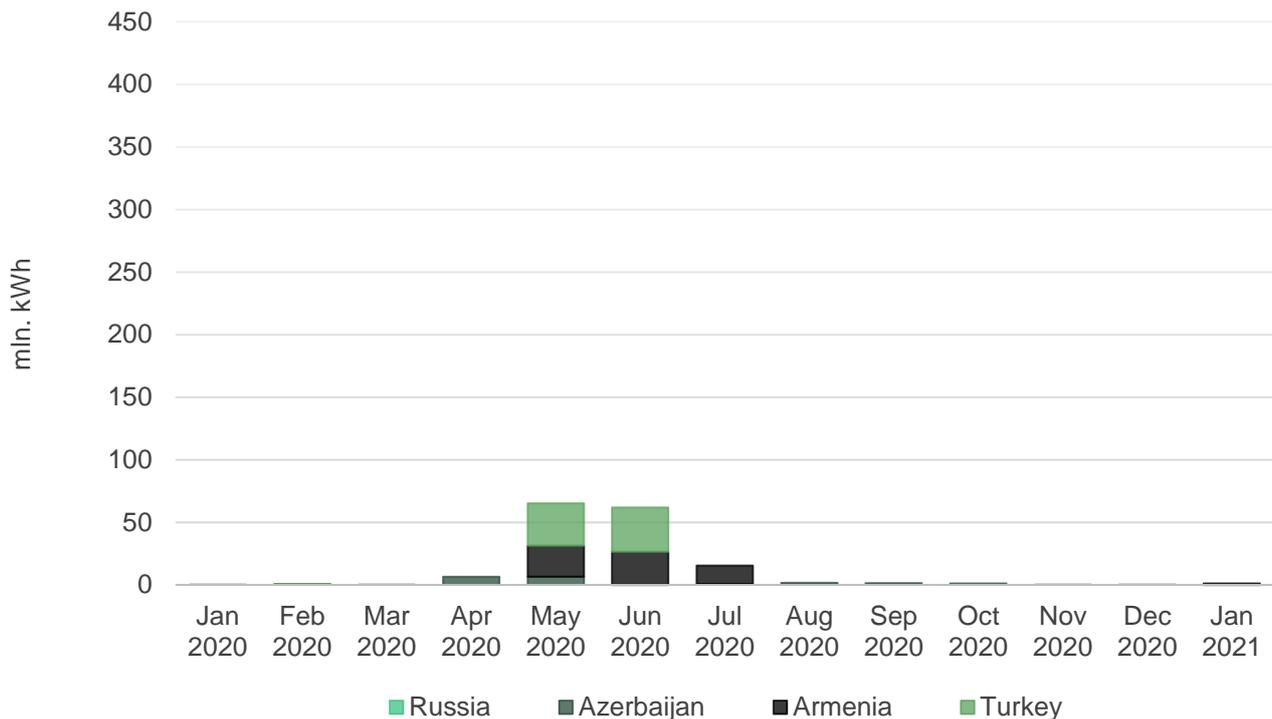
In January 2021 electricity imports increased from 339 mln. kWh to 414 mln. kWh compared to December 2020 (Figure 11), while electricity export increased from 0.085 mln. kWh to 1 mln. kWh (Figure 12).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

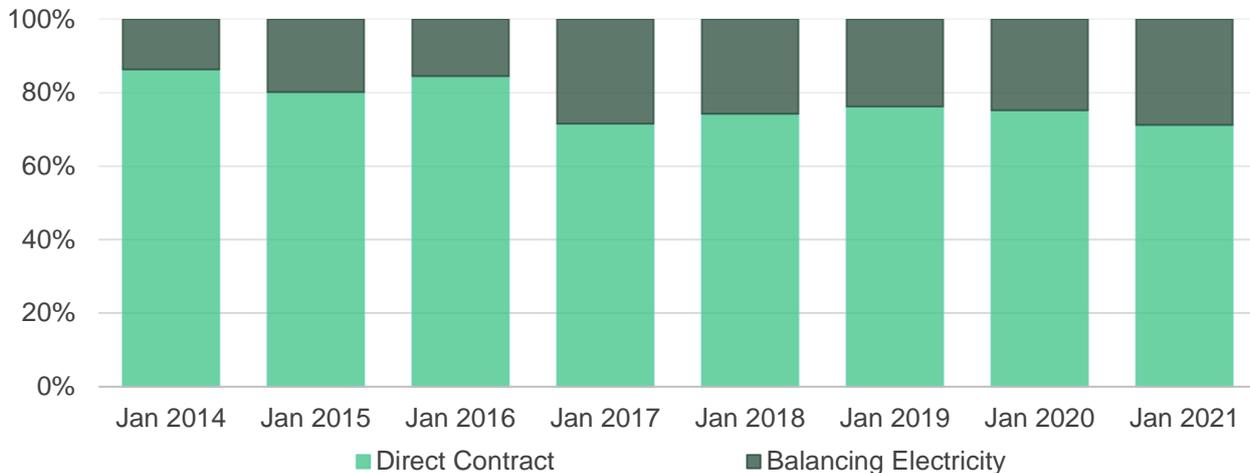


Source: ESCO

1. Market Operations

In January 2021, 71% of the electricity sold on/from the local market was sold through direct contracts. The remaining 29% was sold as balancing electricity (Figure 13).

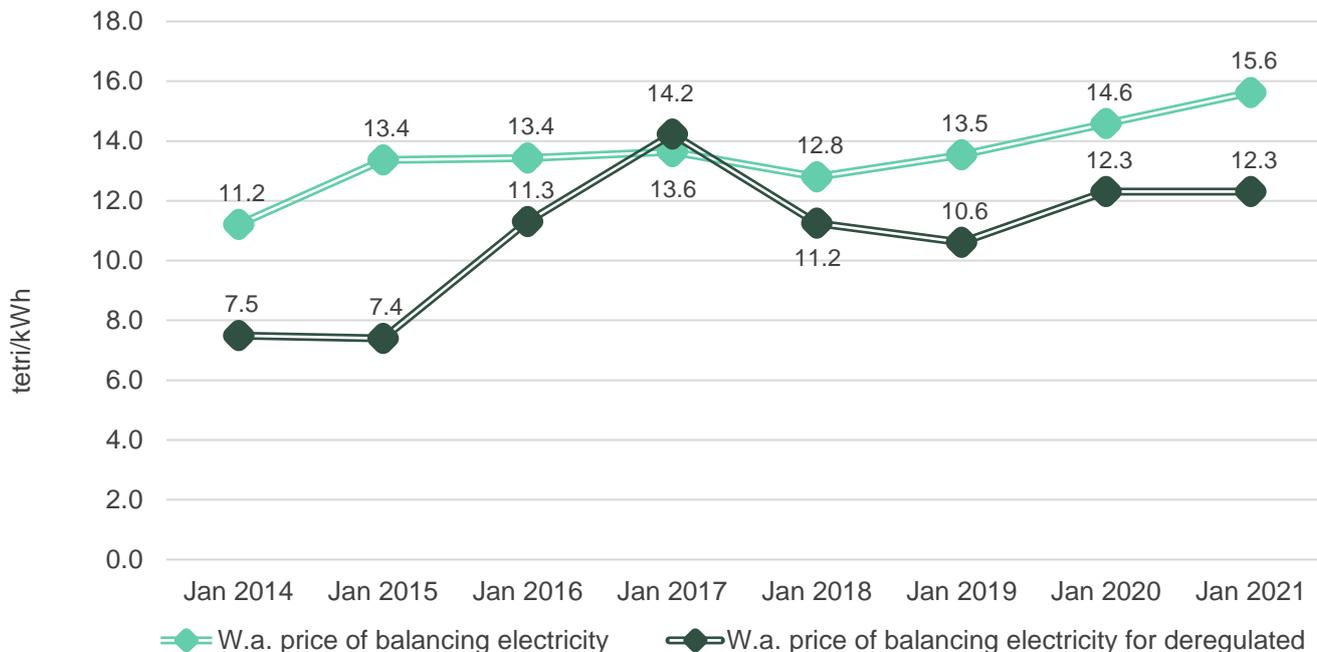
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In January 2021, the weighted average price of balancing electricity was 15.6 tetri/kWh, which corresponds to an annual increase of 7% compared to January 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).

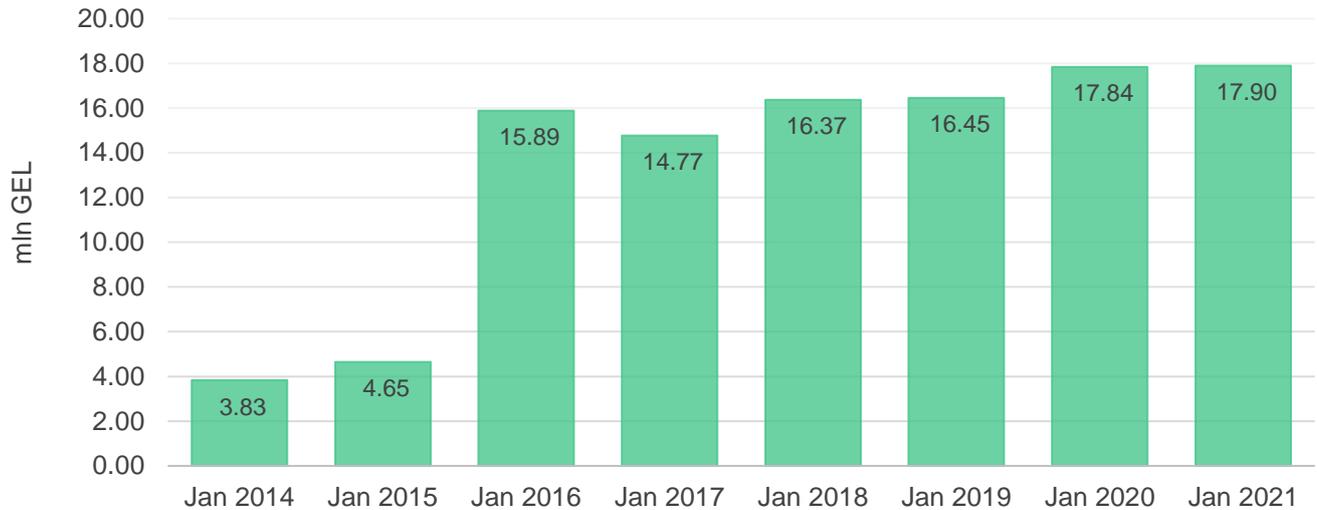
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



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).

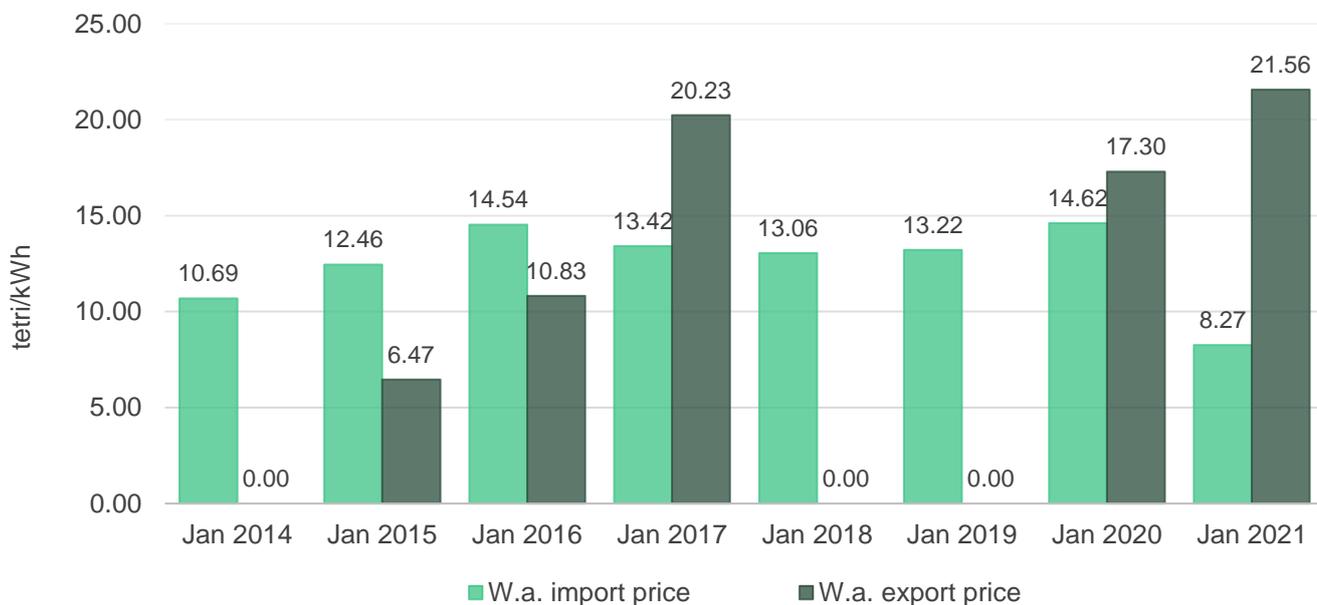
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The weighted average electricity import price in January 2021 decreased by 51% in USD, on an annual basis, and decreased by approximately 43% in GEL (from 5.07 ¢ or 14.62 tetri per kWh in January 2020 to 2.51 ¢ or 8.27 tetri per kWh in January 2021) (Figure 16). The weighted average import price decreased by 22% in both USD and GEL, on a monthly basis (import price was 3.24 ¢ or 10.63 tetri per kWh in December 2020). The weighted average electricity export price in January 2021 increased by 9% in USD by 25% in GEL on an annual basis (from 6 ¢ or 17.3 tetri per kWh in January 2020 to 6.54 ¢ or 21.56 tetri per kWh in January 2021) (Figure 17). The weighted average export price increased by 19% in both USD and GEL on a monthly basis (export price was 5.51 ¢ or 18.09 tetri per kWh in December 2020).

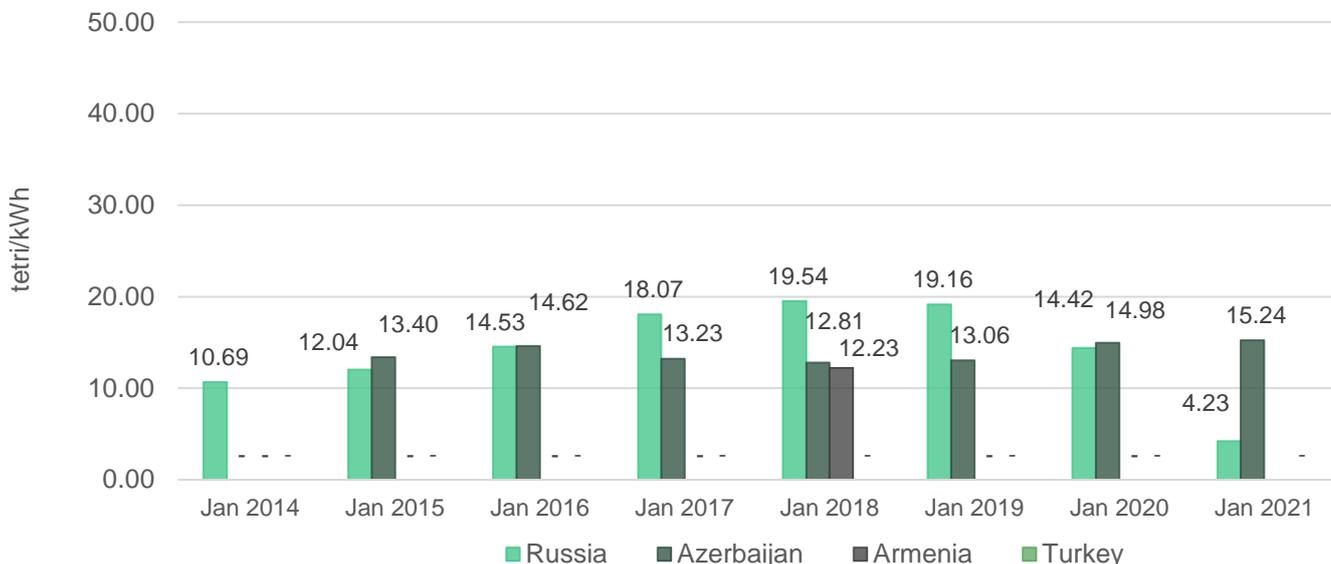
Figure 16 - Prices Import/Export



Source: ESCO

Import prices from Russia and Azerbaijan stood at 1.3 ¢ or 4.23 tetri per kWh, and 4.6 ¢ or 15.24 tetri per kWh, respectively (Figure 17).

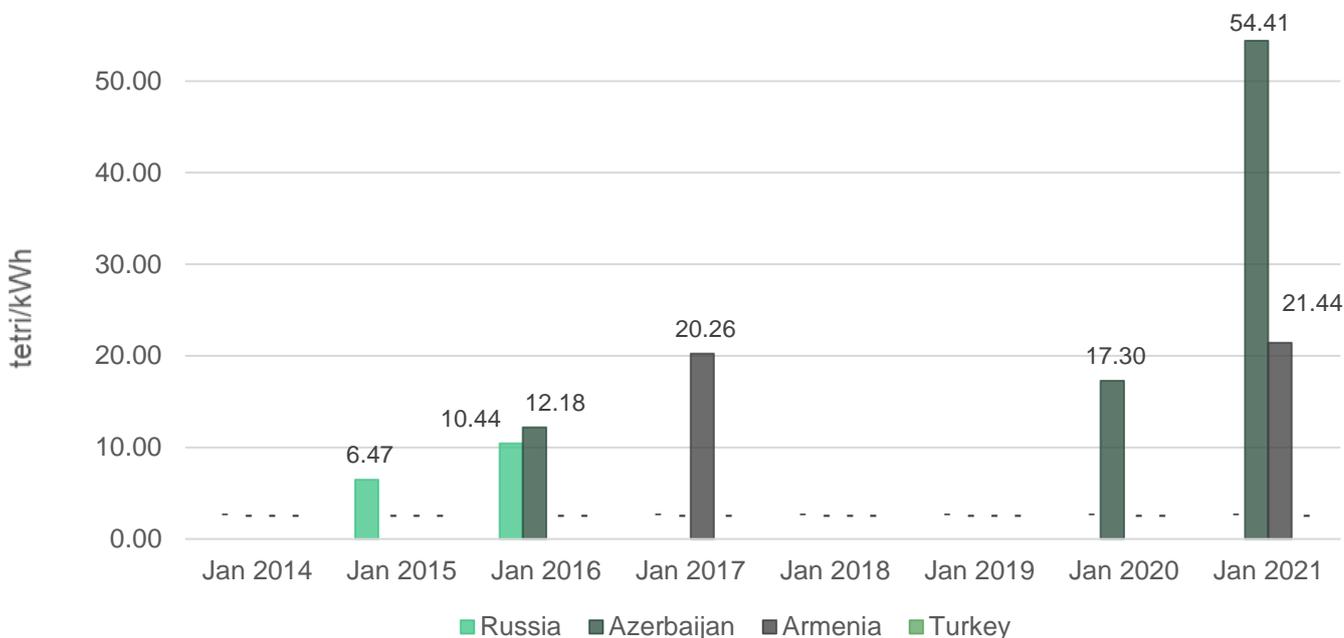
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In January 2021, the electricity export price to Azerbaijan and Armenia stood at 16.5 ¢ or 54.41 and 6.5 ¢ or 21.44 tetri per kWh, respectively (Figure 18).

Figure 18 - Export Prices by Countries

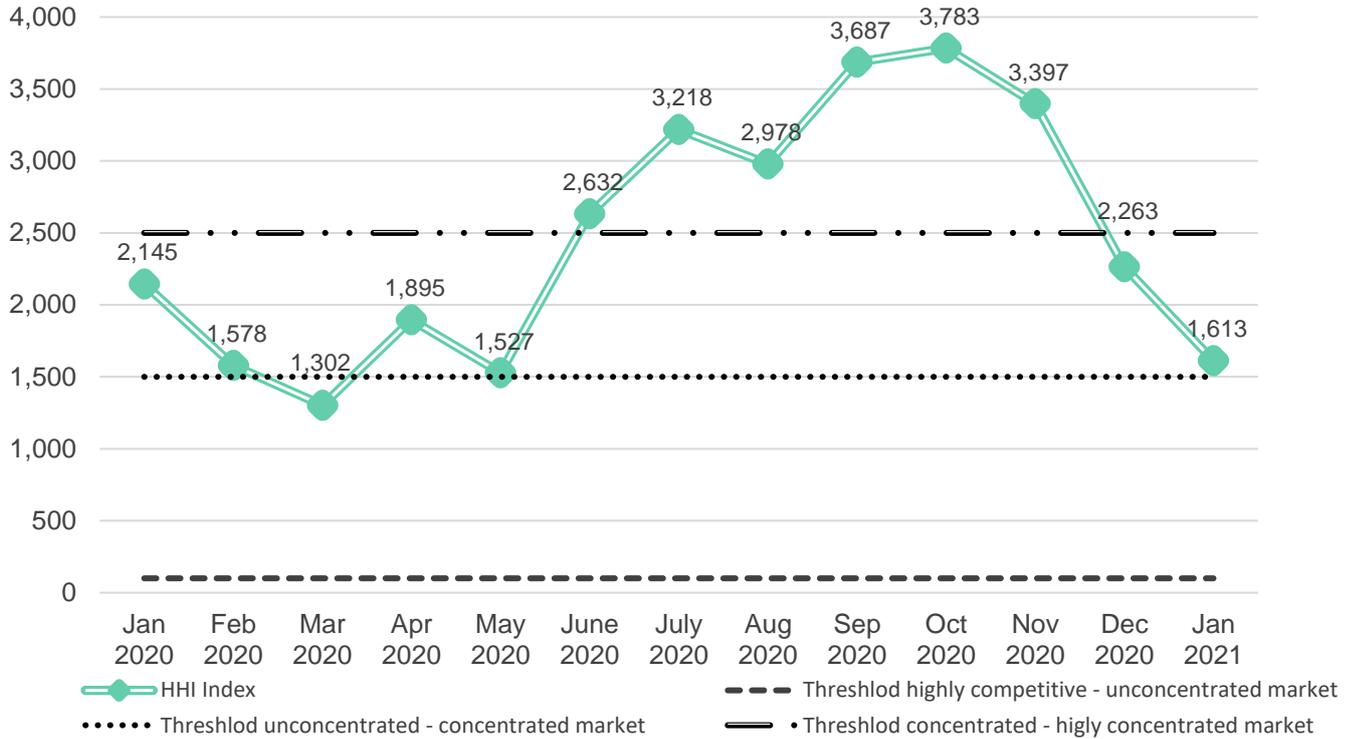


Source: ESCO/Geostat

2. Market Concentration

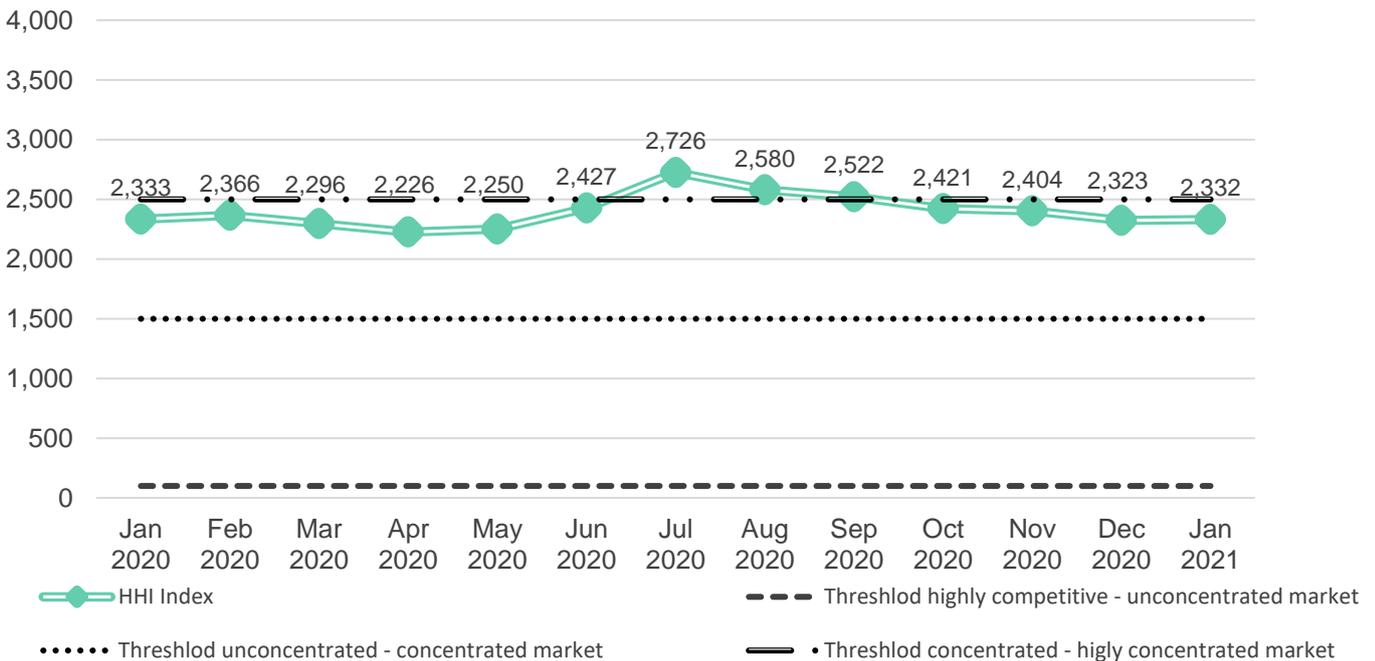
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In January 2021, the Georgian electricity generation market fell well below the threshold of a highly concentrated market, with an HHI value of 1,613 (Figure 19). This is lower than the level in January 2020 (with an HHI value of 2,145), and also lower than the level in December 2020 (HHI was 2,263). As for the consumption segment, in January 2021 the HHI consumption index was slightly below the threshold for a highly concentrated market, with an HHI value of 2,332 (also slightly below the level for January 2020 – 2,333, but slightly higher than the level for December 2020 – 2,323).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO