

ISET

International School of Economics at TSU
Policy Institute

MAY
2021



ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE

ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

Authors:

Norberto Pignatti

Policy Center Head

✉ n.pignatti@iset.ge

Mariam Tsulukidze

Researcher

✉ m.tsulukidze@iset.ge

Mariam Lobjanidze

Researcher

✉ m.lobjanidze@iset.ge

Guram Lobzhanidze

Junior Researcher

✉ guram.lobzhanidze@iset.ge

Erekle Shubitidze

Junior Researcher

✉ erekle.shubitidze@iset.ge

INFORMATION

- There was an increase in total electricity generation by 24% on a yearly basis, and an increase by 48% on a monthly basis.
- Consumption increased by 18% on yearly basis, and increased by 1% on a monthly basis.
- Generation exceeded consumption by 166 mln. kWh – 14% of total generation for May.
- The main import partner country was Azerbaijan.
- The cost of Azerbaijani imports was 18.6 tetri per kWh.
- The weighted average price of imports increased by 6% in GEL on a yearly, and by 219% on a monthly basis.
- The main export partner was Turkey
- The price of exports to Turkey was 11.72 tetri per kWh.
- The weighted average export price decreased by 3% in GEL on a yearly, and by 40% on a monthly basis.
- HHI index for the Georgian electricity generation market was very close to the threshold between concentrated and highly concentrated markets in May 2021, indicating that the generation side of the market became substantially less competitive compared to previous months (it was more competitive in March and April – index values of 498, 706 – against 2183 in May), mainly due to the launch of Enguri HPP.
- 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

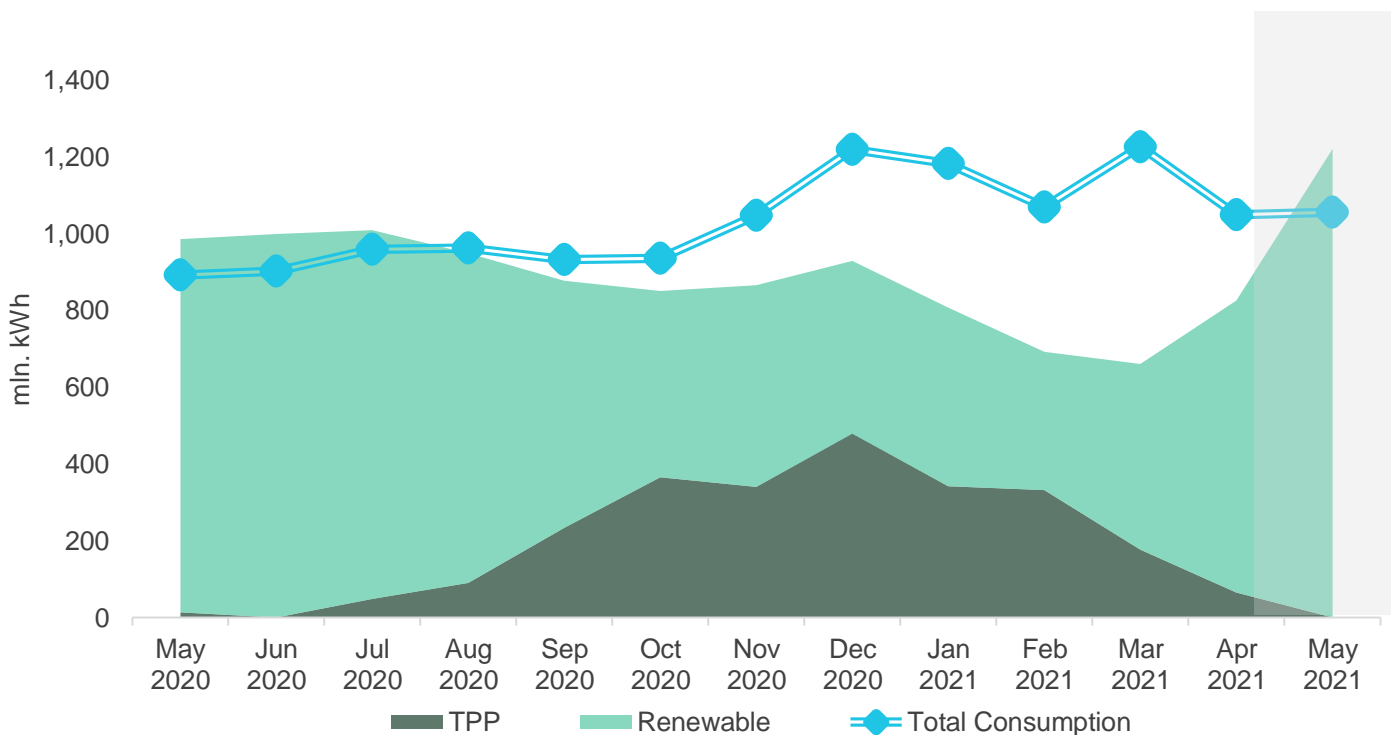
Generation – Consumption – Trade

In May 2021, Georgian power plants generated 1221 mln. kWh of electricity (Figure 1). This represents a 24% increase in total generation, compared to the previous year (in May 2020, the total generation was 986 mln. kWh). The increase in generation on a yearly basis comes from the increase of 26% in hydro power generation, as well as, from increase in the generation of wind power by 10%.

On a monthly basis, generation increased by approximately 48% (in April 2021, total generation was 825 mln. kWh) (Figure 1). The monthly increase in total generation, despite a reduction in thermal power generation of 99% compared to April 2021, was caused by a 61% increase in hydro power generation, and 31% increase in wind power generation.

The consumption of electricity on the local market was 1,055 mln. kWh (+18% and +1% compared to May 2020, and April 2021, respectively) (Figure 1). In May 2021, power generation exceeded consumption by 166 mln. kWh which was 14% of total generation (in May 2020 difference between total generation and consumption resulted in a surplus of 94 mln. kWh, around 10% of the total generation for the month).

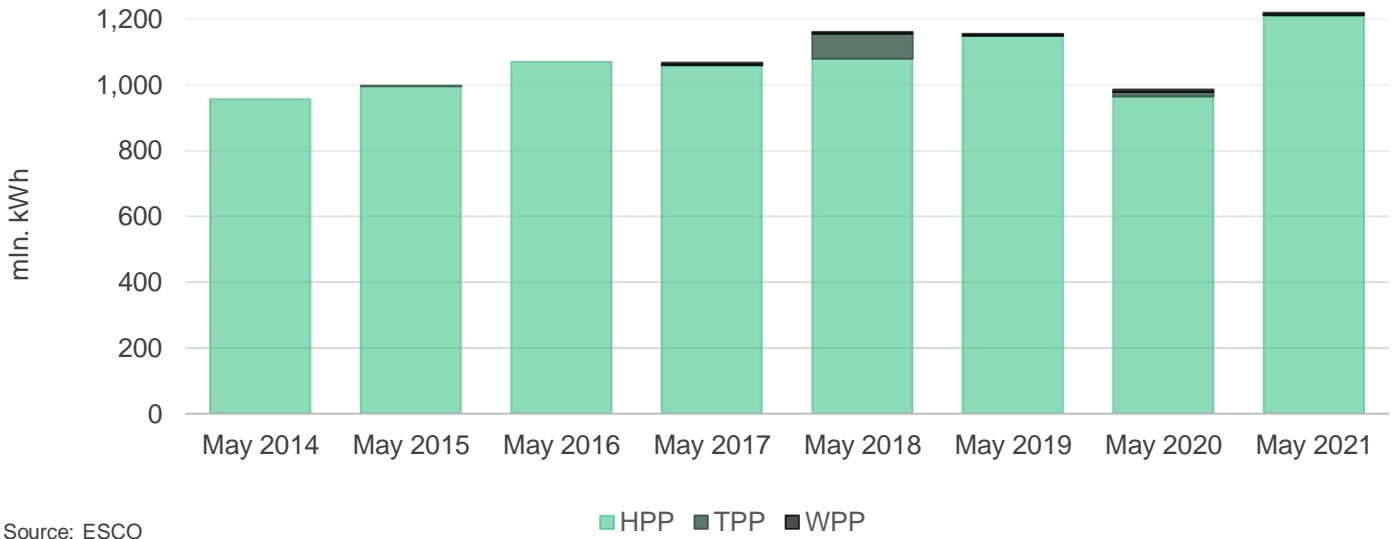
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

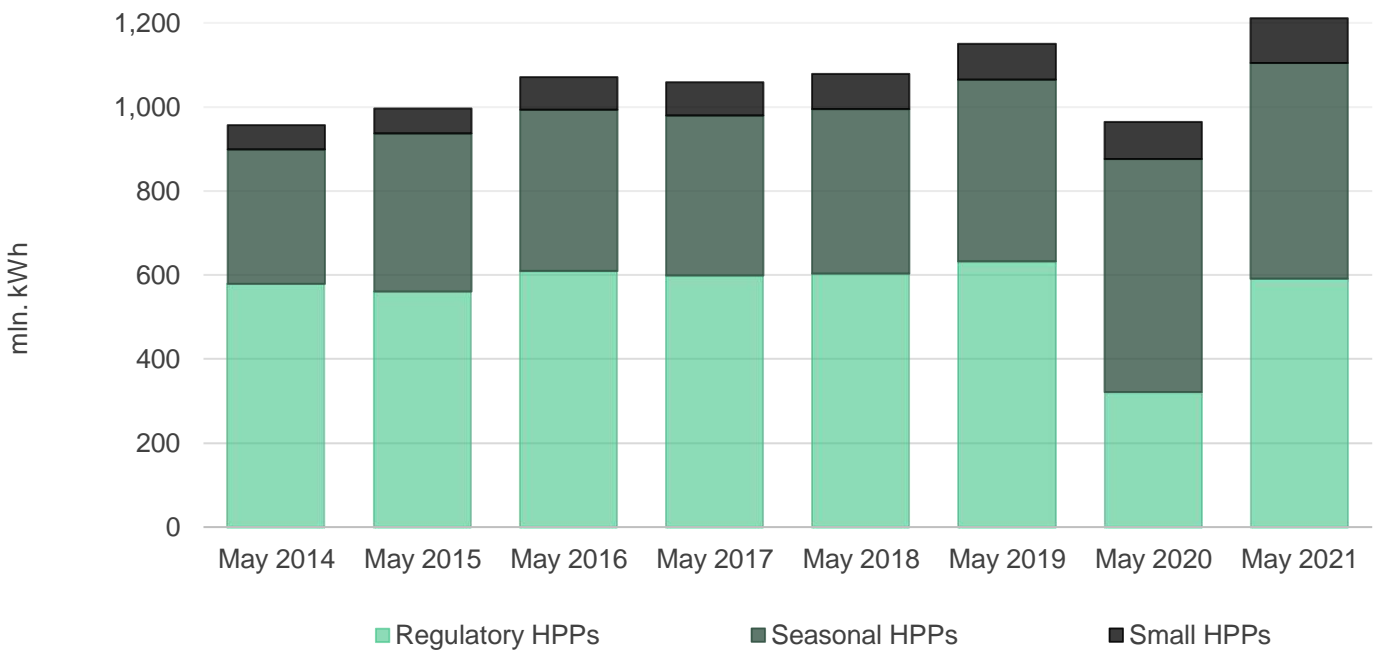
Most generation came from hydro power plants. In May 2021, hydro power (HPP) generation amounted to 1212 mln. kWh (99% of total), while thermal power (TPP) generation was 0.3 mln. kWh, and wind power (WPP) generation was 9 mln. kWh (both less than 1% of total) (Figure 2).

Figure 2 - Electricity Generation by Sources



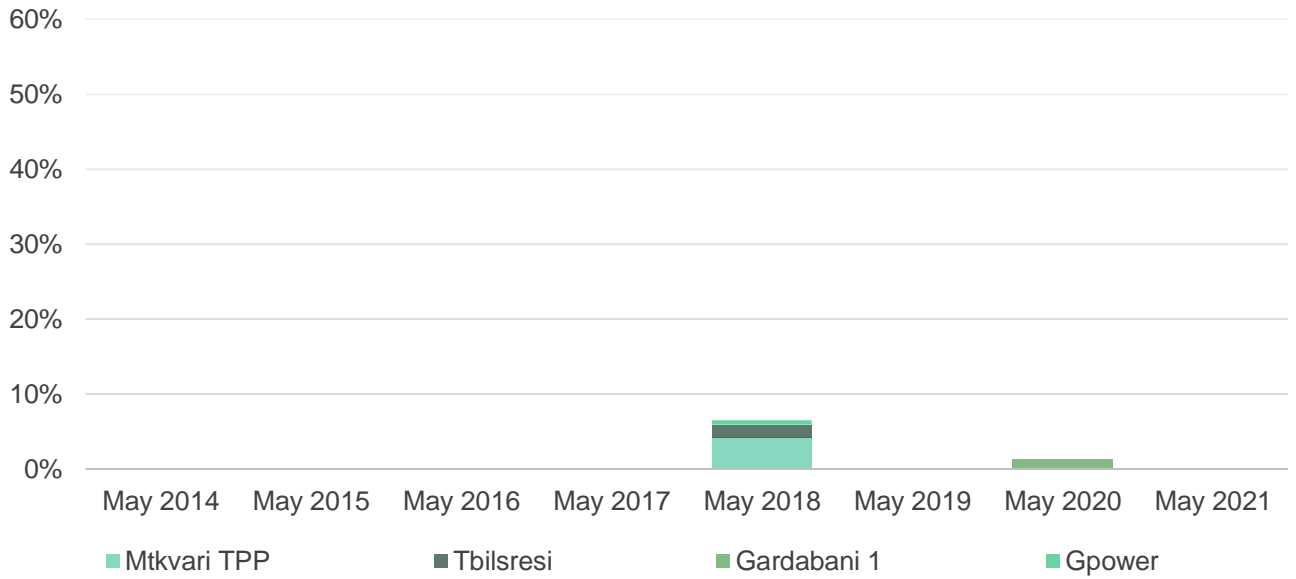
Among hydropower generators, large (regulatory) HPPs produced 49% (591 mln. kWh) of electricity, while seasonal and small HPPs produced 42% (515 mln. kWh) and 9% (107 mln. kWh), respectively (Figure 3).

Figure 3 - HPP Generation by Type



Among thermal power plants, Gpower TPP generated 0.3 mln. kWh, 100% of total thermal power generation, but only 0.02% of total generation (Figure 4).

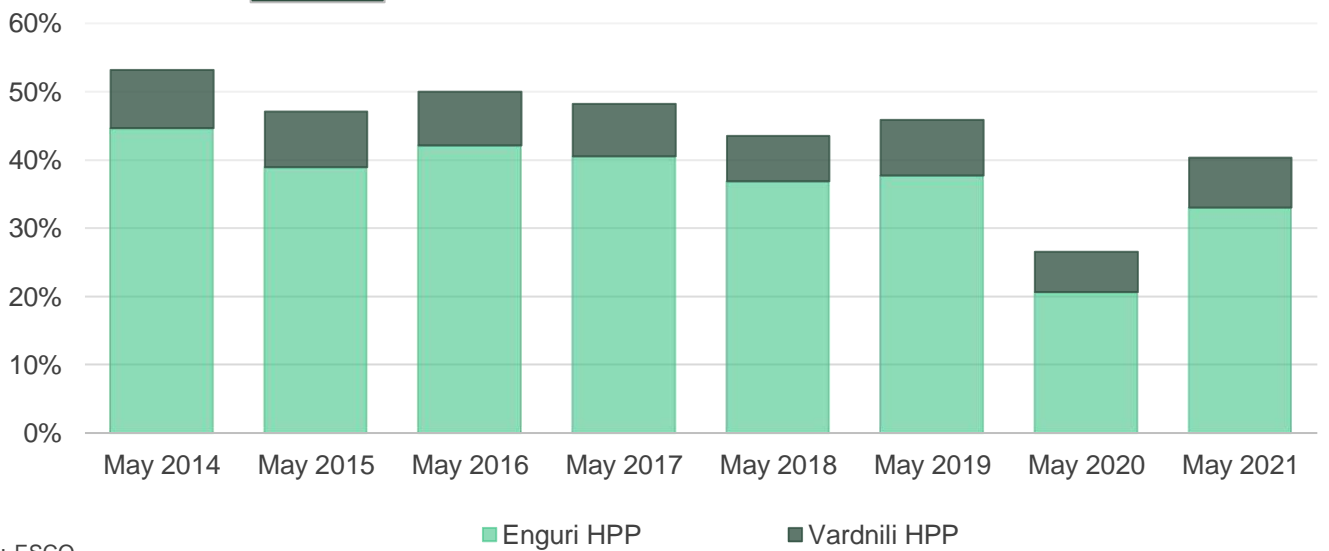
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 89 mln. kWh (15% of generation for regulatory HPPs and 7% of total generation). Enguri HPP generated 404 mln. kWh and this represent 68% of generation of regulatory HPPs and 33% of total generation (Figure 5).

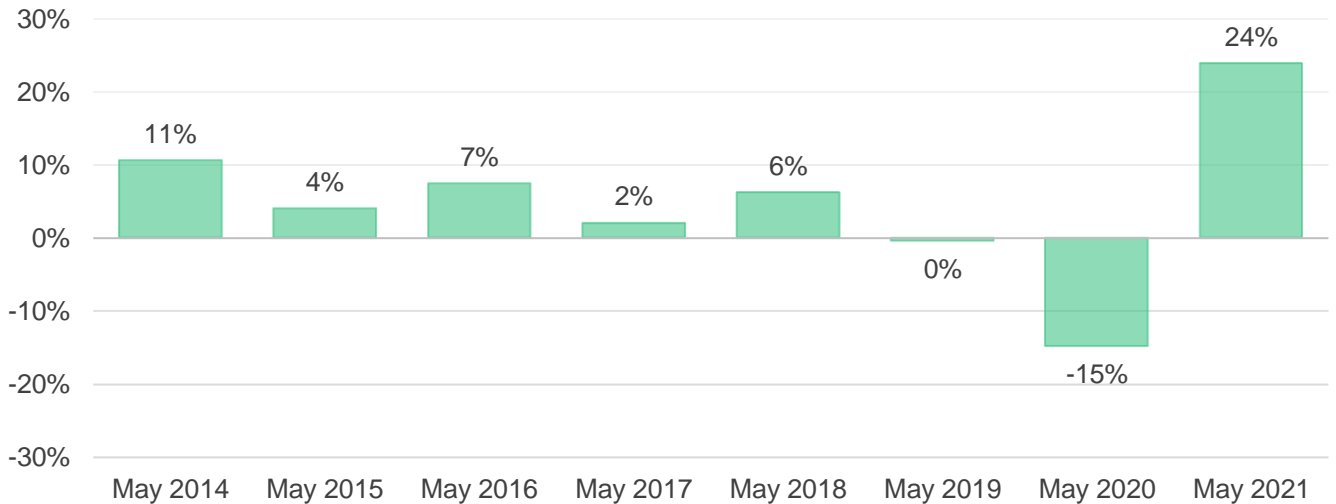
Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, total generation increased by 24% compared to May 2020 (Figure 6).

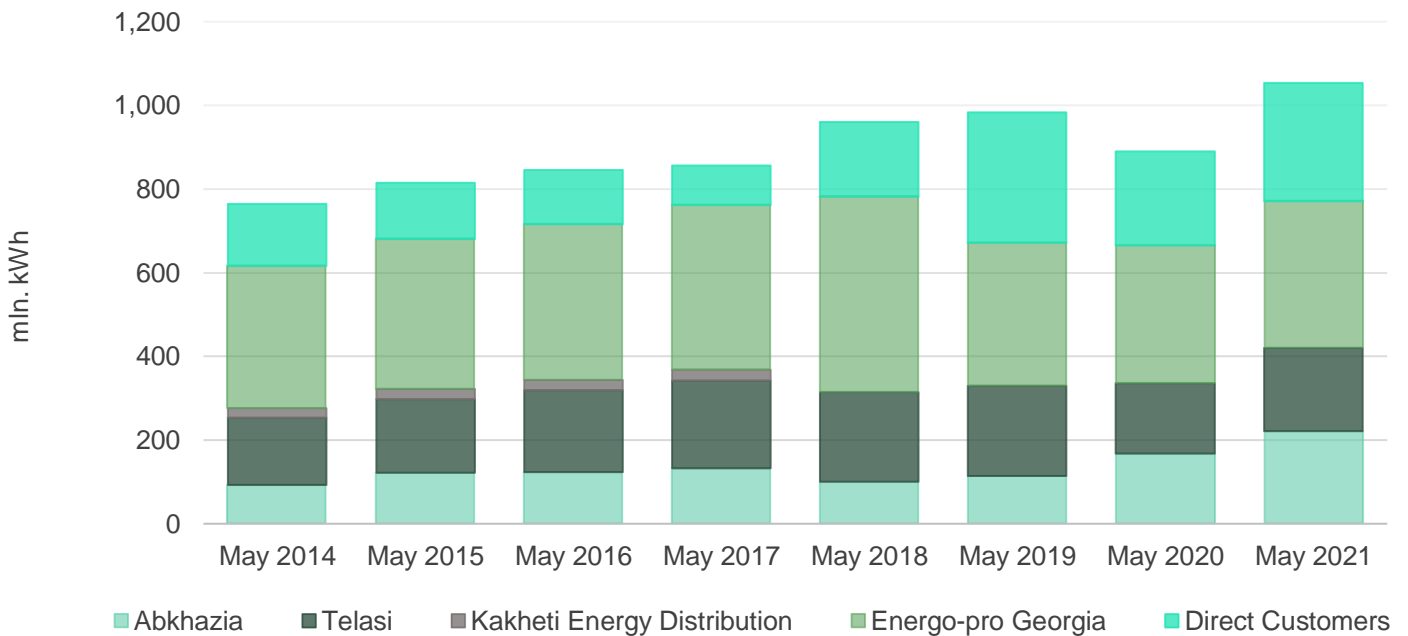
Figure 6 - Growth of Generation (% y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia¹ (33% - 351 mln. kWh), Abkhazia (21% - 222 mln. kWh), Telasi (19% - 198 mln. kWh), and direct customers (27% - 283 mln. kWh) (Figure 7). Annual demand from Energo-Pro, Telasi, Abkhazia and direct customers increased by 7%, 17%, 32% and 26%, respectively. Overall, there was an annual growth of 18% in the total electricity consumption in May 2021, compared to May 2020 (Figure 8).

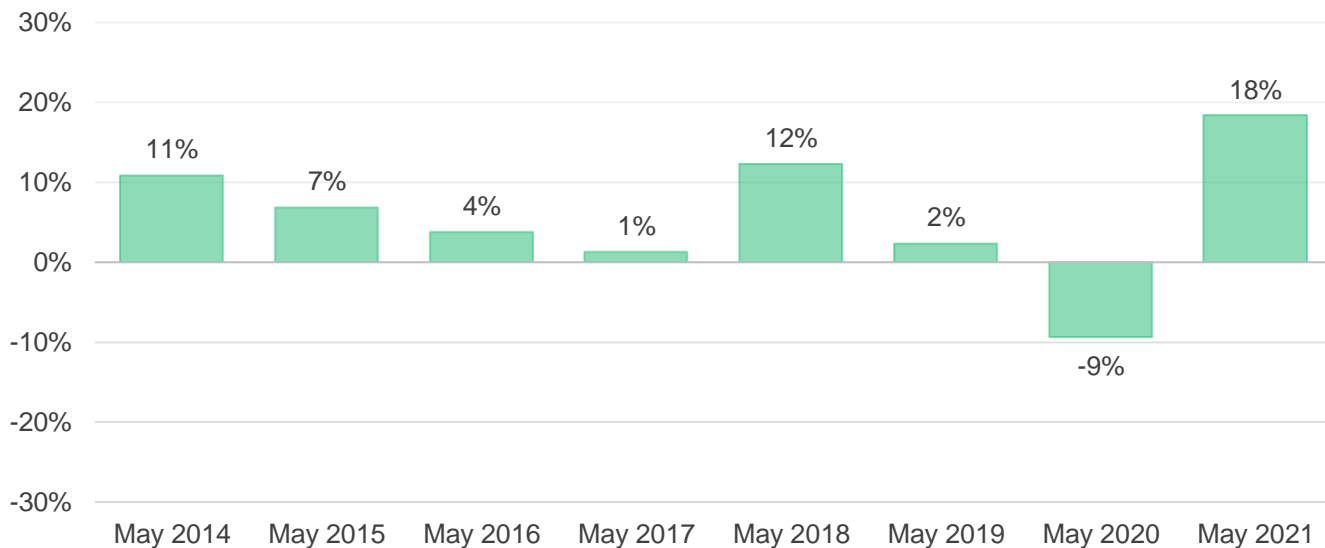
Figure 7 - Electricity Consumption by Type of Customer



Source: ESCO

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

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

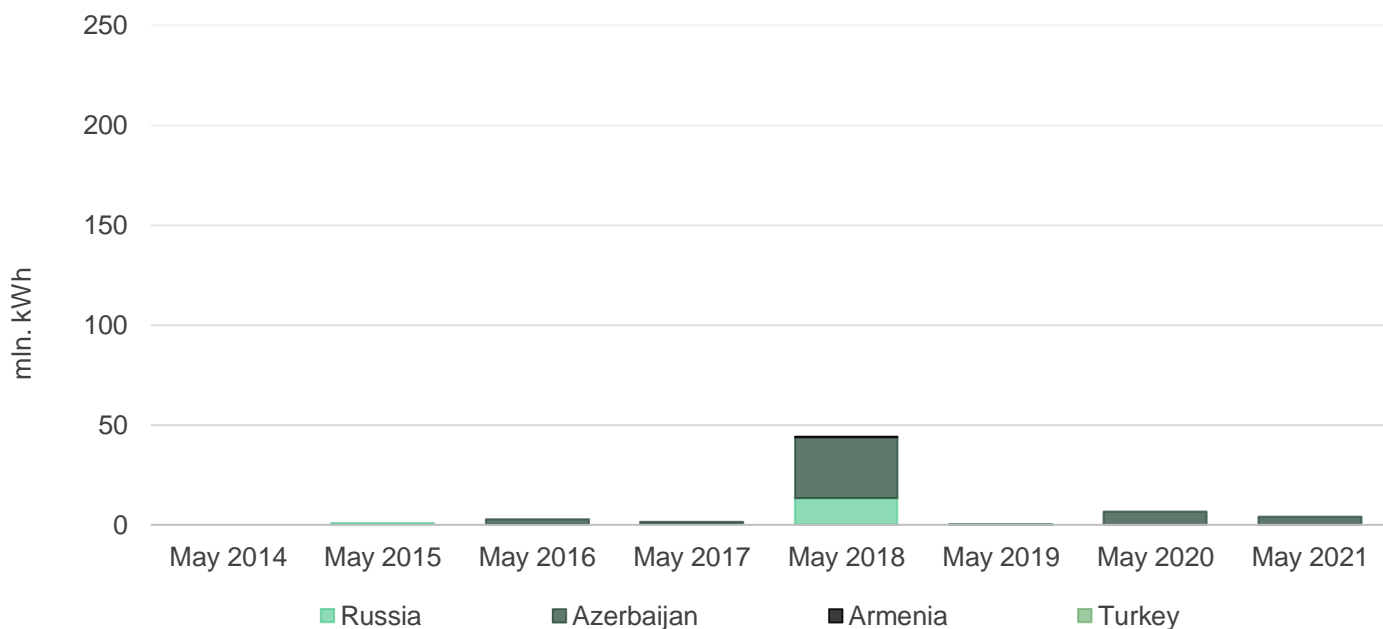


Source: ESCO

In May 2021, Georgia imported 4 mln. kWh of electricity (compared to 7 mln. kWh May 2020), 100% of which came from Azerbaijan (Figure 9). In May 2021, Georgia exported 131 mln. kWh (65 mln. kWh in May 2020), 14% of which was exported to Azerbaijan, 52% to Turkey and 34% to Armenia (Figure 10). There was no electricity transit in May 2021 (In May 2020, there was no electricity transit, as well).

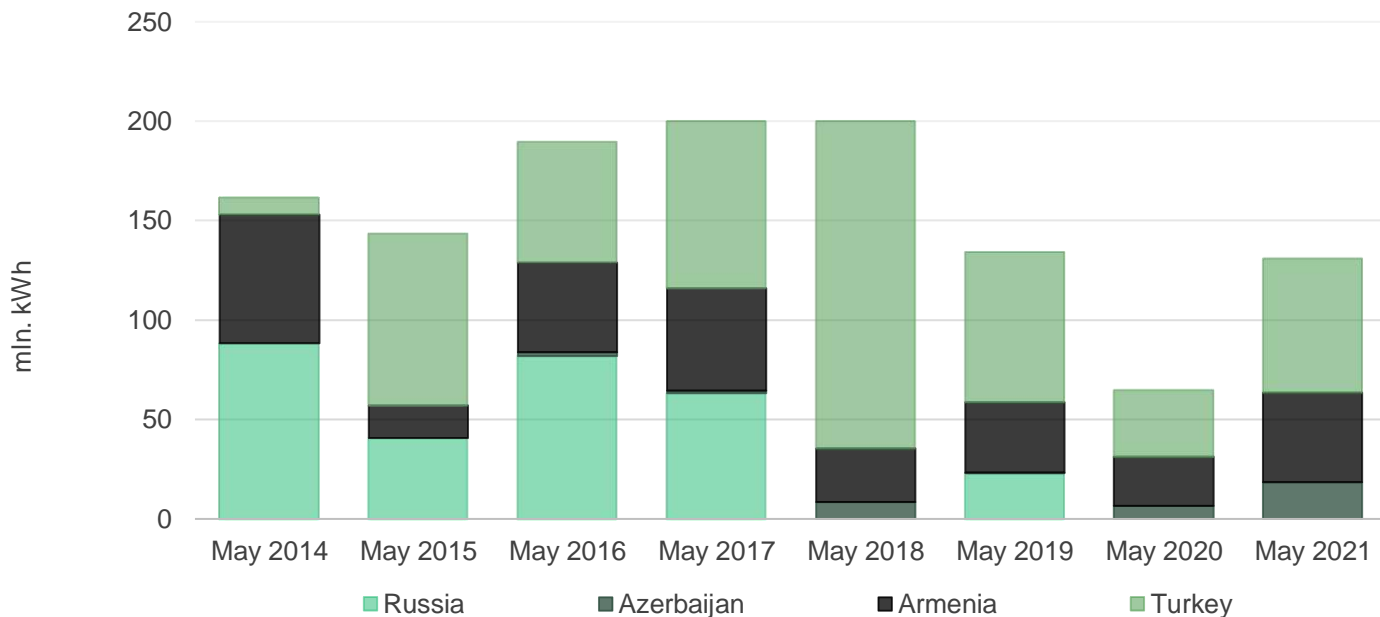
Compared to May 2020, imports decreased by approximately 37% (Figure 9).

Figure 9 - Imports by Year



Source: ESCO

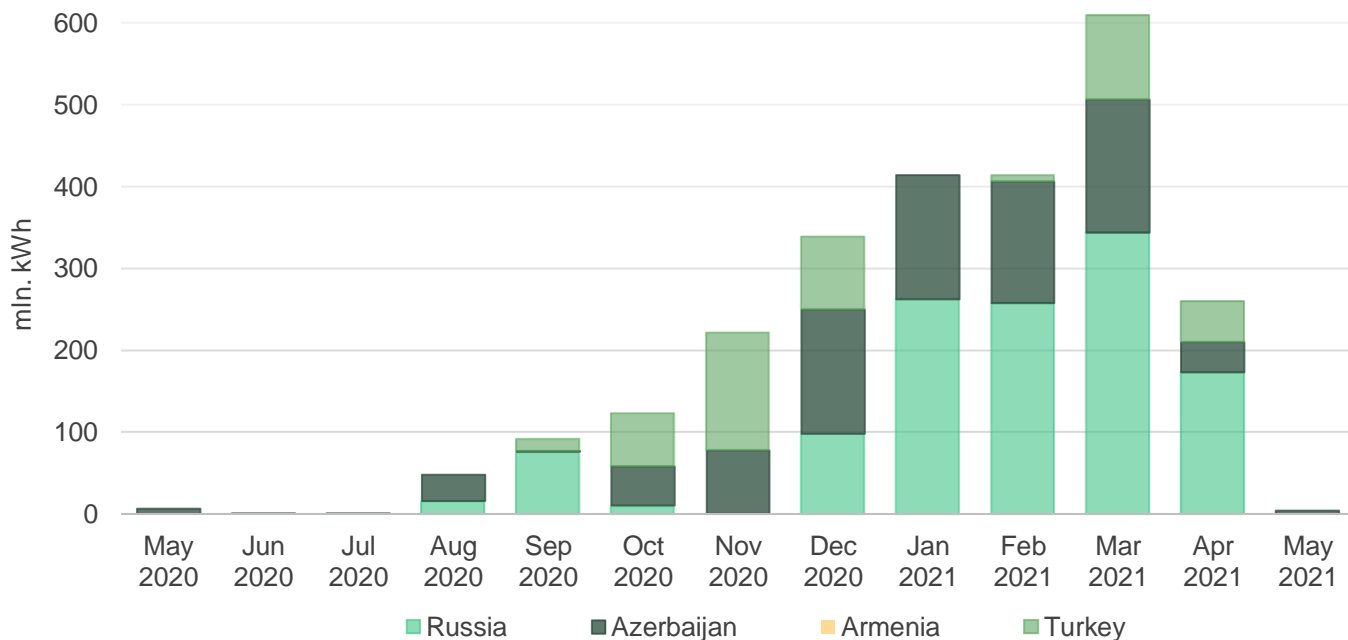
Figure 10 - Exports by Year



Source: ESCO

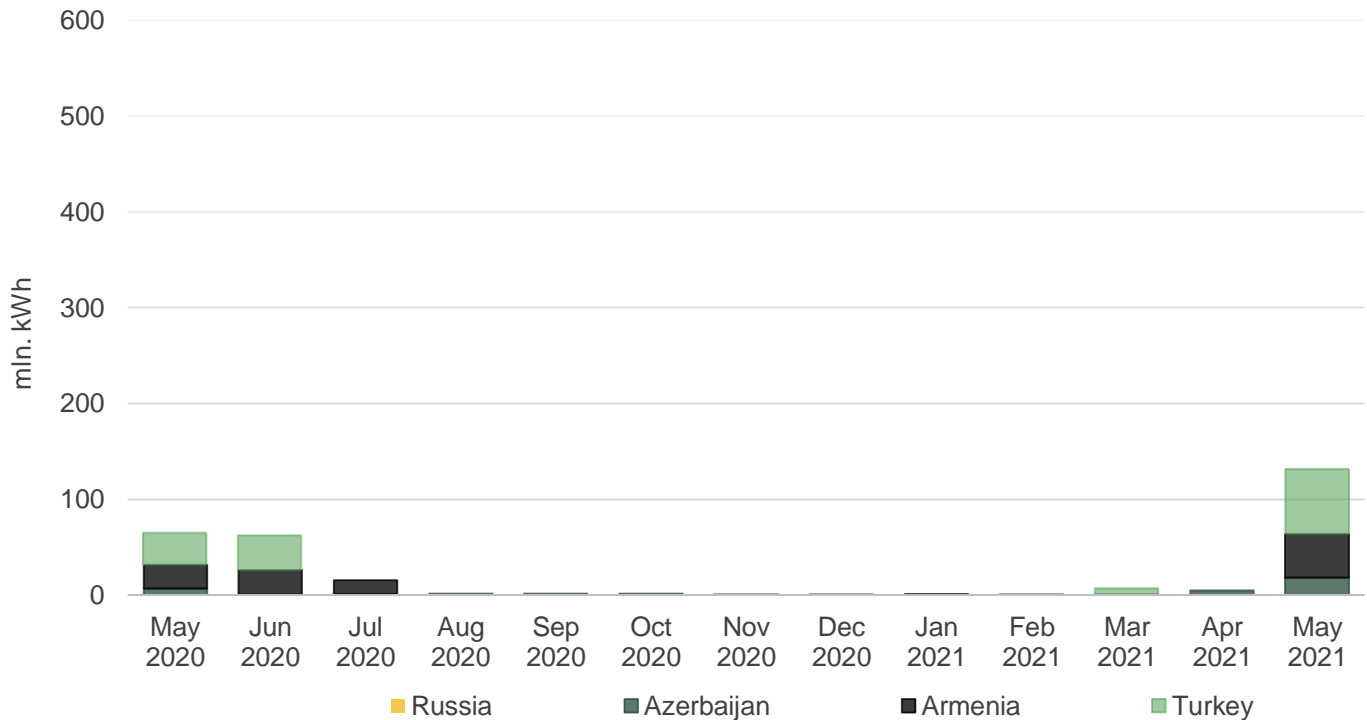
In May 2021, electricity imports decreased by 98% compared to April 2021 (Figure 11), while electricity export increased 28 times (Figure 12).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

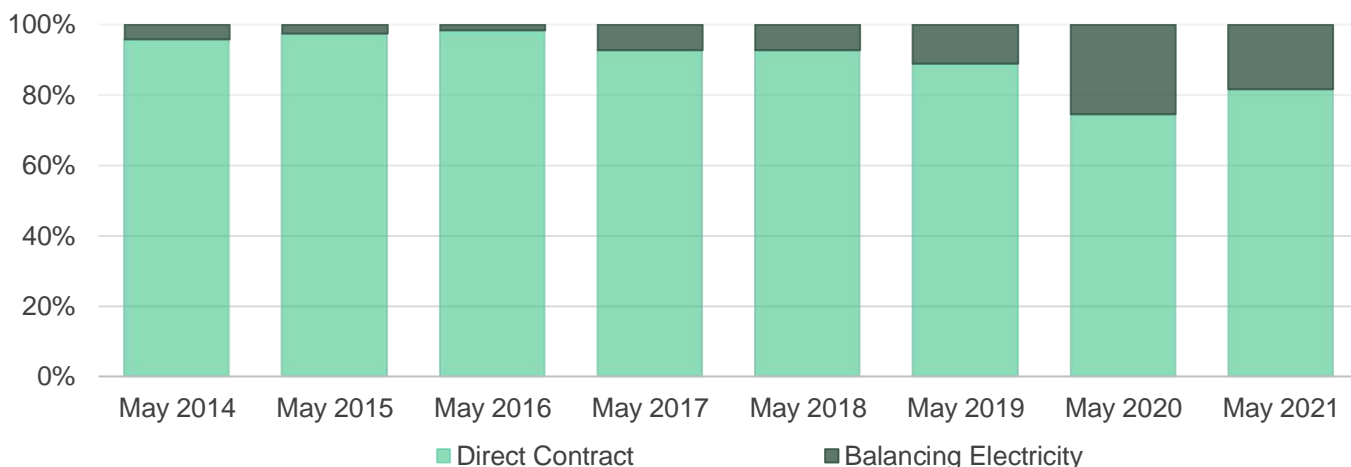


Source: ESCO

1. Market Operations

In May 2021, 82% of the electricity sold on/from the local market was sold through direct contracts. The remaining 18% was sold as balancing electricity (Figure 13).

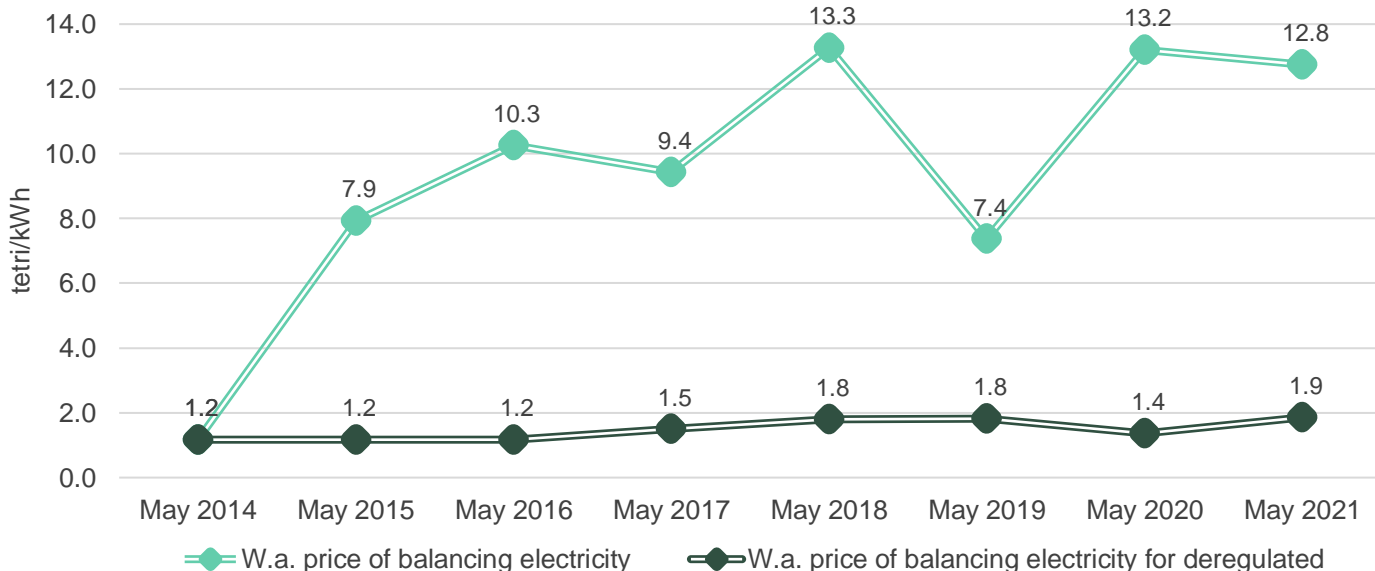
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

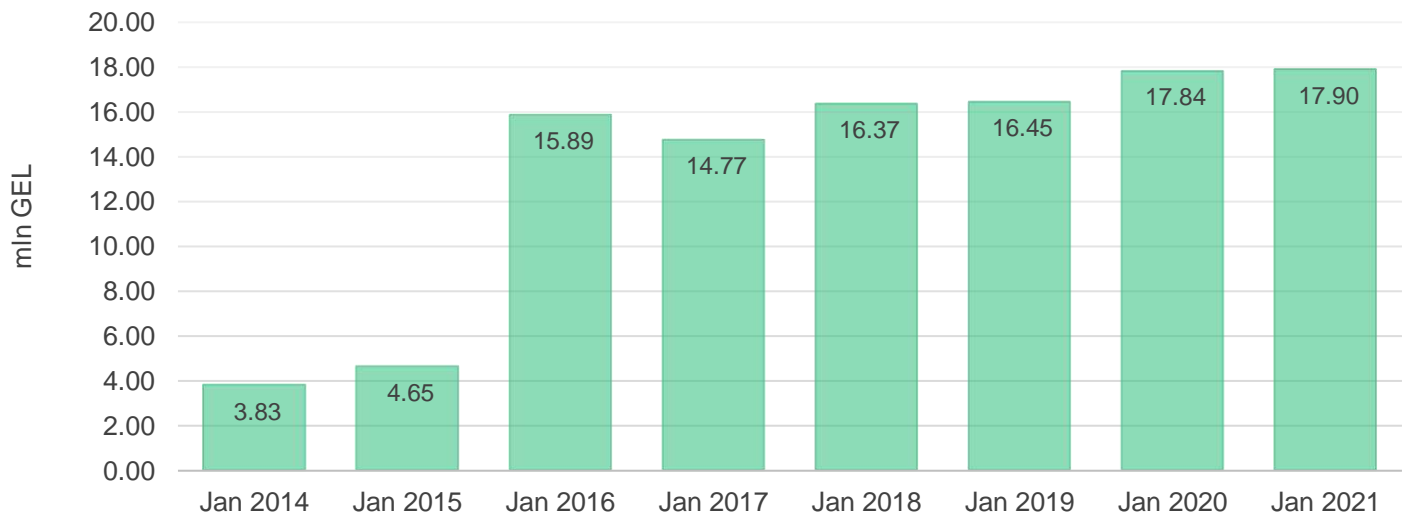
In May 2021, the weighted average price of balancing electricity was 12.8 tetri/kWh, which corresponds to an annual decrease of 3% compared to May 2020. As for the weighted average price for deregulated (small) HPPs, it was 1.9 tetri/kWh, which corresponds to an annual increase of 37% compared to May 2020 (Figure 14).

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



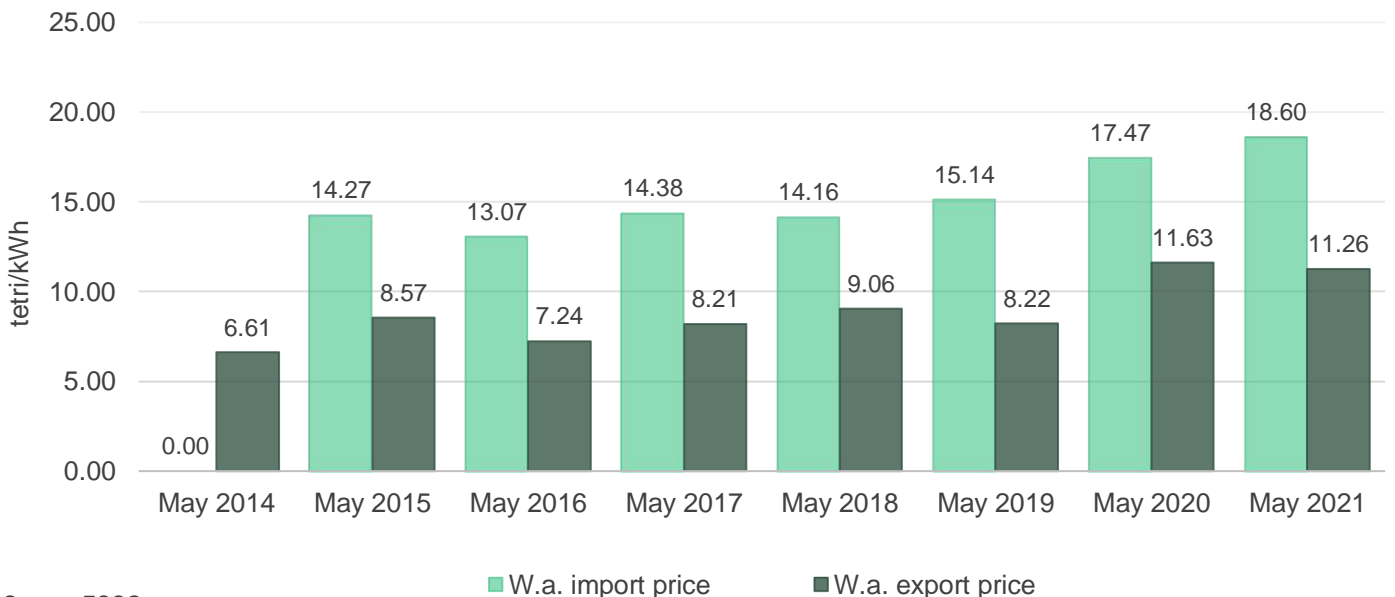
Source: ESCO

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, March, April and May 2021 are not available, so we continue to report the information from January.

Figure 15 - Cost of Guaranteed Capacity

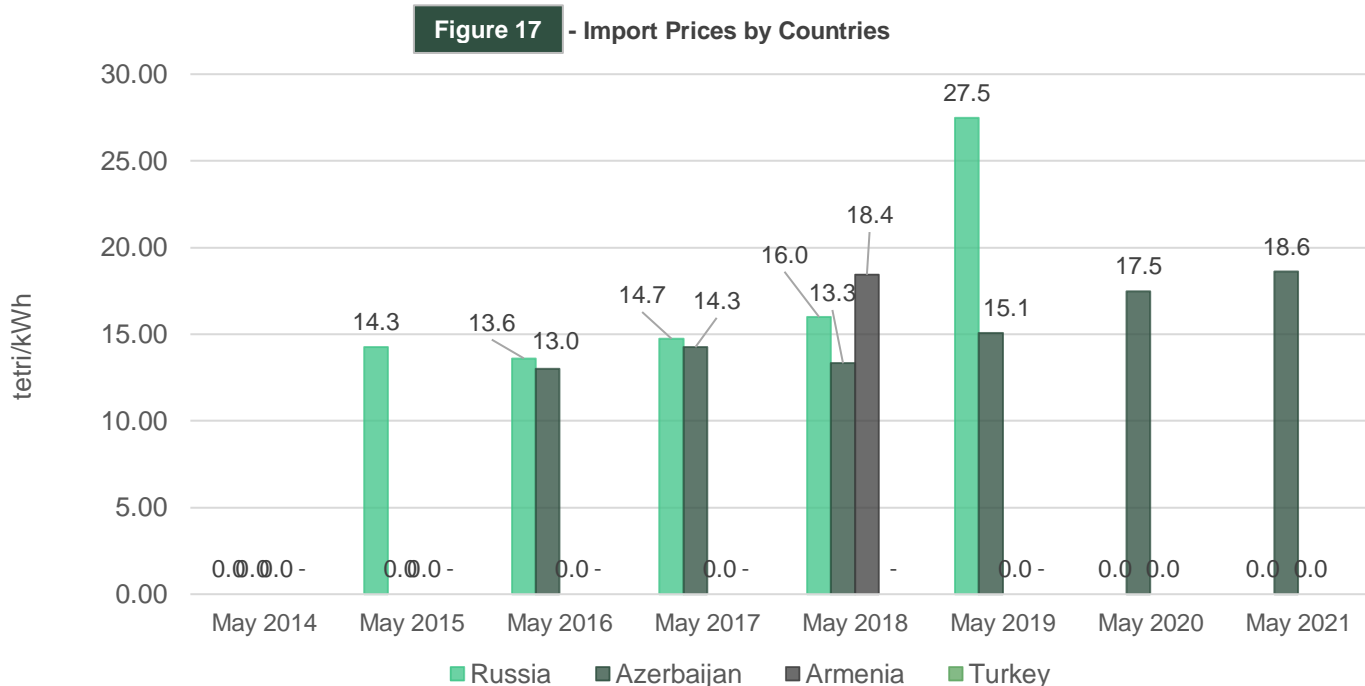
Source: ESCO

The weighted average electricity import price in May 2021 increased by 0.01% in USD, on an annual basis, and increased by approximately 6% in GEL (from 5.5 ¢ or 17.47 tetri per kWh in May 2020 to 5.501 ¢ or 18.6 tetri per kWh in May 2021 - Figure 16). The weighted average import price increased by 225% in USD and 219% in GEL, on a monthly basis (import price was 1.69 ¢ or 5.82 tetri per kWh in April 2021). The weighted average electricity export price in May 2021 decreased by 9% compared to the previous year in terms of USD and by 3% in GEL (from 3.66 ¢ or 11.63 tetri per kWh in May 2020 to 3.33 ¢ or 11.26 tetri per kWh in May 2021 - Figure 17). The weighted average export price decreased by 39% in terms of USD and by 40% in GEL from 5.5 ¢ or 18.9 tetri per kWh to 3.3 ¢ or 11.26 tetri per kWh on a monthly basis.

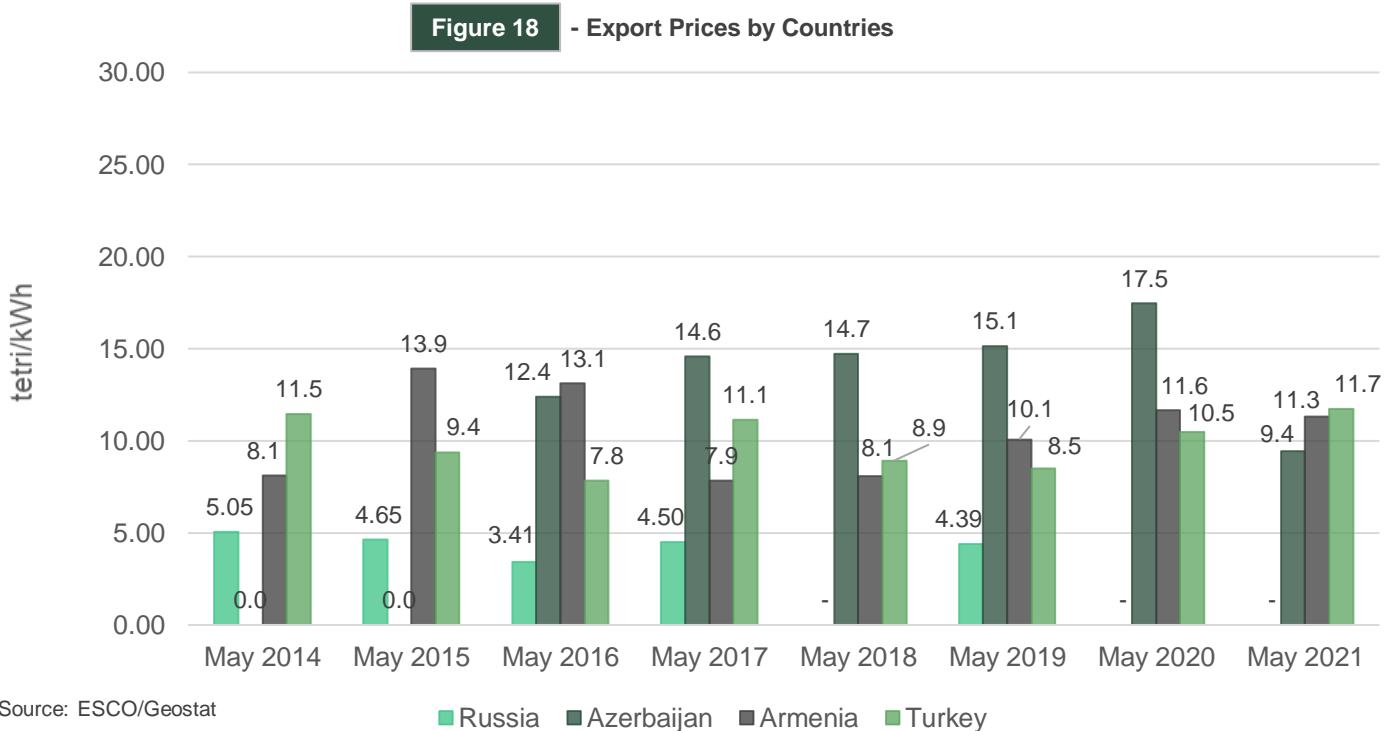
Figure 16 - Prices Import/Export

Source: ESCO

In May 2021, the electricity import price from Azerbaijan stood at 5.5 ¢ or 18.6 tetri per kWh (Figure 17).



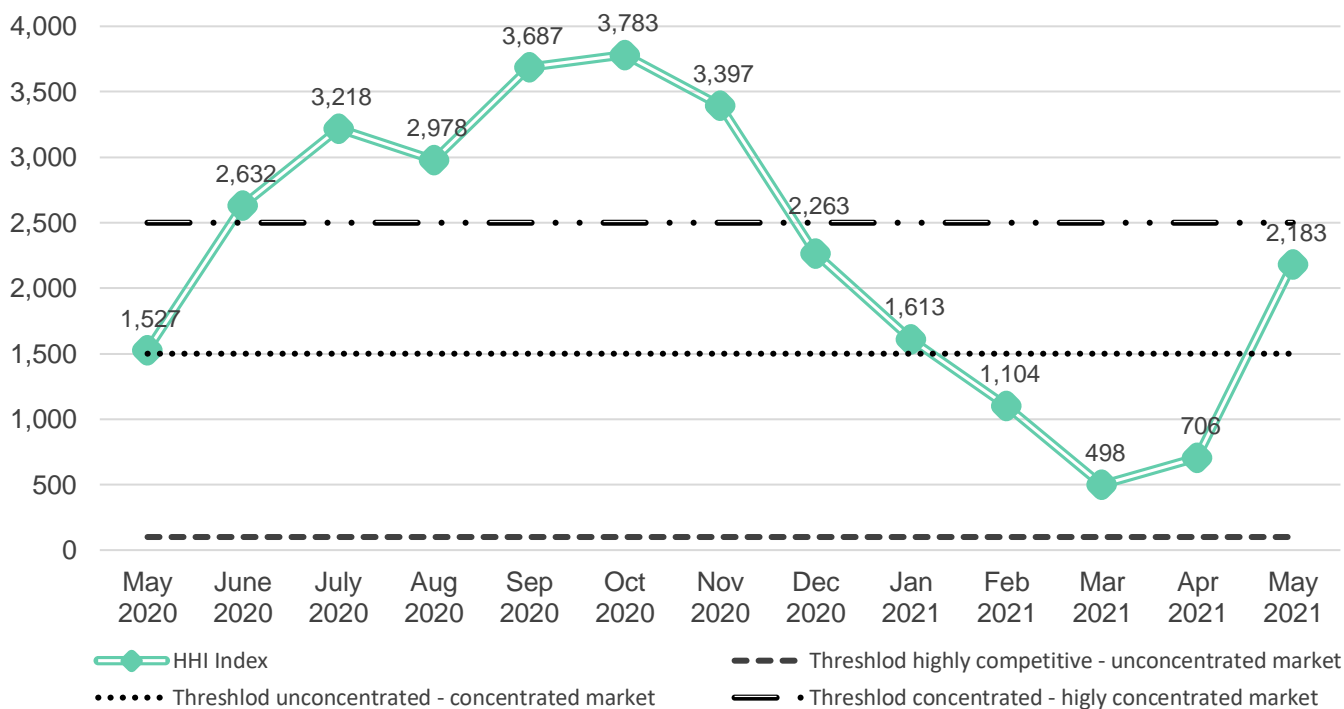
In May 2021, the electricity export price to Azerbaijan, Armenia and Turkey stood at 2.8 ¢ or 9.44 tetri per kWh, 3.3 ¢ or 11.33 tetri per kWh, and 3.5 ¢ or 11.72 tetri per kWh, respectively (Figure 18).



2. Market Concentration

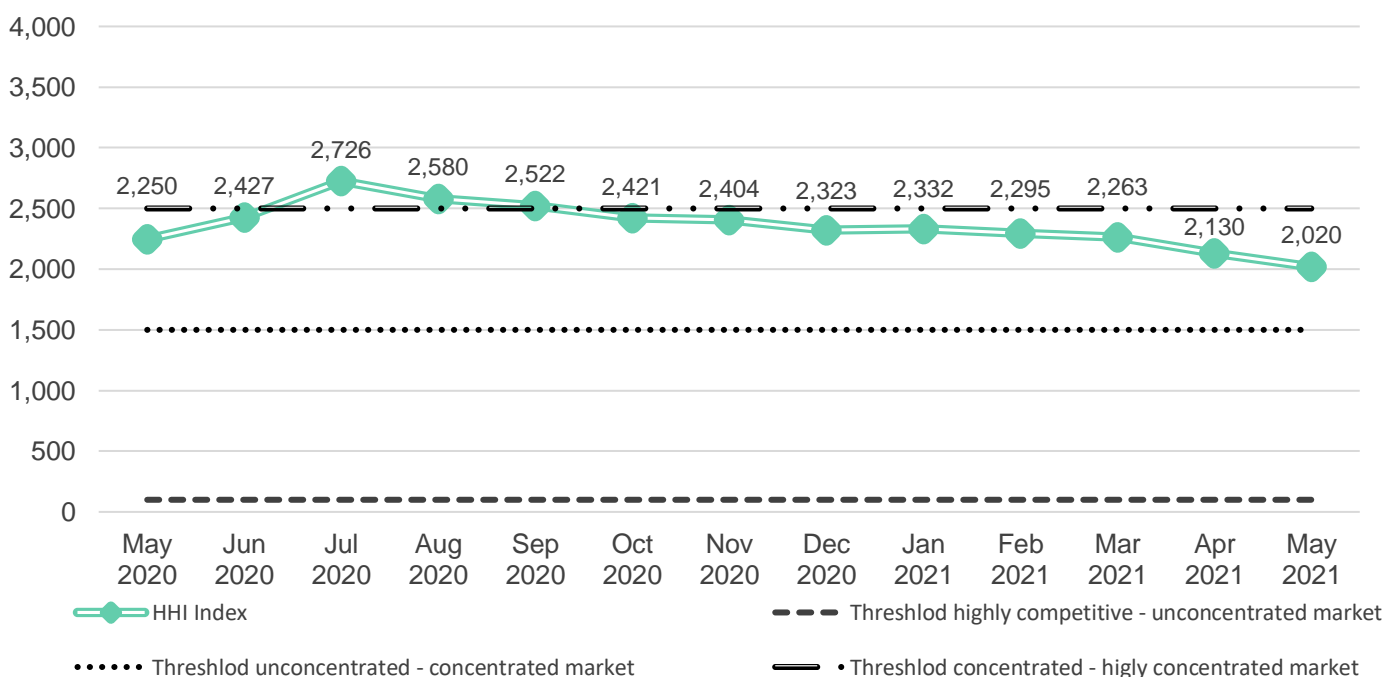
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In May 2021, the Georgian electricity generation market remained slightly below the threshold between concentrated and highly concentrated markets, with an HHI value of 2183 (Figure 19). This is higher than the level in May 2020 (with an HHI value of 1,527), and also substantially higher than the level in April 2021 (HHI was 706). Such a big increase on a monthly basis may be attributed to the return of Enguri HPP. As for the consumption segment, in May 2021, the HHI consumption index was below the threshold for a highly concentrated market, with an HHI value of 2,020 (also slightly below the level in May 2020 – 2,250 and in April 2021 – 2,130).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO