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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE

ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In December 2021 there was an increase in total electricity generation by 28% on a yearly basis, and an increase by 1% on a monthly basis.
- Consumption increased by 10% on yearly basis and increased by 12% on a monthly basis.
- Consumption exceeded generation by 154 mln. kWh – 13% of total generation for December.
- There was a 39% decrease in imports annually.
- The main import partner country was Russia.
- The cost of imports from Russia was 4.80 tetri per kWh.
- The weighted average price of imports in GEL decreased by 9% on a yearly, and by 38% on a monthly basis.
- The main export partner was Turkey, although the level of exports was extremely small.
- The electricity export price to Turkey was 21.27 tetri per kWh.
- For the first time since May 2021, The HHI index for the Georgian electricity generation market fell below the threshold of highly concentrated market in December 2021 and reached the level of 2,106. It was lower compared to the levels in December 2020 and November 2021 (2,263 and 3,160, respectively) indicating that the generation side of the market became slightly competitive compared to the previous months.
- The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. September 2020 (index value of 2,522) was the last month during which the index value was above the level of highly concentrated market. Since then, the trend of the index was downward, however it started to hike up starting from October 2021, reaching the level of 1,913 in December.

ABBREVIATION USED

Mln – million
 kWh – kilowatt-hour
 HPP – Hydro Power Plant
 WPP – Wind Power Plant
 TPP – Thermal Power Plant
 HHI – Hirschmann-Herfindahl Index
 Telmico - Tbilisi Electricity Supply Company
 Ep Georgia - Ep Georgia Supply

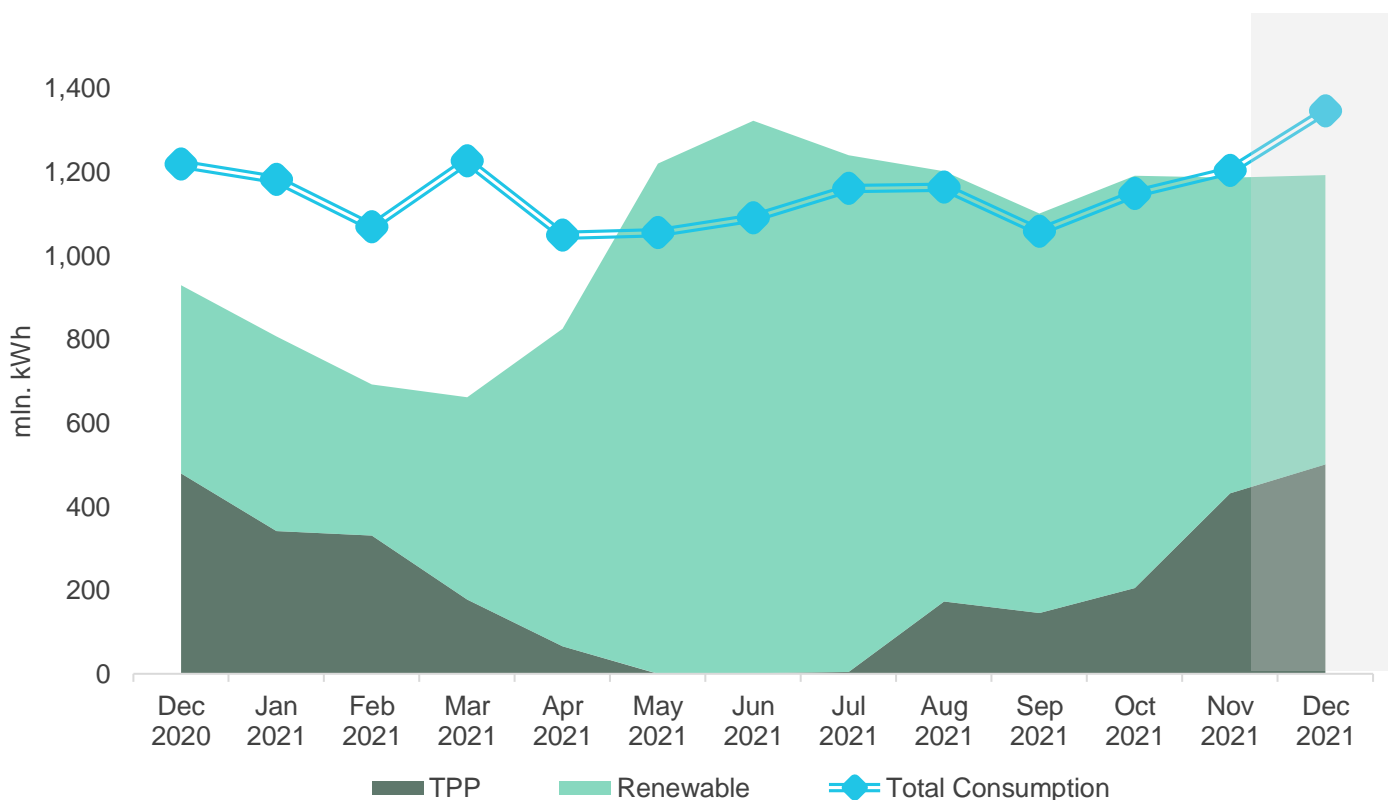
Generation – Consumption – Trade

In December 2021, Georgian power plants generated 1193 mln. kWh of electricity (Figure 1). This represents a 28% increase in total generation, compared to the previous year (in December 2020, the total generation was 930 mln. kWh). The increase in generation on a yearly basis comes from the increase of 55% and 4% in hydro power, and thermal power generation, respectively. Meanwhile, there was a 29% decrease in wind power generation.

On a monthly basis, generation increased by approximately 1% (in November 2021, total generation was 1186 mln. kWh) (Figure 1). The monthly increase in total generation, is induced by a 16% increase in thermal power generation, more than offsetting hydro power and wind power generation decline. They decreased by 8% and 20%, respectively.

The consumption of electricity on the local market was 1346 mln. kWh (+10% compared to December 2020, and +12% compared to November 2021) (Figure 1). In December 2021, power consumption exceeded generation by 154 mln. kWh which was 13% of total generation (in December 2020 difference between total generation and consumption resulted in a deficit of 289 mln. kWh, around 31% of the total generation for the month).

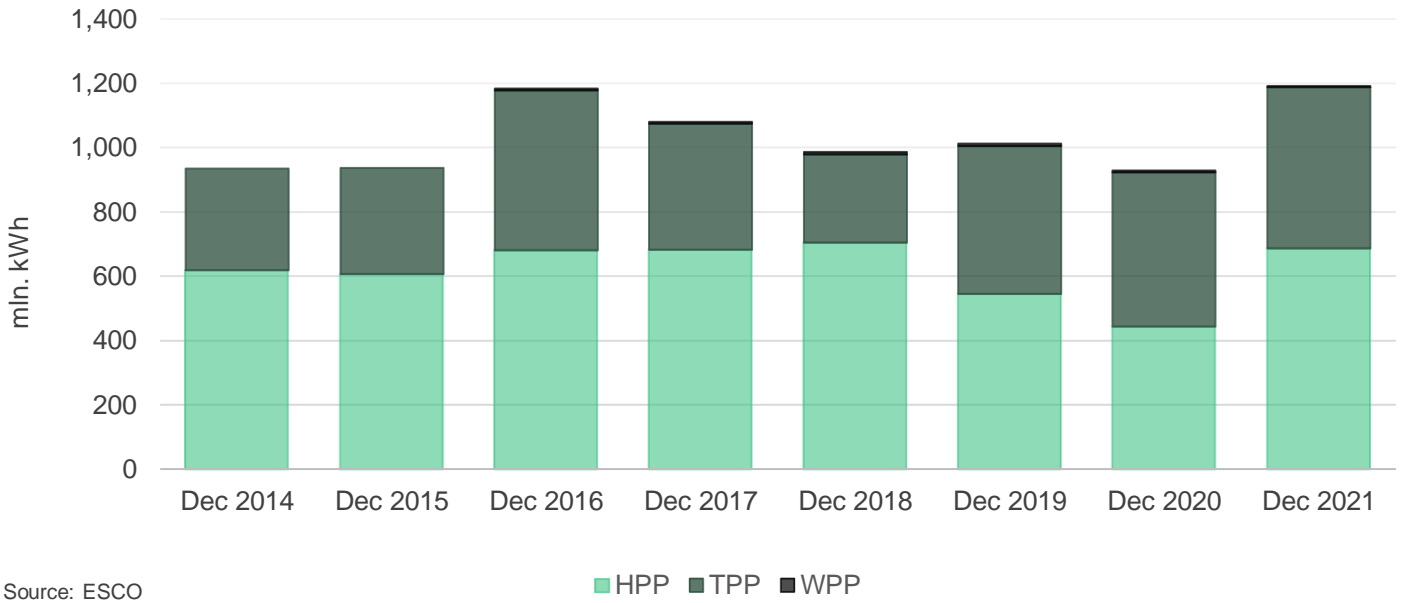
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

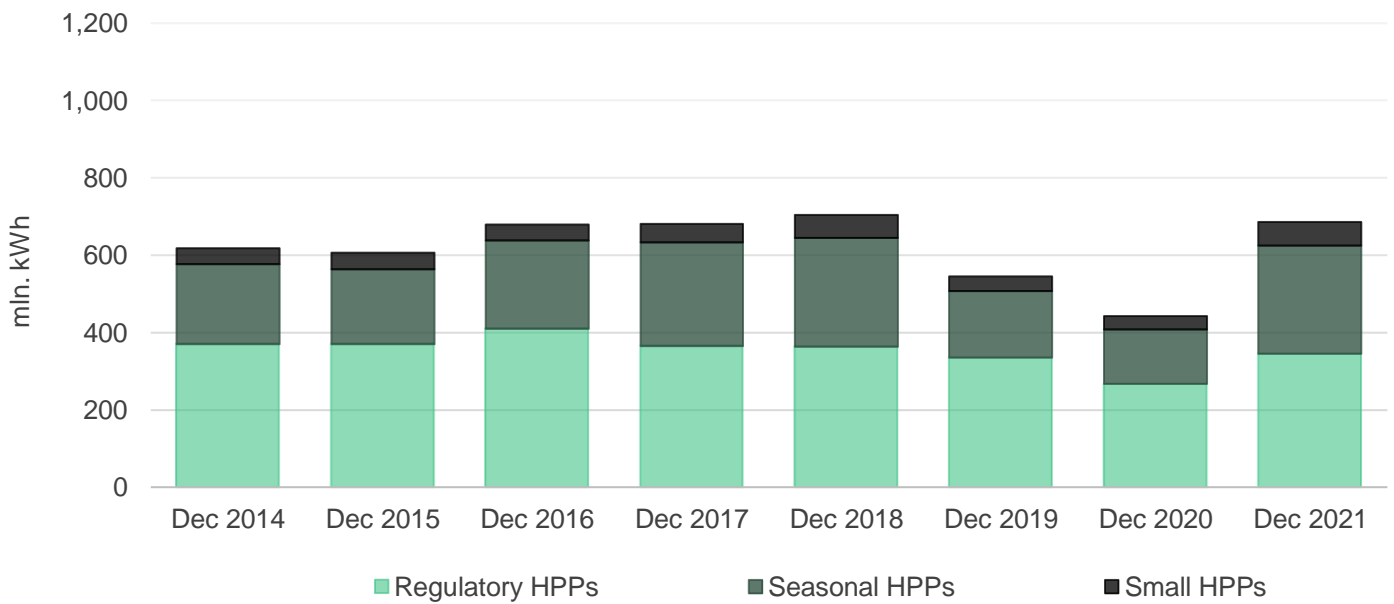
Most generation came from hydro power plants. In December 2021, hydro power (HPP) generation amounted to 687 mln. kWh (58% of total), while thermal power (TPP) generation was 501 mln. kWh, and wind power (WPP) generation was 5 mln. kWh (42% and less than 1% of the total generation, respectively) (Figure 2).

Figure 2 - Electricity Generation by Sources



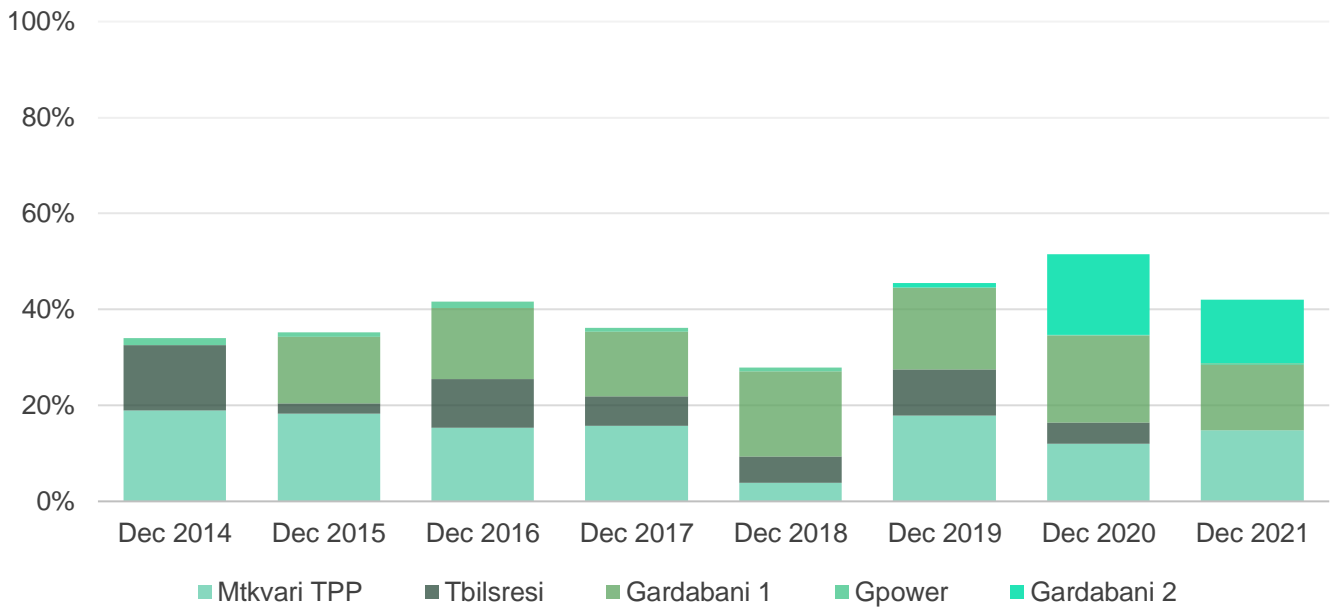
Among hydropower generators, large (regulatory) HPPs produced 50% (345 mln. kWh) of electricity, while seasonal and small HPPs produced 41% (279 mln. kWh) and 9% (62 mln. kWh), respectively (Figure 3).

Figure 3 - HPP Generation by Type



Among thermal power plants, Mtkvari TPP generated 177 mln. kWh, 35% of total thermal power generation and 15% of total generation. Gardabani 1 TPP generated 162 mln. kWh, 32% of total thermal power generation and 14% of total generation. Gardabani 2 TPP generated 157 mln. kWh, 31% of total thermal power generation and 13% of total generation. The remaining 5 mln. kWh of TPP generation came from Gpower (Figure 4).

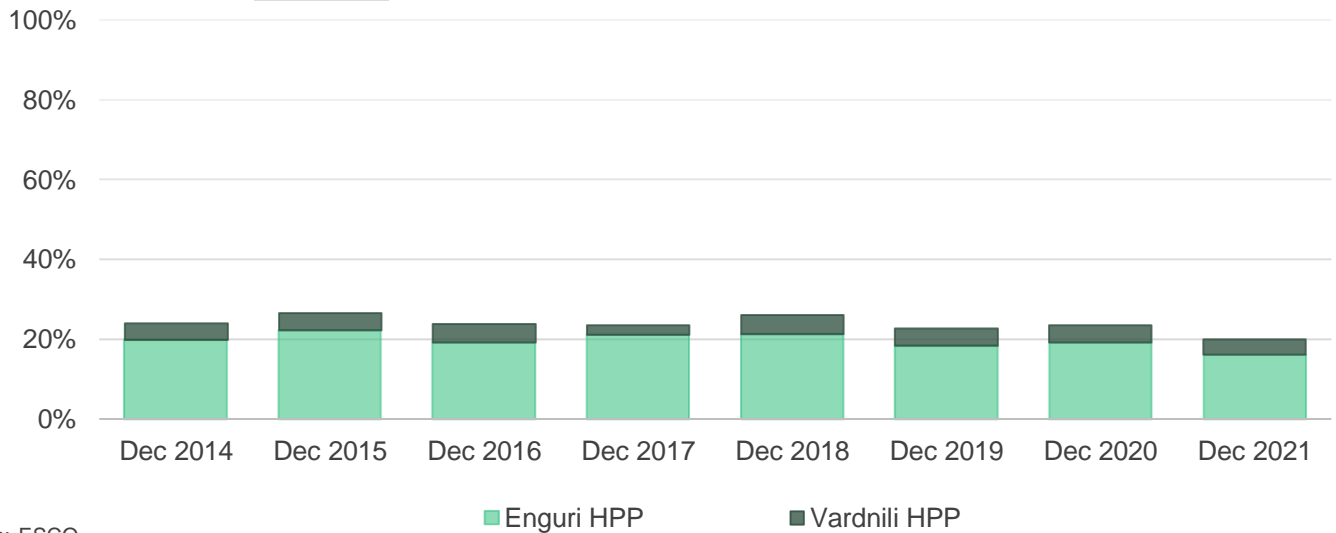
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

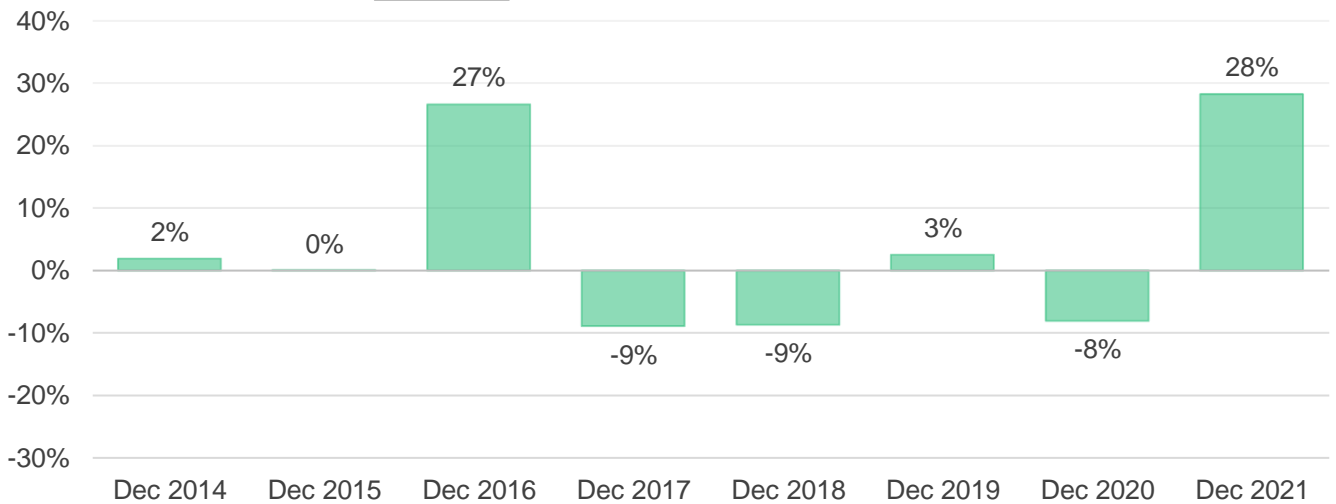
As for HPP generation, Vardnili HPP generated 46 mln. kWh (13% of generation for regulatory HPPs and 4% of total generation). Enguri HPP generated 192 mln. kWh, which represents 55% of generation of regulatory HPPs and 16% of total generation (Figure 5).

Figure 5 - Share of Enguri and Vardnili in Total Generation



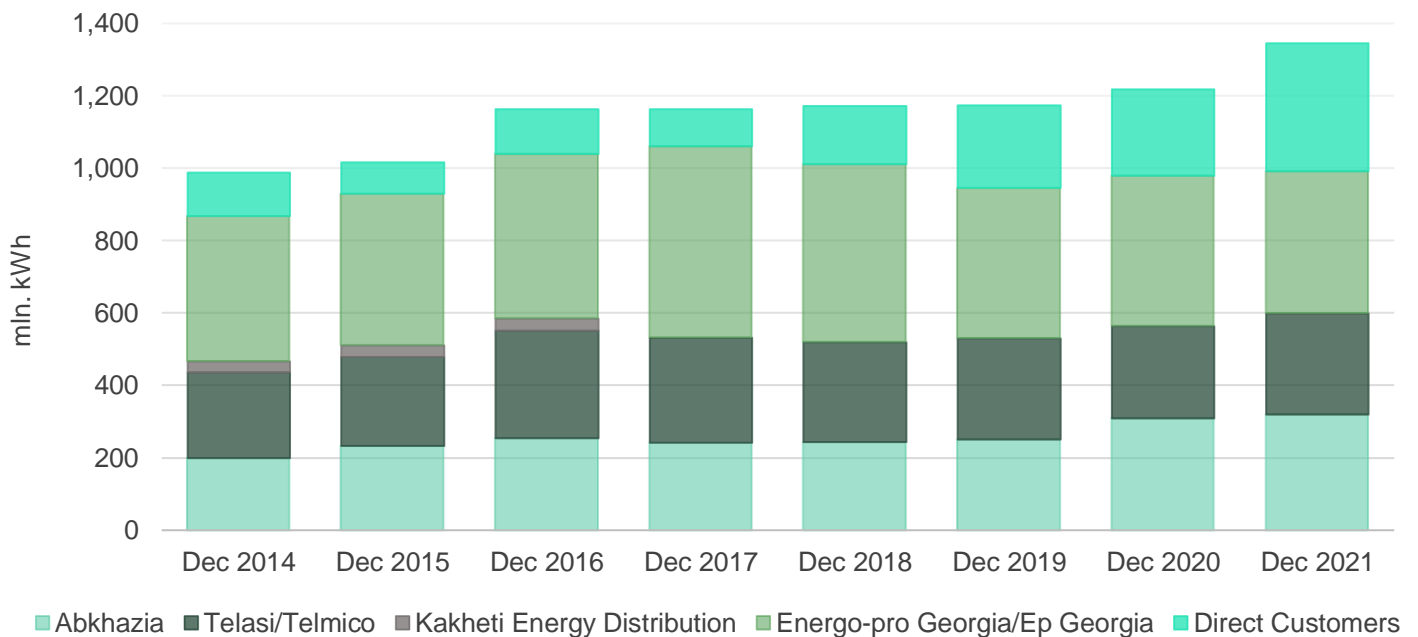
Source: ESCO

Overall, total generation increased by 28% compared to December 2020 (Figure 6).

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

Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia¹ (29% - 392 mln. kWh), Abkhazia (24% - 319 mln. kWh), Telasi/Telmico² (21% - 280 mln. kWh), and direct customers (26% - 355 mln. kWh) (Figure 7). Annual demand from Abkhazia, Telasi and direct customers increased by 3%, 10%, and 49%, respectively, while demand from Energo-pro Georgia decreased by 6%. Overall, there was an annual growth of 10% in the total electricity consumption in December 2021, compared to December 2020 (Figure 8).

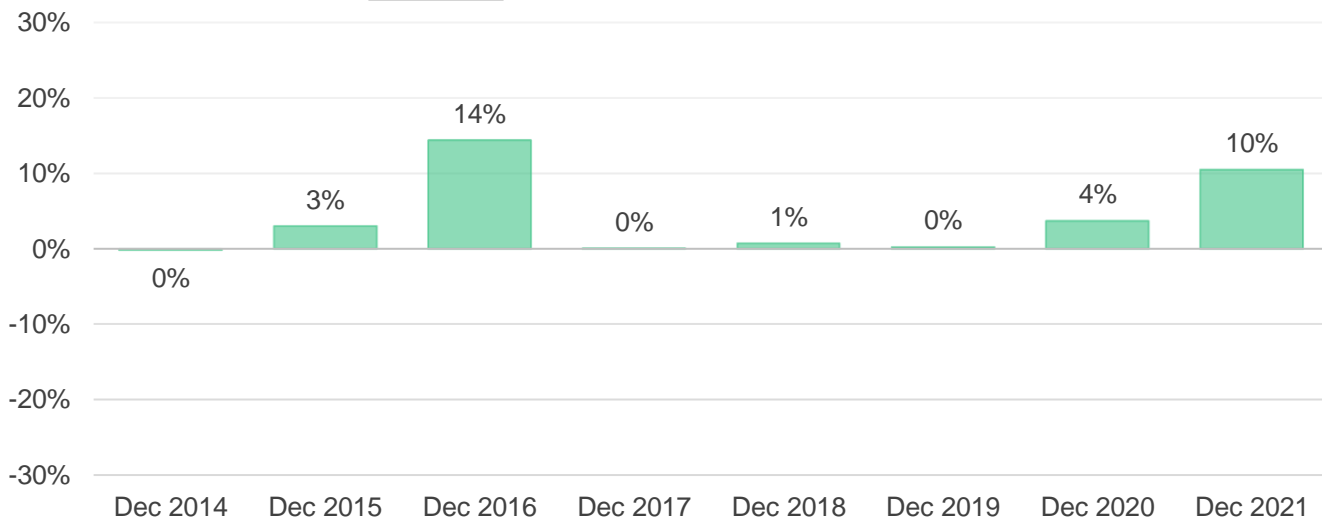
Figure 7 - Electricity Consumption by Type of Customer

Source: ESCO

¹ Energo-Pro Georgia acquired Kakheta Energy Distribution in September 2017. Since July 2021, Ep Georgia is responsible for supply of electricity.

² Since July 2021, Telmico is responsible for supply of electricity.

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

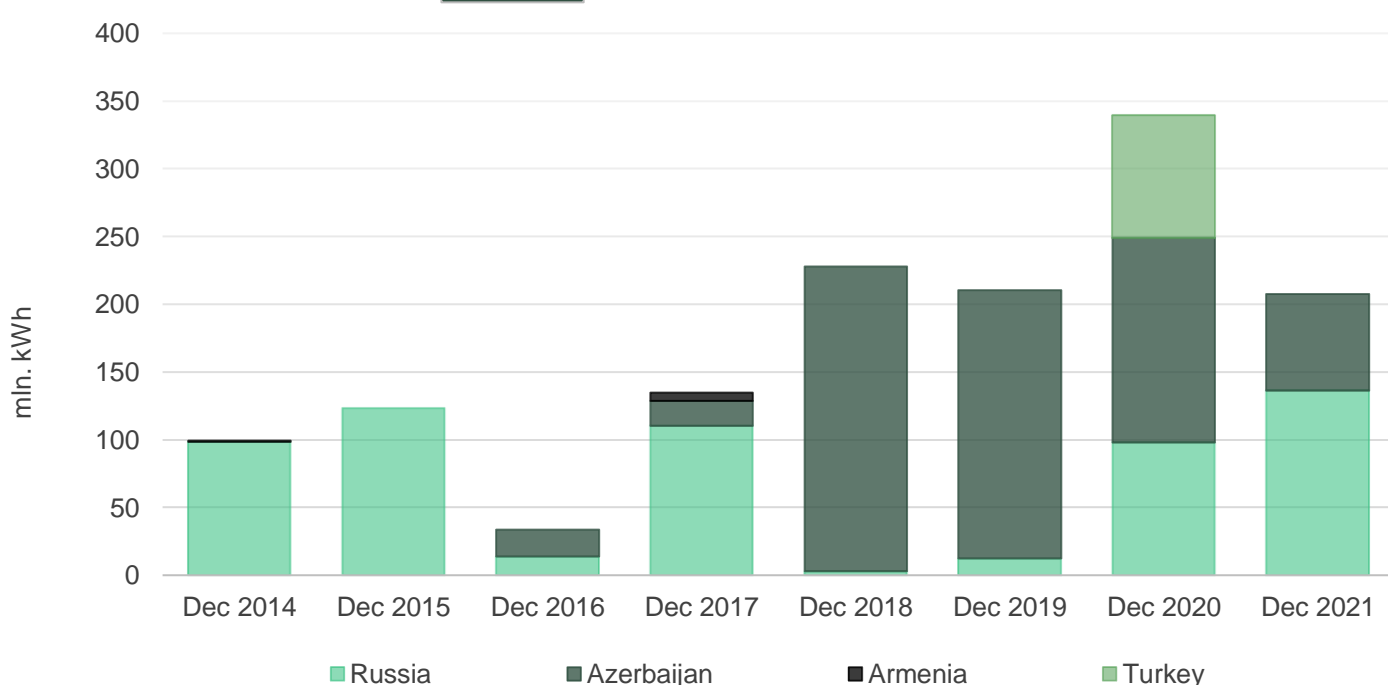


Source: ESCO

In December 2021, Georgia imported 207 mln. kWh of electricity (compared to 339 mln. kWh December 2020). 66% of imports came from Russia and the rest came from Azerbaijan (Figure 9). In December 2021, Georgia exported almost no electricity (0.037 mln. kWh), all of which went to Turkey (there was 0.085 mln. kWh export in December 2020) (Figure 10). There was a 204 mln. kWh electricity transit from Azerbaijan to Turkey in December 2021 (In December 2020, there was no transit at all).

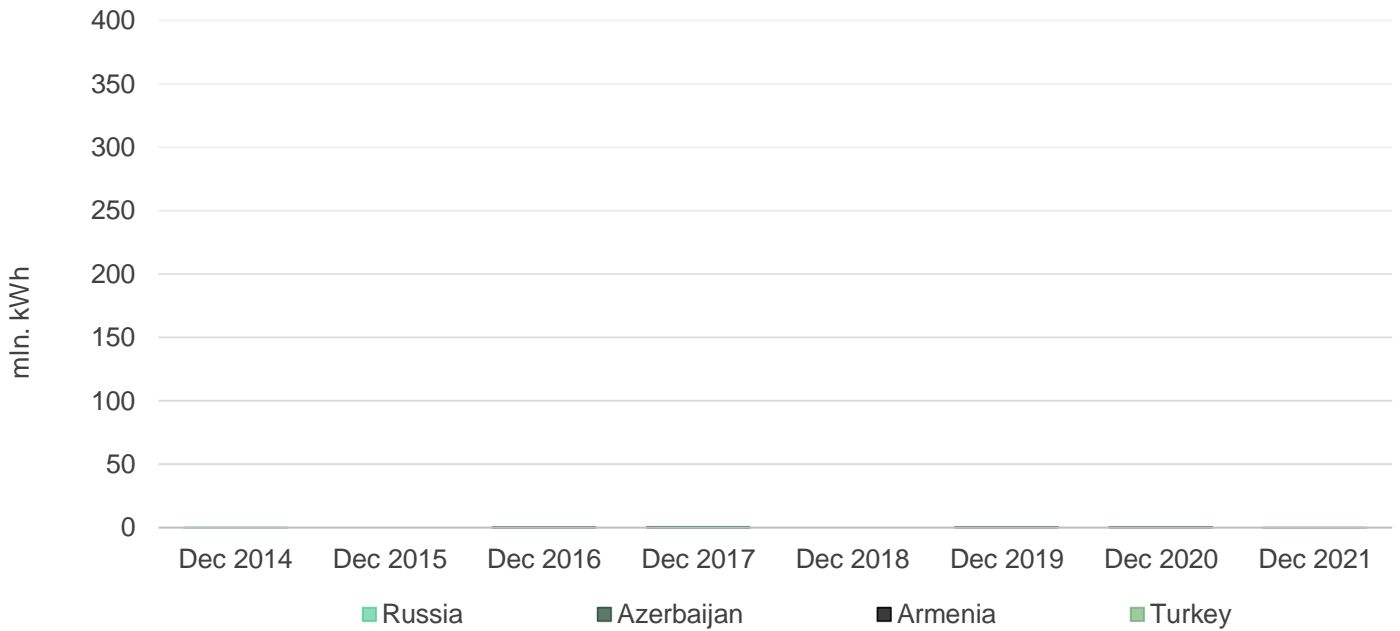
Compared to December 2020, imports decreased by 39%, while exports decreased by 56%.

Figure 9 - Imports by Year



Source: ESCO

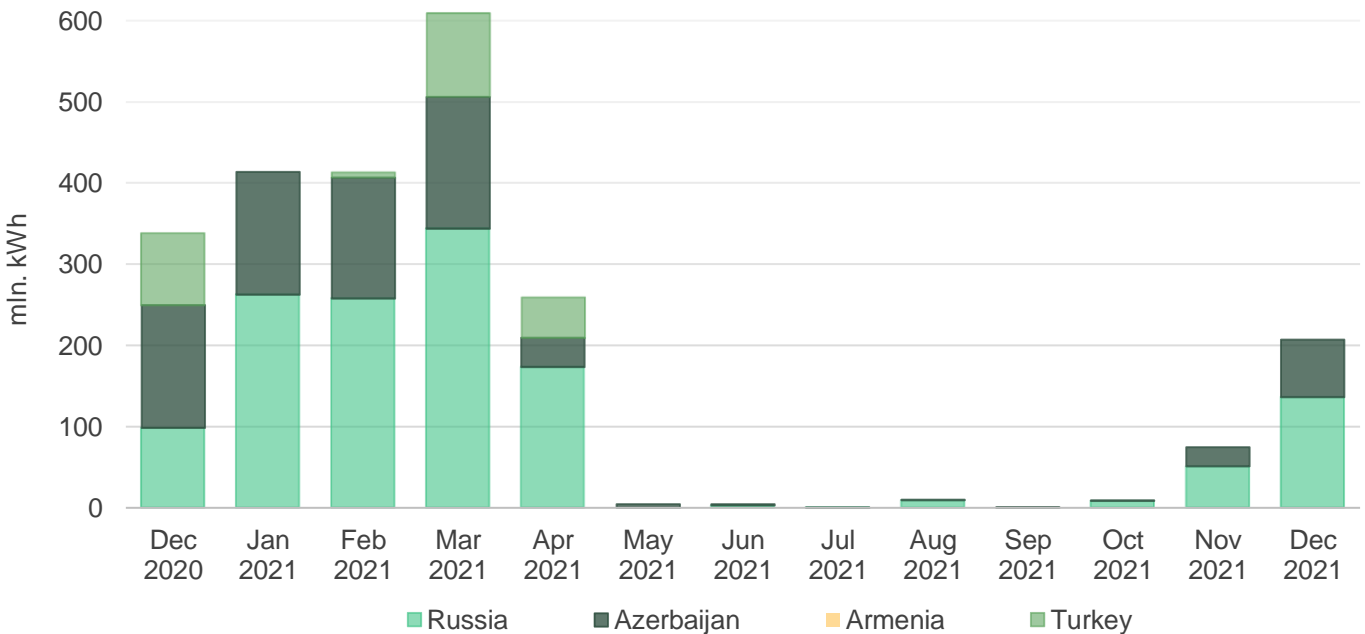
Figure 10 - Exports by Year



Source: ESCO

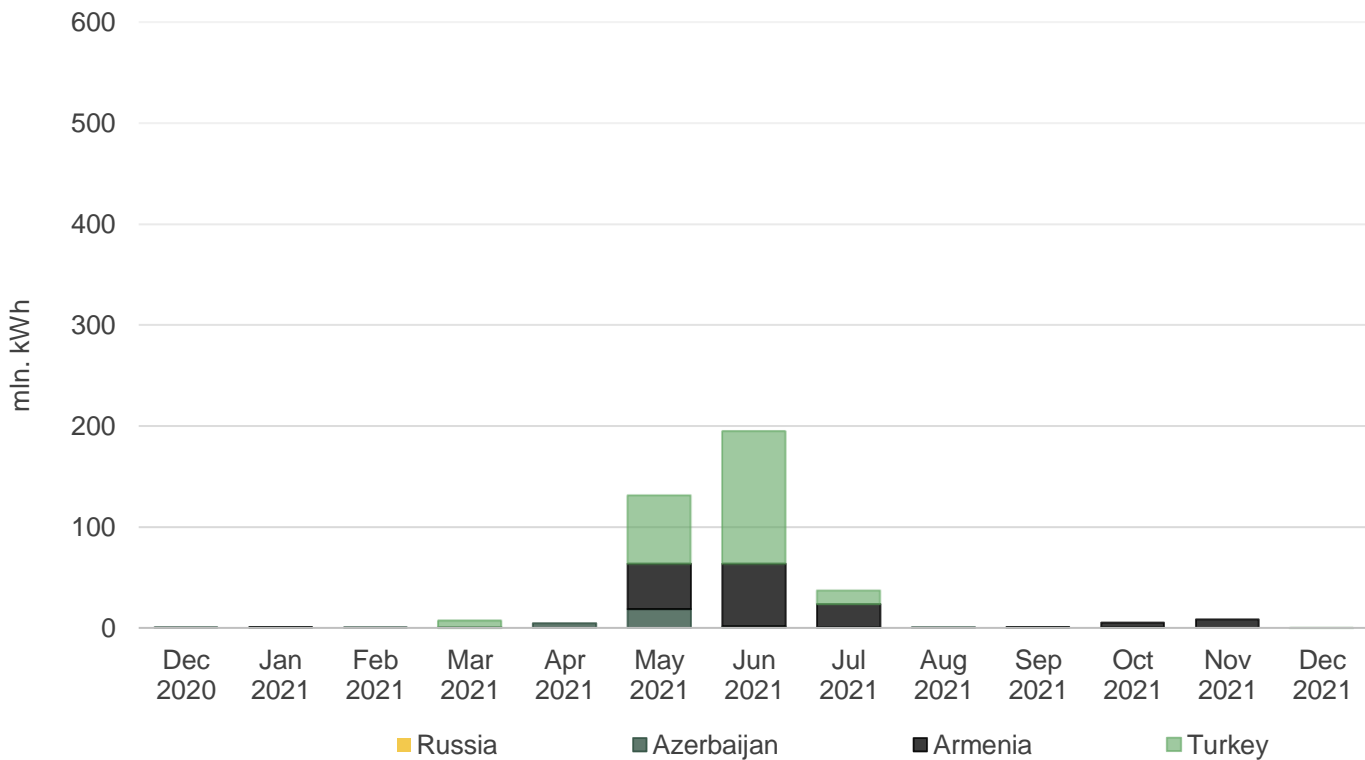
In December 2021, electricity imports increased almost three times compared to November 2021 (Figure 11) Electricity exports decreased by almost 100%, compared to November 2021 (Figure 12). December was the second month after a six-month surplus period to end up in generation-consumption deficit.

Figure 11 - Imports by Month



Source: ESCO

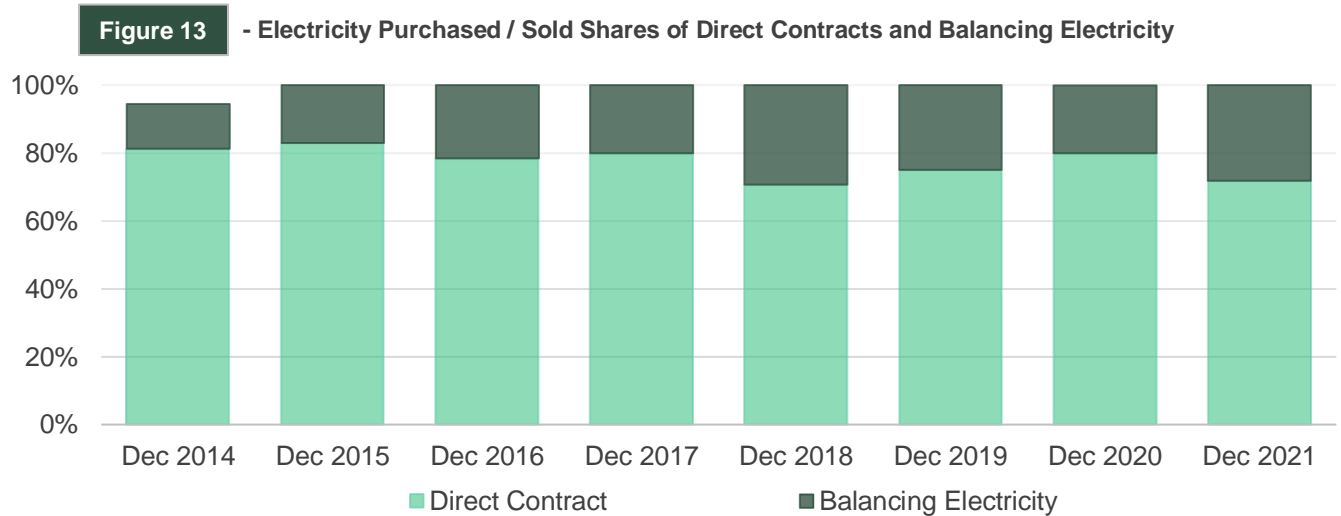
Figure 12 - Exports by Month



Source: ESCO

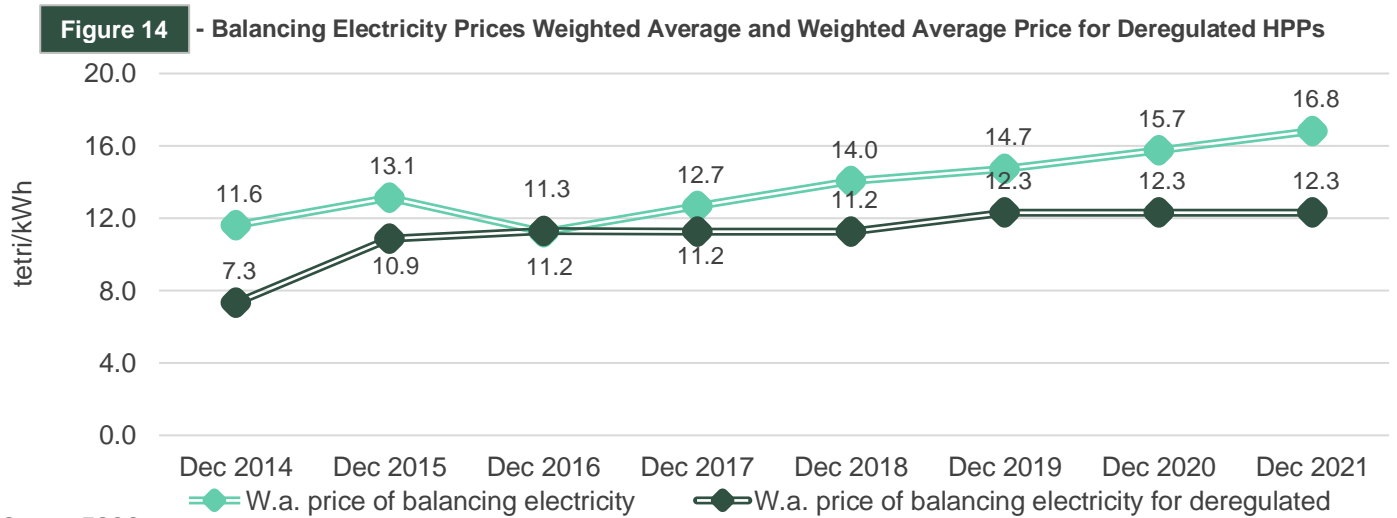
1. Market Operations

In December 2021, 72% of the electricity sold on/from the local market was sold through direct contracts. The remaining 28% was sold as balancing electricity (Figure 13).



Source: ESCO

In December 2021, the weighted average price of balancing electricity was 16.8 tetri/kWh, which corresponds to an annual increase of 7% compared to December 2020. As for the weighted average price for deregulated (small) HPPs, it was 12.3 tetri/kWh, which is identical to the price in December 2020 (Figure 14).

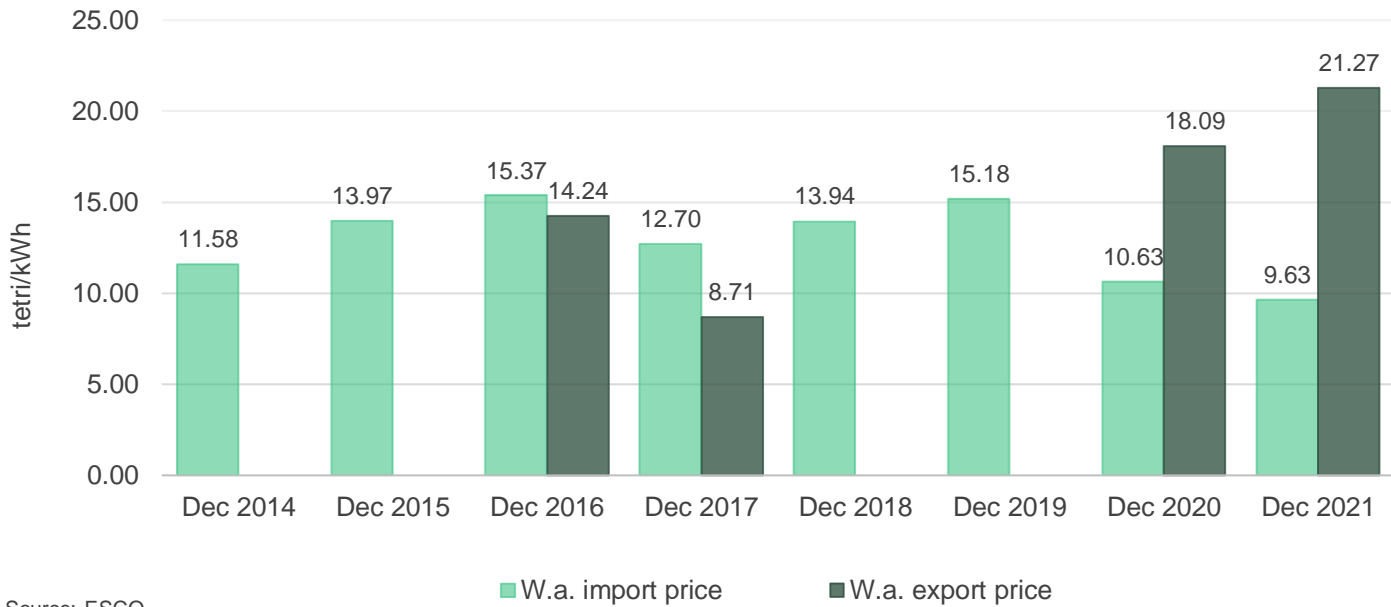


Source: ESCO

Data about guaranteed capacity payments in December 2021 are not available. Latest available data refer to January 2021 (available in EMR of January).

The weighted average electricity import price in December 2021 decreased by 4% in USD, on an annual basis, and decreased by approximately 9% in GEL (from 3.24 ¢, or 10.63 tetri per kWh in December 2020 to 3.11 ¢, or 9.63 tetri per kWh in December 2021 - Figure 15). The weighted average import price decreased by 37% in USD and by 38% in GEL on a monthly basis (prices were 4.91 ¢, or 15.41 tetri per kWh in November 2021). The weighted average electricity export price in December 2021 increased by 25% in USD, on an annual basis, and increased by approximately 18% in GEL (from 5.51 ¢, or 18.09 tetri per kWh in December 2020 to 6.86 ¢, or 21.27 tetri per kWh in December 2021 - Figure 15). The weighted average export price increased by 5% in USD and by 4% in GEL, on a monthly basis (prices were 6.50 ¢, or 20.39 tetri per kWh in November 2021).

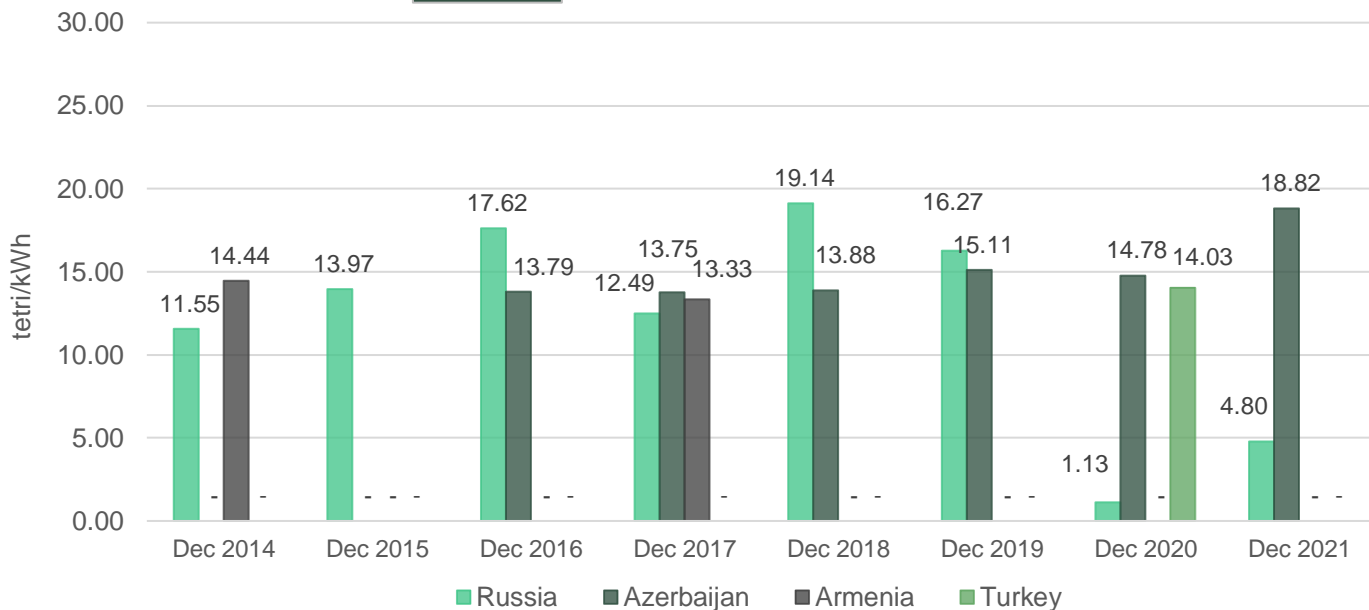
Figure 15 - Prices Import/Export



Source: ESCO

In December 2021, the electricity import price from Azerbaijan and Russia stood at 6.08 ¢ or 18.82 tetri, and 1.55 ¢ or 4.80 tetri per kWh, respectively. (Figure 16).

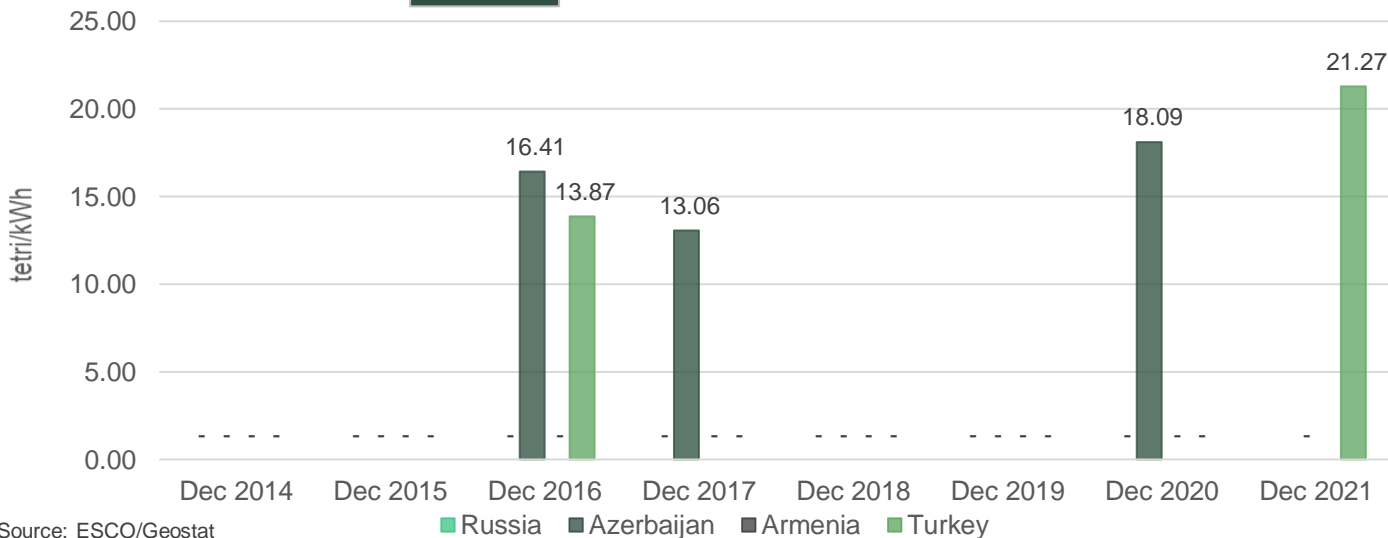
Figure 16 - Import Prices by Countries



Source: ESCO/Geostat

In December 2021, the electricity export price to Turkey stood at 6.86 ¢ or 21.27 tetri. (Figure 17).

Figure 17 - Export Prices by Countries

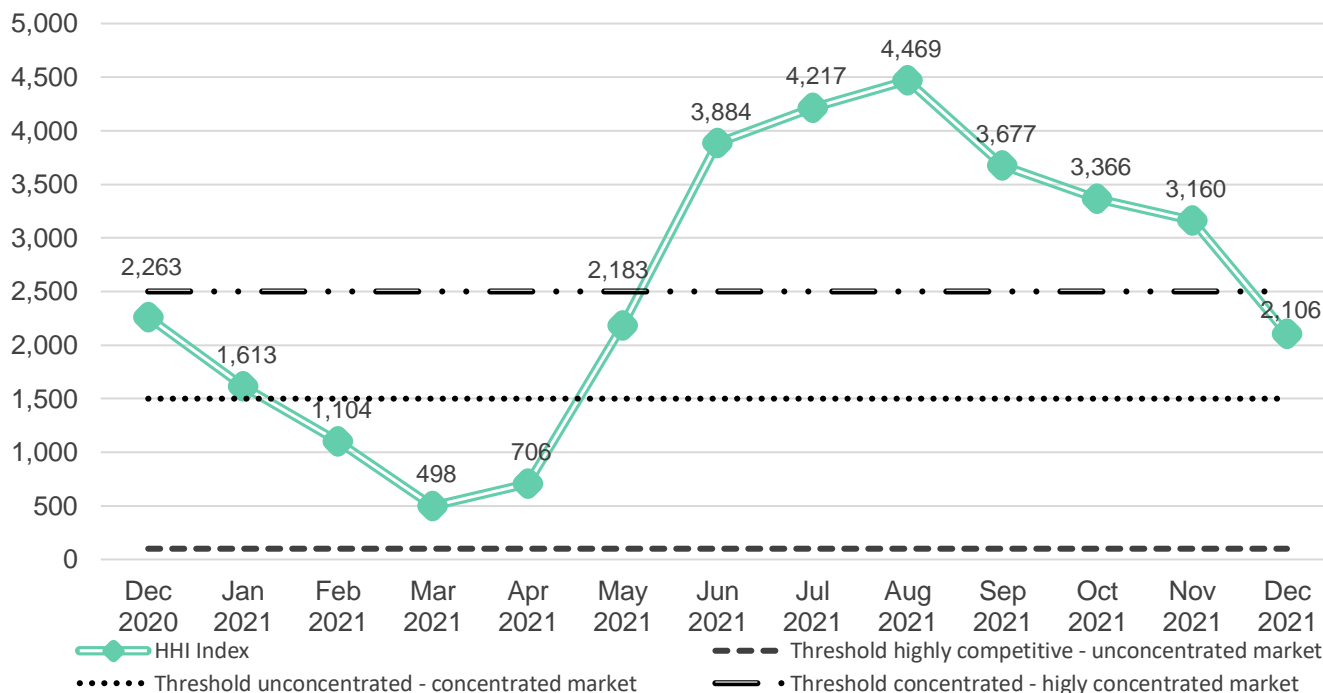


Source: ESCO/Geostat

2. Market Concentration

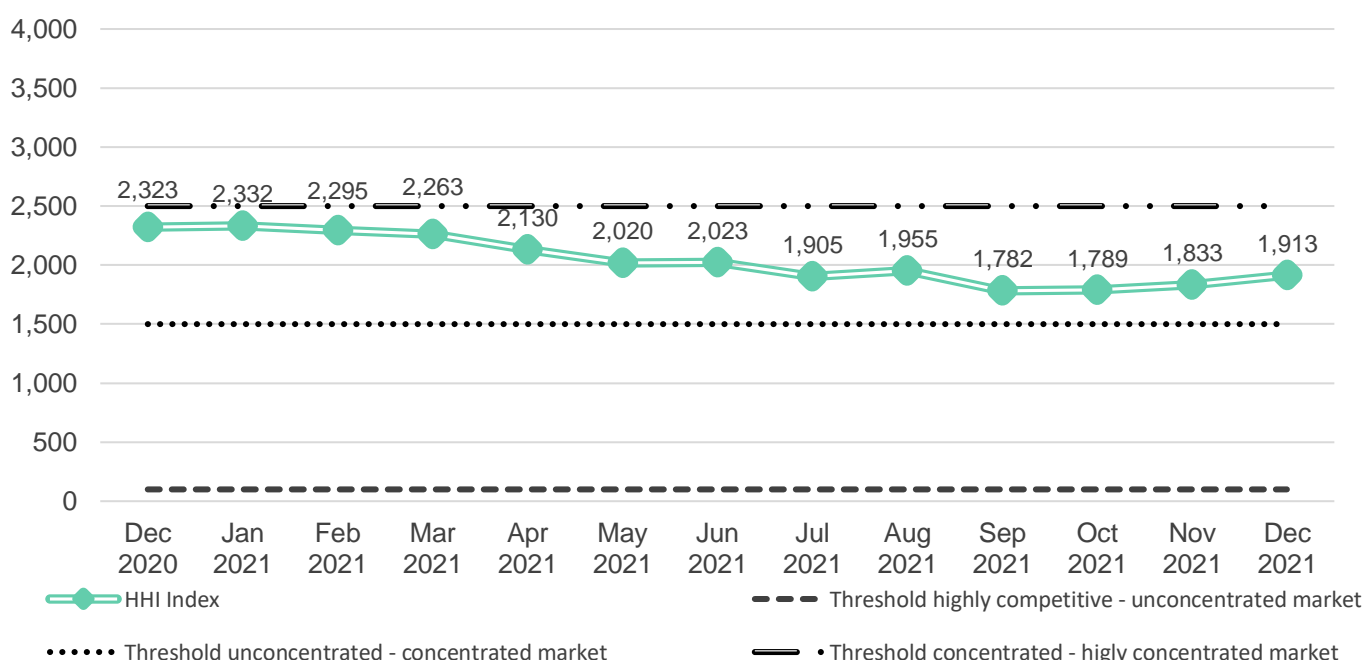
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In December 2021, the Georgian electricity generation market fell below the threshold of highly concentrated market (first time since May 2021), with an HHI value of 2,106 (Figure 18). This is slightly lower than the level in December 2020 (with an HHI value of 2,263), and also lower than the level in November 2021 (HHI was 3,160) As for the consumption segment, in December 2021, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 1,913 (substantially below the level in December 2020 – 2,323 and slightly above the level in November 2021 – 1,833). In fact, September 2020 was the last month when the index value was above the level of highly concentrated market. Since then, an overall decreasing trend in market concentration was observable in market concentration of consumption segment, however the pattern changed in September 2021 and last 3 months demonstrate slightly increasing dynamics (Figure 19).

Figure 18 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 19 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO

