ISET

International School of Economics at TSU
Policy Institute

JANUARY

2022

ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

Authors:

Norberto Pignatti
Policy Center Head
n.pignatti@iset.ge

Guram Lobzhanidze
Researcher
guram.lobzhanidze@iset.ge

Erekle Shubitidze
Researcher
erekle.shubitidze@iset.ge

INFORMATION

- In January 2022 there was an increase in total electricity generation by 27% on a yearly basis, and a decrease by 14% on a monthly basis.
- Consumption increased by 16% on yearly basis and increased by 2% on a monthly basis.
- Consumption exceeded generation by 349 mln. kWh – 34% of total generation for December.
- There was a 2% decrease in imports annually.
- The main import partner country was Russia.
- The cost of imports from Russia was 2.71 tetri per kWh.
- The weighted average price of imports in GEL increased by 3% on a yearly, and decreased by 11% 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 23.13 tetri per kWh.
- For the first time since April 2021, The HHI index for the Georgian electricity generation market fell below the threshold of concentrated market in January 2022 and reached the level of 1381. It was lower compared to the levels in January 2021 and December 2021 (1613 and 2106, respectively) indicating that the generation side of the market became 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 2522) 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 2015 in January 2022.

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

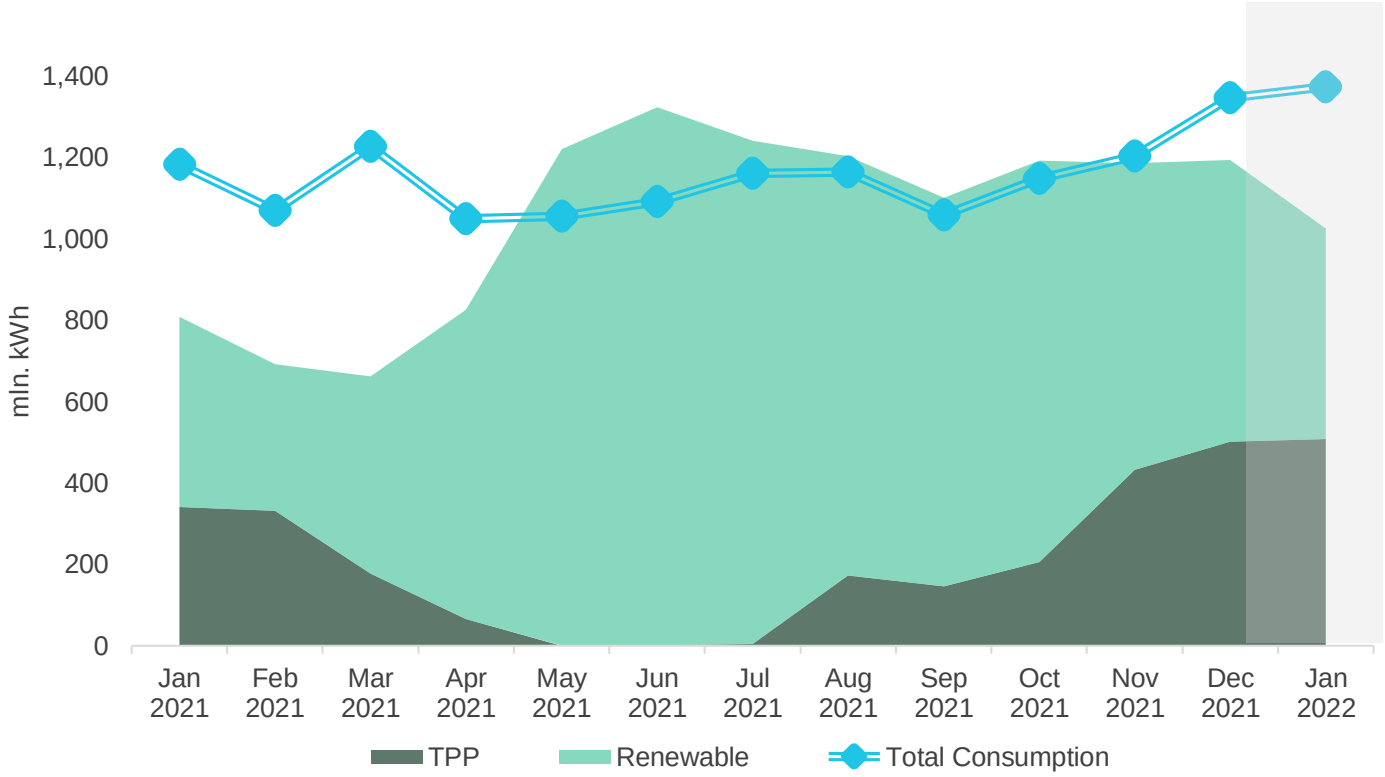
Generation – Consumption – Trade

In January 2022, Georgian power plants generated 1025 mln. kWh of electricity (Figure 1). This represents a 27% increase in total generation, compared to the previous year (in January 2021, the total generation was 808 mln. kWh). The increase in generation on a yearly basis comes from the increase of 11%, 49%, and 30% in hydro power, thermal and wind power generation, respectively.

On a monthly basis, generation decreased by approximately 14% (in December 2021, total generation was 1193 mln. kWh) (Figure 1). The monthly decrease in total generation, is induced by a 26% decrease in hydro power generation, more than offsetting thermal power and wind power generation growth. They increased by 1% and 32%, respectively.

The consumption of electricity on the local market was 1373 mln. kWh (+16% compared to January 2021, and +2% compared to December 2021) (Figure 1). In January 2022, power consumption exceeded generation by 349 mln. kWh which was 34% of total generation (in January 2021 difference between total generation and consumption resulted in a deficit of 374 mln. kWh, around 46% of the total generation for the month).

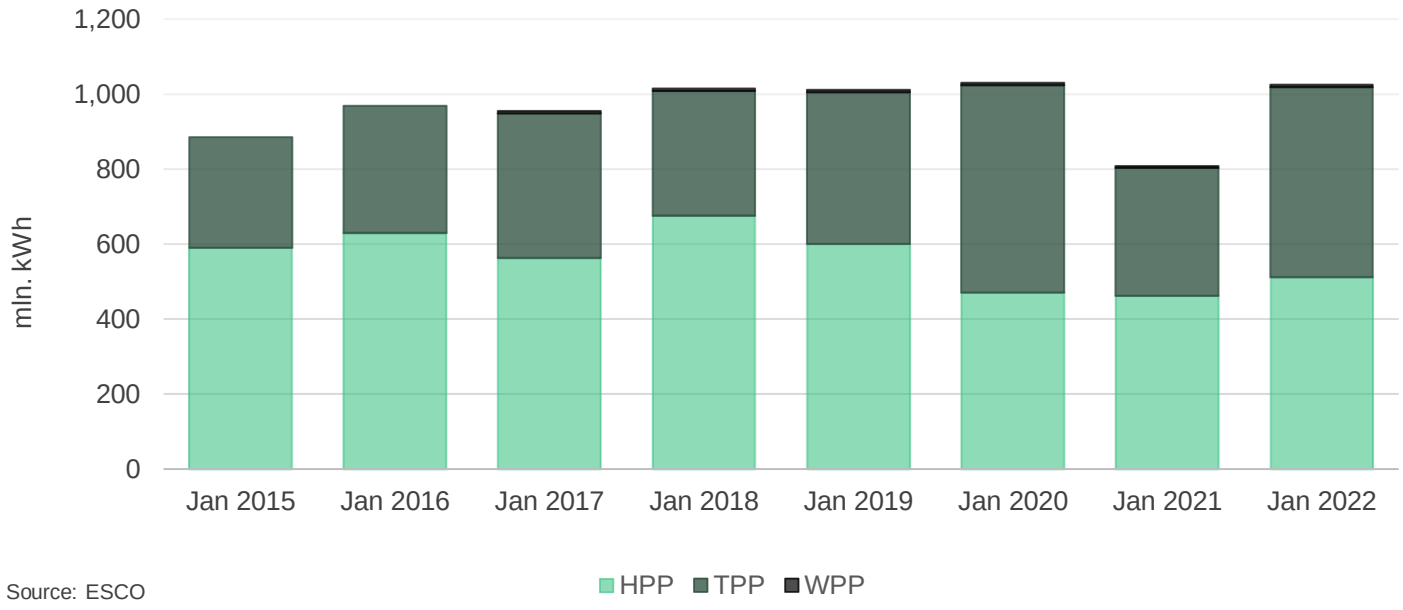
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

Most generation still came from hydro power plants. In January 2022, hydro power (HPP) generation amounted to 510 mln. kWh (50% of total), while thermal power (TPP) generation was 508 mln. kWh, and wind power (WPP) generation was 7 mln. kWh (50% and less than 1% of the total generation, respectively) (Figure 2).

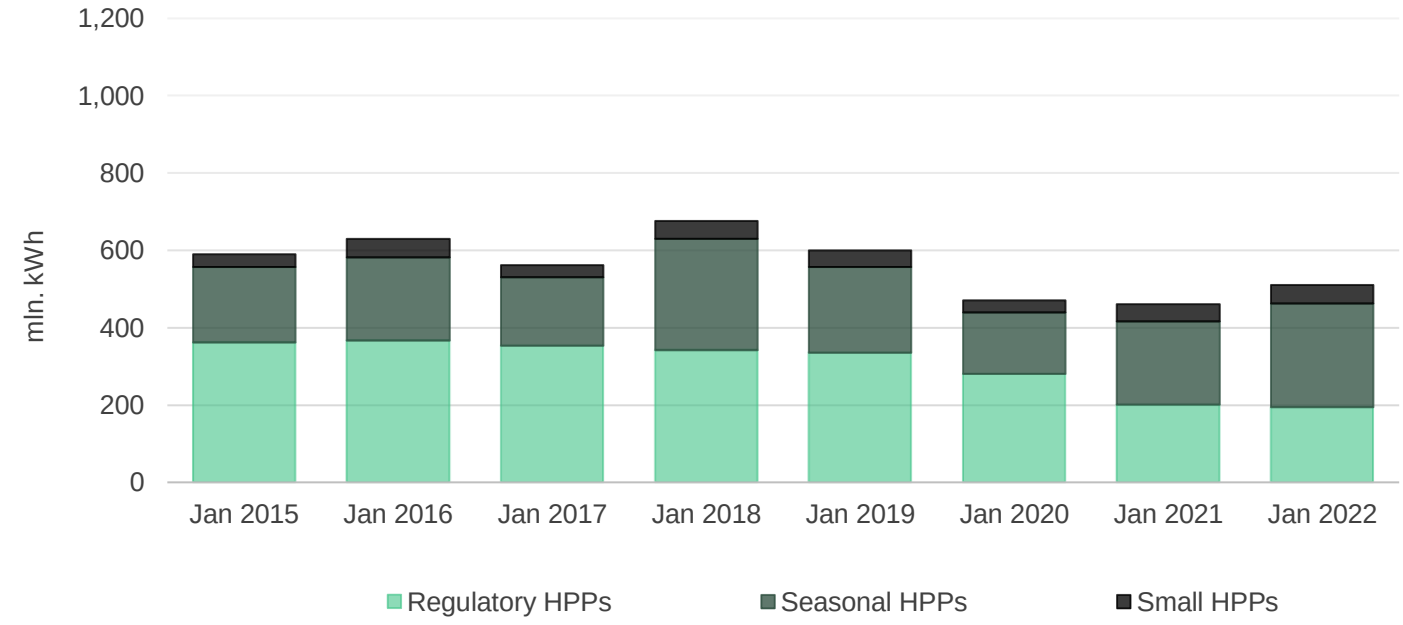
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 38% (193 mln. kWh) of electricity, while seasonal and small HPPs produced 53% (269 mln. kWh) and 9% (48 mln. kWh), respectively (Figure 3).

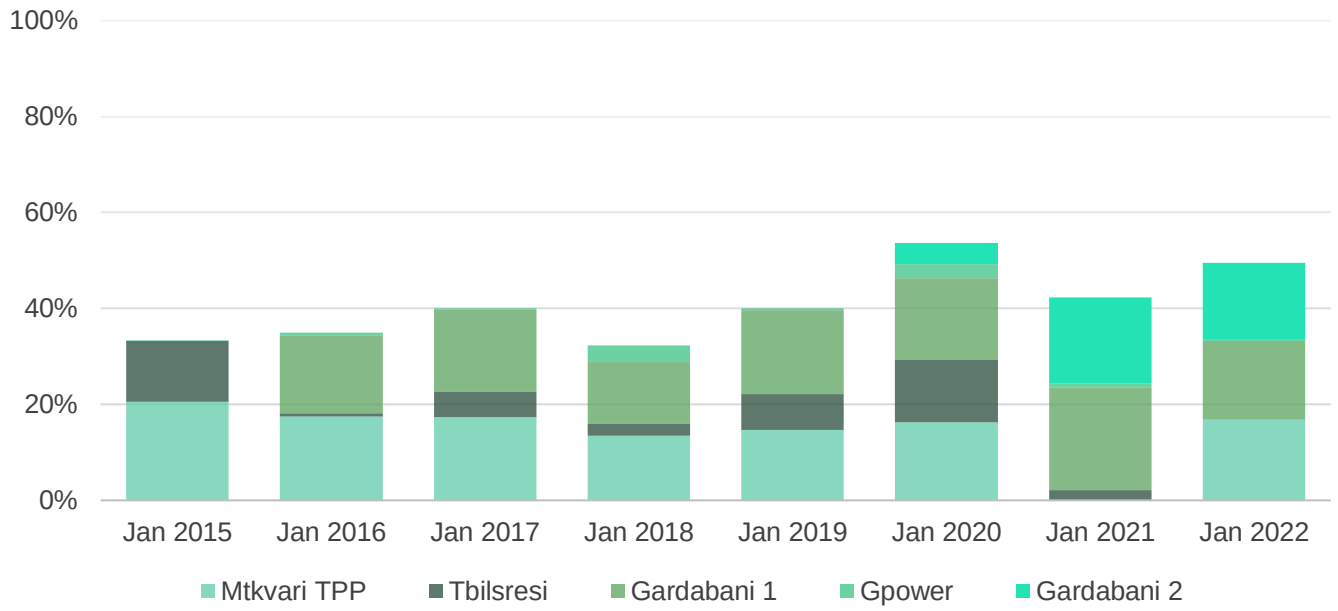
Figure 3 - HPP Generation by Type



Source: ESCO

Among thermal power plants, Mtkvari TPP generated 172 mln. kWh, 34% of total thermal power generation and 17% of total generation. Gardabani 1 TPP generated 169 mln. kWh, 33% of total thermal power generation and 17% of total generation. Gardabani 2 TPP generated 163 mln. kWh, 32% of total thermal power generation and 16% of total generation. The remaining 3 mln. kWh of TPP generation came from Gpower (Figure 4).

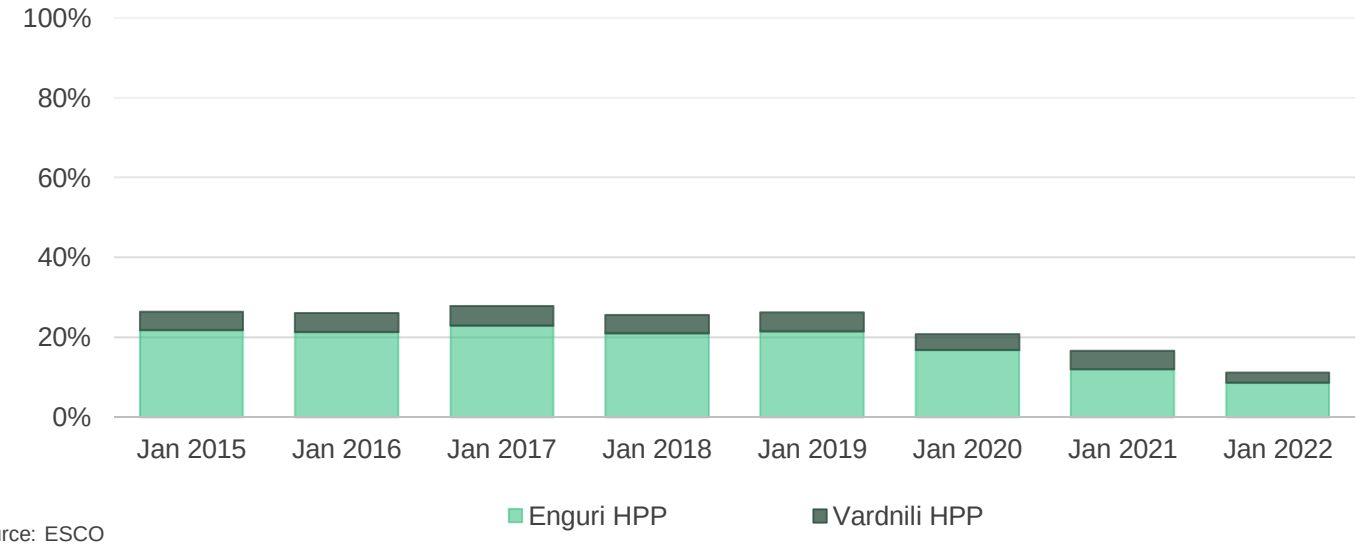
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 26 mln. kWh (14% of generation for regulatory HPPs and 3% of total generation). Enguri HPP generated 88 mln. kWh, which represents 46% of generation of regulatory HPPs and 9% of total generation (Figure 5).

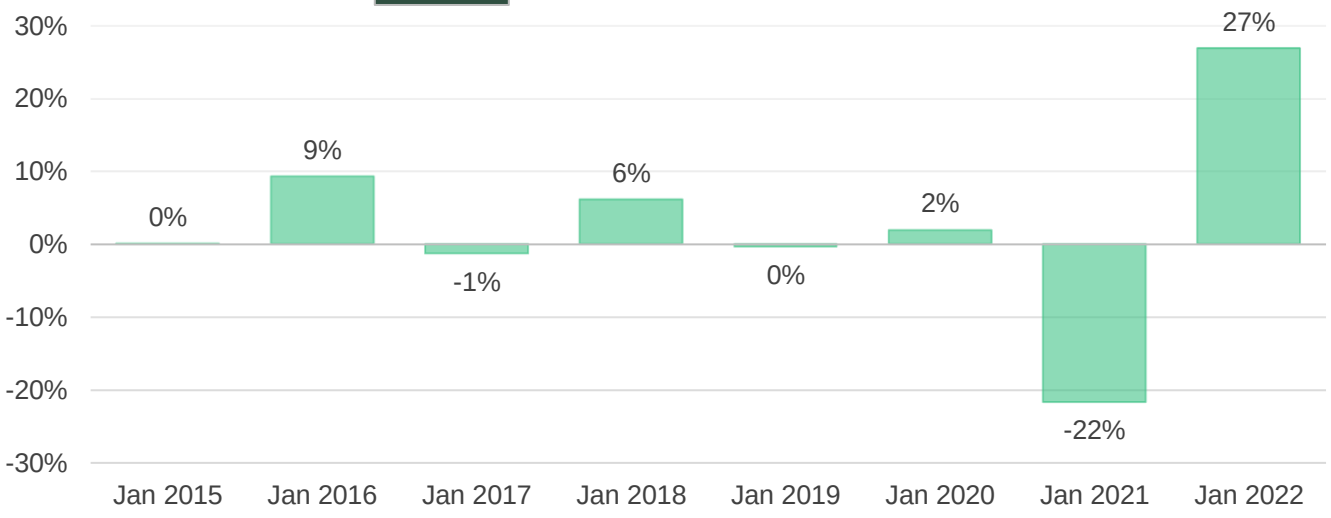
Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, total generation increased by 27% compared to January 2021 (Figure 6).

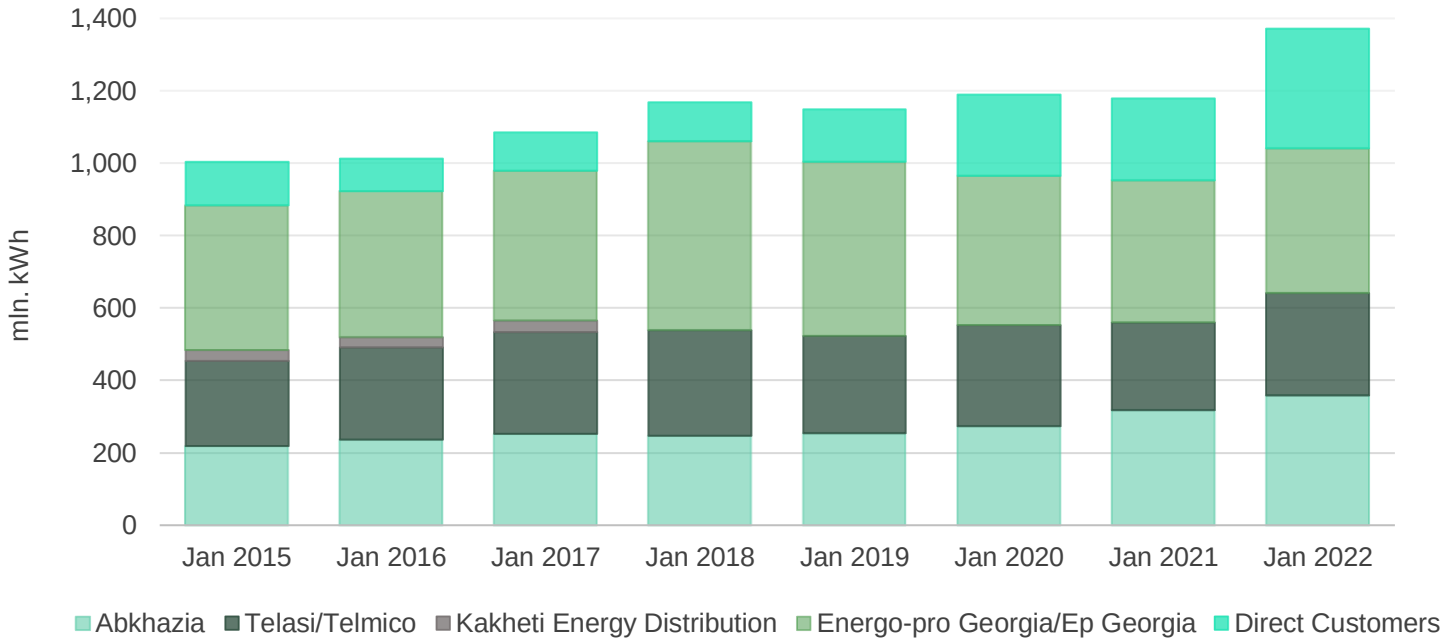
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia[1] (29% - 399 mln. kWh), Abkhazia (26% - 359 mln. kWh), Telasi/Telmico[2] (21% - 283 mln. kWh), and direct customers (24% - 332 mln. kWh) (Figure 7). Annual demand from Energo-pro Georgia, Abkhazia, Telasi and direct customers increased by 2%, 13%, 17%, and 46%, respectively. Overall, there was an annual growth of 16% in the total electricity consumption in January 2022, compared to January 2021 (Figure 8).

Figure 7 - Electricity Consumption by Type of Customer

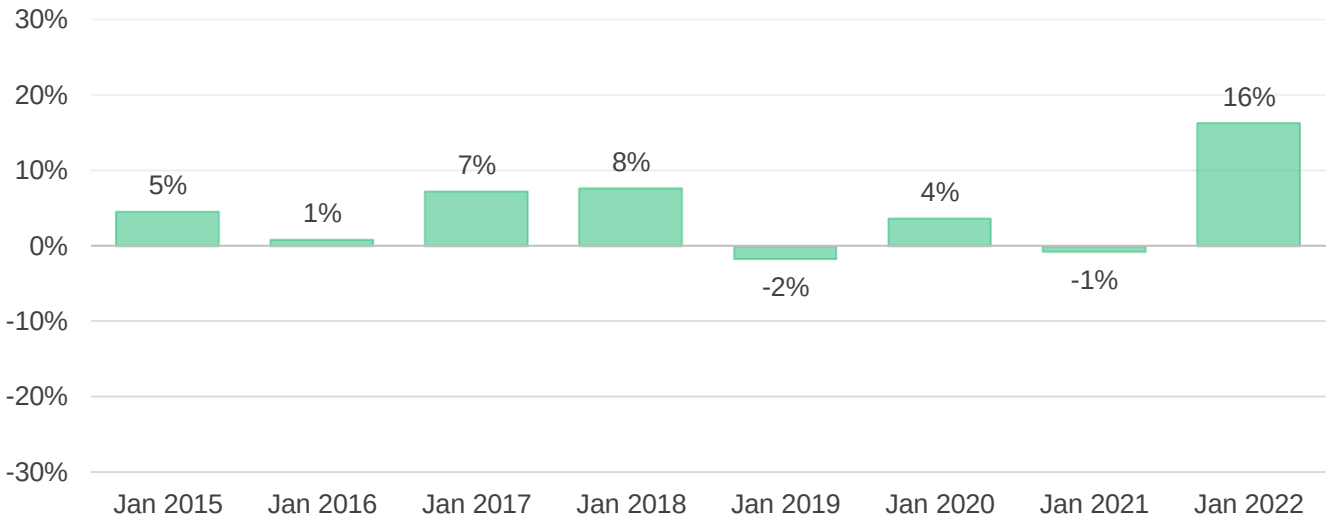


Source: ESCO

[1] Energo-Pro Georgia acquired Kakheti 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)

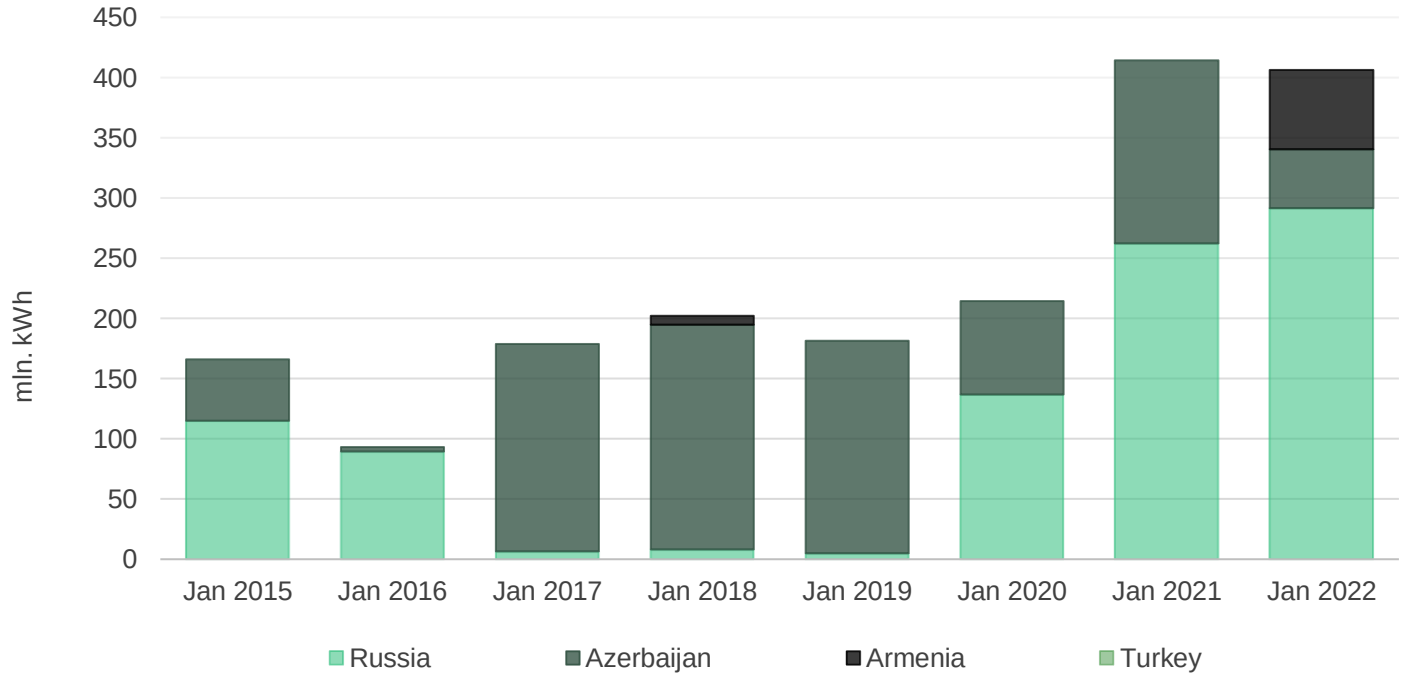


Source: ESCO

In January 2022, Georgia imported 406 mln. kWh of electricity (compared to 414 mln. kWh January 2021). 72% of imports came from Russia, while 16% and 12% came from Armenia and Azerbaijan, respectively (Figure 9). In January 2022, Georgia exported less than 3 mln. kWh of electricity, all of which went to Turkey (there was 1 mln. kWh export in January 2021) (Figure 10). There was a 186 mln. kWh electricity transit from Azerbaijan to Turkey in January 2022 (In January 2021, there was a transit of 13 mln. kWh in the same direction).

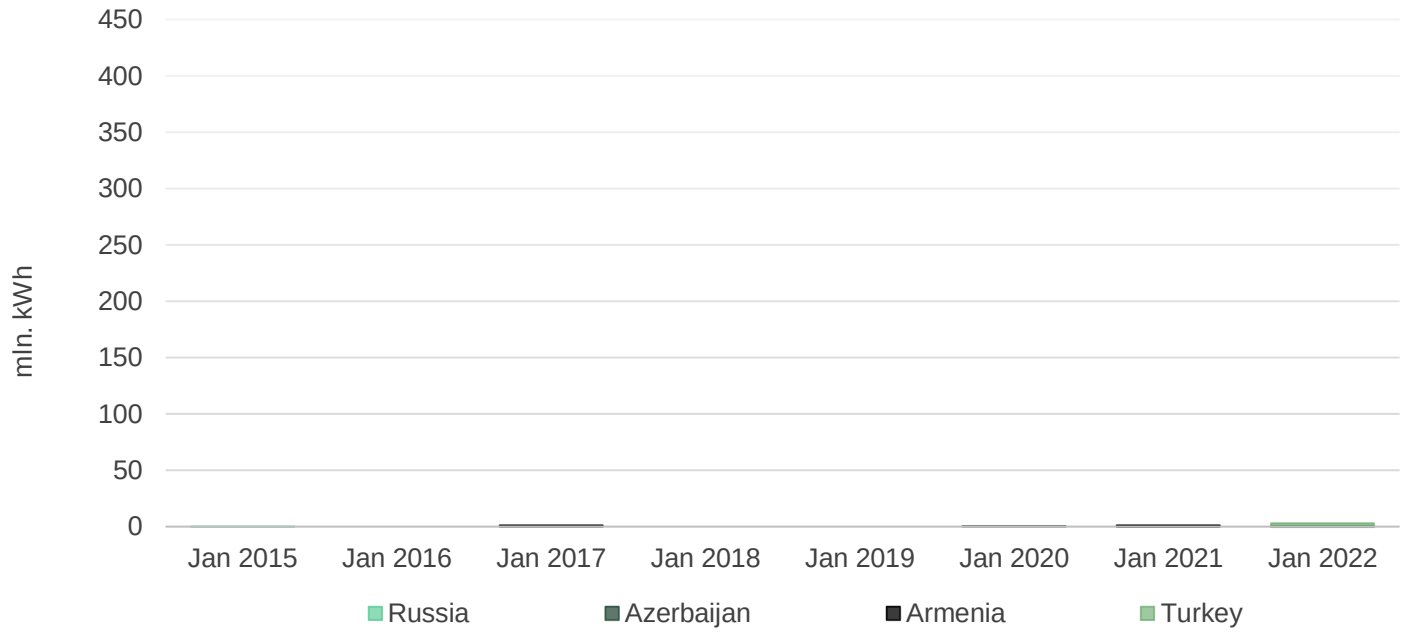
Compared to January 2021, imports decreased by 2%, while exports increased by 141%.

Figure 9 - Imports by Year



Source: ESCO

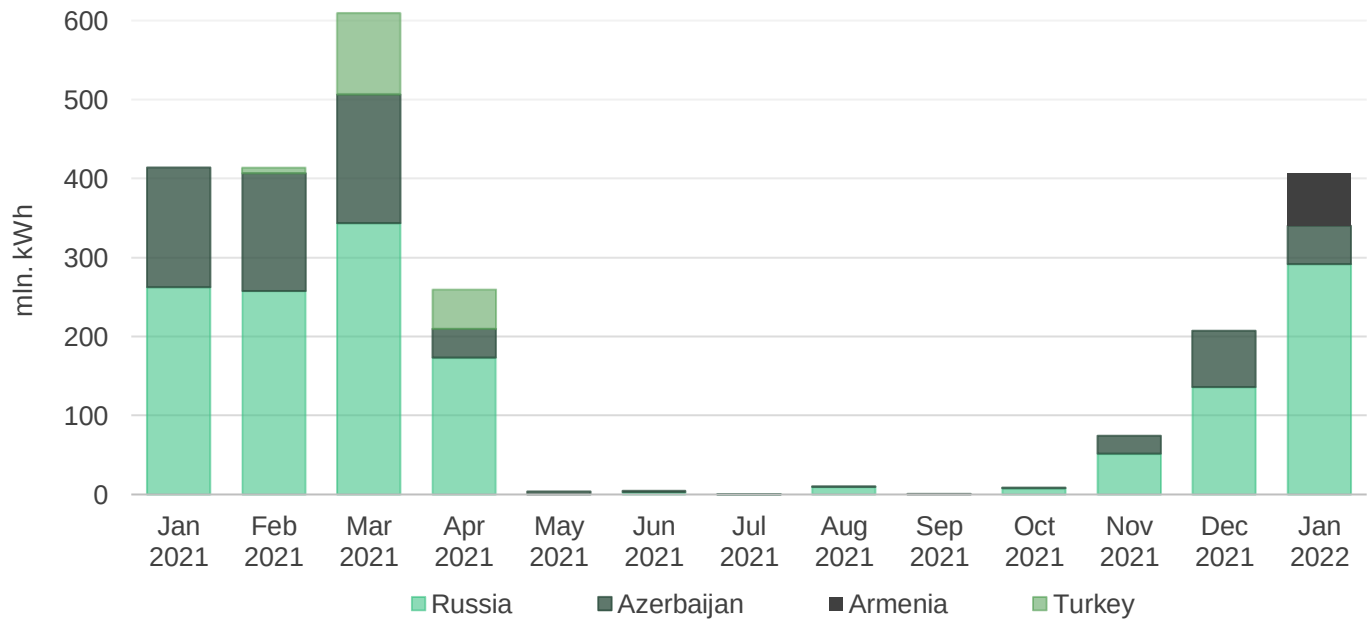
Figure 10 - **Exports by Year**



Source: ESCO

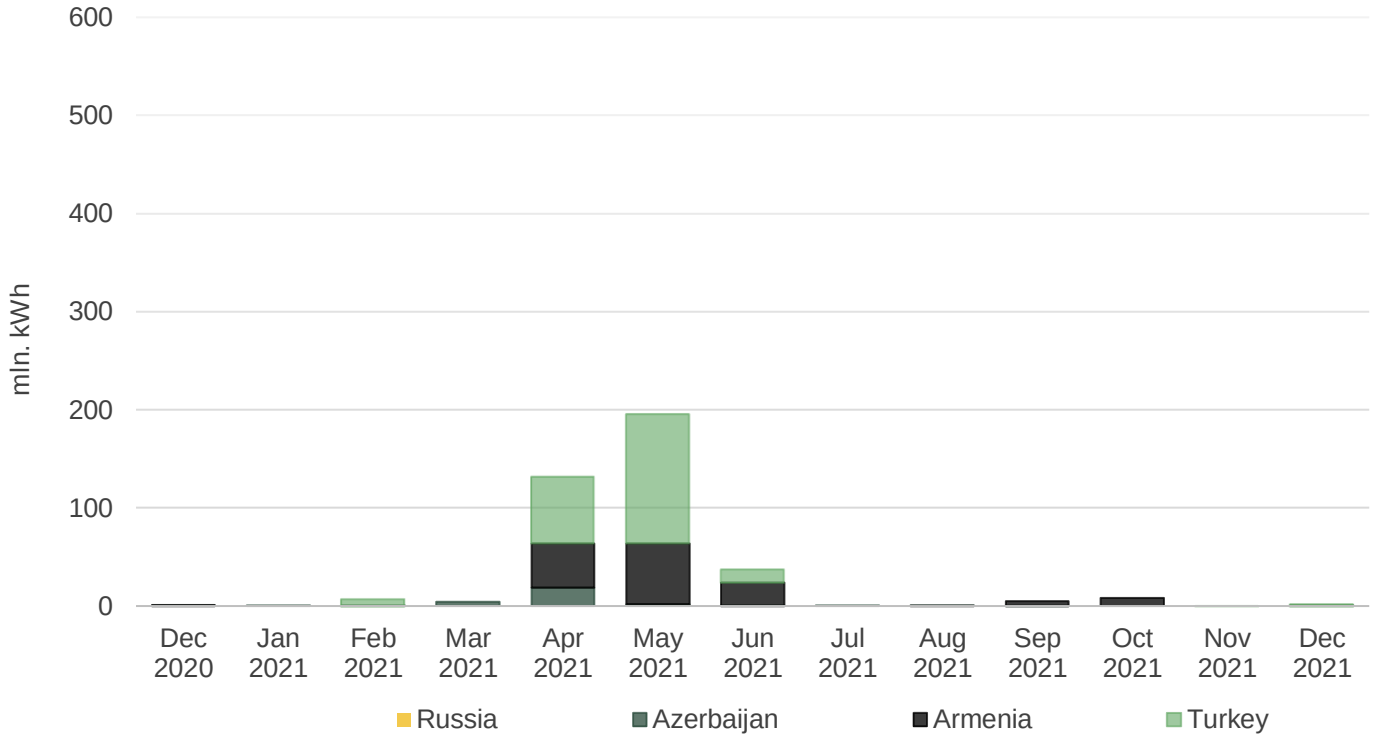
In January 2022, electricity imports increased almost by 96% compared to December 2021 (Figure 11) Electricity exports increased by 69 times, compared to December 2021, but the level still remains low (Figure 12). January was the third consecutive month to end up in generation-consumption deficit after a six-month surplus period.

Figure 11 - **Imports by Month**



Source: ESCO

Figure 12 - **Exports by Month**

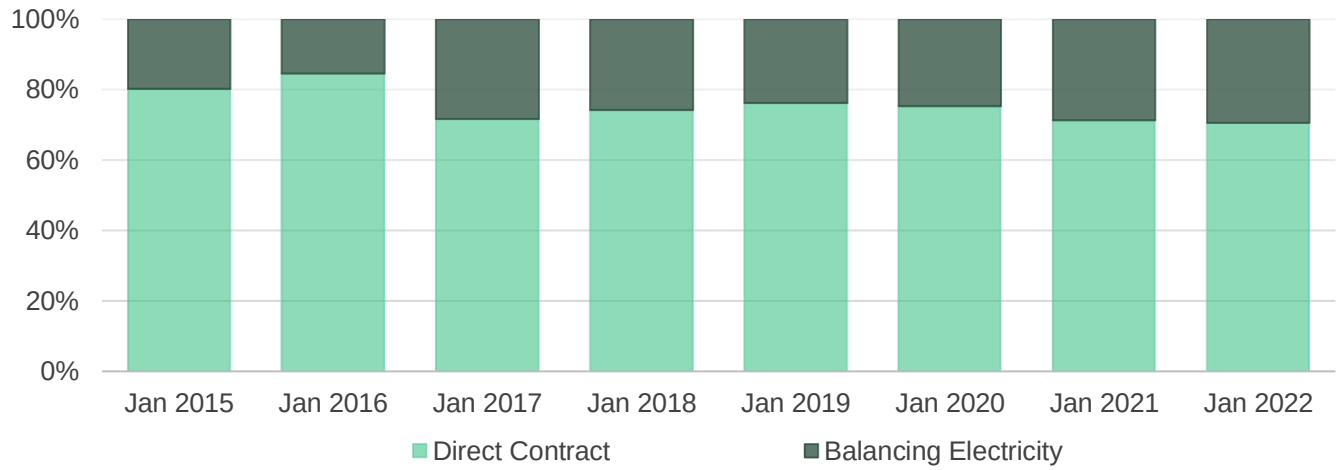

600
500
400
300
200
100
0
mln. kWh
Dec 2020
Jan 2021
Feb 2021
Mar 2021
Apr 2021
May 2021
Jun 2021
Jul 2021
Aug 2021
Sep 2021
Oct 2021
Nov 2021
Dec 2021
Russia
Azerbaijan
Armenia
Turkey

Source: ESCO

1. Market Operations

In January 2022, 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).

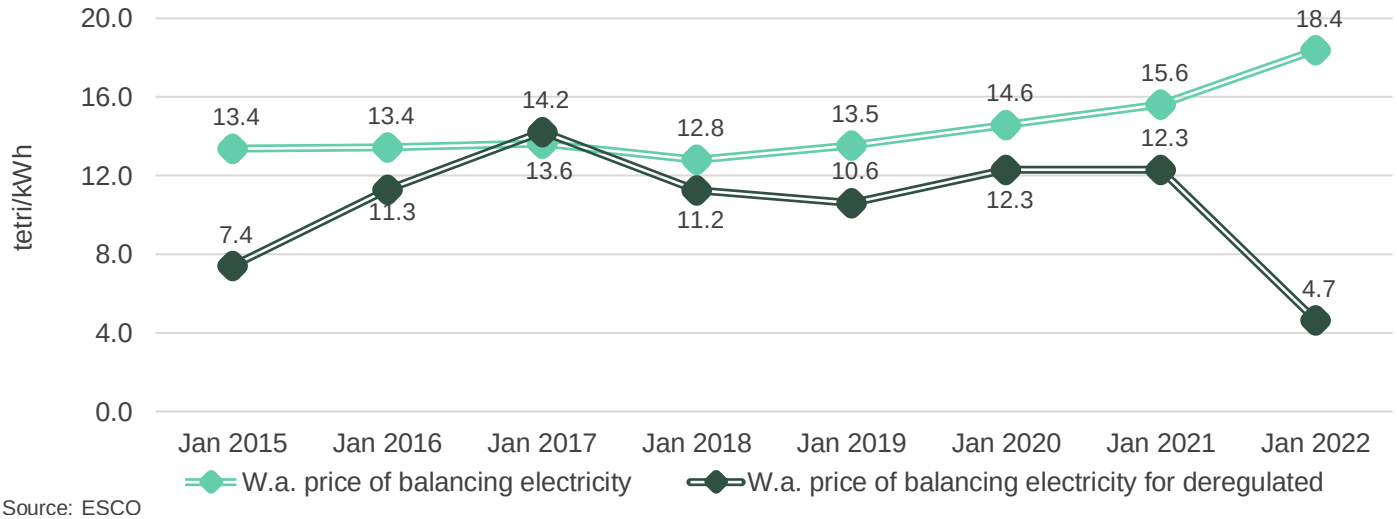
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In January 2022, the weighted average price of balancing electricity was 18.4 tetri/kWh, which corresponds to an annual increase of 18% compared to January 2021. As for the weighted average price for deregulated (small) HPPs, it was 4.7 tetri/kWh, which represents a 63% decrease compared to January 2021 (Figure 14).

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

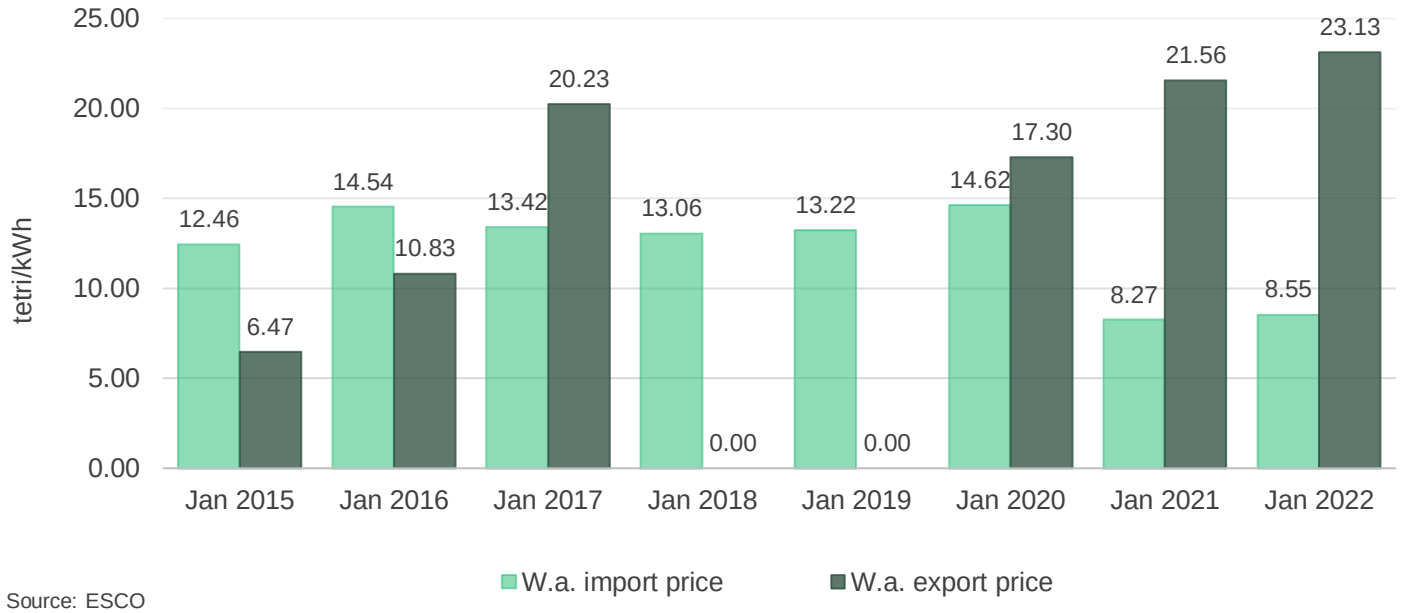


Source: ESCO

Data about guaranteed capacity payments in January 2022 are not available. Latest available data refer to January 2021 (available in EMR of January 2021).

The weighted average electricity import price in January 2022 increased by 11% in USD, on an annual basis, and increased by approximately 3% in GEL (from 2.51 ¢, or 8.27 tetri per kWh in January 2021 to 2.78 ¢, or 8.55 tetri per kWh in January 2022 - Figure 15). The weighted average import price decreased by 11% in USD and by 11% in GEL on a monthly basis (prices were 3.11 ¢, or 9.63 tetri per kWh in December 2021). The weighted average electricity export price in January 2022 increased by 15% in USD, on an annual basis, and increased by approximately 7% in GEL (from 6.54 ¢, or 21.56 tetri per kWh in January 2021 to 7.51 ¢, or 23.13 tetri per kWh in January 2022 - Figure 15). The weighted average export price increased by 9% in both USD and GEL, on a monthly basis (prices were 6.86 ¢, or 21.27 tetri per kWh in December 2021).

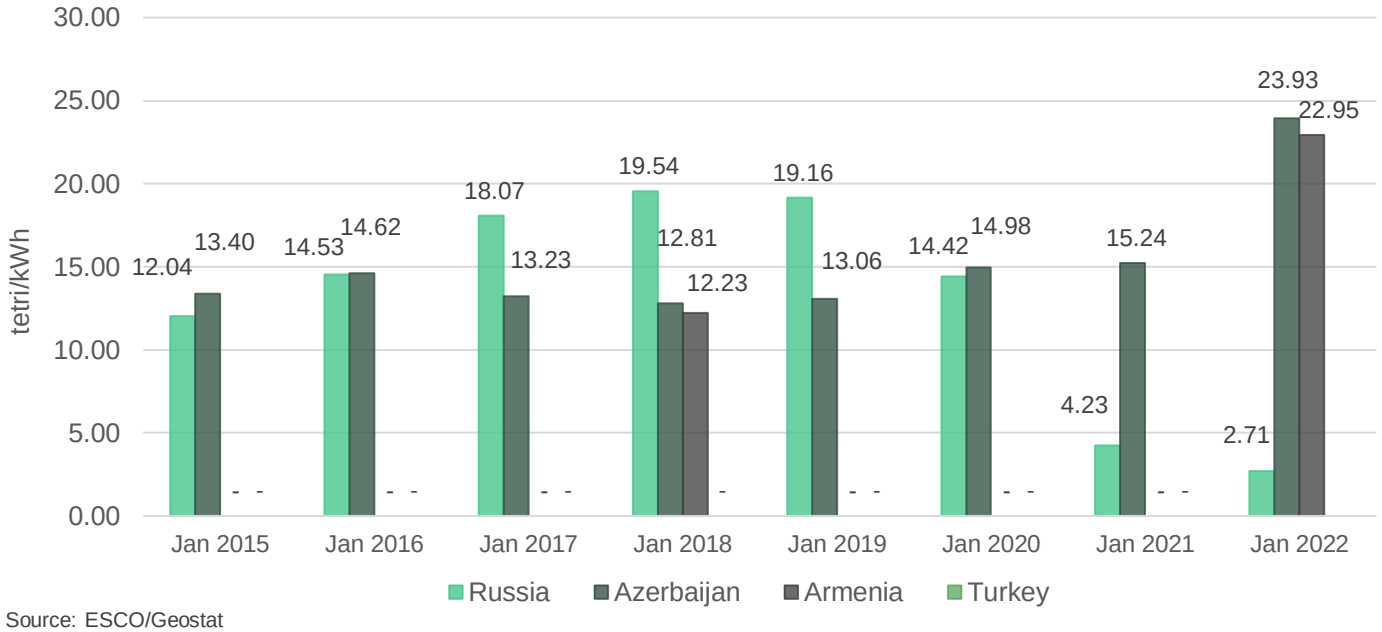
Figure 15 - Prices Import/Export



Source: ESCO

In January 2022, the electricity import price from Armenia, Azerbaijan and Russia stood at 7.45 ¢ or 22.95 tetri, 7.77 ¢ or 23.93 tetri and 0.88 ¢ or 2.71 tetri per kWh, respectively. (Figure 16).

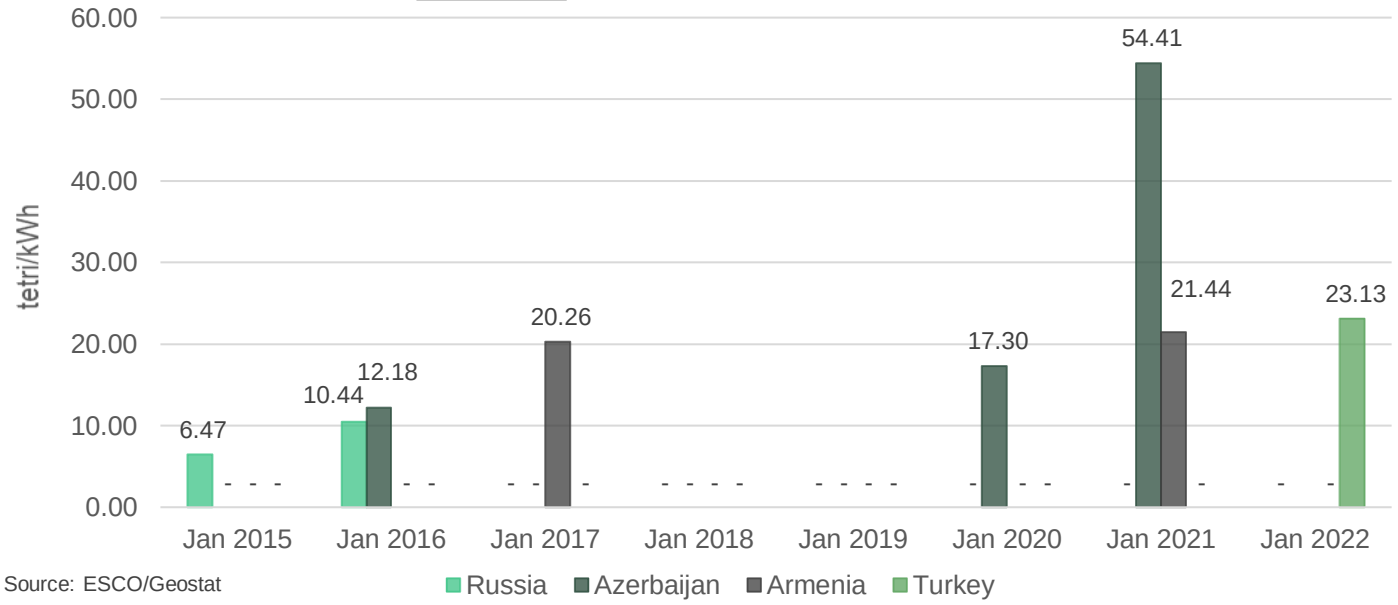
Figure 16 - Import Prices by Countries



Source: ESCO/Geostat

In January 2022, the electricity export price to Turkey stood at 7.51 ¢ or 23.13 tetri. (Figure 17).

Figure 17 - Export Prices by Countries

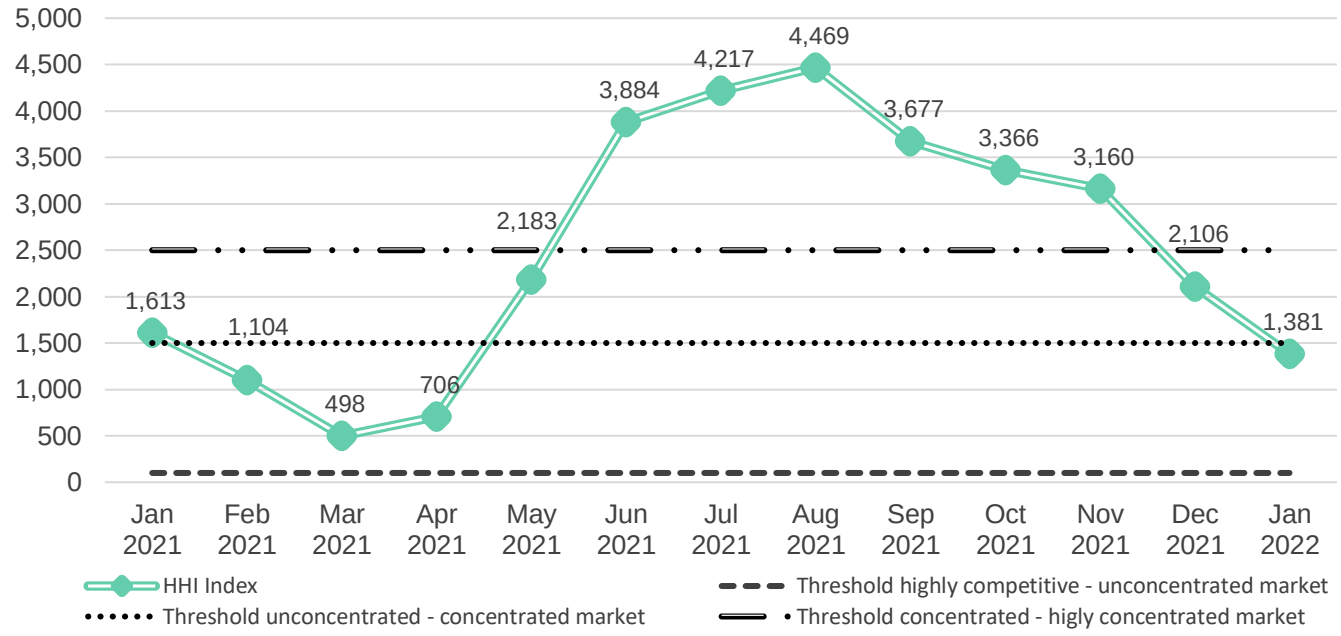


Source: ESCO/Geostat

2. Market Concentration

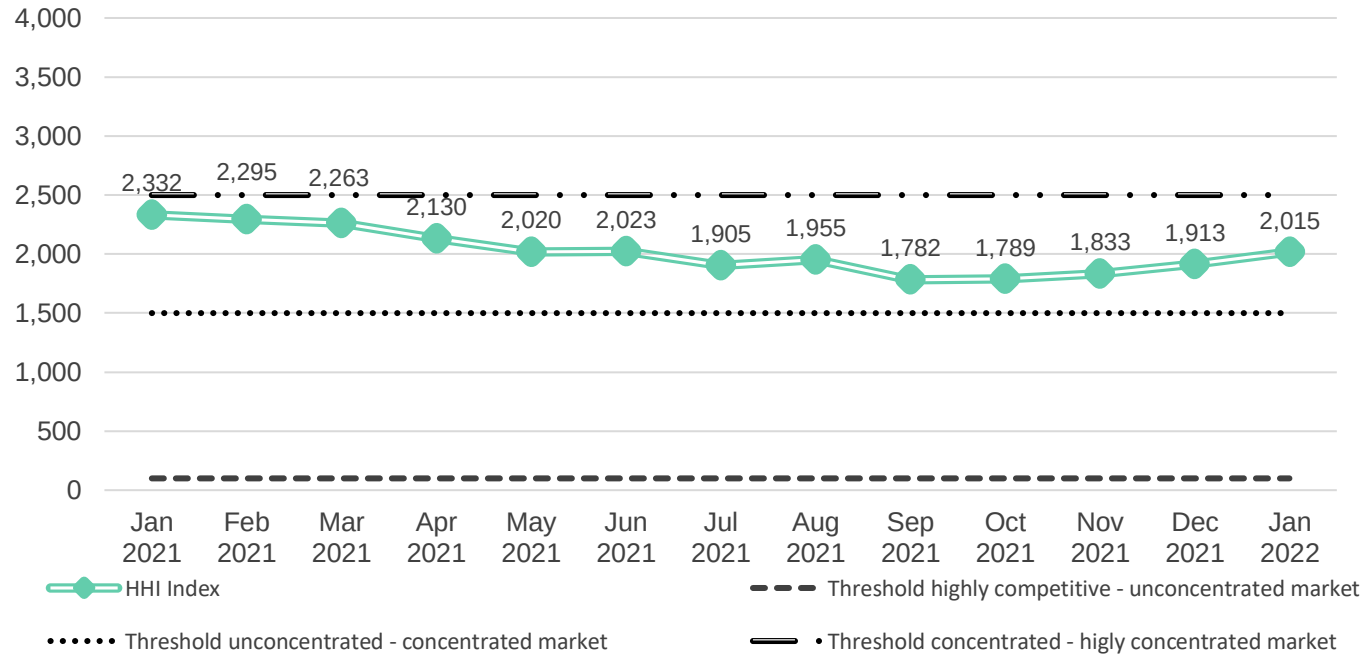
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In January 2022, the Georgian electricity generation market fell below the threshold between unconcentrated and concentrated markets (first time since April 2021), with an HHI value of 1381 (Figure 18). This is lower than the level in January 2021 (with an HHI value of 1613), and also lower than the level in December 2021 (HHI was 2106) As for the consumption segment, in January 2022, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 2015 (below the level in January 2021 – 2332 and slightly above the level in December 2021 – 1913). 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 the market concentration of consumption segment was observable. The pattern changed after September 2021 and the last 4 months demonstrate a 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