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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In December 2022 there was a decrease in the total electricity generation by 6% on a yearly basis and by 1% on a monthly basis.
- Consumption decreased by 6% on yearly basis and increased by 12% compared to the previous month.
- Consumption exceeded generation by 144 mln. kWh which was 13% of the total generation and 11% of the total consumption in December 2022.
- There was an import of 218 mln. kWh in December.
- There was an export of 0.049 to Azerbaijan and Turkey in December.
- The main import partner country was Russia. 95% of the import from Russia went to Abkhazia.
- The price of imports reached 0.11 ¢, or 0.28 tetri per kWh.
- The HHI index for the Georgian electricity generation market fell below the threshold of highly concentrated market. In December 2022, its level was 2,461.
- The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. In December 2022, its level was 2,188

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
Geostat	National Statistics Off e of Georgia
ESCO	Electricity System Commercial Operator

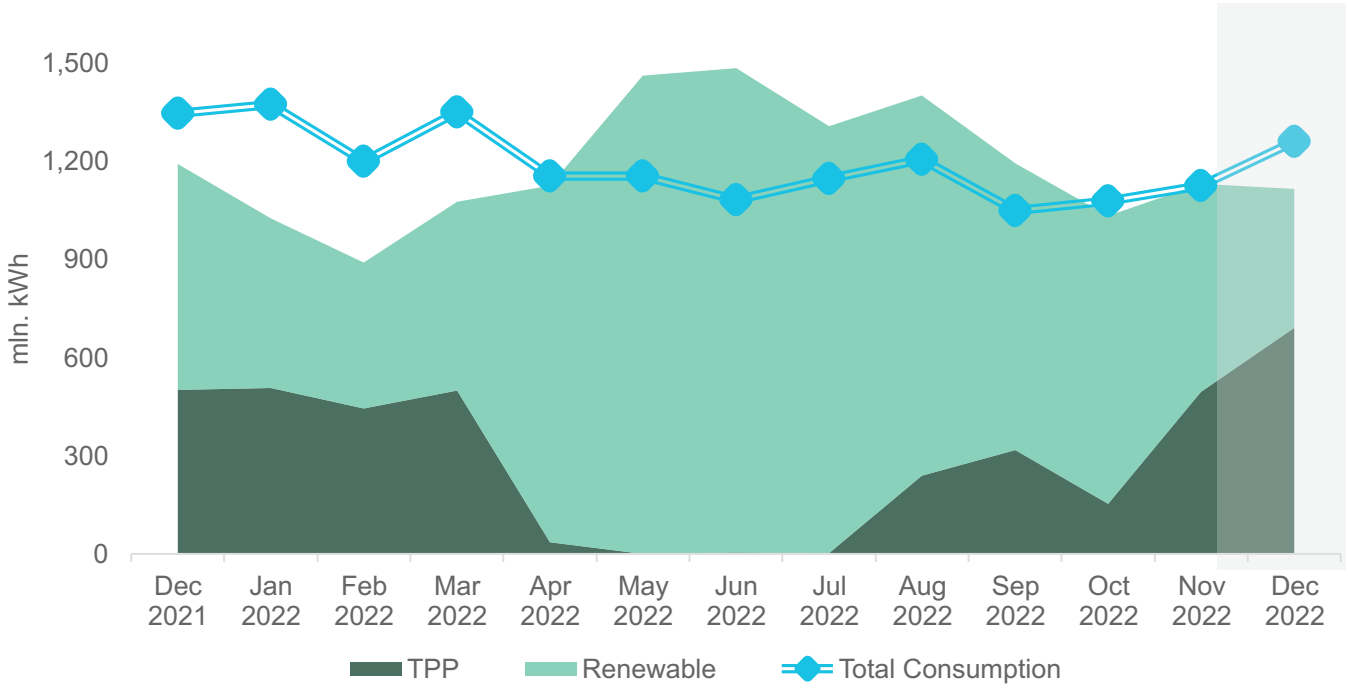
Generation – Consumption – Trade

In December 2022, Georgian power plants generated 1,116 mln. kWh of electricity (Figure 1). This represents a 6% decrease in the total generation compared to the previous year (in December 2021, the total generation was 1,192 mln. kWh). The decrease in the generation on a yearly basis comes from a decline of 39% in hydro power, while the wind power and thermal power generation increased by 50% and 38%, respectively.

On a monthly basis, the generation decreased by approximately 1% (in November 2022, the total generation was 1,131 mln. kWh) (Figure 1). The monthly fall in the total generation is induced by a 33% decrease in hydro power generation. Meanwhile, wind and thermal power generation increased by 3% and 39%, respectively.

The consumption of electricity on the local market was 1,261 mln. kWh (-6% compared to December 2021, and +12% compared to November 2022) (Figure 1). In December 2022, power consumption exceeded generation by 145 mln. kWh which was 13% of the total generation and 11% of the total consumption (in November 2021, the difference between the total generation and the consumption resulted in a deficit of 17 mln. kWh, around 1% of the total generation and 1% of the total consumption for the month).

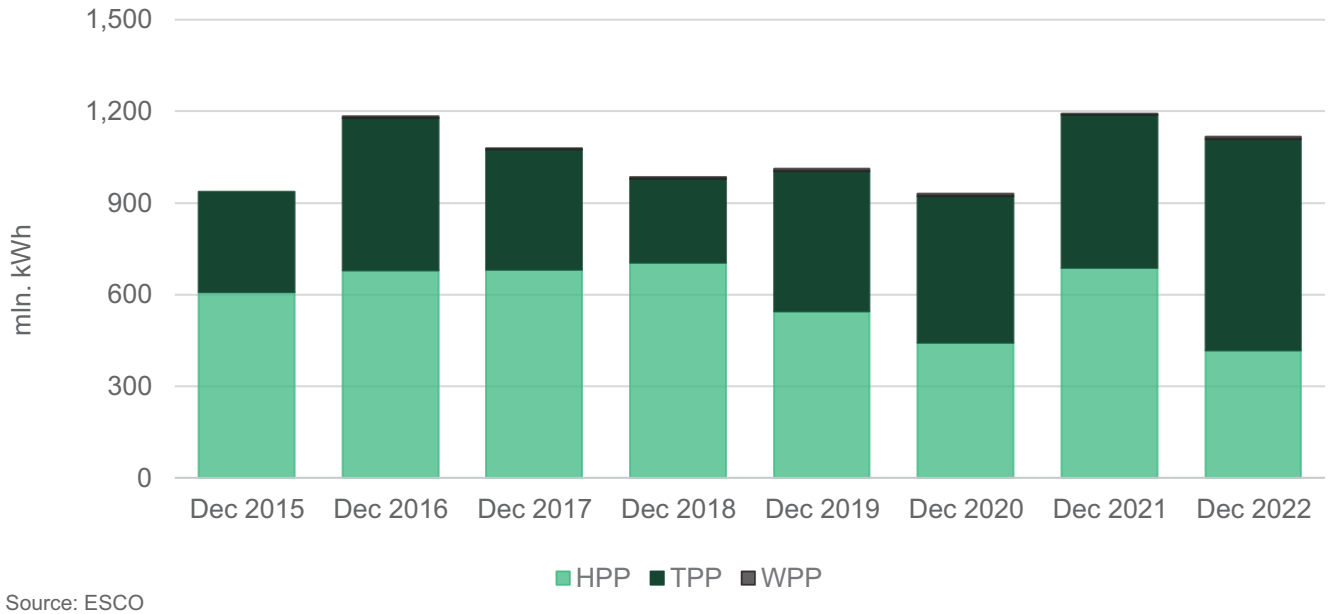
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

In December 2022, thermal power plants were the leading source of generation . In December 2022, thermal power (TPP) generation amounted to 691 mln. kWh (62% of total), hydro power (HPP) generation was 418 mln. kWh (37% of the total generation), while wind power (WPP) generation amounted to 8 mln. kWh (1% of the total generation) (Figure 2).

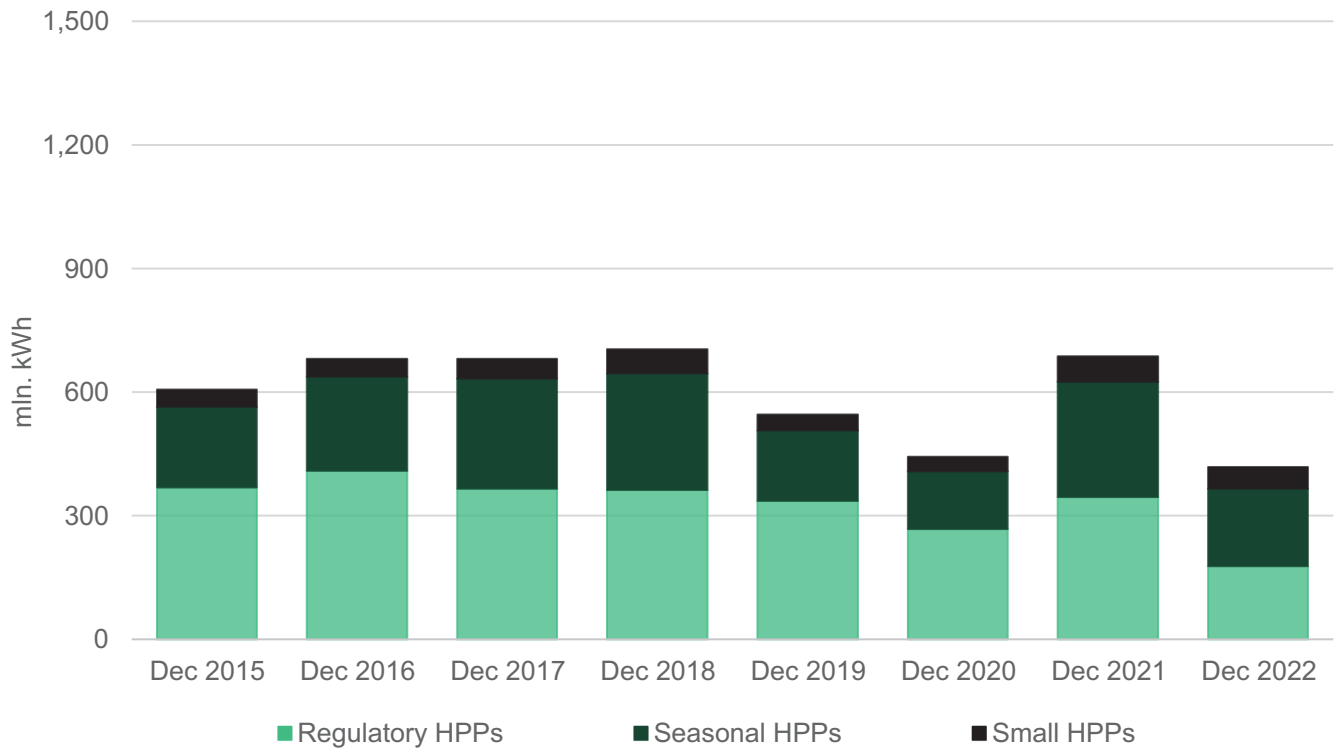
Figure 2 **- Electricity Generation by Sources**



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 43% (178 mln. kWh) of electricity, while seasonal and small HPPs produced 45% (187 mln. kWh) and 13% (53 mln. kWh), respectively (Figure 3).

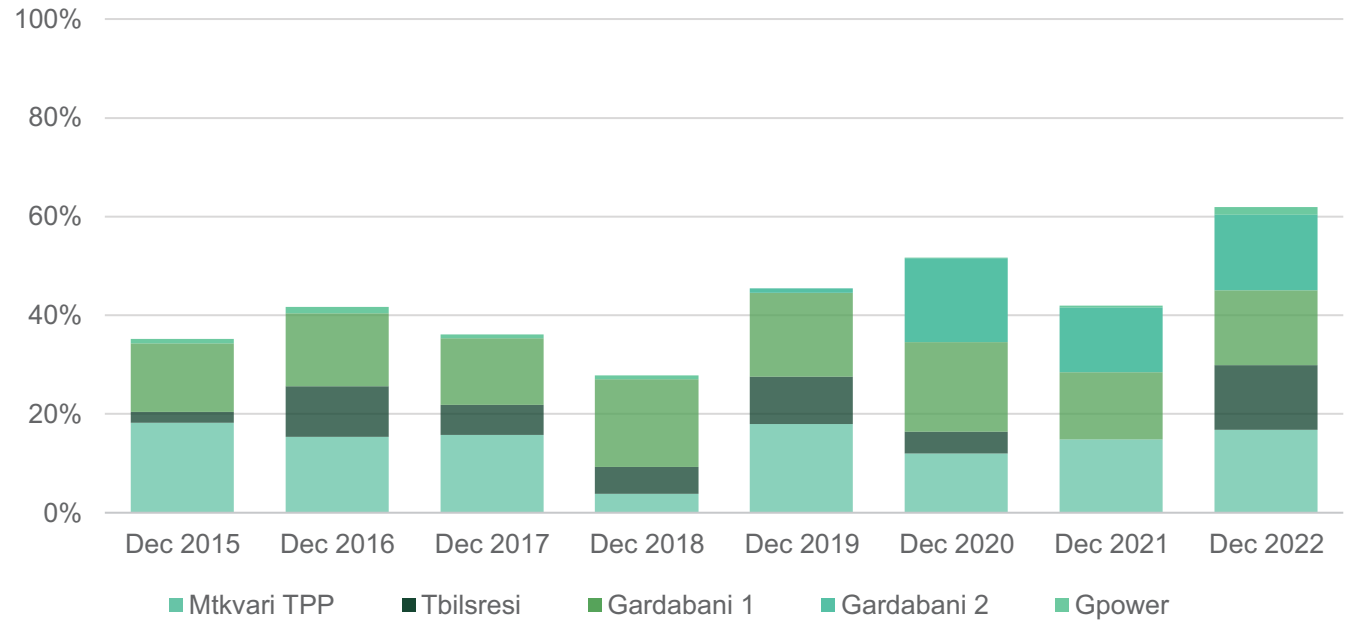
Figure 3 **- HPP Generation by Type**



Source: ESCO

As for the thermal power generation, Gardabani 1 TPP generated 168 mln. kWh electricity (24% of TPP generation and 15% of total power generation), Gardabani 2 TPP generated 172 mln. kWh (25% of TPP generation and 15% of total power generation), Mtkvari TPP generated 187 mln. kWh (27% of TPP generation and 17% of total power generation), Tbilsresi generated 147 mln. kWh (21% of TPP generation and 13% of total power generation). The remaining 2% of TPP generation was produced by Gpower (1% of total power generation) (Figure 4).

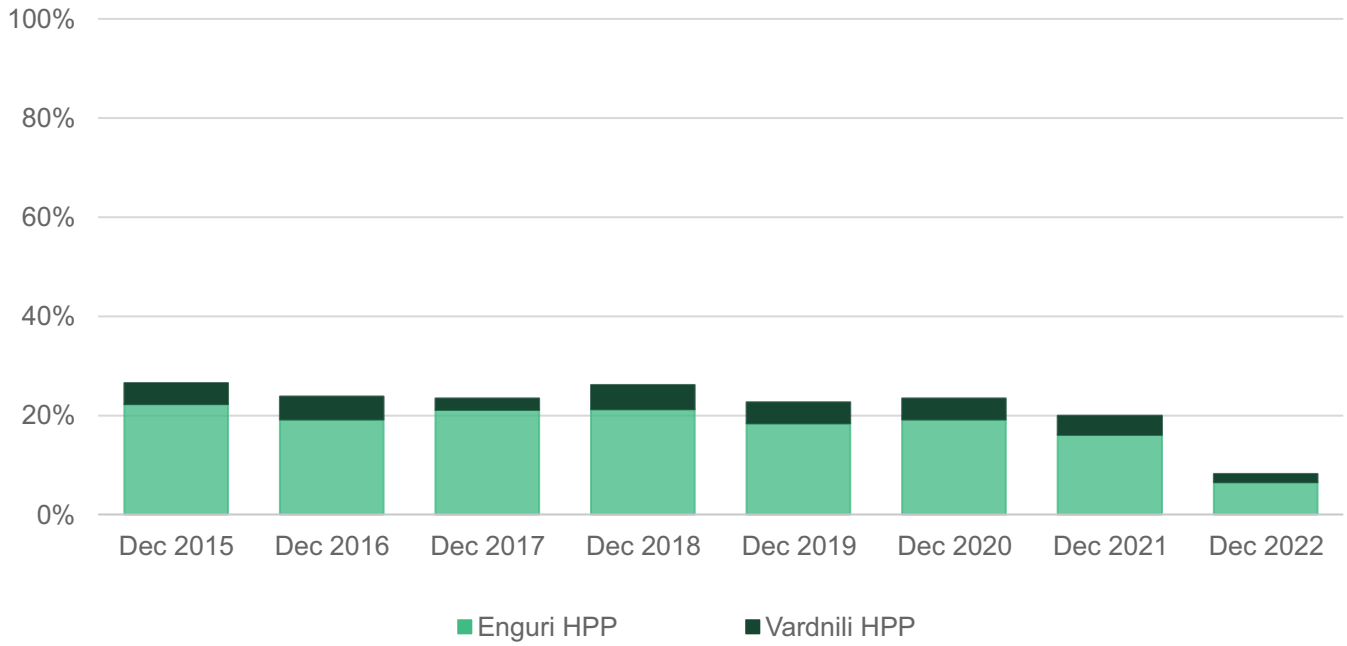
Figure 4 **- Share of Large TPPs in Total Generation**



Source: ESCO

As for HPP generation, Vardnili HPP generated 19 mln. kWh (11% of generation for regulatory HPPs and 2% of total generation). Enguri HPP generated 72 mln. kWh, which represents 41% of generation of regulatory HPPs and 6% of total generation (Figure 5).

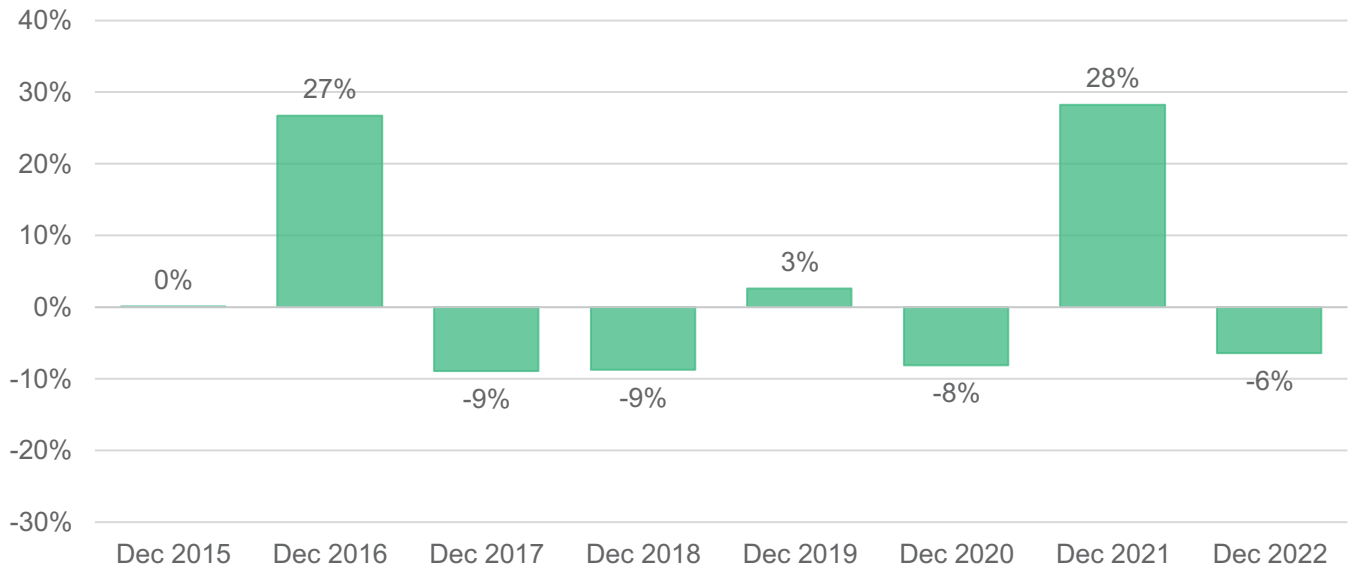
Figure 5 **- Share of Enguri and Vardnili in Total Generation**



Source: ESCO

Overall, the total generation decreased by 6% compared to December 2021 (Figure 6).

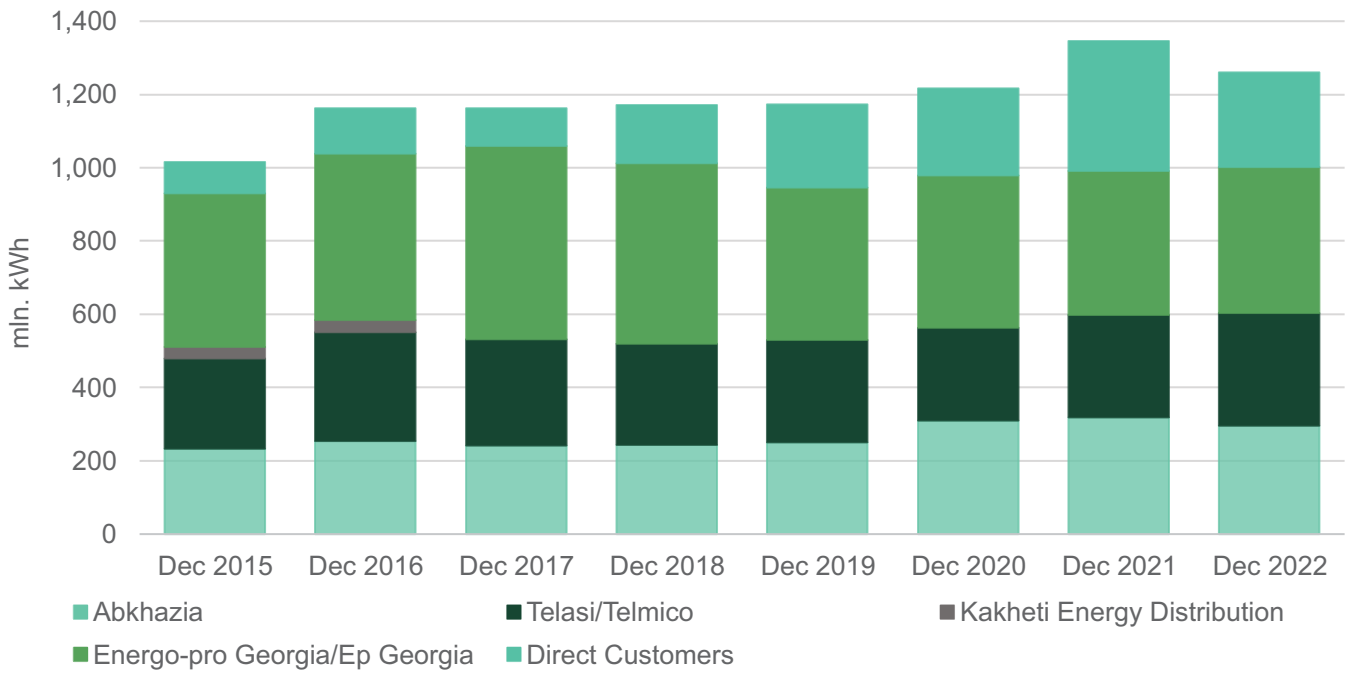
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo -Pro Georgia/Ep Georgia[1] (32% - 399 mln. kWh), Abkhazia (24% - 297 mln. kWh), Telasi/Telmico[2] (24% - 307 mln. kWh), and direct customers (20% - 258 mln. kWh) (Figure 7). Annual demand from Energo-Pro Georgia and Telasi/Telmico increased by 2% and 10%, respectively, while the demand from Abkhazia and direct customers fell by 7% and 27%, respectively. Overall, there was an annual decrease of 6% in the total electricity consumption in December 2022, compared to December 2021 (Figure 8).

Figure 7 - Electricity Consumption by Type of Consumer

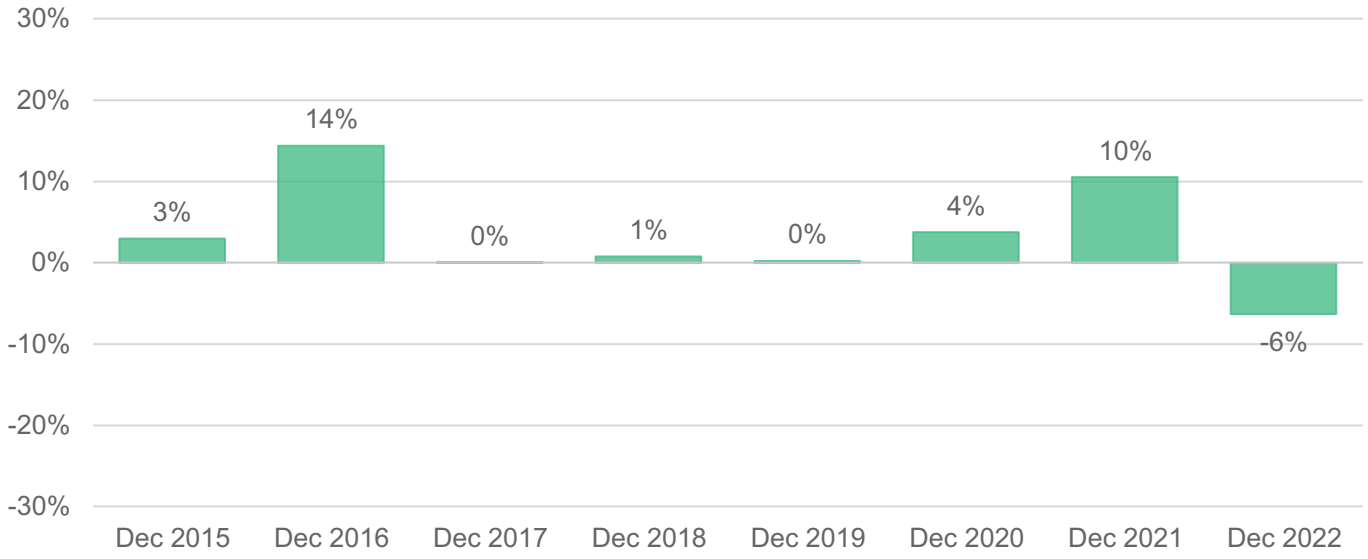


Source: ESCO

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

[2] Since 1st of July 2021, after adoption of a new electricity market model concept, operations of distribution and final supply have been disentangled, thus three different groups of players appeared on the market, Distribution Licensees- responsible for distribution activities and covering losses in the distribution network- Universal Service Suppliers - responsible for providing electricity to residential sectorand small enterprises and Public Service Organizations– responsible for providing electricity to medium and large enterprises upon the written agreement. Currently, Energepro Georgia and Telasi continue their distribution activities, while EP Georgia Supply and Tbilisi Electricity Supply Company (Telmico) have been separated from them and play the role of both Universal Service Suppliers and Public Service Organizations.

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

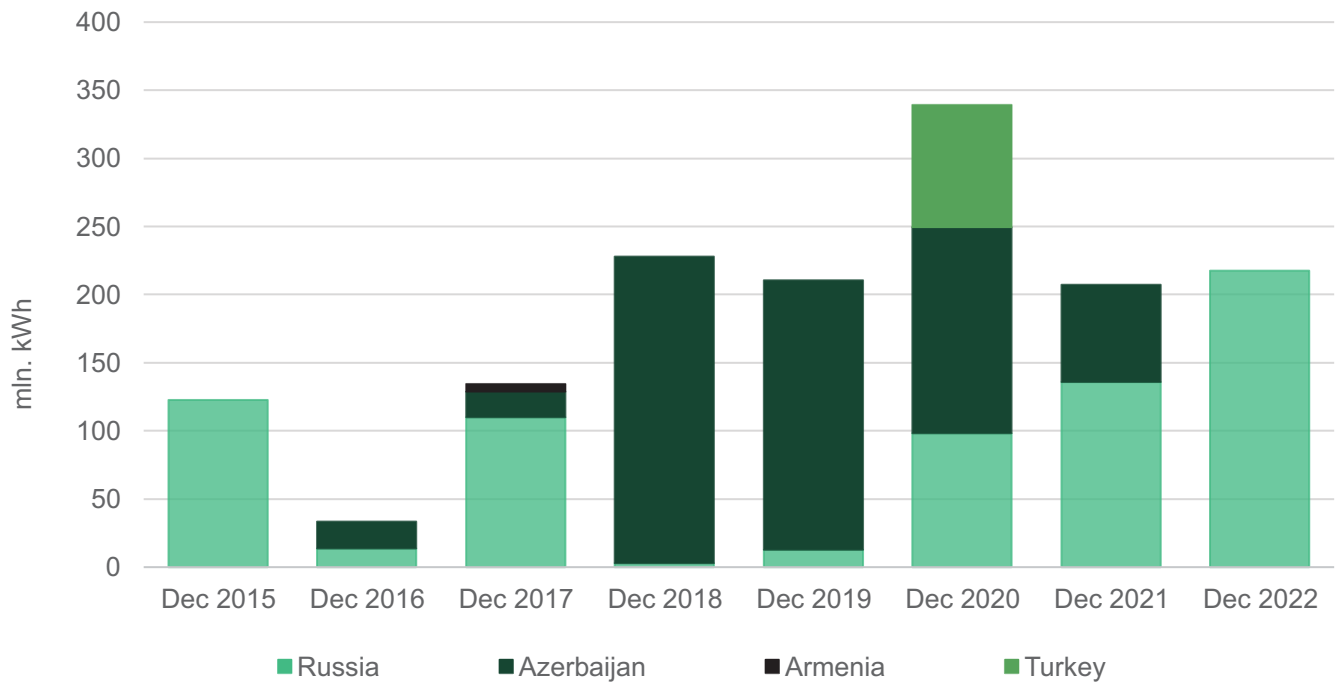


Source: ESCO

In December 2022, there was the import of 218 mln. kWh of electricity (compared to 207 mln. kWh in December 2021) (Figure 9). 100% of this import came from Russia (out of which 95% went to Abkhazia) (in December 2021, 66% of import came from Russia, while the rest came from Azerbaijan). In December 2022, there was export of 0.049 mln. kWh electricity to Azerbaijan and Turkey (there was 0.037 mln. kWh export to Turkey in December 2021) (Figure 10). There was 446 mln. kWh transit from Azerbaijan to Turkey and 71 mln. kWh transit from Armenia to Turkey (there was 204 mln. kWh transit from Azerbaijan to Turkey in December 2021).

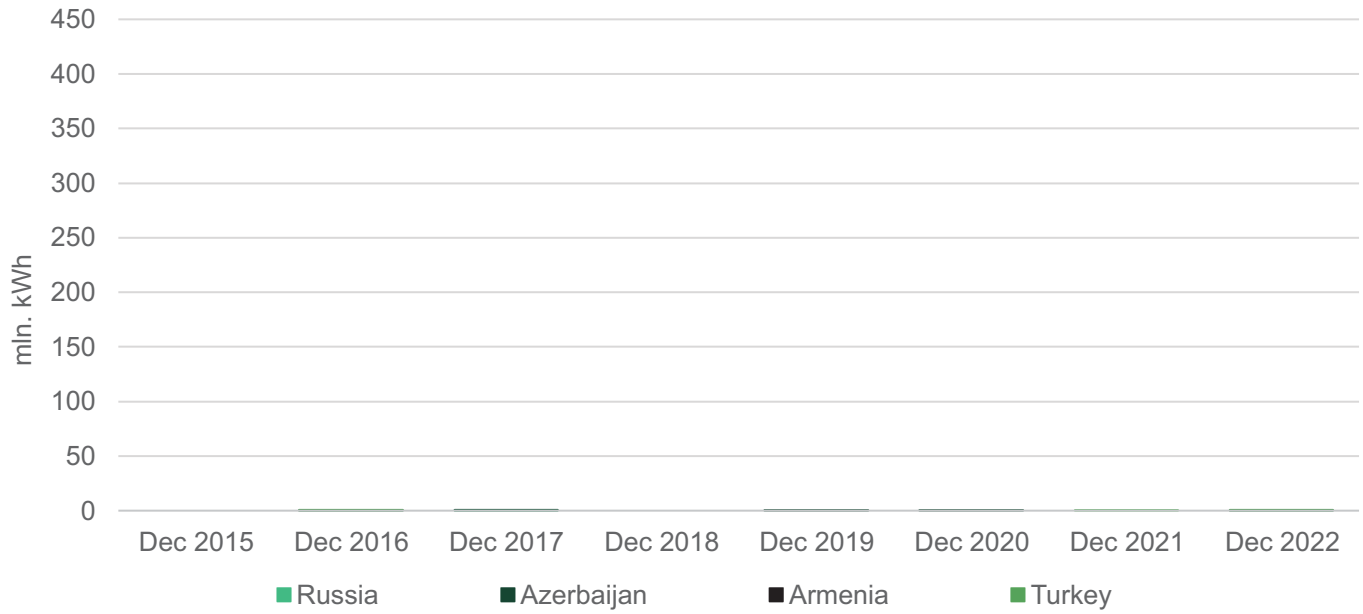
In December 2022, imports increased by 5% compared to December 2021, while exports increased by 32%.

Figure 9 **- Imports by Year**



Source: ESCO

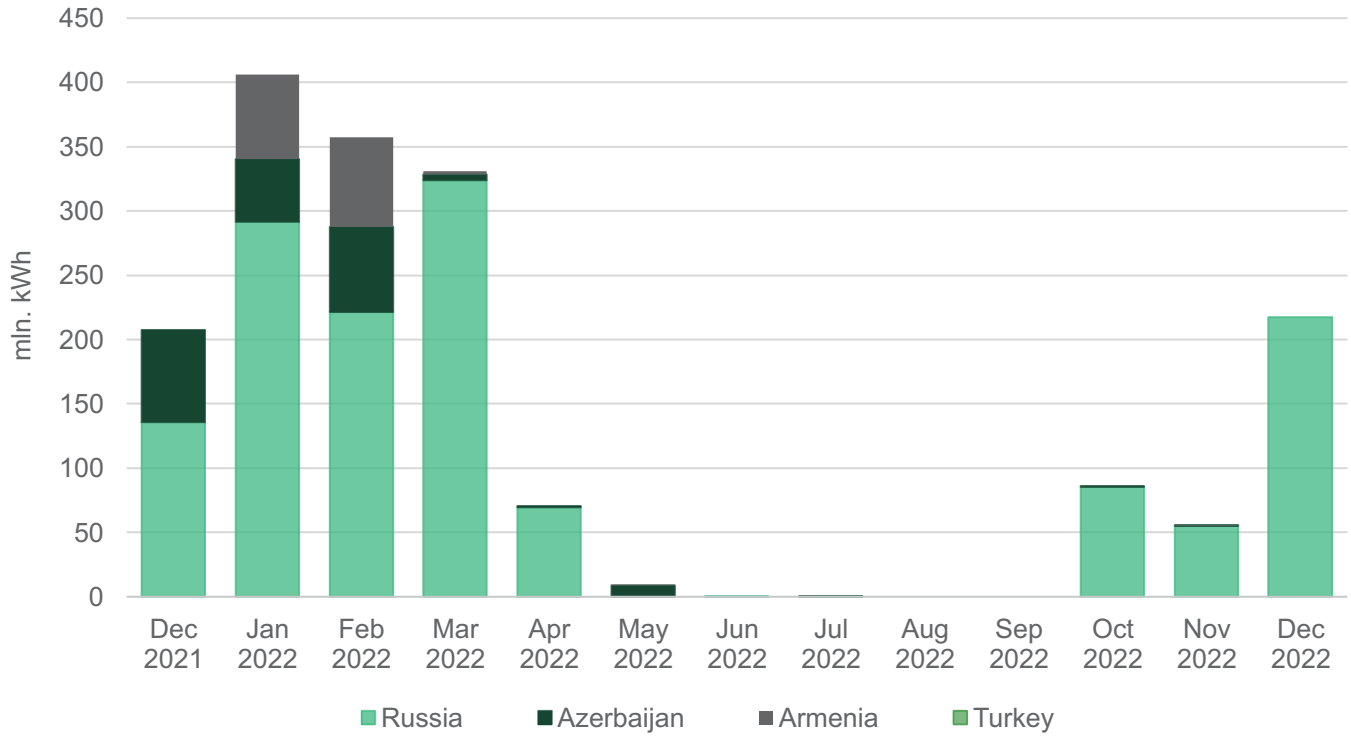
Figure 10 - Exports by Year



Source: ESCO

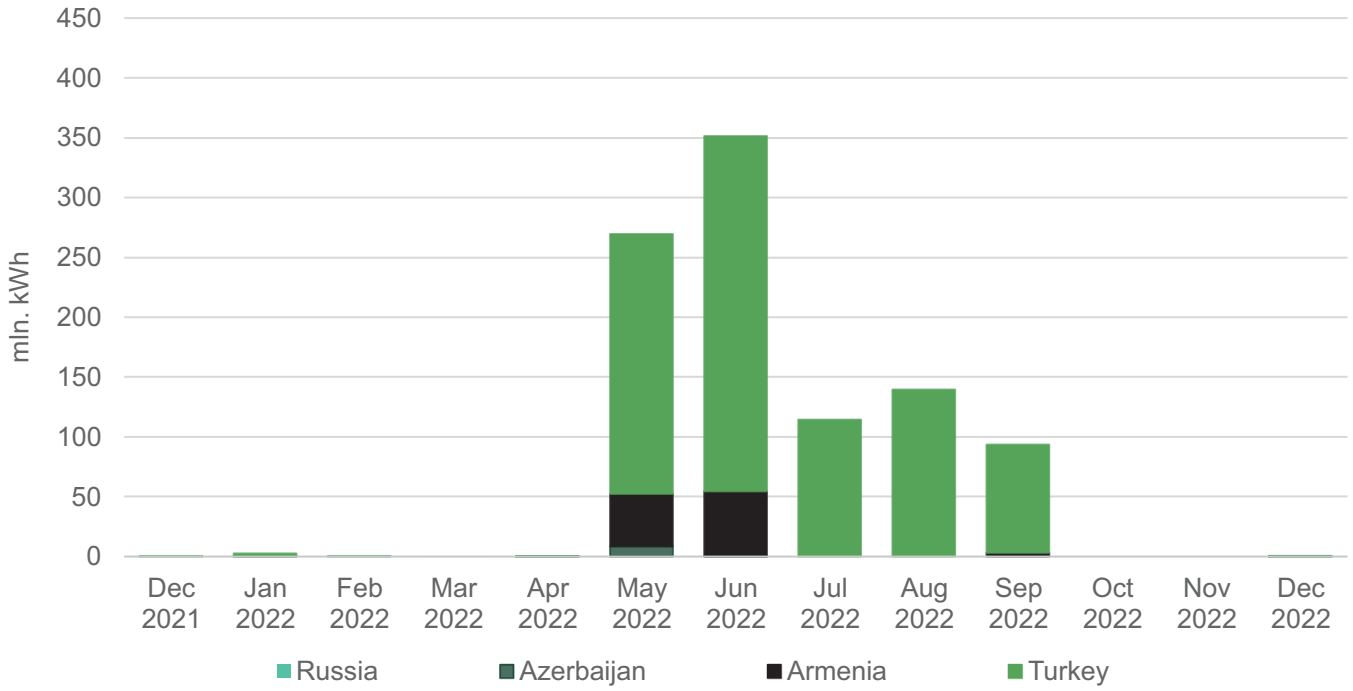
Electricity imports increased by 294%, compared to November 2022 (Figure 11). There were no exports in November 2022 (Figure 12).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 **- Exports by Month**

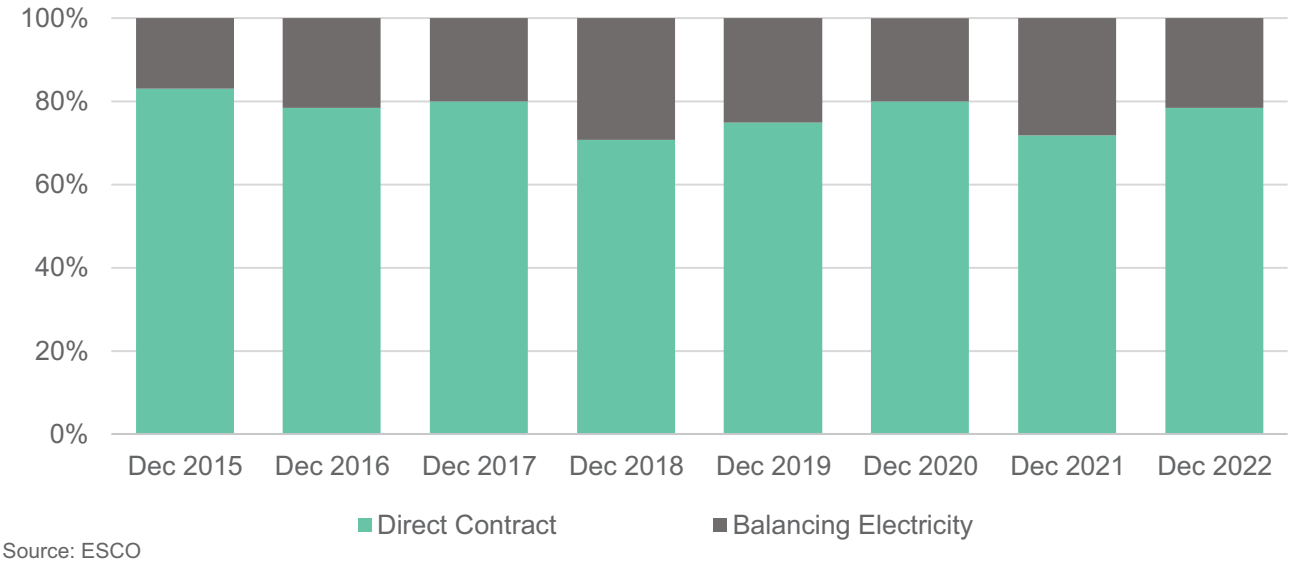


Source: ESCO

1. Market Operations

In December 2022, 78% of the electricity sold on/from the local market was sold through direct contracts. The remaining 22% was sold as balancing electricity (Figure 13).

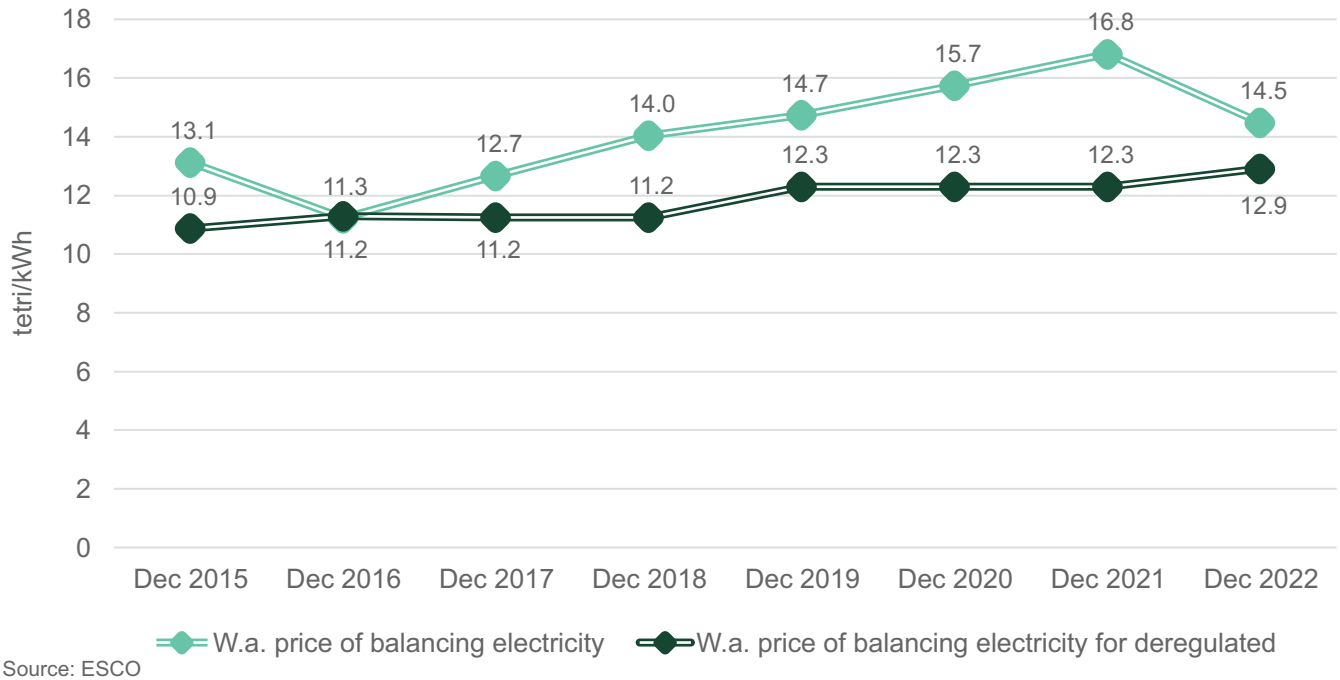
Figure 13 - Electricity Purchased / Sold Shares of DirectContracts and Balancing Electricity



Source: ESCO

In December 2022, the weighted average price of balancing electricity was 14.5 tetri/kWh, which corresponds to an annual decrease of 14% compared to December 2021. As for the weighted average price for deregulated (small) HPPs, it was 12.9 tetri/kWh, 5% more than the price in December 2021 (Figure 14).

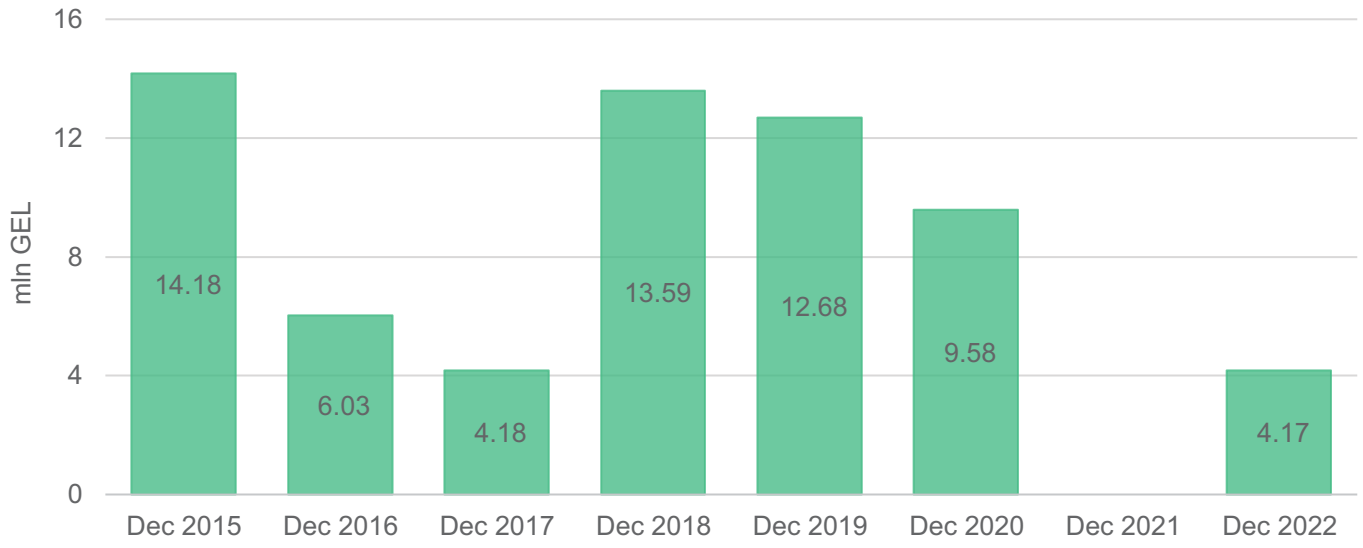
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in December 2022 were roughly 4 mln. GEL, which represents a n 56% decrease compared to December 2020. The data about December 2021 are not available (Figure 15).

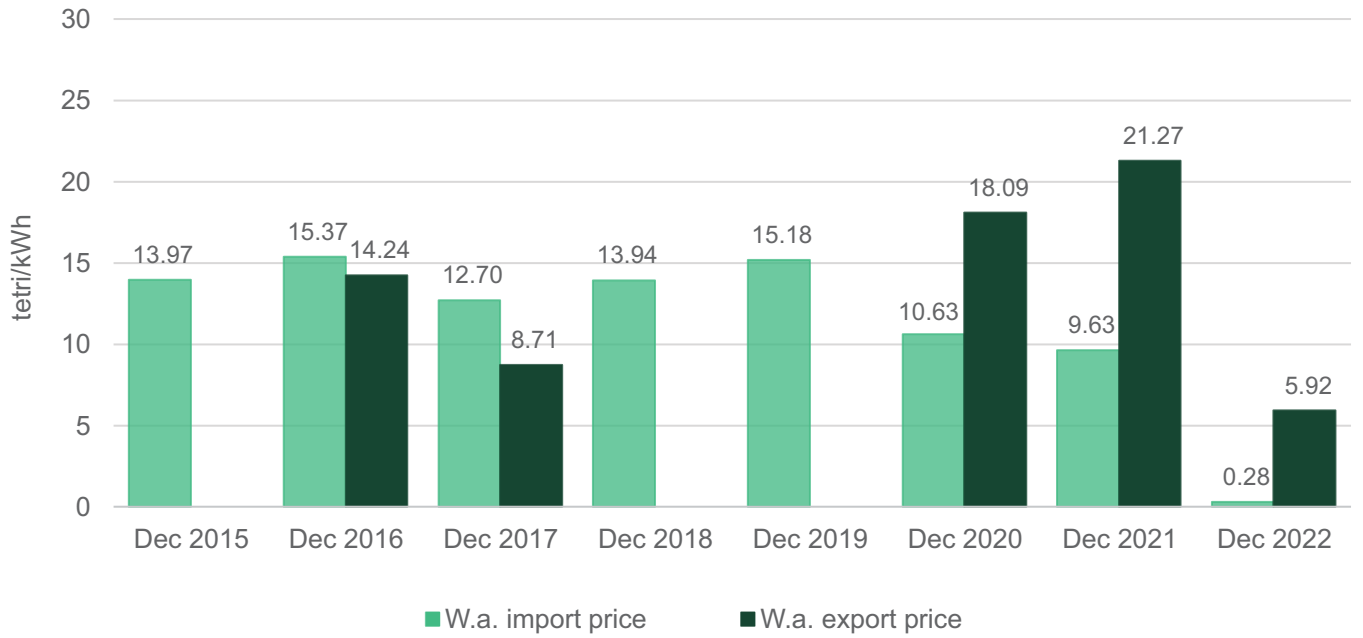
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The electricity import price in December 2022 reached 0.11 ¢, or 0.28 tetri per kWh (Figure 16). This corresponds to an annual decrease in price by 97% in USD and 97% in GEL (prices were 3.11 ¢, or 9.63 tetri per kWh in December 2021). Compared to November 2022, import price decreased by 70% in USD and 71% in GEL (prices were 0.35 ¢, or 0.97 tetri per kWh in October 2022). The electricity export price in December 2022 reached 2.2 ¢, or 5.92 tetri per kWh. This corresponds to an annual decrease in price by 68% in USD and 72% in GEL (prices were 6.86 ¢, or 21.27 tetri per kWh in December 2021). There was no export in November 2022.

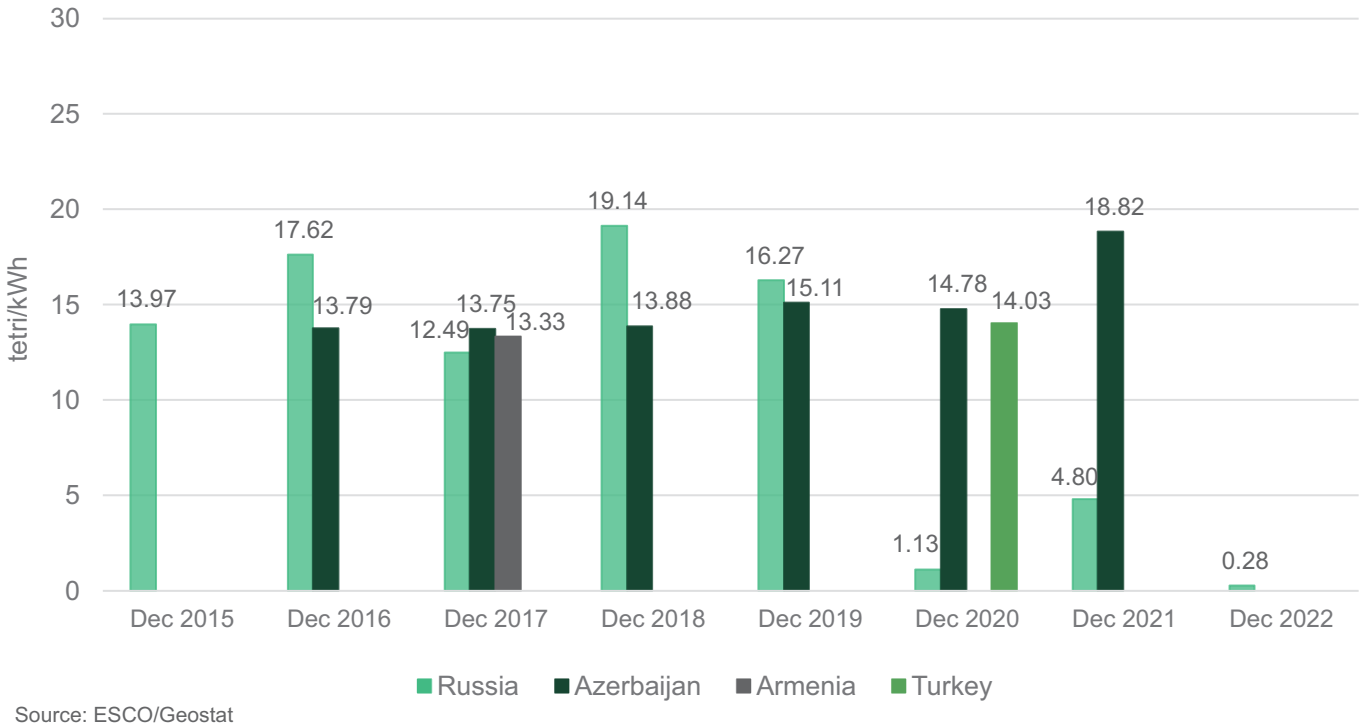
Figure 16 - Prices Import/Export



Source: ESCO

In December 2022, the electricity import price from Russia stood at 0.11 ¢ or 0.28 tetri (Figure 17).

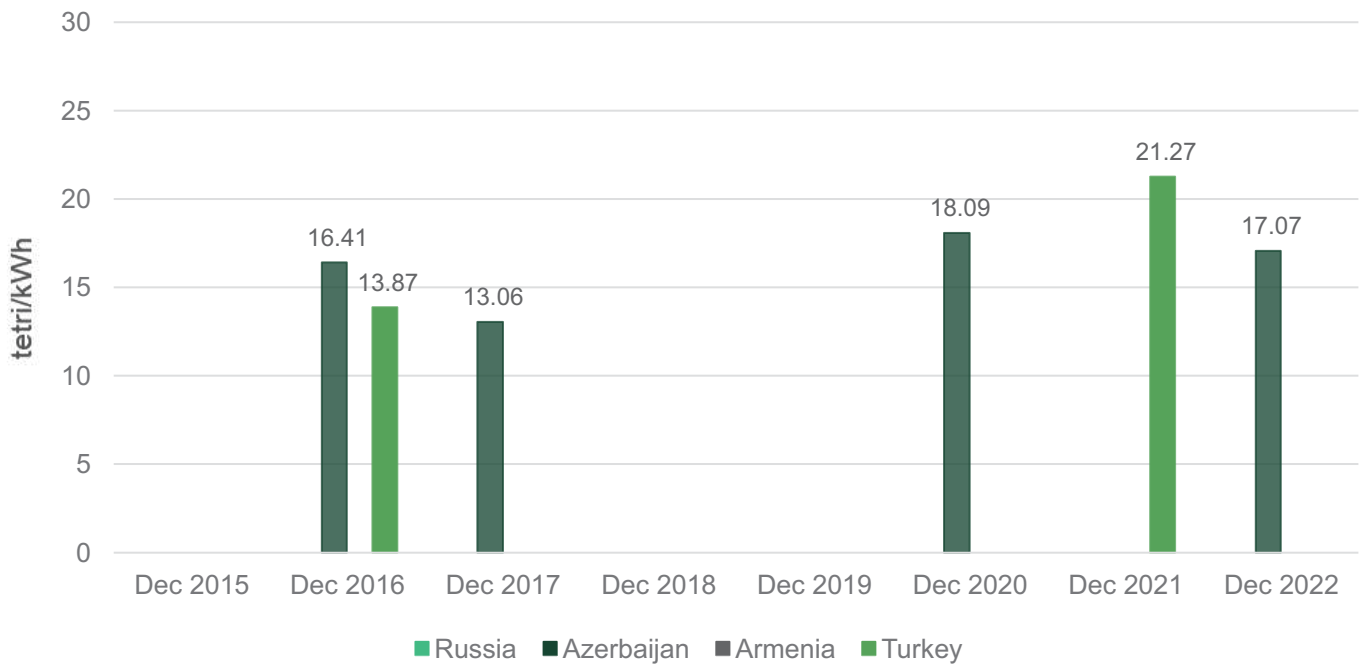
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In December 2022, electricity export price from Azerbaijan stood at 6.35 ¢ or 17.07 tetri (Figure 18).

Figure 18 - Export Prices by Countries

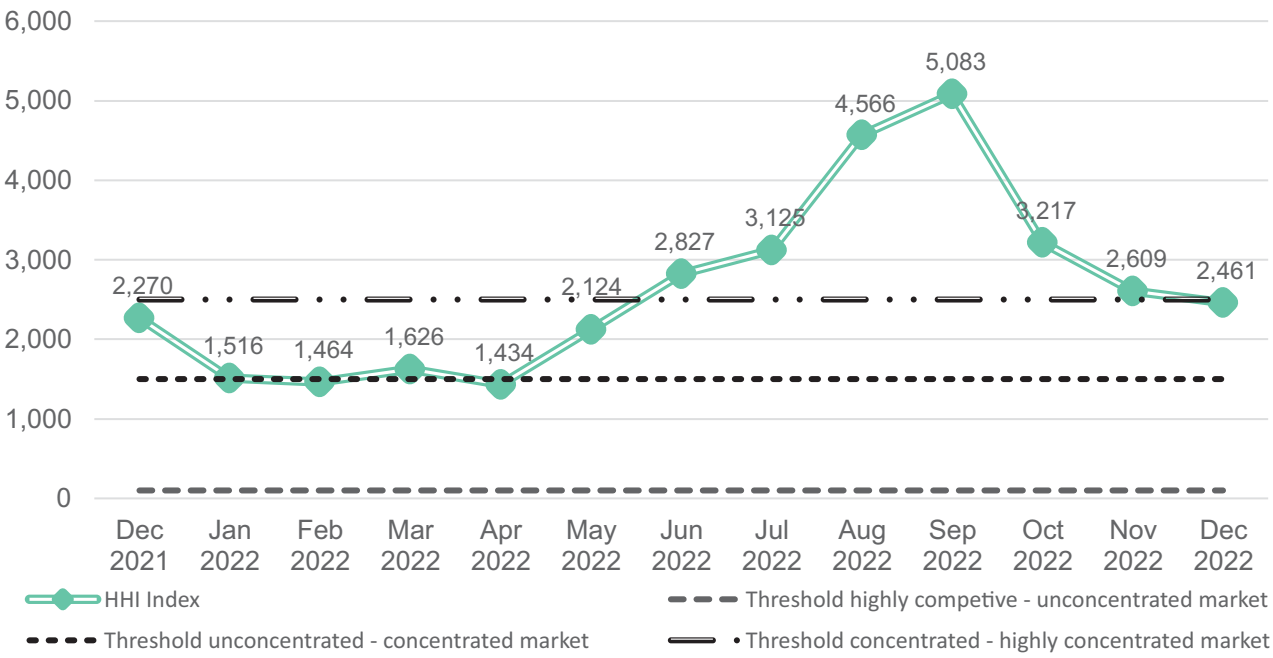


Source: ESCO/Geostat

2. Market Concentration

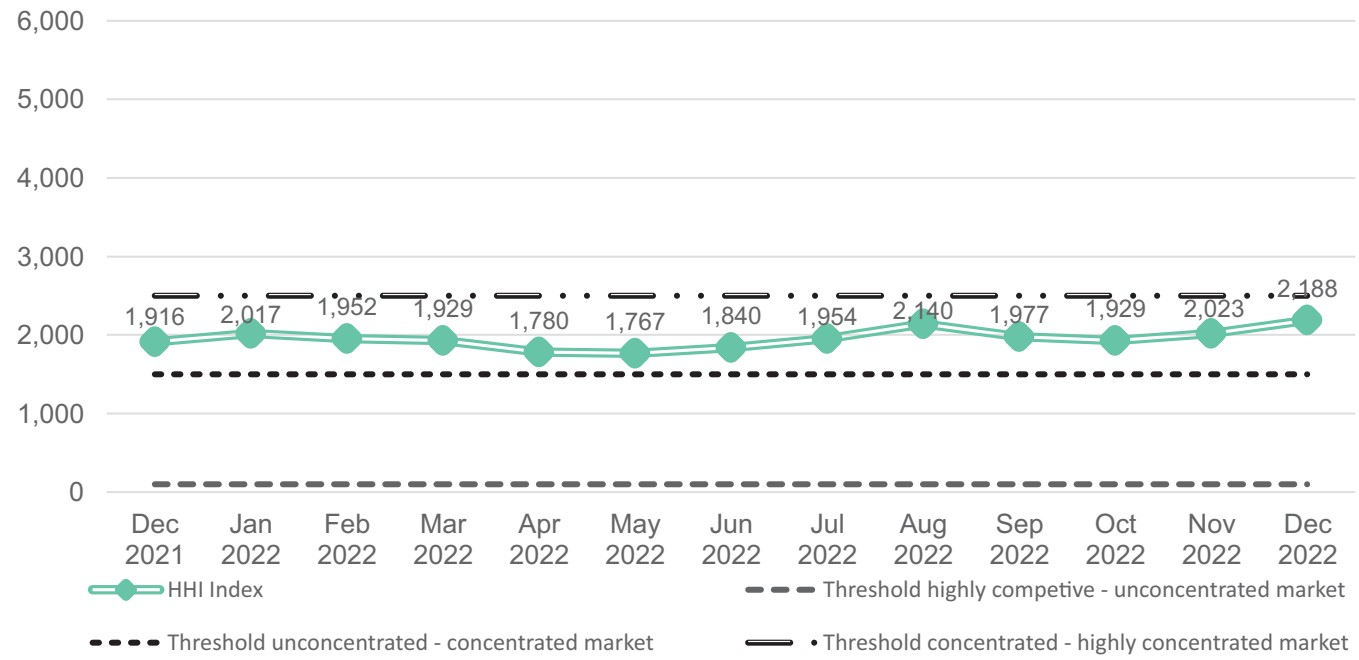
In conclusion, we utilize the Hirschman -Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In December 2022, for the first time in the last seven month the Georgian electricity generation market index came below the threshold of highly concentrated market with an HHI value of 2,461 (Figure 19). This is higher than the level in December 2021 (with an HHI value of 2,270), and lower than the level in November 2022 (the HHI was 2,609). As for the consumption segment, in December 2022, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 2,188 (above the level in December 2021 – 1,916 and the level in November 2022 – 2,023). In fact, September 2020 was the last month when the index value was above the level of highly concentrated market, which indicates that the market is becoming increasingly competitive, with many new direct customers emerging. Since then, an overall annually decreasing trend in the market concentration of consumption segment was observable (Figure 20).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO