ISET

International School of Economics at TSU
Policy Institute

SEPTEMBER

2022

ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In September 2022 there was an increase in the total electricity generation by 8% on a yearly basis, and a decrease by approximately 15% on a monthly basis.
- Consumption decreased by 1% on yearly basis and decreased by 13% compared to the previous month.
- Generation exceeded consumption by 144 mln. kWh which was 12% of the total generation in September 2022.
- There were no imports in September.
- Exports increased 180 times annually (due to extremely low level in September 2021)
- The main export partner was Turkey.
- The price of exports reached 8.37 ¢, or 23.85 tetri per kWh.
- The HHI index for the Georgian electricity generation market remained above the threshold of highly concentrated market. In September 2022, it reached the record high, the level of 5,184.
- The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. In September 2022, it reached the level of 1,977.

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 Office of Georgia
ESCO	Electricity System Commercial Operator

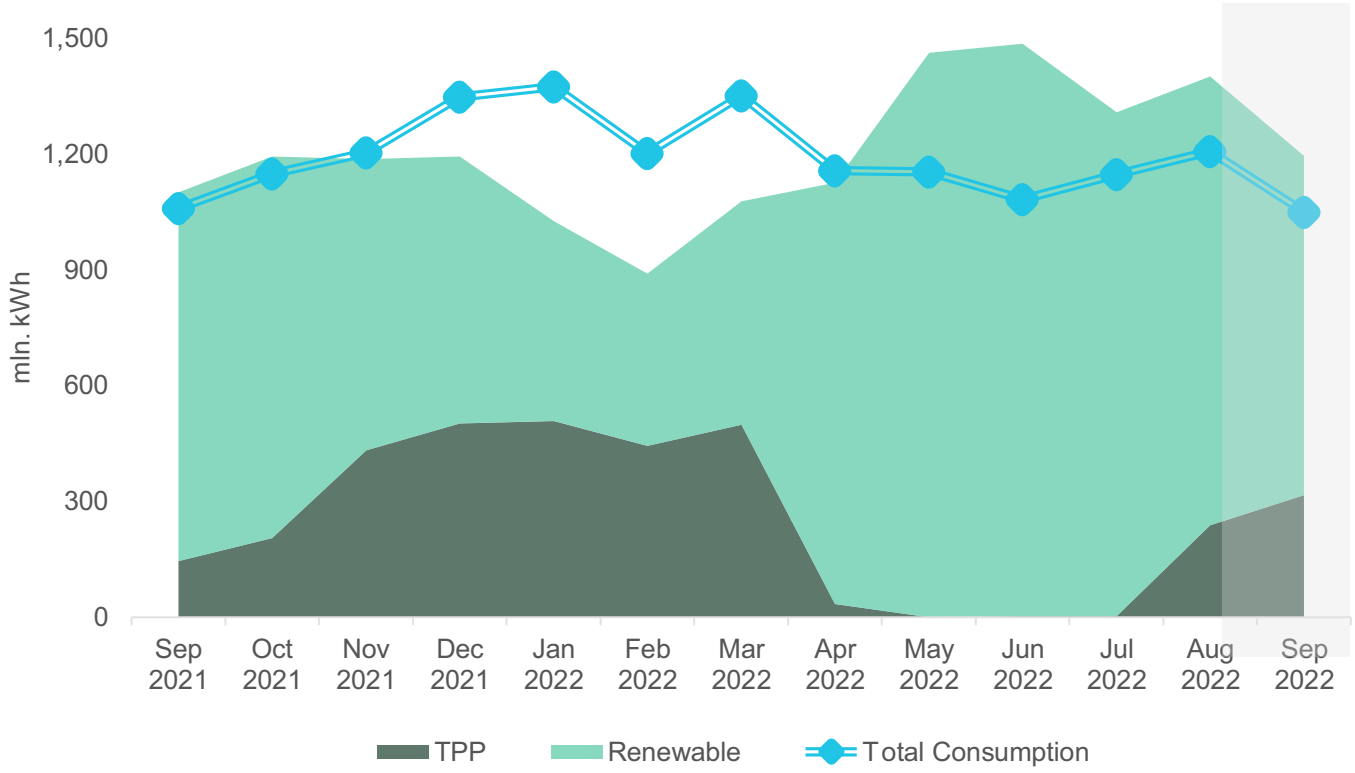
Generation – Consumption – Trade

In September 2022, Georgian power plants generated 1,194 mln. kWh of electricity (Figure 1). This represents an 8% increase in the total generation compared to the previous year (in September 2021, the total generation was 1,101 mln. kWh). The increase in the generation on a yearly basis comes from a rise of 117% in thermal power generation, and 7% in wind power generation, while there was 8% decline in hydro power generation.

On a monthly basis, the generation decreased by approximately 15% (in August 2022, the total generation was 1,401 mln. kWh) (Figure 1). The monthly decrease in the total generation is induced by a 25% decrease in hydro power generation and 20% decrease in wind power generation, while thermal power generation increased by 33%.

The consumption of electricity on the local market was 1,049 mln. kWh (-1% compared to September 2021, and -13% compared to August 2022) (Figure 1). In September 2022, power generation exceeded consumption by 144 mln. kWh which was 12% of the total generation and 14% of the total consumption (in September 2021, the difference between the total generation and the consumption resulted in a surplus of 43 mln. kWh, around 4% of the total generation and 4% of the total consumption for the month).

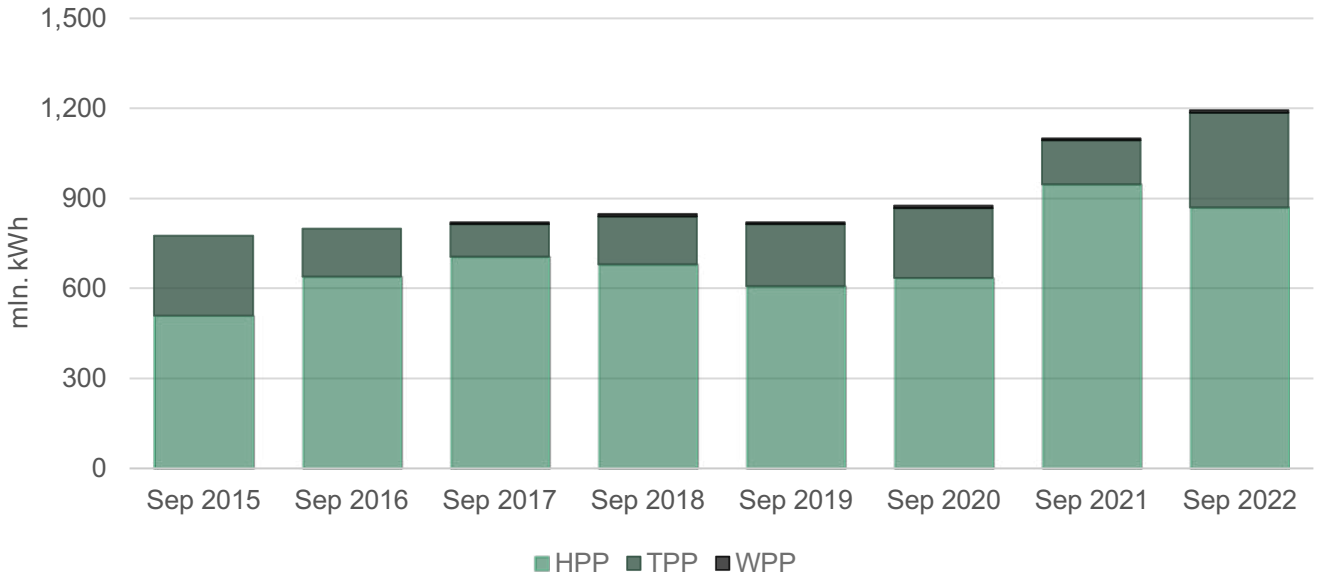
Figure 1 **Electricity Consumption and Generation**



Source: Electricity System Commercial Operator (ESCO)

In September 2022, hydro power plants were the leading source of generation. In September 2022, hydro power (HPP) generation amounted to 870 mln. kWh (73% of total), thermal power (TPP) generation was 316 mln. kWh (27% of the total generation), while wind power (WPP) generation amounted to 8 mln. kWh (less than 1% of the total generation) (Figure 2).

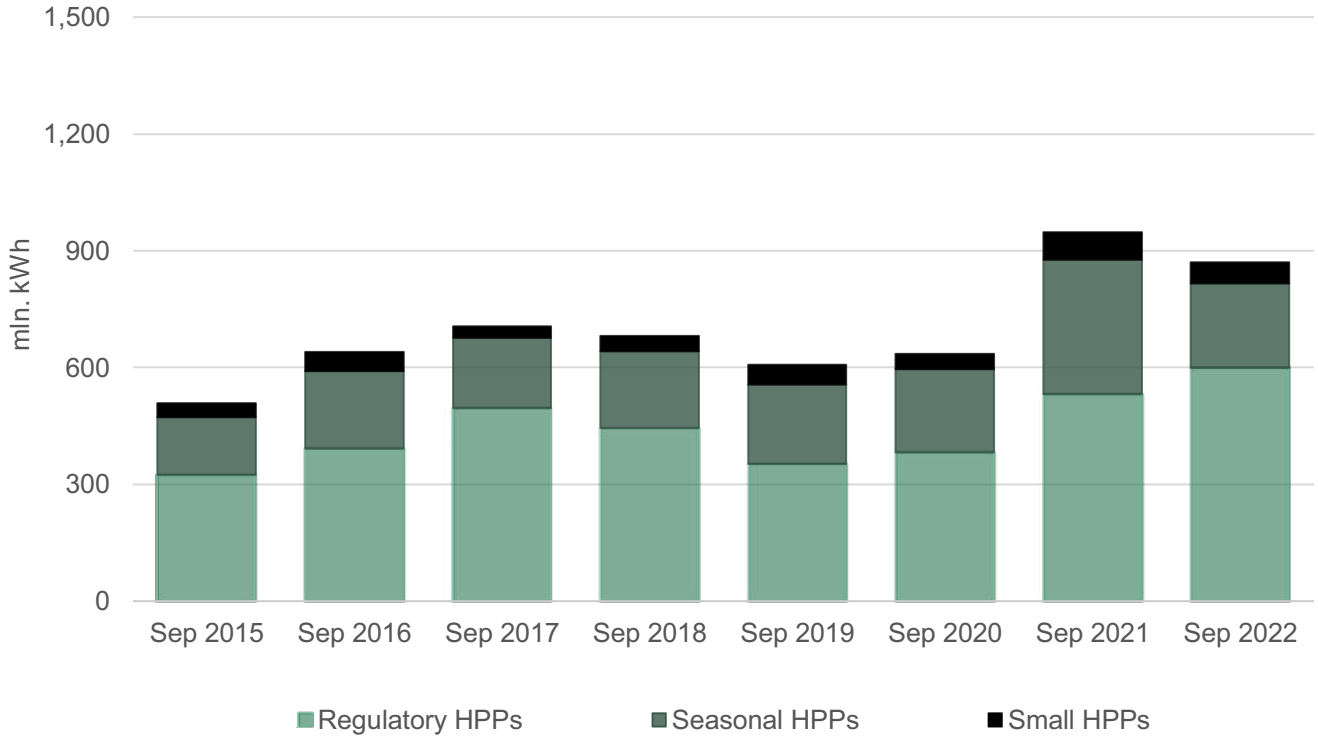
Figure 2 **Electricity Generation by Sources**



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 69% (598 mln. kWh) of electricity, while seasonal and small HPPs produced 25% (218 mln. kWh) and 6% (53 mln. kWh), respectively (Figure 3).

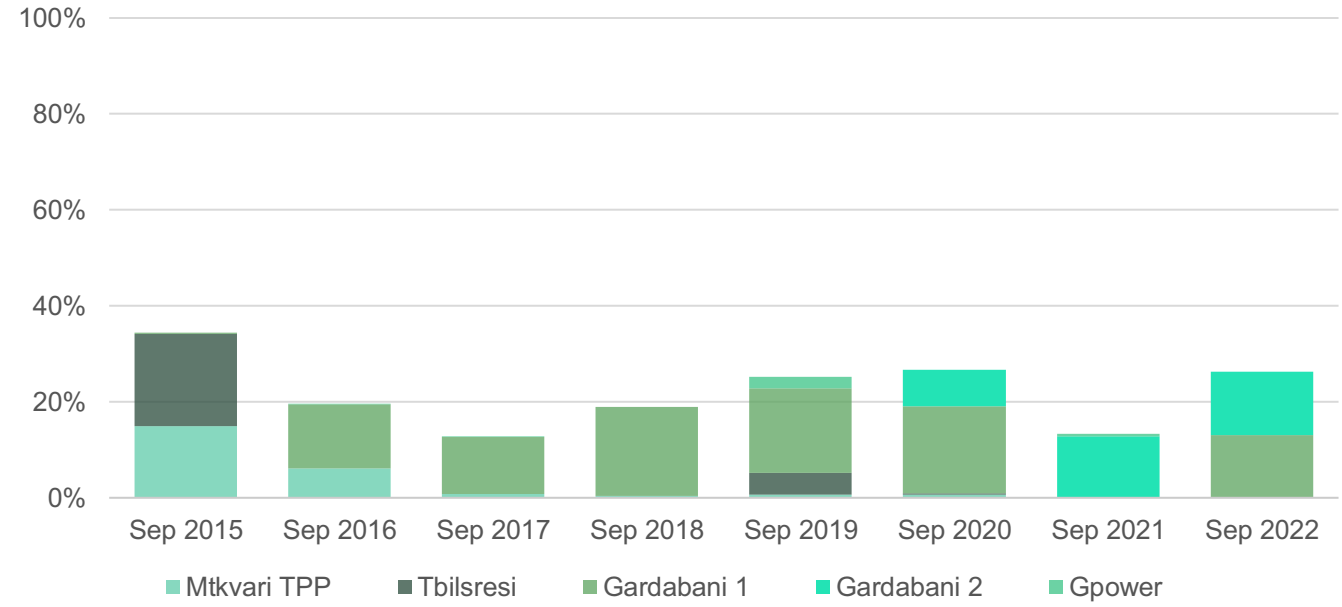
Figure 3 **HPP Generation by Type**



Source: ESCO

As for the thermal power generation, Gardabani 1 TPP generated 155 mln. kWh electricity (49% of TPP generation and 13% of total power generation), Gardabani 2 TPP generated 159 mln. kWh (50% of TPP generation and 13% of total power generation) the remaining 1% of TPP generation was produced by Mtkvari TPP (Figure 4).

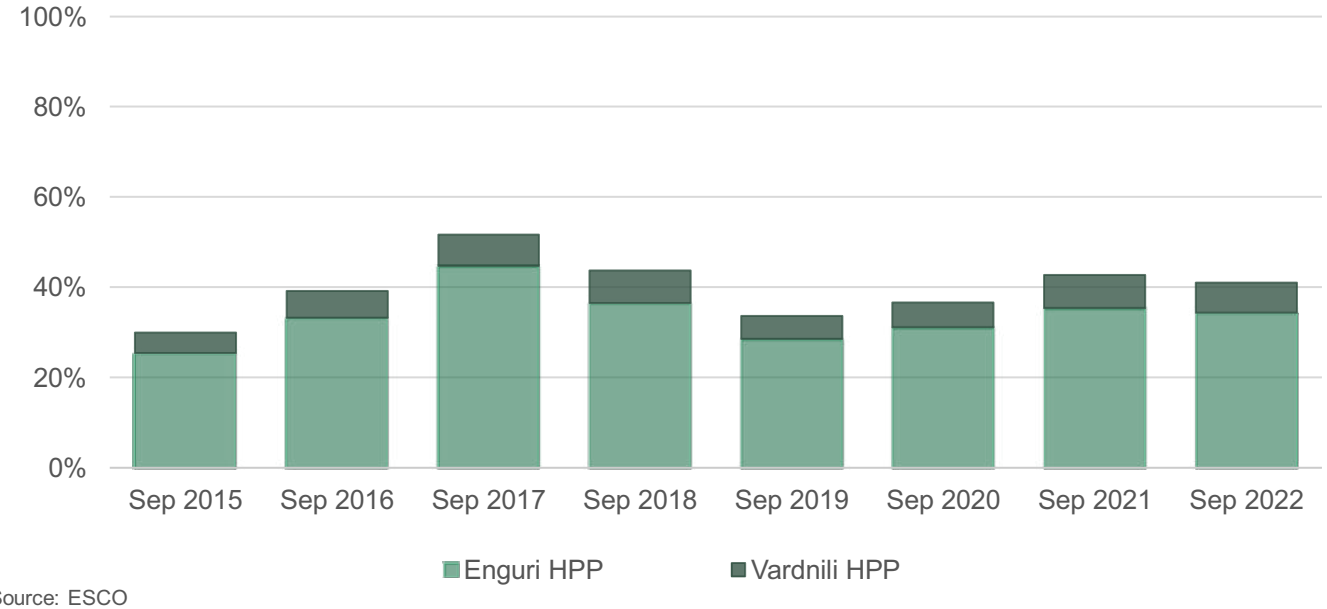
Figure 4 **Share of Large TPPs in Total Generation**



Source: ESCO

As for HPP generation, Vardnili HPP generated 79 mln. kWh (13% of generation for regulatory HPPs and 7% of total generation). Enguri HPP generated 410 mln. kWh, which represents 69% of generation of regulatory HPPs and 34% of total generation (Figure 5).

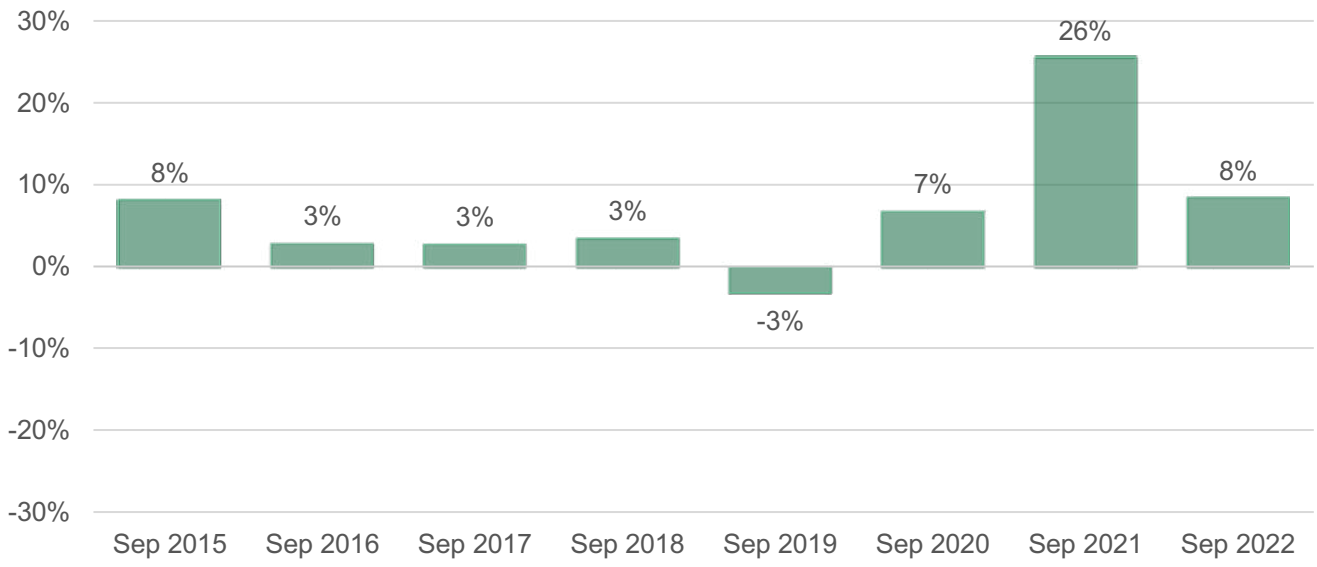
Figure 5 **Share of Enguri and Vardnili in Total Generation**



Source: ESCO

Overall, the total generation increased by 8% compared to September 2021 (Figure 6).

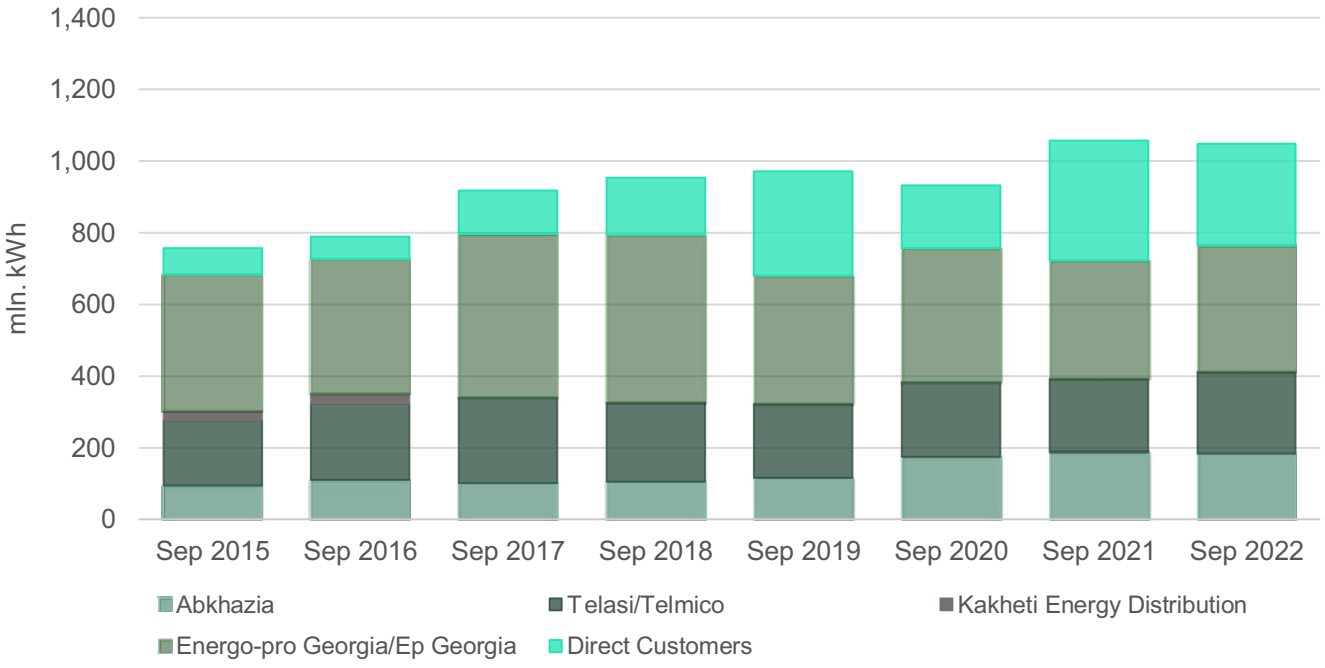
Figure 6 **Growth of Generation (%, y/y)**



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia[1] (33% - 351 mln. kWh), Abkhazia (17% - 183 mln. kWh), Telasi/Telmico[2] (22% - 230 mln. kWh), and direct customers (27% - 285 mln. kWh) (Figure 7). Annual demand from Energo-Pro Georgia and Telasi increased by 6%, and 12%, respectively, while the demand from Abkhazia and direct customers fell by 2% and 15%, respectively. Overall, there was an annual decrease of 1% in the total electricity consumption in September 2022, compared to September 2021 (Figure 8).

Figure 7 **Electricity Consumption by Type of Customer**

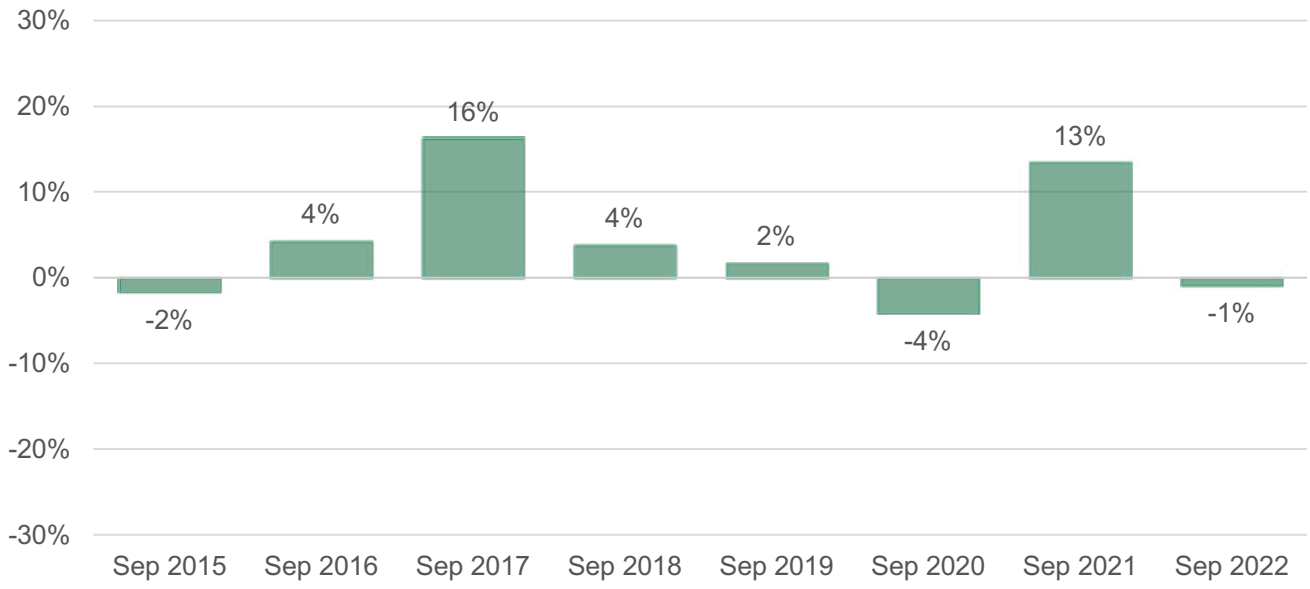


Source: ESCO

[1] Energo-Pro Georgia acquired Kakheti Energy Distribution in September 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 sector and small enterprises and Public Service Organizations – responsible for providing electricity to medium and large enterprises upon the written agreement. Currently, Energo-pro 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)**

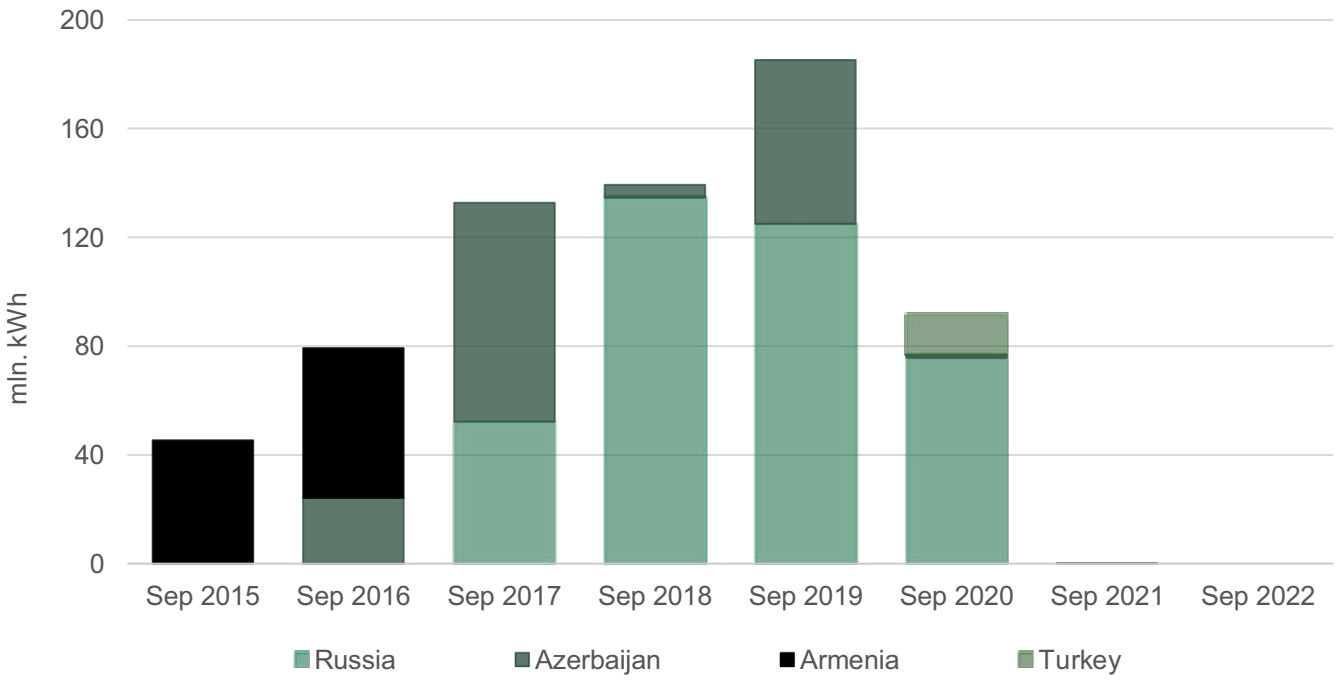


Source: ESCO

In September 2022, there was no import of electricity (compared to 0.15 mln. kWh in September 2021) (Figure 9). In September 2022, Georgia exported 94 mln. kWh of electricity, 97% of which went to Turkey and 3% went to Armenia (there was almost no export in September 2021) (Figure 10). There was 393 mln. kWh transit from Azerbaijan to Turkey (there was 97 mln. kWh transit from Russia to Turkey, 61 mln. kWh transit from Russia to Armenia and 39 mln. kWh transit from Azerbaijan to Turkey in September 2021).

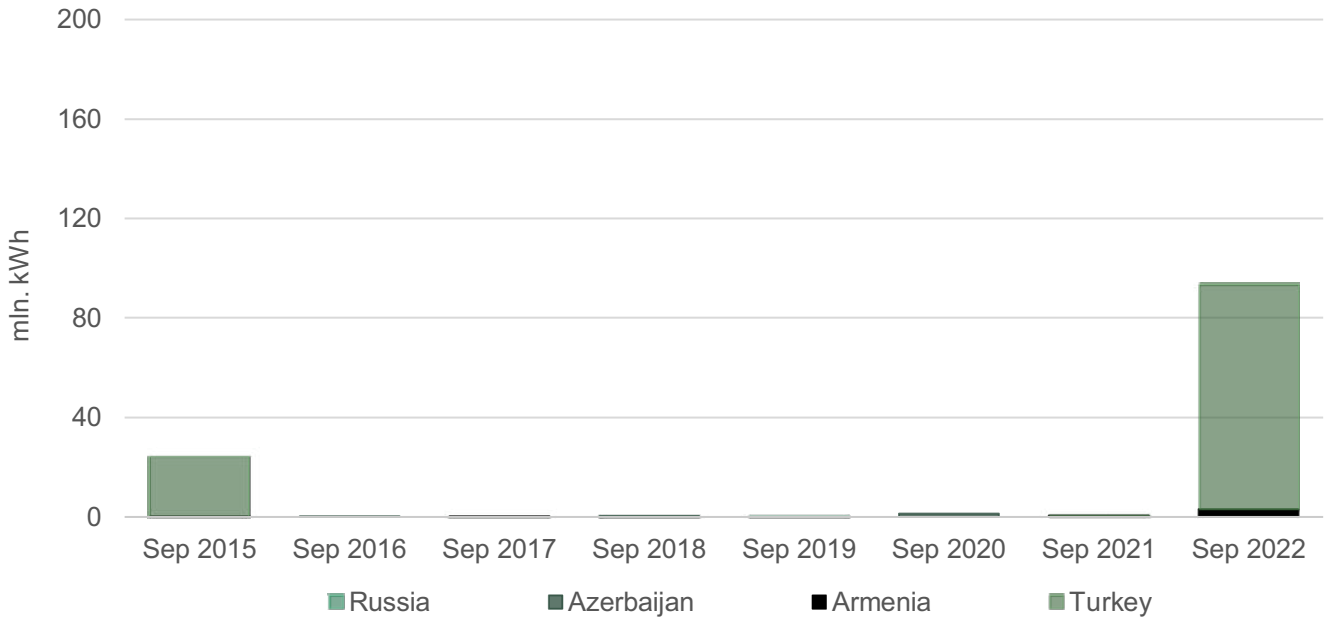
In September 2022 there were no imports compared to September 2021, while exports increased by 180 times (due to extremely low level in September 2021).

Figure 9 **Imports by Year**



Source: ESCO

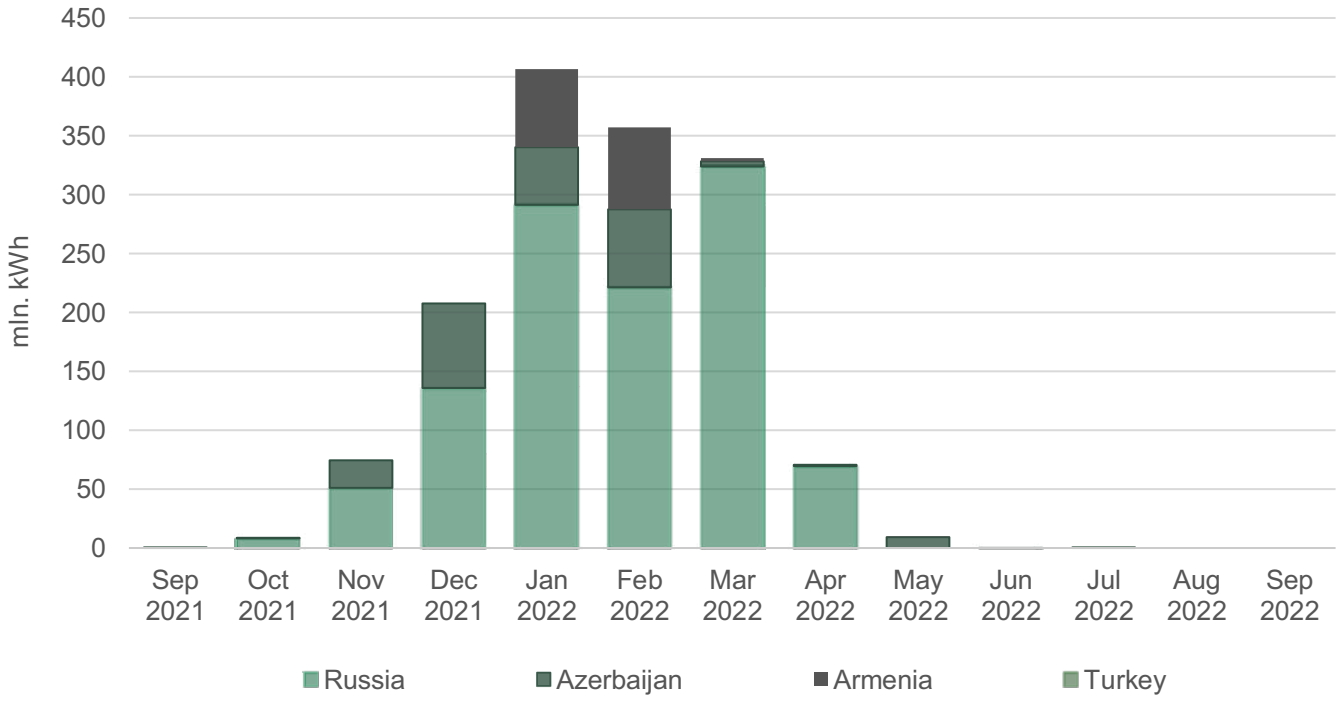
Figure 10 **Exports by Year**



Source: ESCO

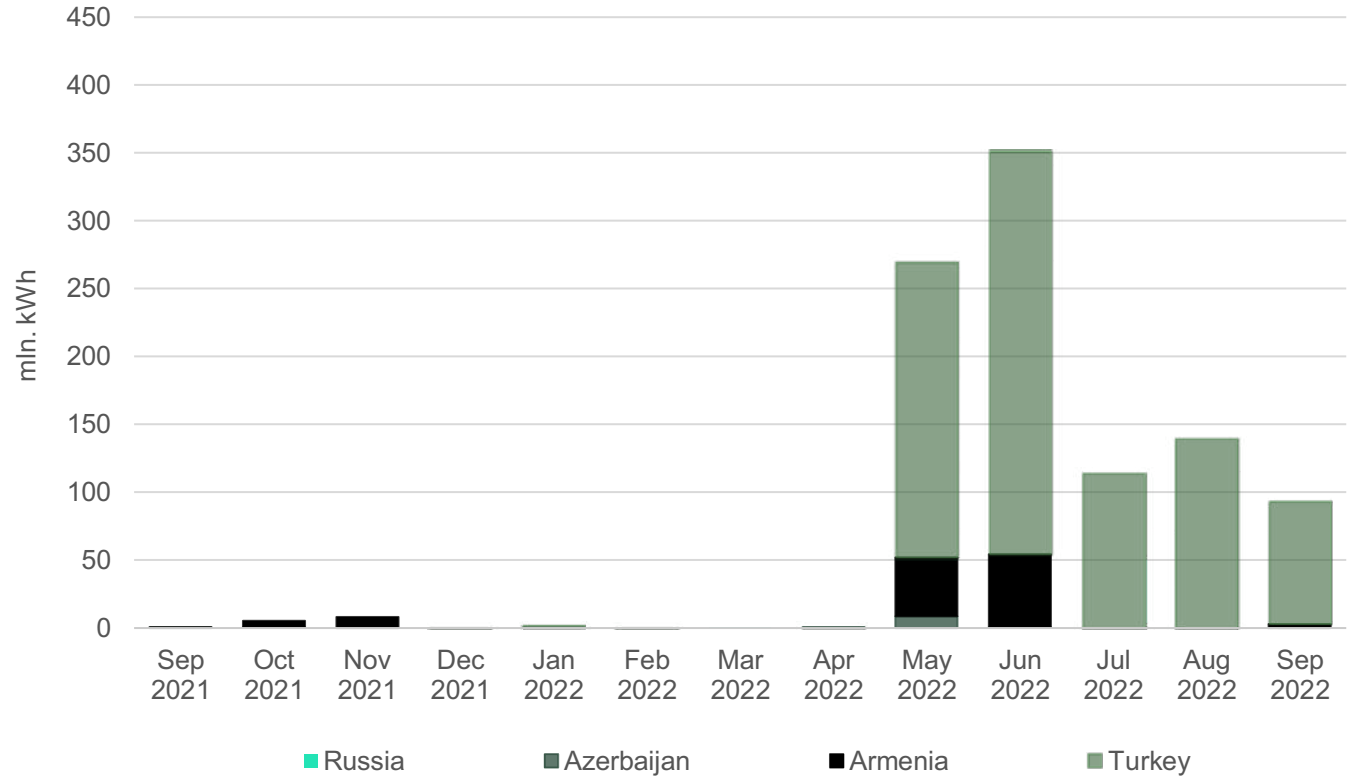
In September 2022, similarly to August 2022, there were no imports (Figure 11). Electricity exports decreased by 33%, compared to August 2022 (Figure 12). September 2022 was the fifth straight month with generation-consumption surplus.

Figure 11 **Imports by Month**



Source: ESCO

Figure 12 **Exports by Month**

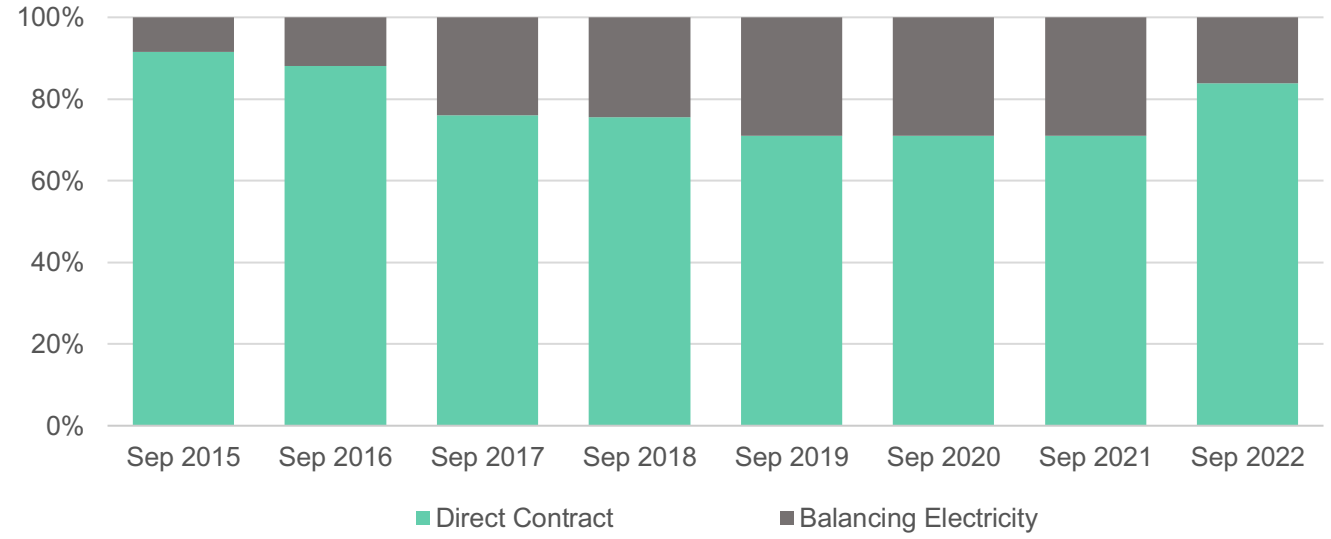


Source: ESCO

Market Operations

In September 2022, 84% of the electricity sold on/from the local market was sold through direct contracts. The remaining 16% was sold as balancing electricity (Figure 13).

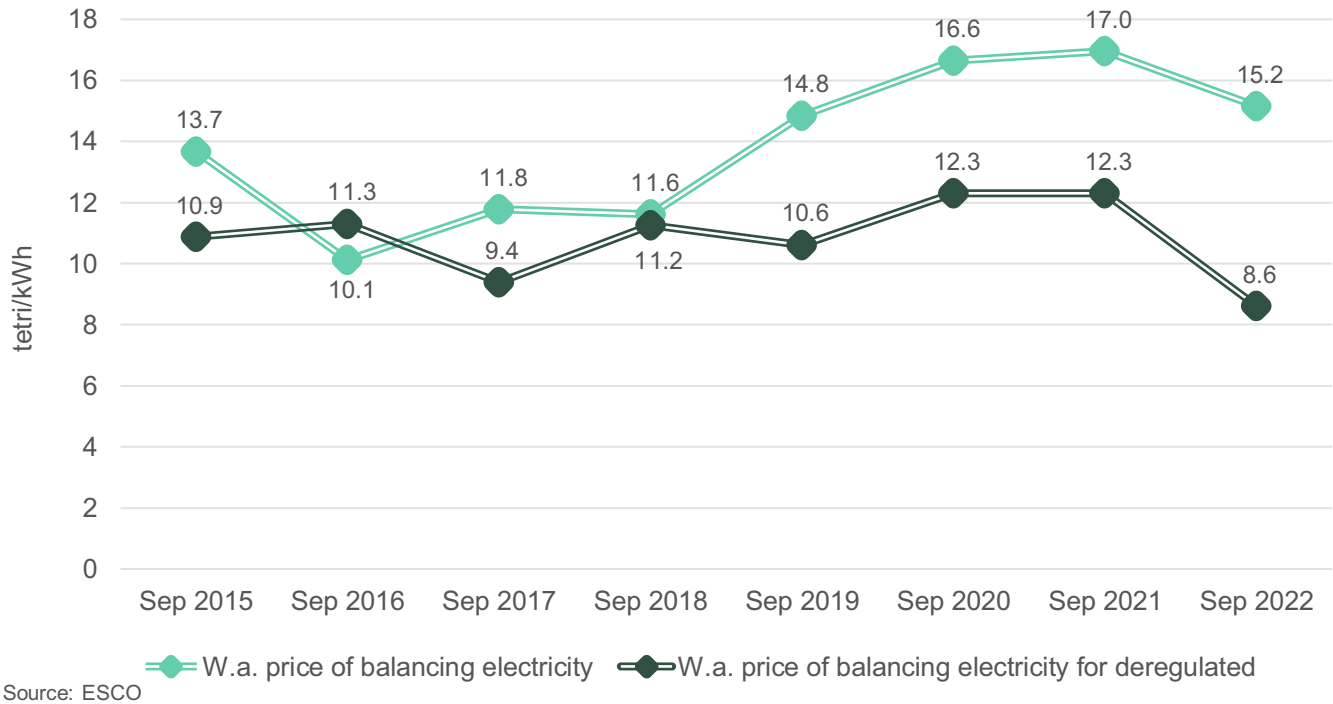
Figure 13 **Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity**



Source: ESCO

In September 2022, the weighted average price of balancing electricity was 15.2 tetri/kWh, which corresponds to an annual decrease of 11% compared to September 2021. As for the weighted average price for deregulated (small) HPPs, it was 8.6 tetri/kWh, 30% less than the price in September 2021 (Figure 14).

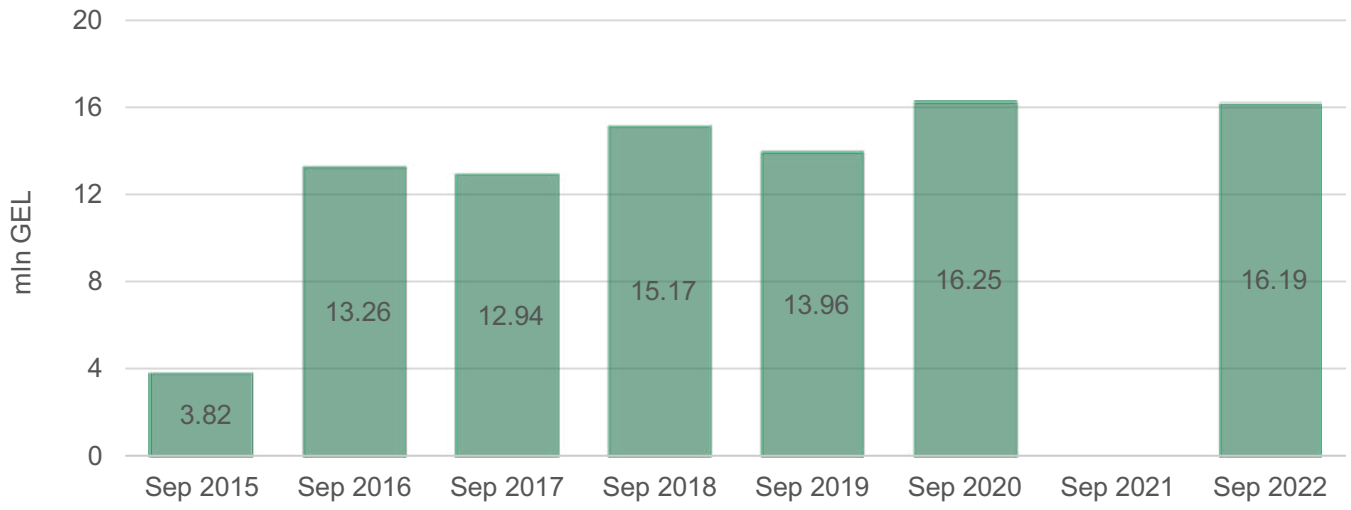
Figure 14 **Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs**



Source: ESCO

Guaranteed capacity payments in September 2022 were roughly 16 mln. GEL, which represents an 0.4% decrease compared to September 2020. The data about September 2021 are not available (Figure 15).

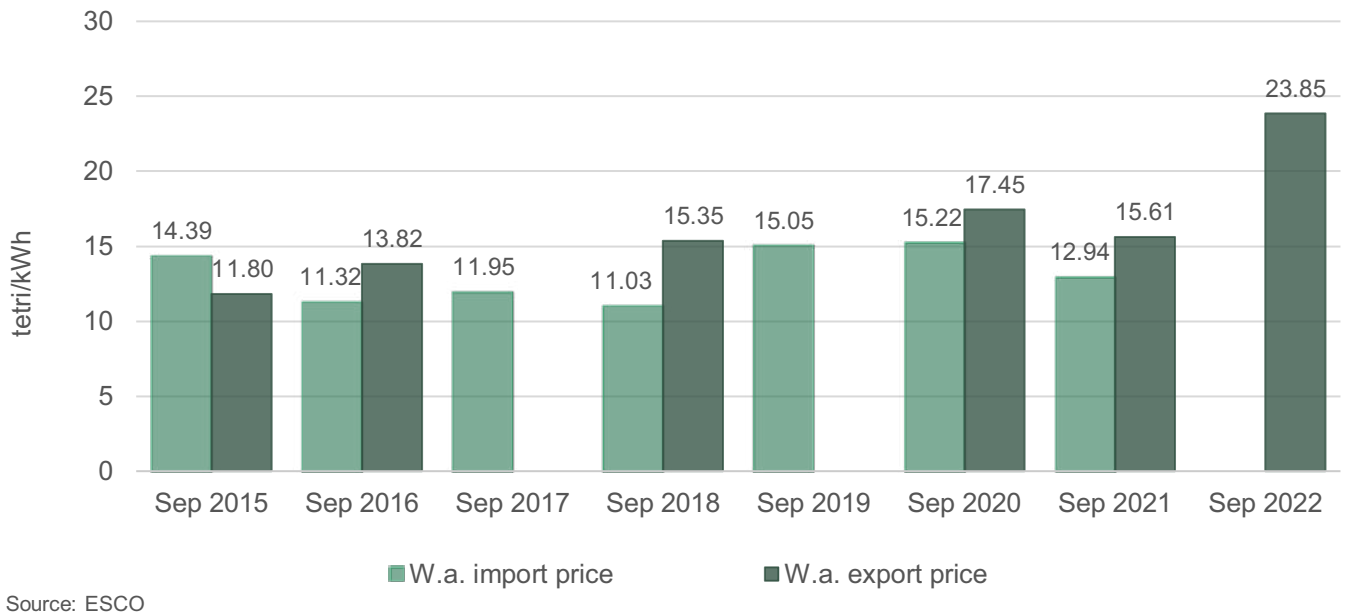
Figure 15 Cost of Guaranteed Capacity



Source: ESCO

The electricity export price in September 2022 reached 8.37 ¢, or 23.85 tetri per kWh (Figure 16). This corresponds to an annual growth in price by 67% in USD and 53% in GEL (prices were 5.00 ¢, or 15.61 tetri per kWh in September 2021). Prices increased by 29% and by 32% in USD and GEL, respectively, on a monthly basis (prices were 6.50 ¢, or 18.03 tetri per kWh in August 2022).

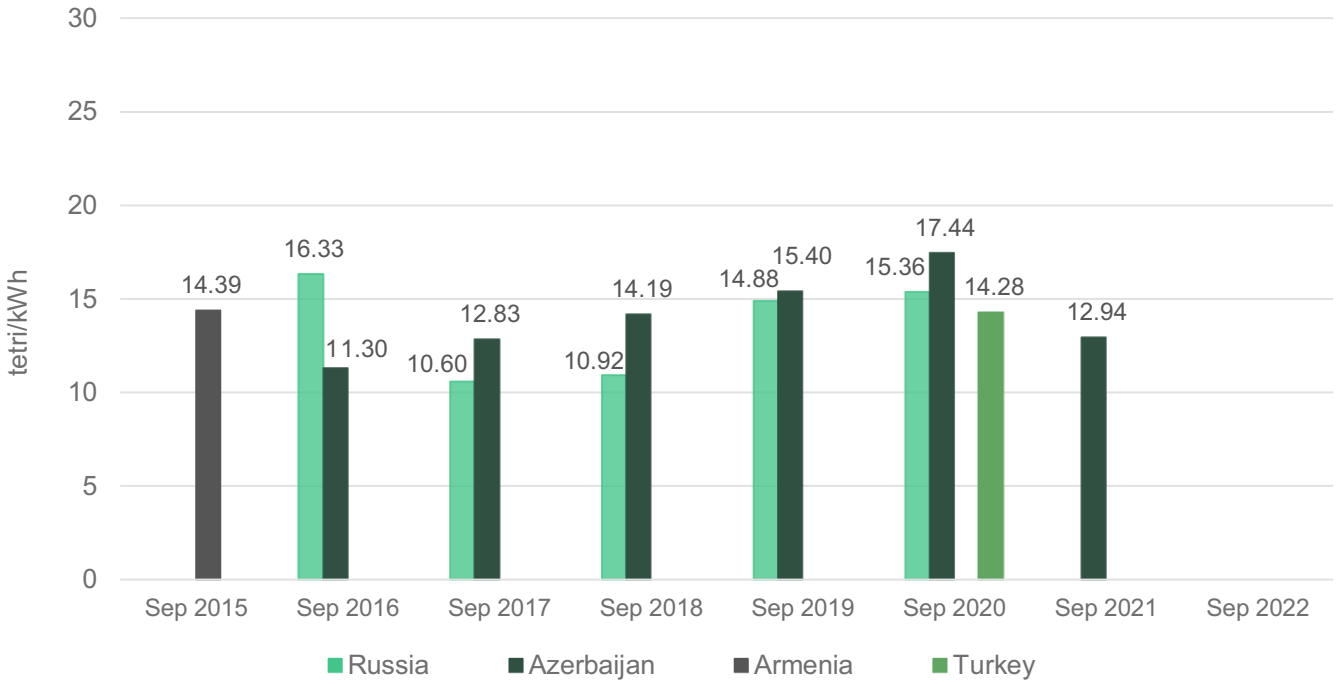
Figure 16 Prices Import/Export



Source: ESCO

In September 2022, there were no imports at all, so the price cannot be estimated. (Figure 17).

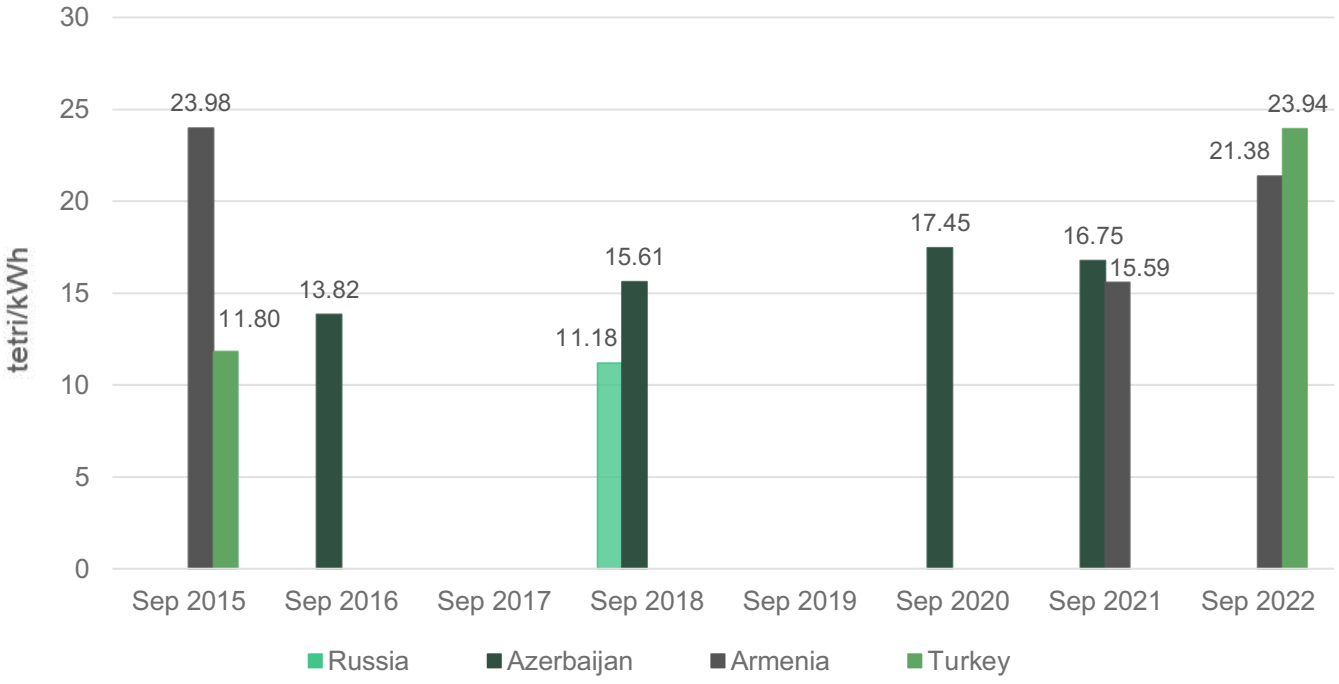
Figure 17 **Import Prices by Countries**



Source: ESCO/Geostat

In September 2022, the electricity export price to Turkey and Armenia stood at 8.40 ¢ or 23.94 tetri and at 7.50 ¢ or 21.38 tetri, respectively (Figure 18).

Figure 18 **Export Prices by Countries**

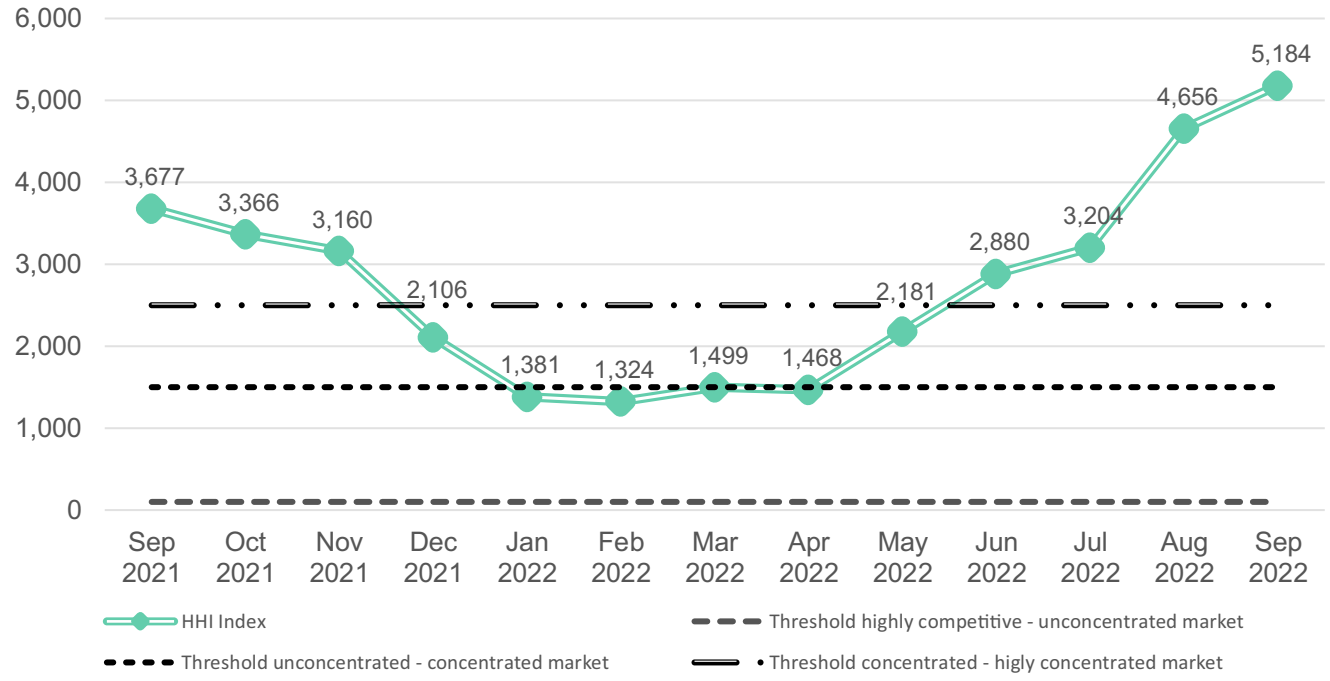


Source: ESCO/Geostat

Market Concentration

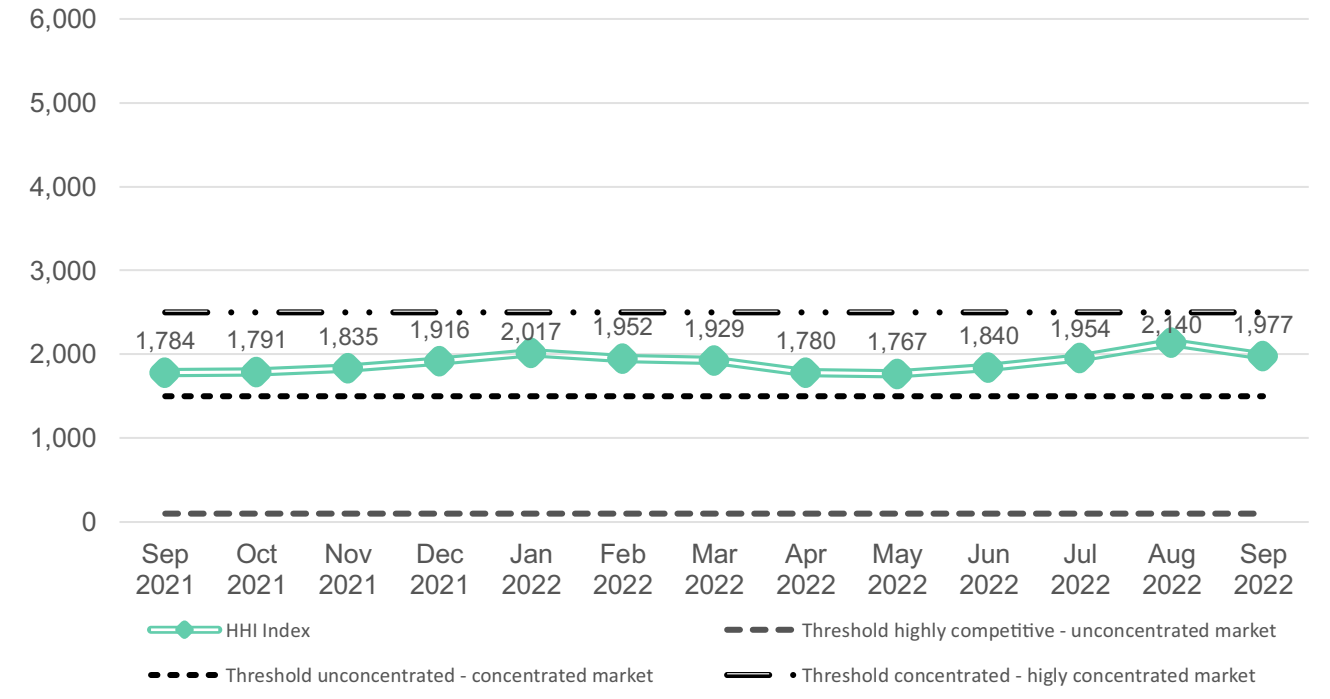
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In September 2022, the Georgian electricity generation market index increased above the threshold of highly concentrated market with an HHI value of 5,184 (Figure 19). This is higher than the level in September 2021 (with an HHI value of 3,677), and higher than the level in August 2022 (the HHI was 4,656). As for the consumption segment, in September 2022, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 1,977 (above the level in September 2021 – 1,784 and below the level in August 2022 – 2,140). 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