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Policy Institute



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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE

ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In September 2021 there was an increase in total electricity generation by 26% on a yearly basis, and a decrease by 8% on a monthly basis.
- Consumption increased by 13% on yearly basis and decreased by 9% on a monthly basis.
- Generation exceeded consumption by 43 mln. kWh – 4% of total generation for September.
- The levels of import and export were extremely low.
- The main import partner country was Azerbaijan.
- The cost of imports from Azerbaijan was 12.94 tetri per kWh.
- The weighted average price of imports in GEL decreased by 15% on a yearly, and increased by 13% on a monthly basis.
- The main export partner was Armenia.
- The electricity export price to Armenia was 15.59 tetri per kWh.
- The HHI index for the Georgian electricity generation market remained above the threshold of highly concentrated market in September 2021, but decreased compared to August 2021, indicating that the generation side of the market became slightly more competitive compared to the previous month (the index value in August was 4,469, while in September it fell to 3,666).
- The HHI for the Georgian electricity consumption market was 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. Afterwards, the index clearly demonstrated a downward trend, reaching the historic low in September 2021 (index value of 1,782).

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

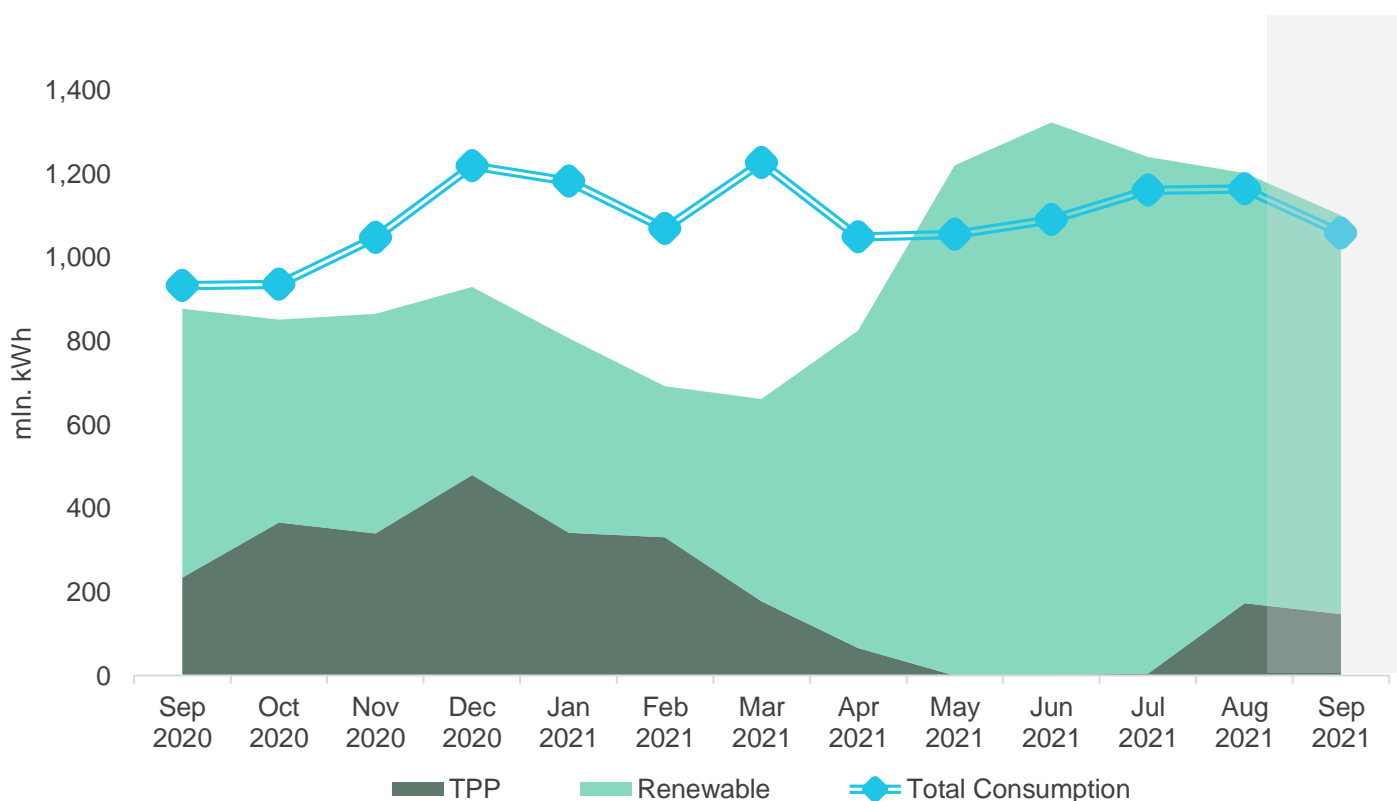
Generation – Consumption – Trade

In September 2021, Georgian power plants generated 1101 mln. kWh of electricity (Figure 1). This represents a 26% increase in total generation, compared to the previous year (in September 2020, the total generation was 877 mln. kWh). The increase in generation on a yearly basis comes from the increase of 49% in hydro power generation. Meanwhile, there was a 37% and 15% decrease in thermal power and wind power generation, respectively.

On a monthly basis, generation decreased by approximately 8% (in August 2021, total generation was 1203 mln. kWh) (Figure 1). The monthly decrease in total generation, is mostly caused by a reduction in hydro power generation, 7% compared to August 2021, as well as the decrease of 16% in thermal power generation. Wind power generation increased by 28% compared to August.

The consumption of electricity on the local market was 1058 mln. kWh (+13% compared to September 2020, and -9% compared to August 2021) (Figure 1). In September 2021, power generation exceeded consumption by 43 mln. kWh which was 4% of total generation (in September 2020 difference between total generation and consumption resulted in a deficit of 56 mln. kWh, around 6% of the total generation for the month).

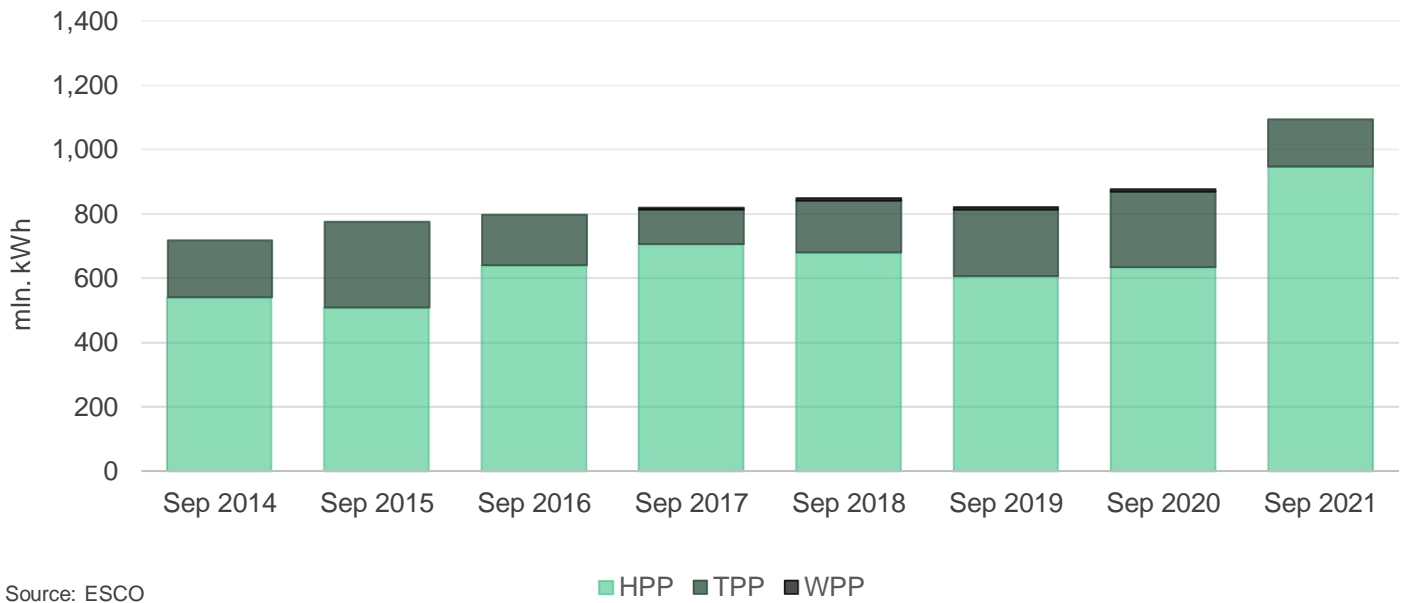
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

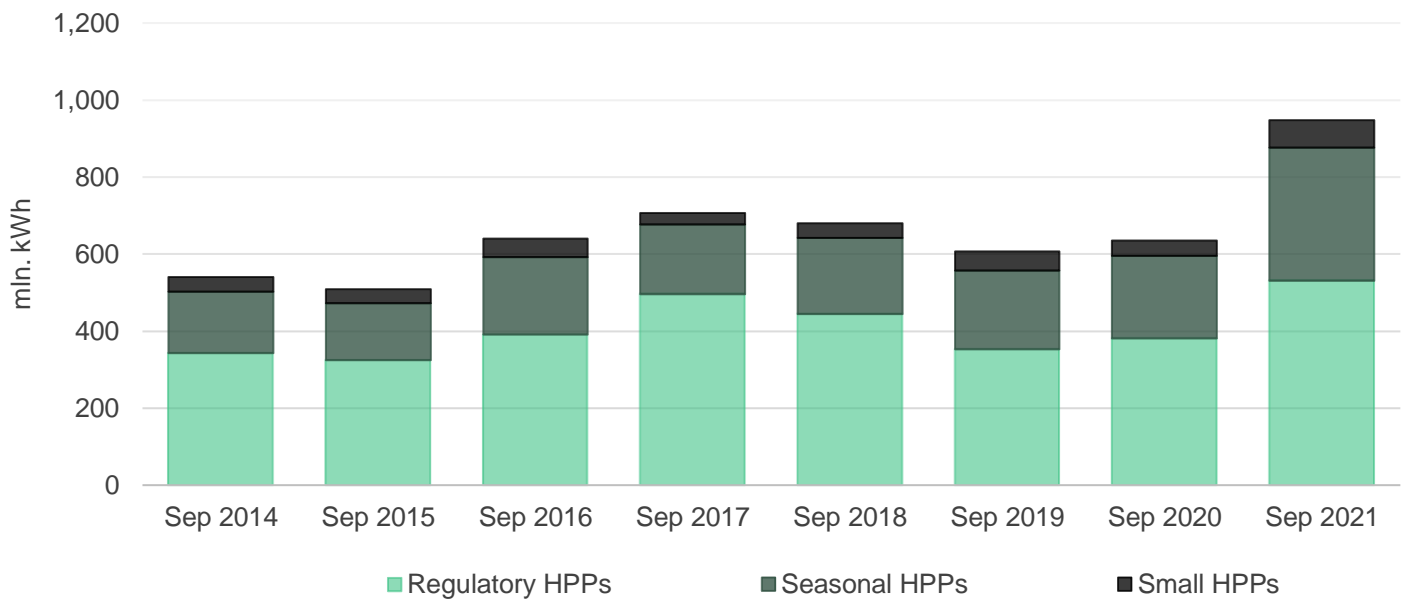
Most generation came from hydro power plants. In September 2021, hydro power (HPP) generation amounted to 948 mln. kWh (86% of total), while thermal power (TPP) generation was 146 mln. kWh, and wind power (WPP) generation was 7 mln. kWh (13% and less than 1% of the total generation, respectively) (Figure 2).

Figure 2 - Electricity Generation by Sources



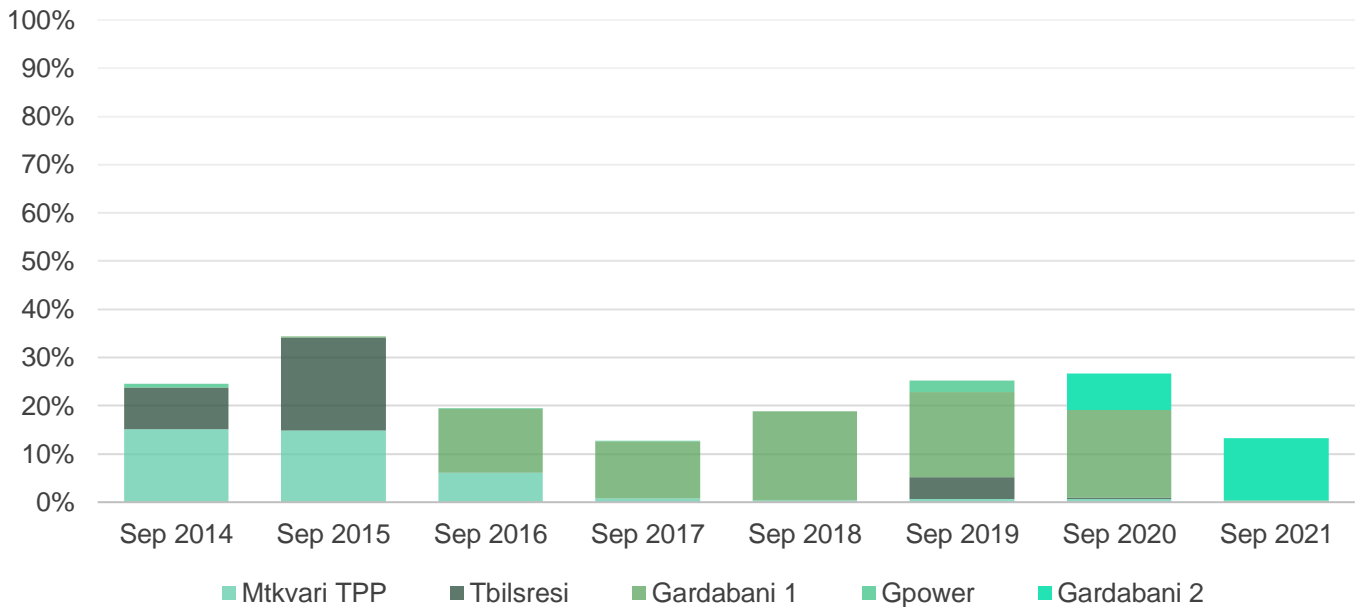
Among hydropower generators, large (regulatory) HPPs produced 56% (531 mln. kWh) of electricity, while seasonal and small HPPs produced 36% (345 mln. kWh) and 8% (71 mln. kWh), respectively (Figure 3).

Figure 3 - HPP Generation by Type



Among thermal power plants, Gpower TPP generated 4.7 mln. kWh, 3.2% of total thermal power generation, but only 0.4% of total generation, and Gardabani 2 TPP generated 141.4 mln. kWh, 96.8% of total thermal power generation, but only 12.9% of total generation. (Figure 4).

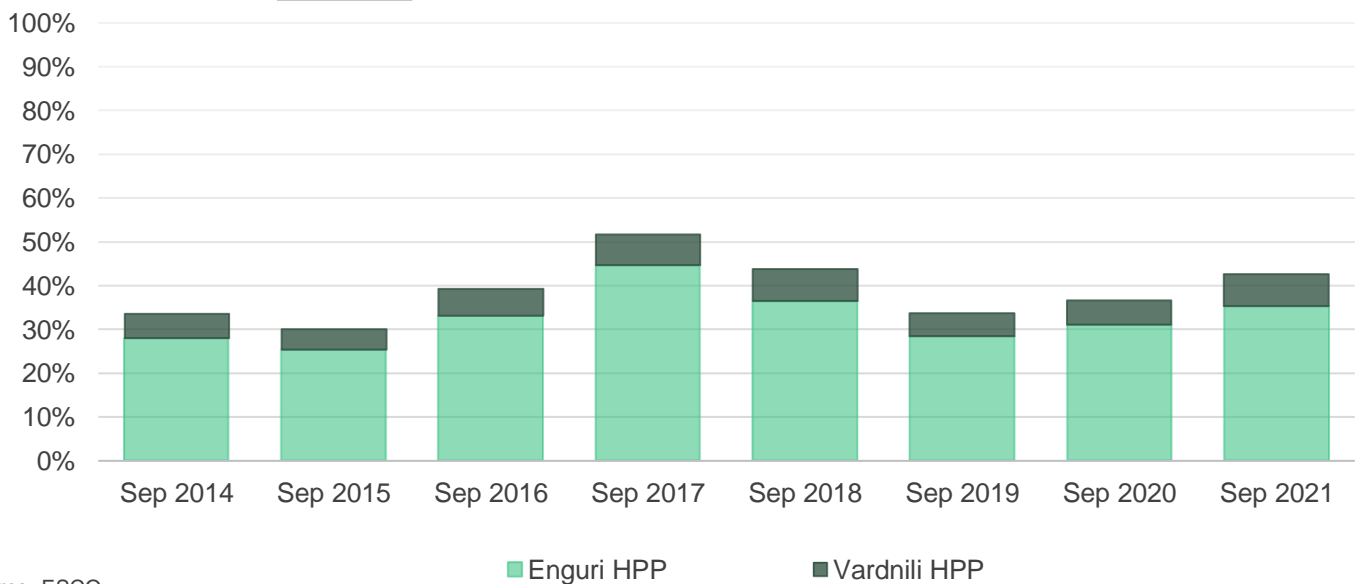
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

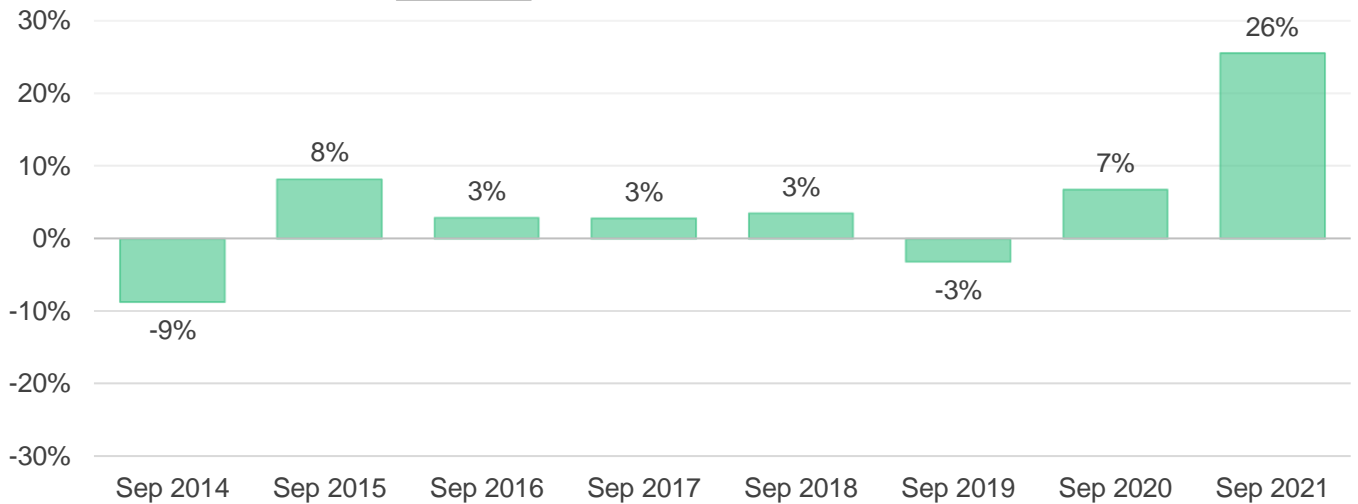
As for HPP generation, Vardnili HPP generated 81 mln. kWh (15% of generation for regulatory HPPs and 9% of total generation). Enguri HPP generated 389 mln. kWh, which represents 73% of generation of regulatory HPPs and 41% of total generation (Figure 5).

Figure 5 - Share of Enguri and Vardnili in Total Generation



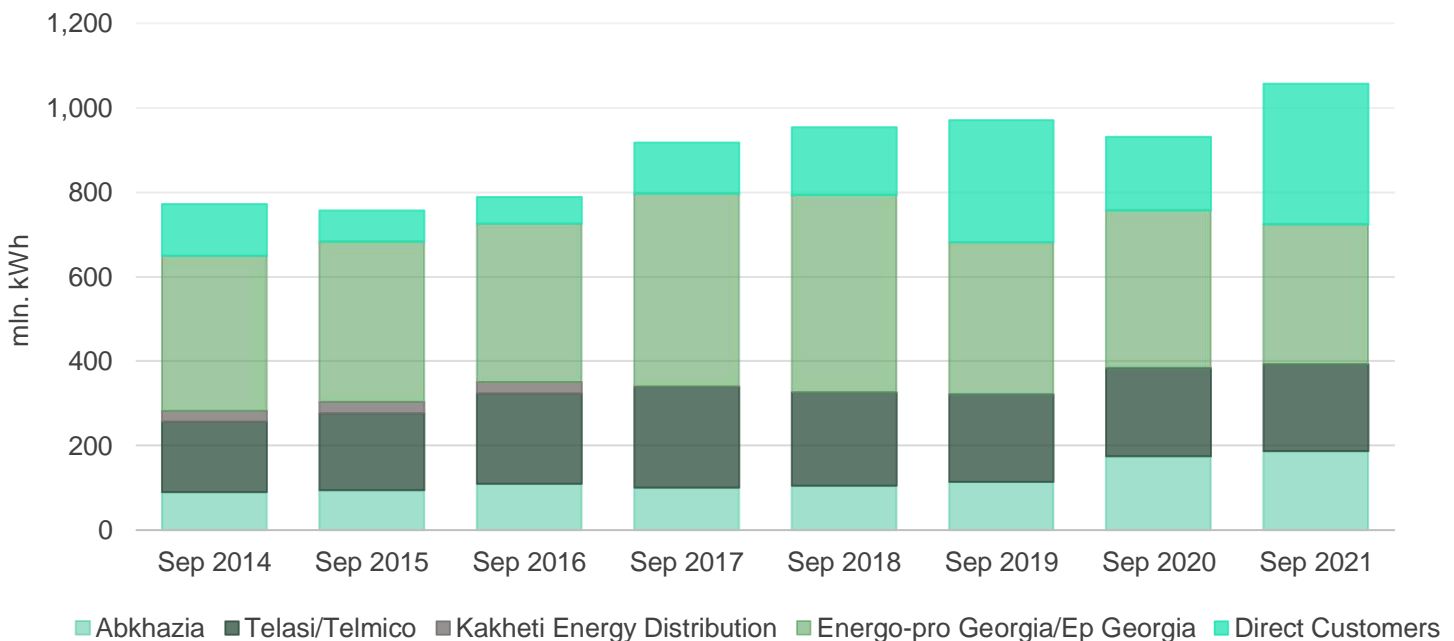
Source: ESCO

Overall, total generation increased by 26% compared to September 2020 (Figure 6).

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

Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia¹ (31% - 330 mln. kWh), Abkhazia (18% - 187 mln. kWh), Telasi/Telmico² (19% - 206 mln. kWh), and direct customers (32% - 334 mln. kWh) (Figure 7). Annual demand from Abkhazia and direct customers increased by 7%, and 92%, respectively, while demand from Energo-pro Georgia, and Telasi decreased by 12%, and 1%, respectively. Overall, there was an annual growth of 13% in the total electricity consumption in September 2021, compared to September 2020 (Figure 8).

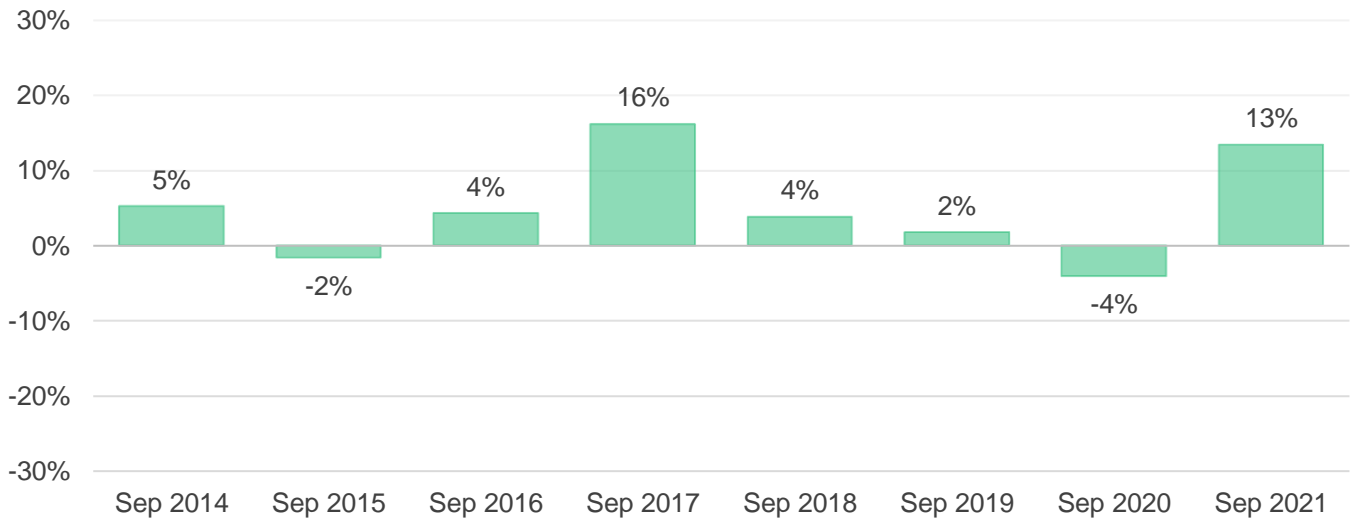
Figure 7 - Electricity Consumption by Type of Customer

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)

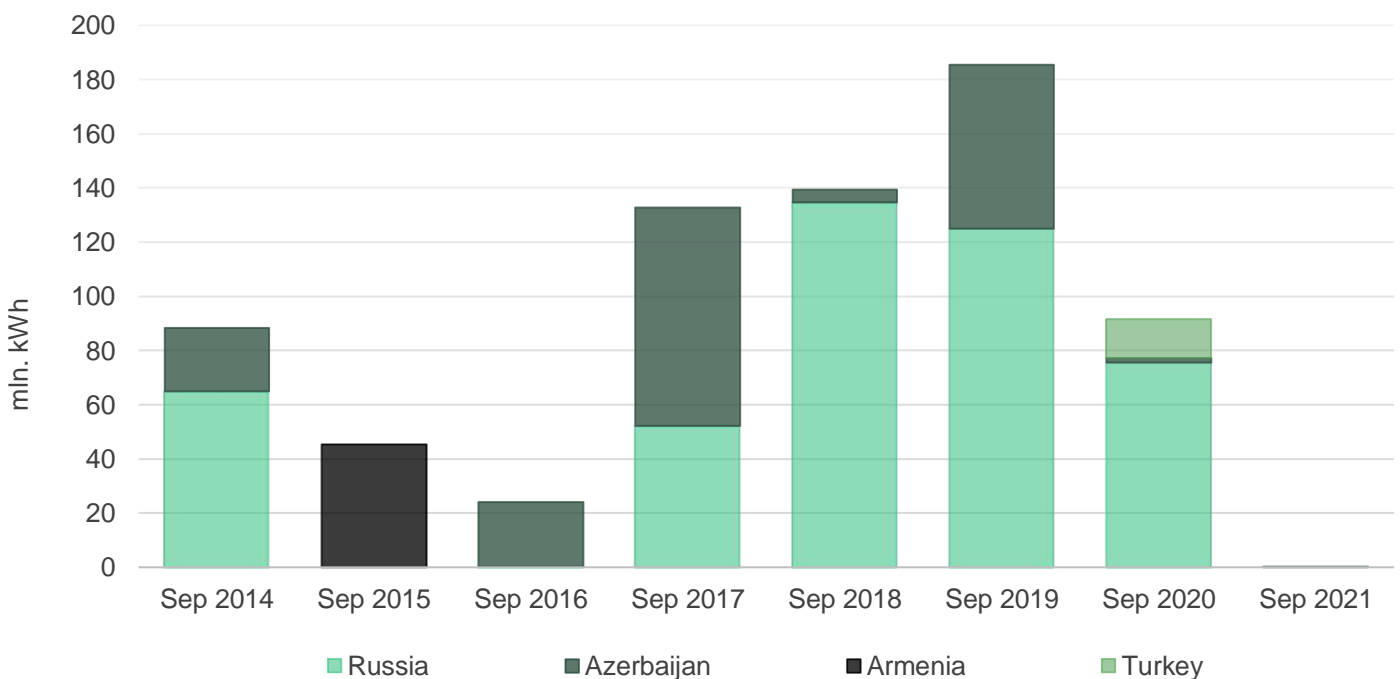


Source: ESCO

In September 2021, Georgia imported 0.2 mln. kWh of electricity (compared to 92 mln. kWh September 2020), and all of imports came from Azerbaijan (Figure 9). In September 2021, Georgia exported almost 0.5 mln. kWh of electricity (1.4 mln. kWh in September 2020) (Figure 10). There was a 39 mln. kWh electricity transit from Azerbaijan to Turkey, 97 mln. kWh transit from Russia to Turkey, and 61 mln. kWh transit from Russia to Armenia in September 2021 (In September 2020, there was no transit at all).

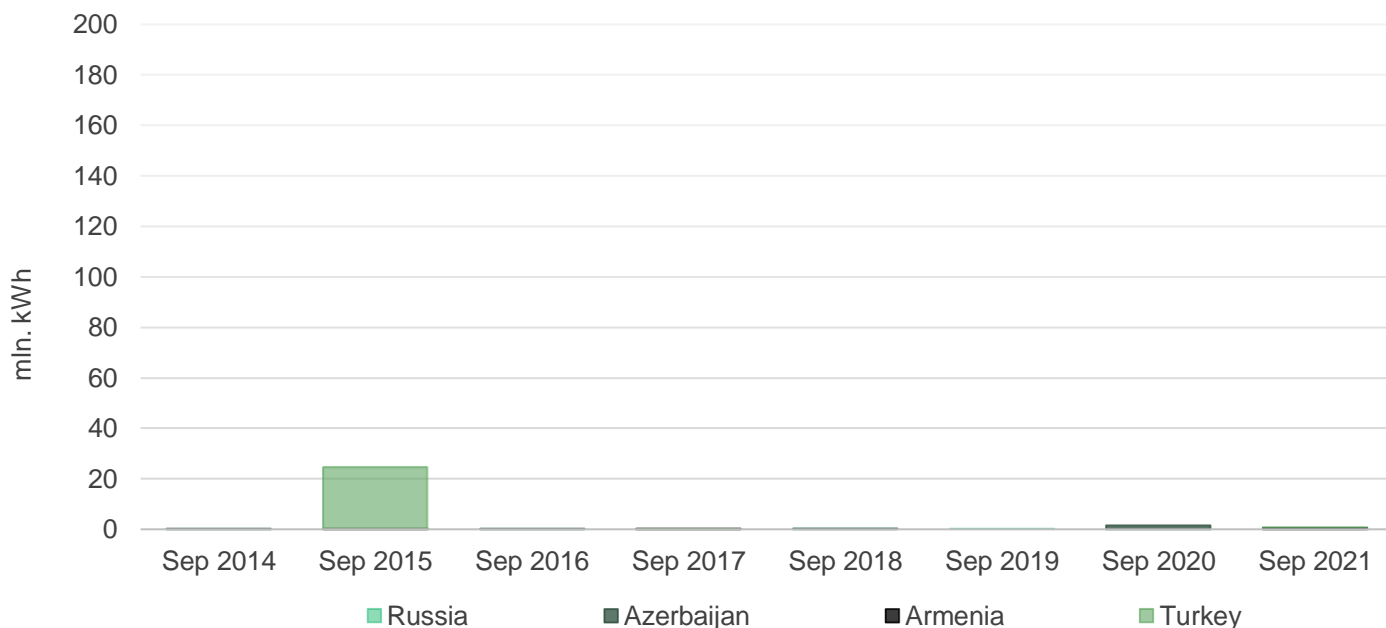
Compared to September 2020, imports decreased by almost 100%, reaching the historic low for the month of September (Figure 9).

Figure 9 - Imports by Year



Source: ESCO

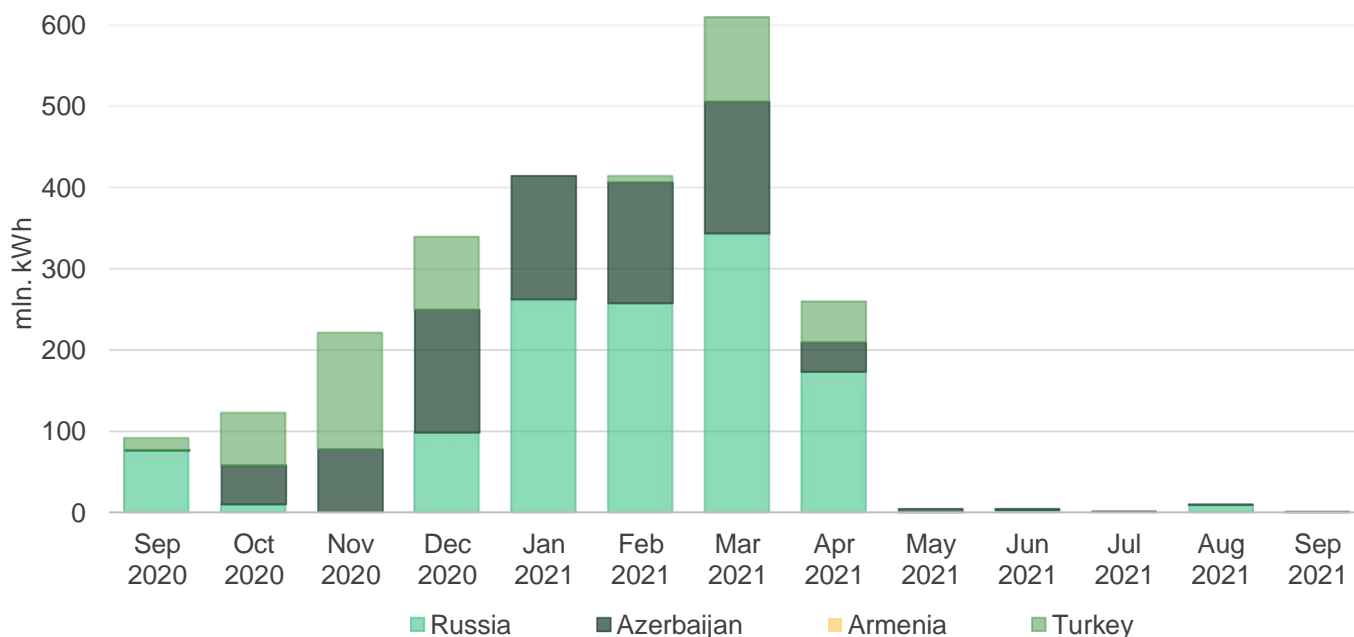
Figure 10 - Exports by Year



Source: ESCO

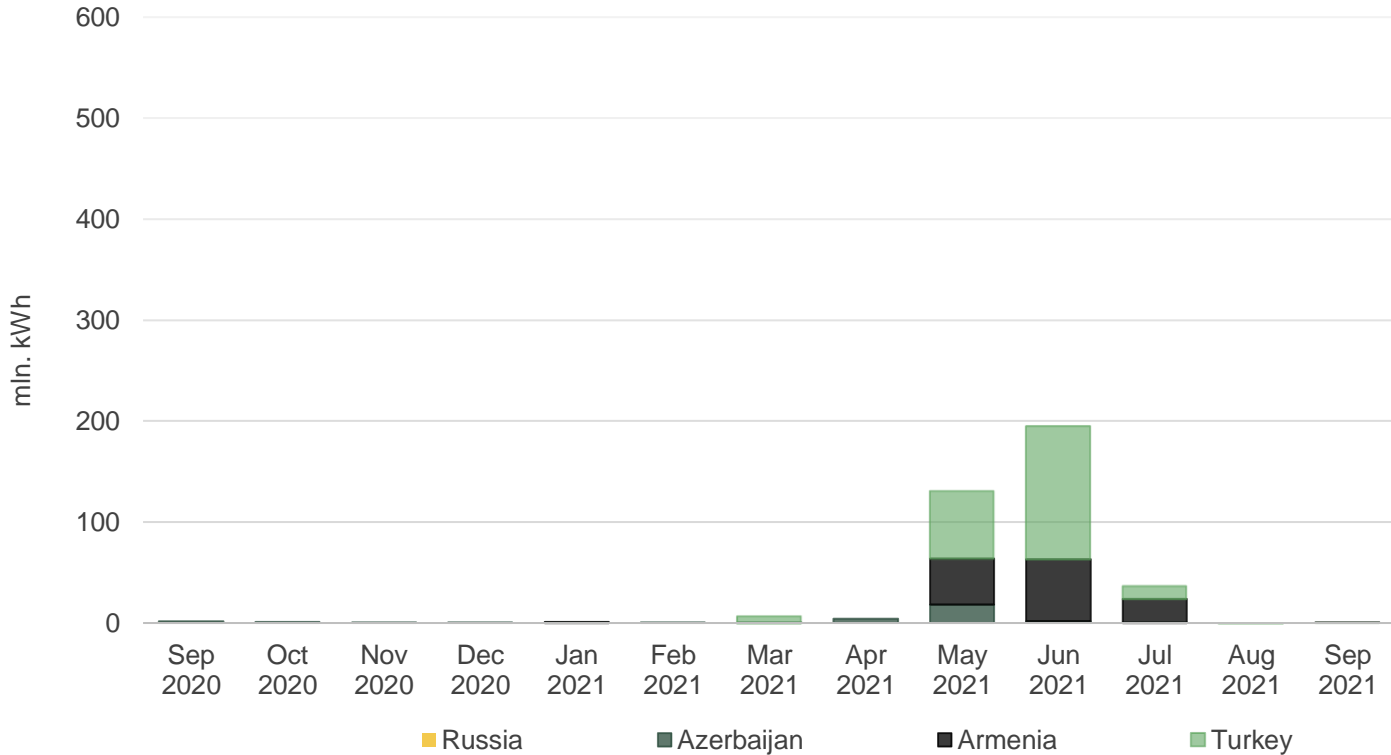
In September 2021, electricity imports decreased by 98%, compared to August 2021 (Figure 11), remaining very low in absolute terms. Electricity exports increased 23 times compared to August 2021, but the level is still very low (The export comprised only 0.52 mln. kWh, compared to 0.02 mln. kWh in August 2021) (Figure 12). Therefore, similar to August, the month of September was characterized by self-sufficiency in terms of electricity generation-consumption.

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

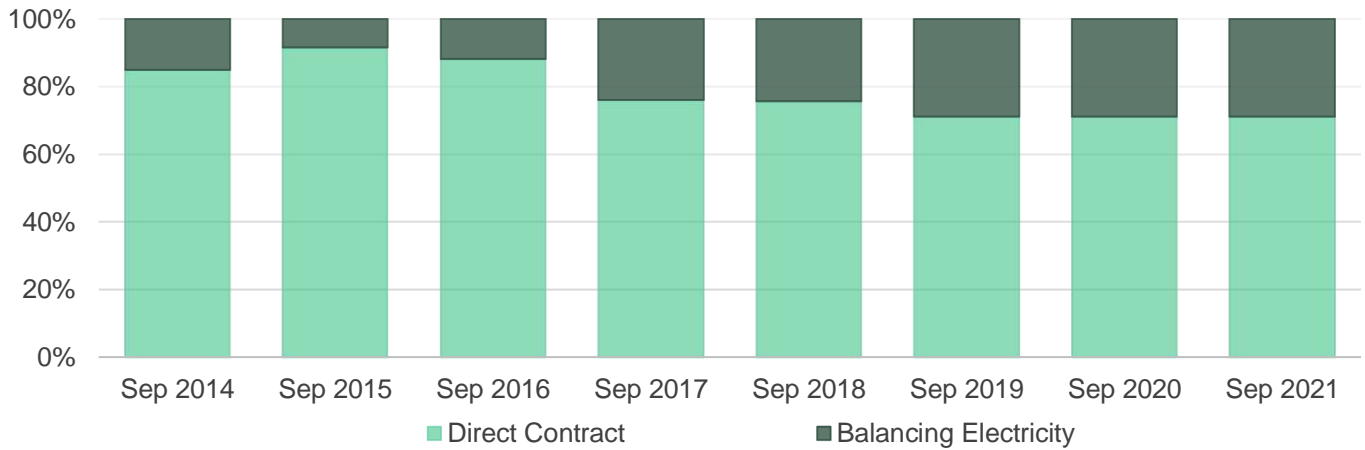


Source: ESCO

1. Market Operations

In September 2021, 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).

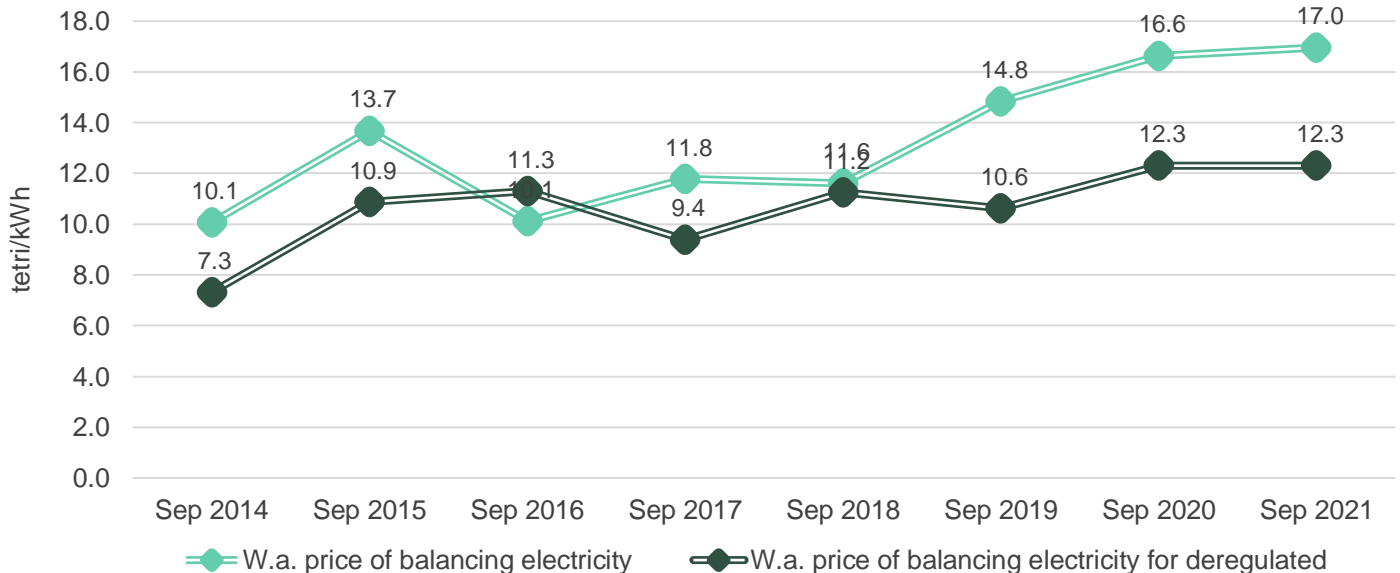
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In September 2021, the weighted average price of balancing electricity was 17 tetri/kWh, which corresponds to an annual increase of 2% compared to September 2020. As for the weighted average price for deregulated (small) HPPs, it was 12.3 tetri/kWh, which is identical to the price in September 2020 (Figure 14).

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

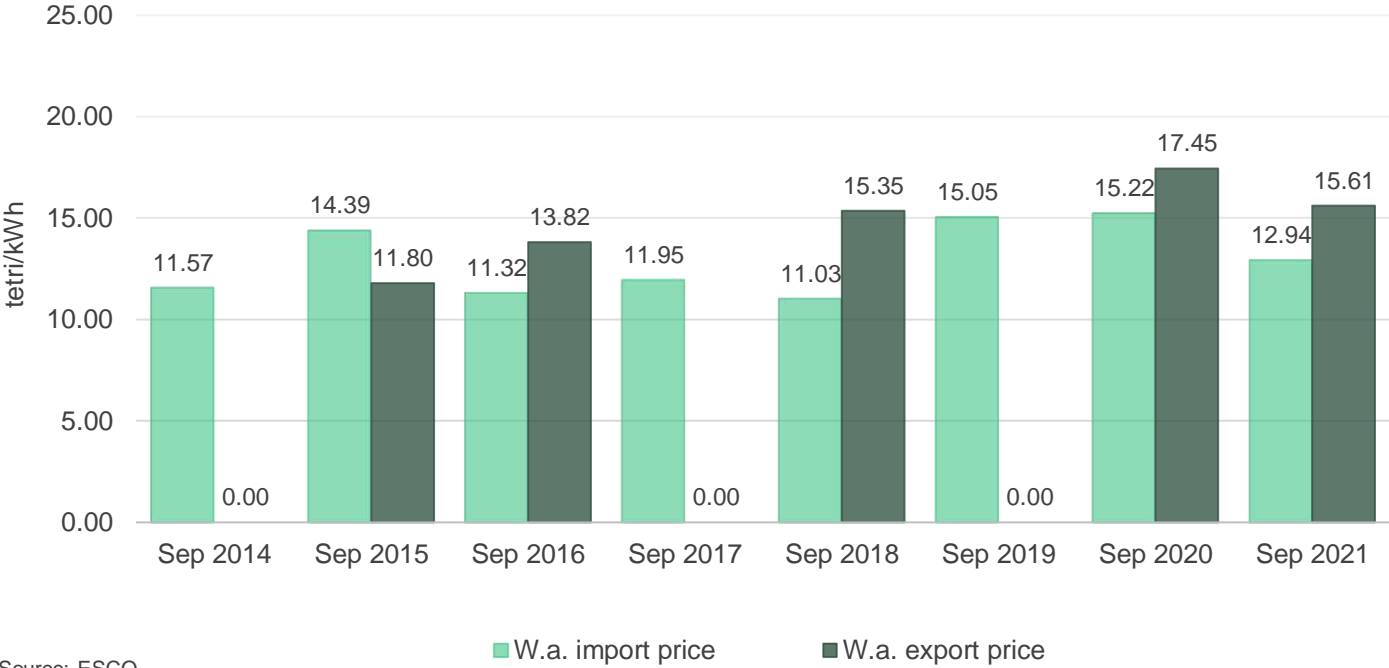


Source: ESCO

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

The weighted average electricity import price in September 2021 decreased by 13% in USD, on an annual basis, and decreased by approximately 15% in GEL (from 4.80 ¢, or 15.22 tetri per kWh in September 2020 to 4.15 ¢, or 12.94 tetri per kWh in September 2021 - Figure 15). The weighted average import price increased by 13% in both, USD and GEL, on a monthly basis (import price was 4.78 ¢, or 14.89 tetri per kWh in August 2021). As the level of export was extremely low and almost equal to zero in August 2021, it is impossible to assess the weighted average price in August 2021, and, therefore, the level of monthly change. The weighted average export price in September 2021 was 5.01 ¢, or 15.61 tetri per kWh (Figure 15).

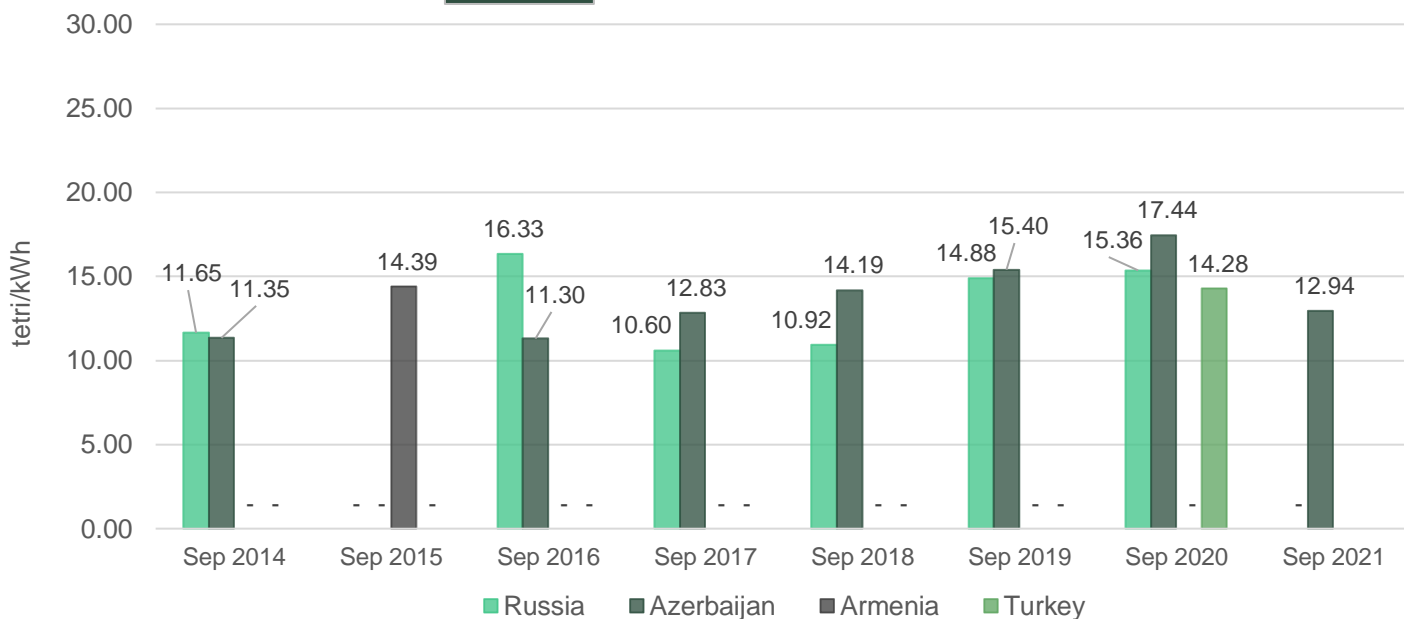
Figure 15 - Prices Import/Export



Source: ESCO

In September 2021, the electricity import price from Azerbaijan stood at 4.15 ¢ or 12.94 tetri per kWh. (Figure 16).

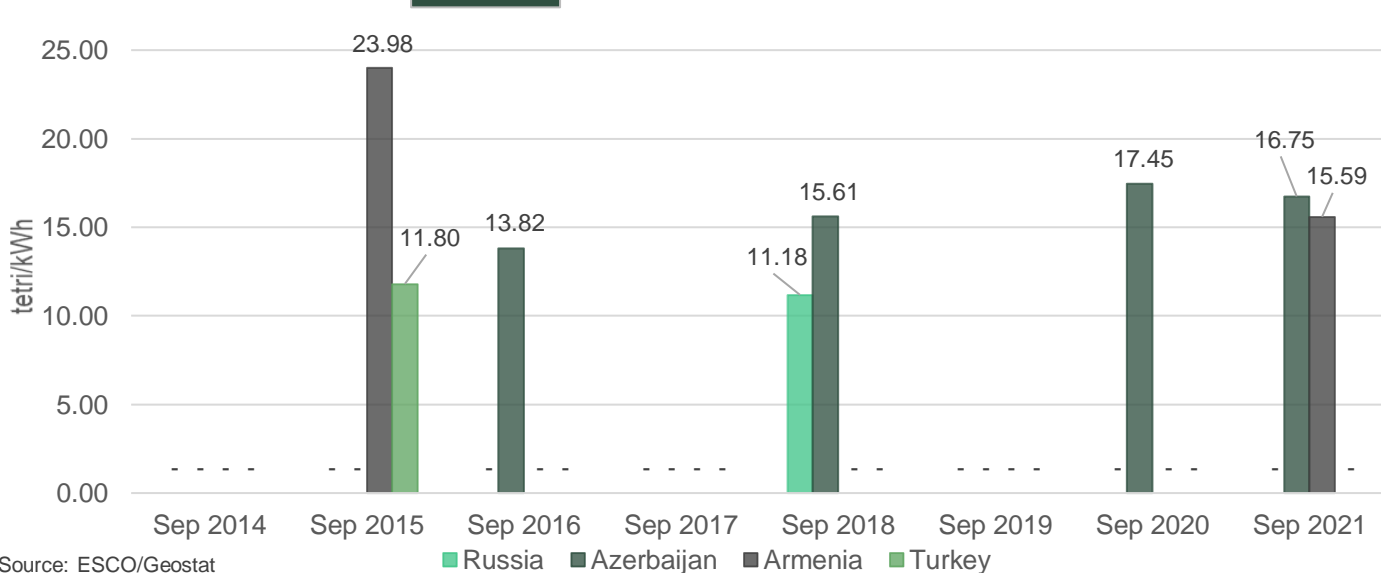
Figure 16 - Import Prices by Countries



Source: ESCO/Geostat

In September 2021, the electricity export price to Azerbaijan and Armenia stood at 5.40 ¢ or 16.75, and 5.00 ¢, or 15.59 tetri per kWh, respectively (Figure 17).

Figure 17 - Export Prices by Countries

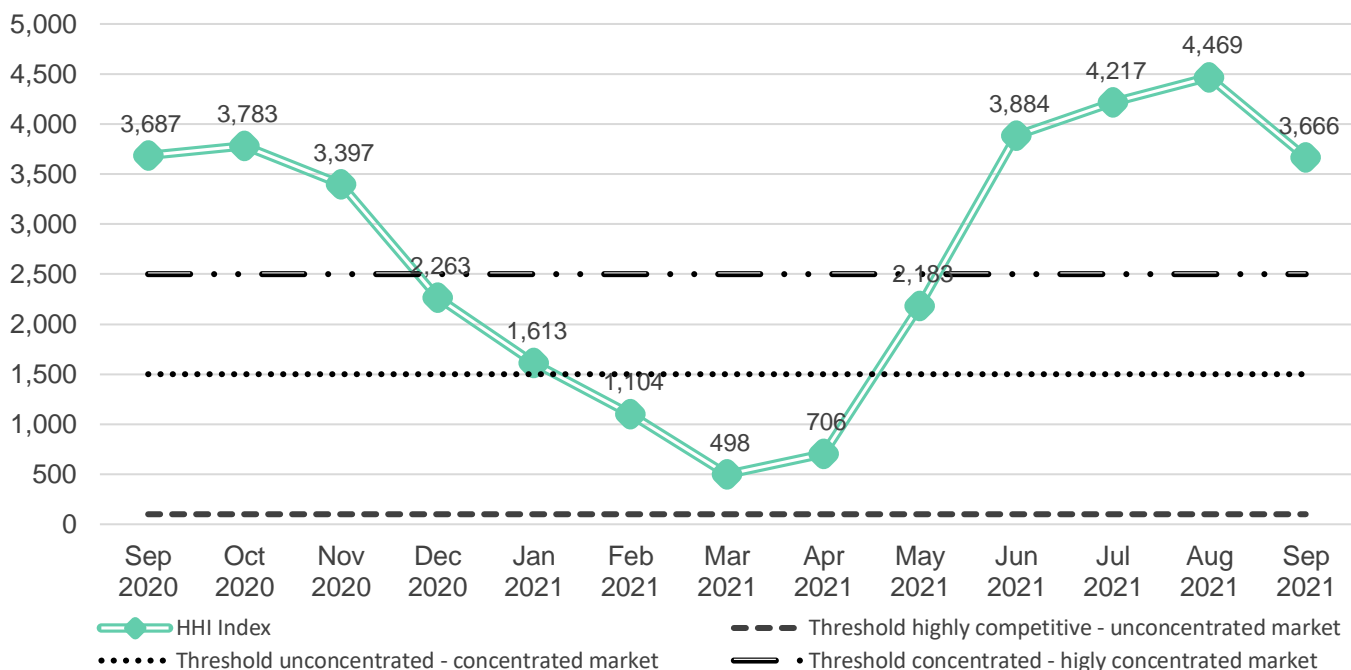


Source: ESCO/Geostat

2. Market Concentration

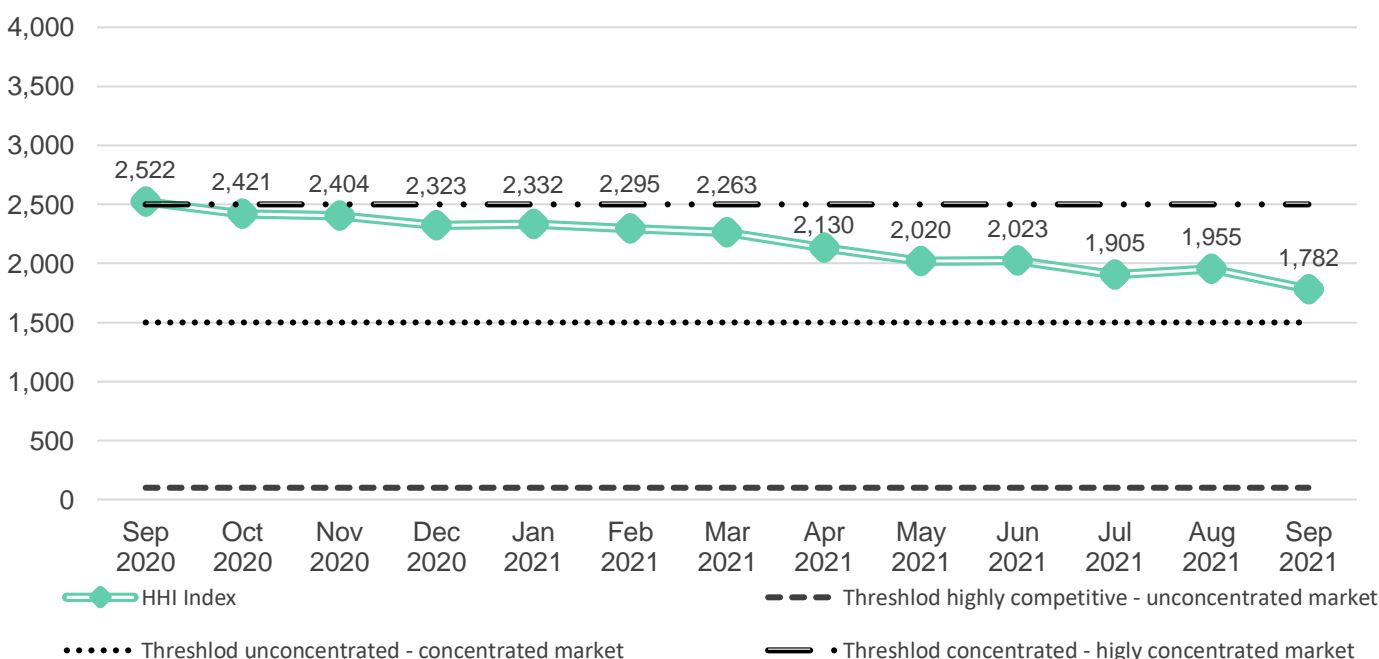
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In September 2021, the Georgian electricity generation market remained above the threshold of highly concentrated market, with an HHI value of 3,666 (Figure 18). This is slightly lower than the level in September 2020 (with an HHI value of 3,687), and also substantially lower than the level in August 2021 (HHI was 4,469) As for the consumption segment, in September 2021, the HHI consumption index was below the threshold for a highly concentrated market, with an HHI value of 1,782 (substantially below the level in September 2020 – 2,522 and slightly below the level in August 2021 – 1,955). In fact, September 2020 was the last month when the index value was above the level of highly concentrated market. Over the last 12 months, a clear decreasing trend in market concentration is observable on the consumption side of the electricity market (Figure 19).

Figure 18 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 19 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO