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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In October 2021 there was an increase in total electricity generation by 40% on a yearly basis, and an increase by 8% on a monthly basis.
- Consumption increased by 23% on yearly basis and increased by 9% on a monthly basis.
- Generation exceeded consumption by 44 mln. kWh – 4% of total generation for October.
- The levels of import and export were extremely low.
- The main import partner country was Russia.
- The cost of imports from Russia was 15.52 tetri per kWh.
- The weighted average price of imports in GEL increased by 2% on a yearly, and by 20% on a monthly basis.
- The main export partner was Armenia.
- The electricity export price to Armenia was 20.41 tetri per kWh.
- The HHI index for the Georgian electricity generation market remained above the threshold of highly concentrated market in October 2021, but decreased compared to the levels in August and September, 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 and October it fell to 3,677 and 3,366, respectively).
- 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 level of 1.789 in October 2021.

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

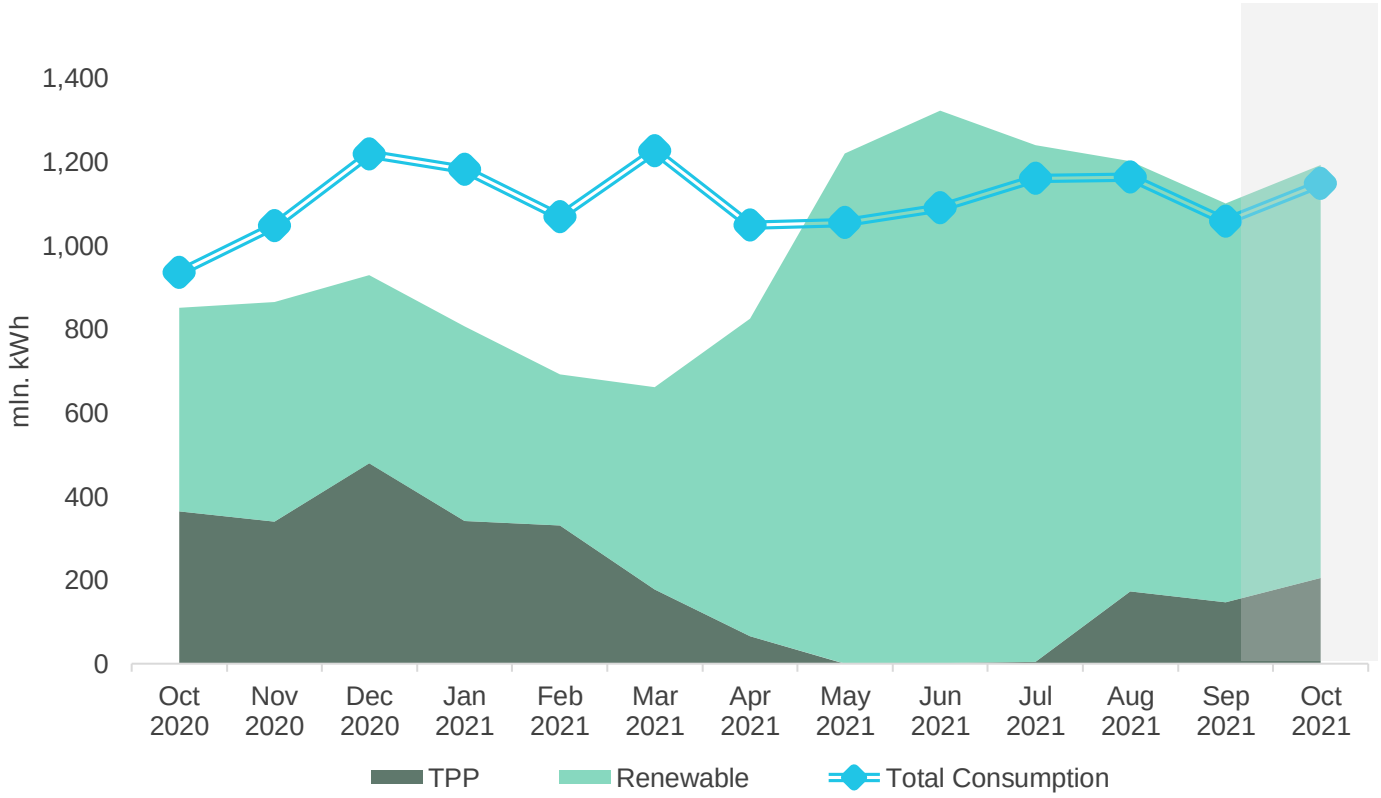
Generation – Consumption – Trade

In October 2021, Georgian power plants generated 1192 mln. kWh of electricity (Figure 1). This represents a 40% increase in total generation, compared to the previous year (in October 2020, the total generation was 852 mln. kWh). The increase in generation on a yearly basis comes from the increase of 104% and 43% in hydro power, and wind power generation, respectively. Meanwhile, there was a 44% decrease in thermal power generation.

On a monthly basis, generation increased by approximately 8% (in September 2021, total generation was 1101 mln. kWh) (Figure 1). The monthly growth in total generation, is caused by an increase of 41%, 37%, and 3% in thermal, wind and hydro power generation, respectively.

The consumption of electricity on the local market was 1148 mln. kWh (+23% compared to October 2020, and +9% compared to September 2021) (Figure 1). In October 2021, power generation exceeded consumption by 44 mln. kWh which was 4% of total generation (in October 2020 difference between total generation and consumption resulted in a deficit of 84 mln. kWh, around 10% of the total generation for the month).

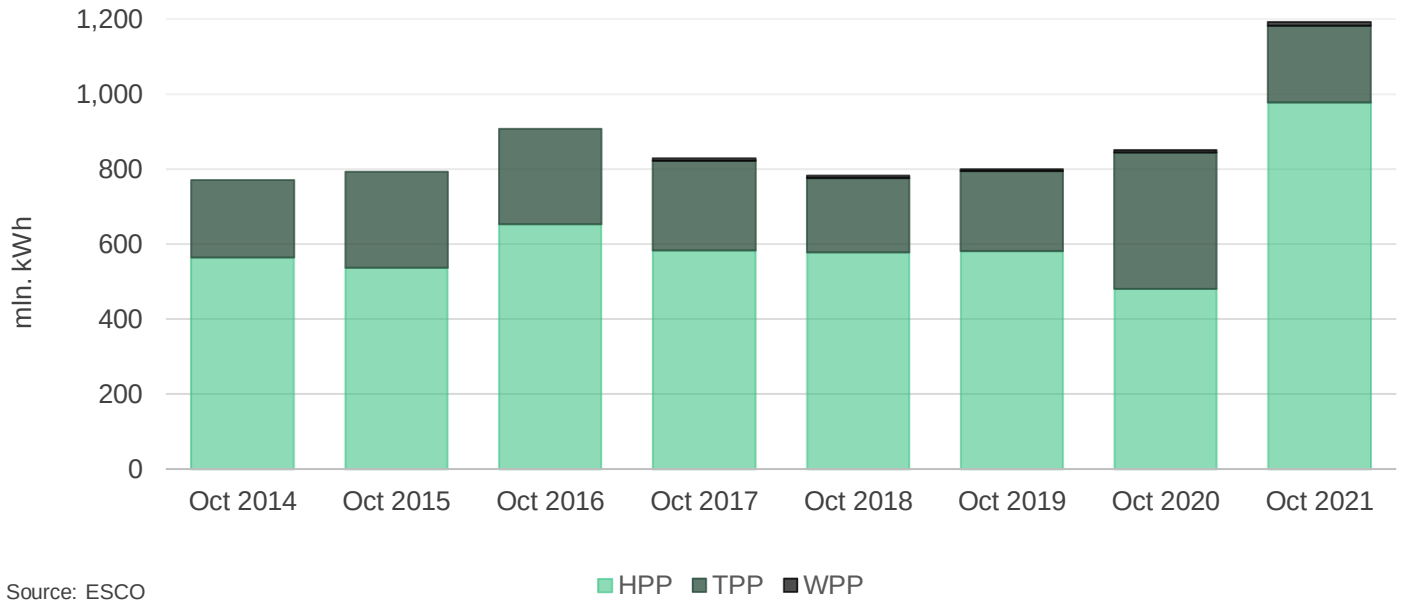
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

Most generation came from hydro power plants. In October 2021, hydro power (HPP) generation amounted to 977 mln. kWh (82% of total), while thermal power (TPP) generation was 205 mln. kWh, and wind power (WPP) generation was 10 mln. kWh (17% and 1% of the total generation, respectively) (Figure 2).

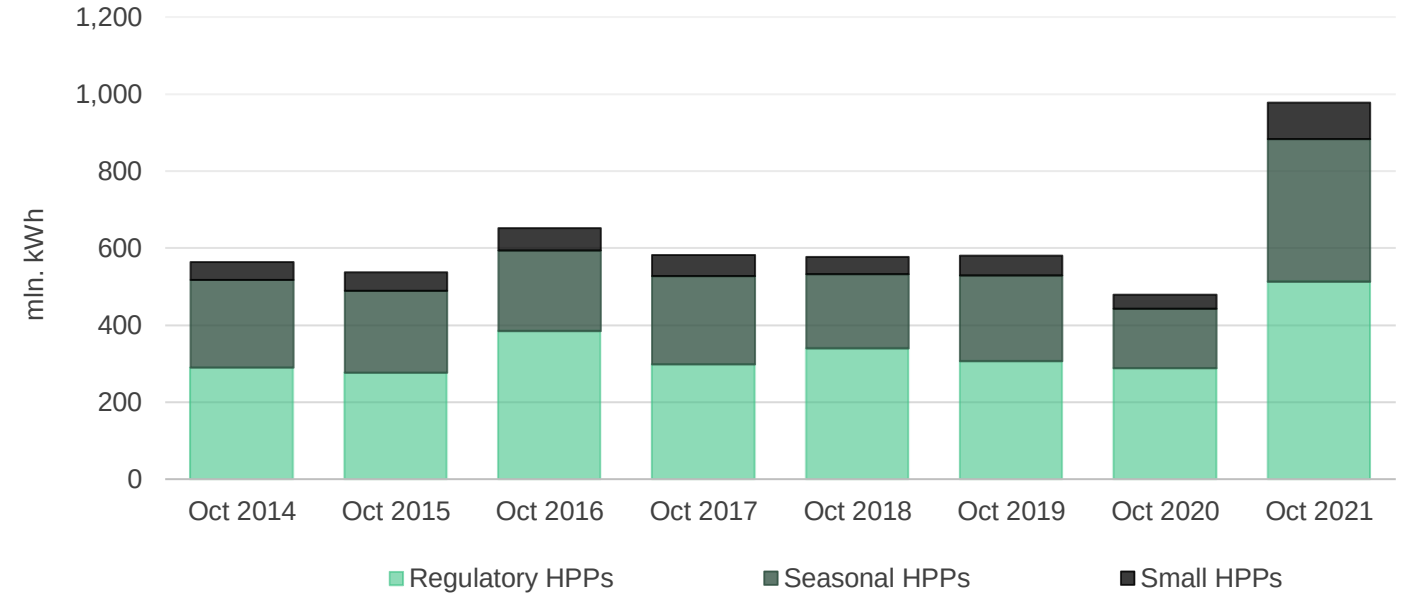
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 52% (512 mln. kWh) of electricity, while seasonal and small HPPs produced 38% (371 mln. kWh) and 10% (94 mln. kWh), respectively (Figure 3).

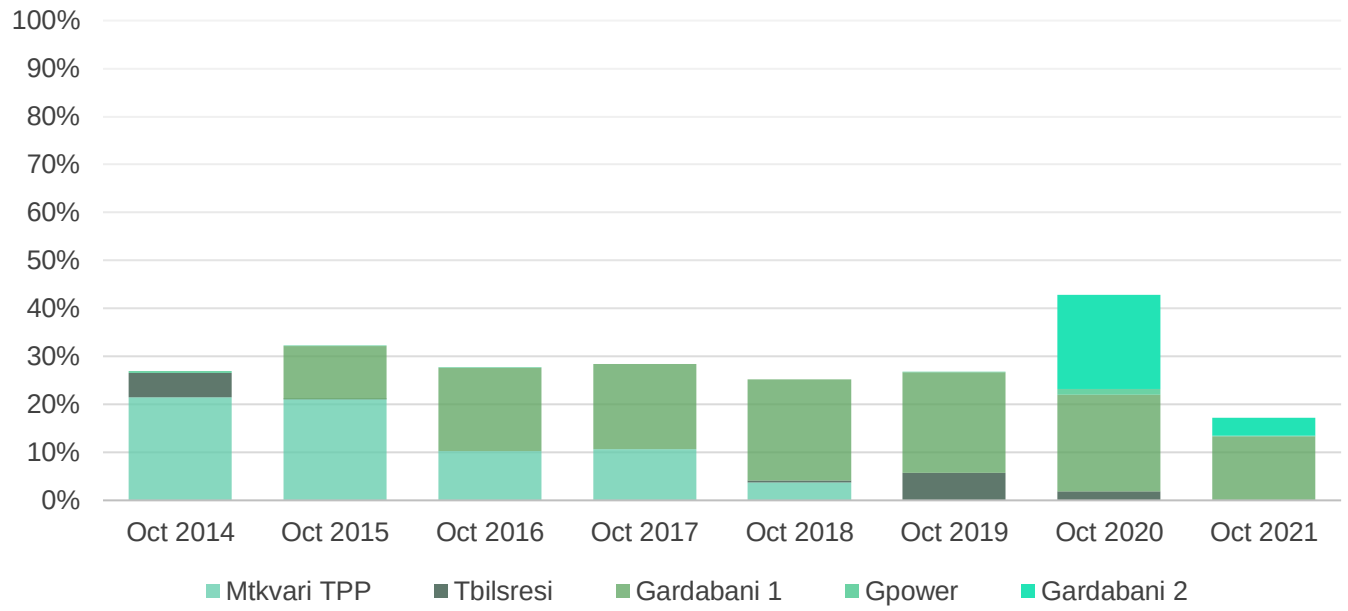
Figure 3 - HPP Generation by Type



Source: ESCO

Among thermal power plants, Gpower TPP generated 1 mln. kWh, less than 1% of total thermal power generation. Gardabani 1 TPP generated 160 mln. kWh, 78% of total thermal power generation, but only 13% of total generation. Gardabani 2 TPP generated 44 mln. kWh, 22% of total thermal power generation, but only 4% of total generation. (Figure 4).

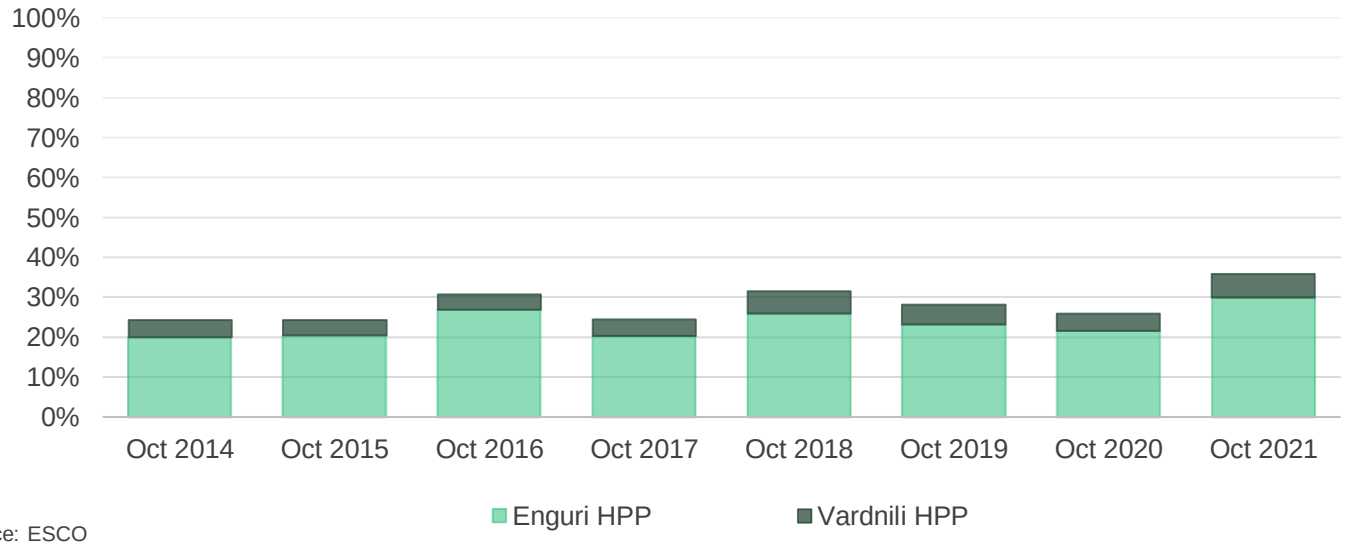
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 71 mln. kWh (14% of generation for regulatory HPPs and 6% of total generation). Enguri HPP generated 356 mln. kWh, which represents 70% of generation of regulatory HPPs and 30% of total generation (Figure 5).

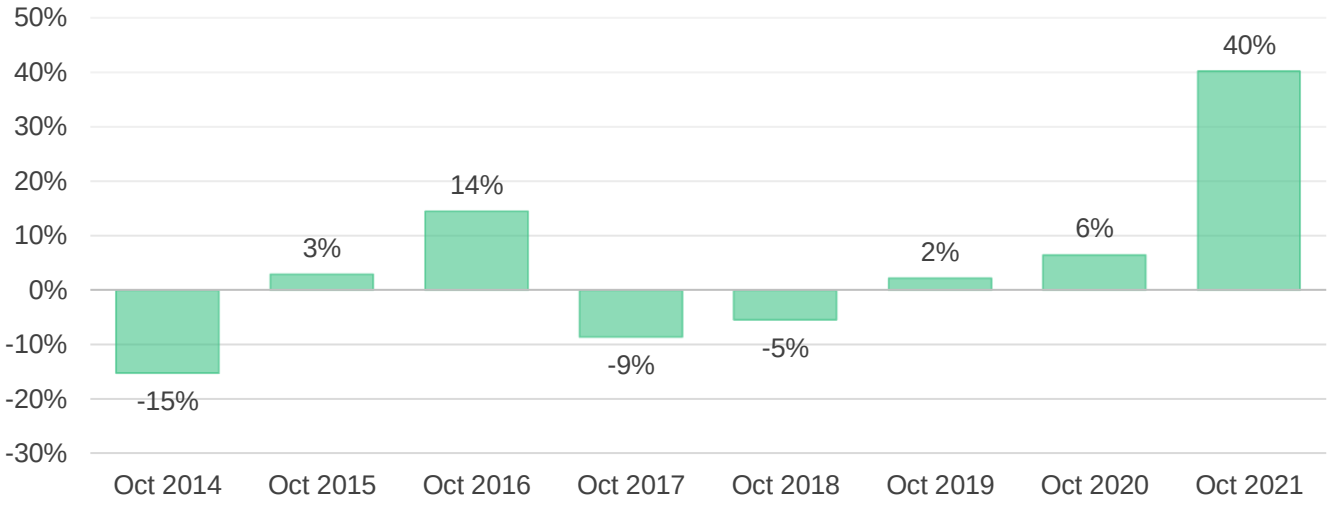
Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, total generation increased by 40% compared to October 2020 (Figure 6).

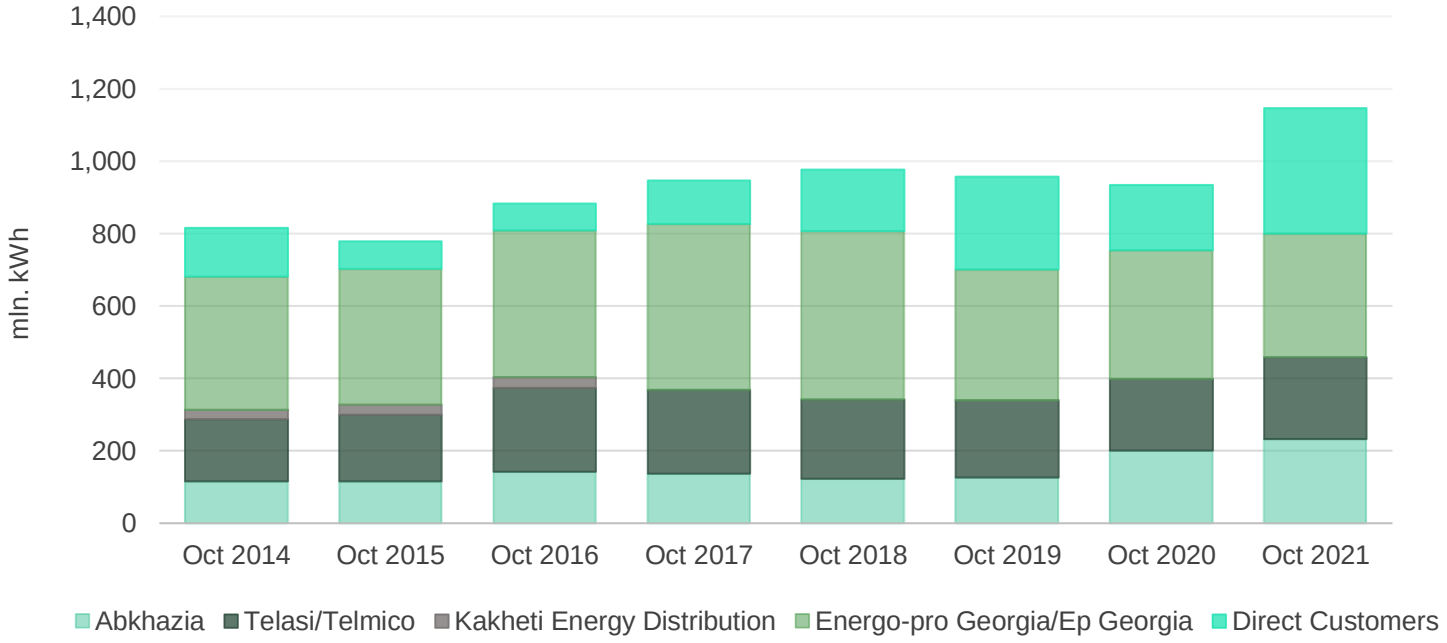
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia[1] (30% - 342 mln. kWh), Abkhazia (20% - 232 mln. kWh), Telasi/Telmico[2] (20% - 227 mln. kWh), and direct customers (30% - 346 mln. kWh) (Figure 7). Annual demand from Abkhazia, Telasi and direct customers increased by 15%, 15%, and 92%, respectively, while demand from Energo-pro Georgia decreased by 4%. Overall, there was an annual growth of 23% in the total electricity consumption in October 2021, compared to October 2020 (Figure 8).

Figure 7 - Electricity Consumption by Type of Customer

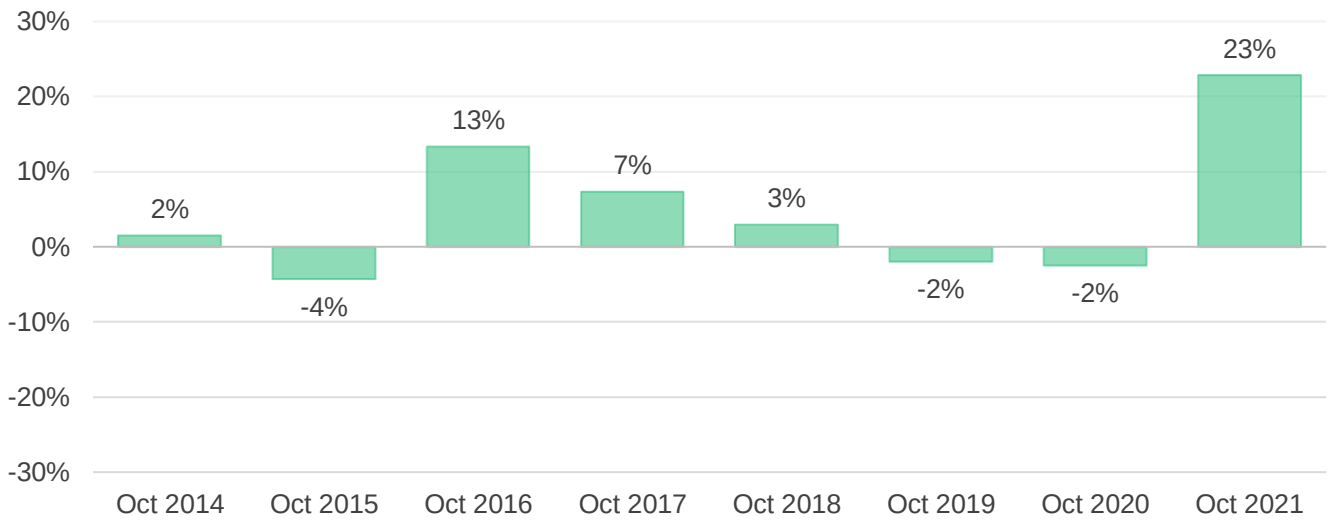


Source: ESCO

[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)

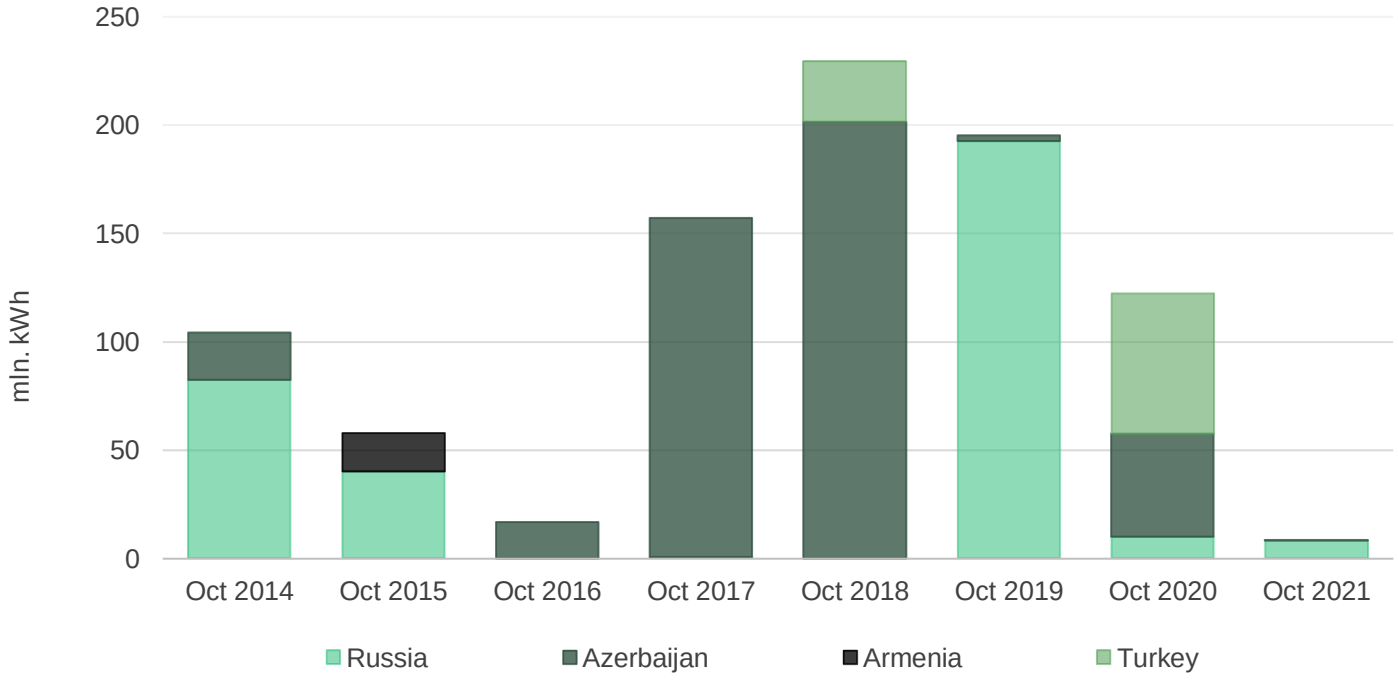


Source: ESCO

In October 2021, Georgia imported 8 mln. kWh of electricity (compared to 123 mln. kWh October 2020). 98% of imports came from Russia and the rest came from Azerbaijan (Figure 9). In October 2021, Georgia exported almost 5 mln. kWh of electricity (1 mln. kWh in October 2020) (Figure 10). There was a 115 mln. kWh electricity transit from Azerbaijan to Turkey, 153 mln. kWh transit from Russia to Turkey, and 19 mln. kWh transit from Russia to Armenia in October 2021 (In October 2020, there was no transit at all).

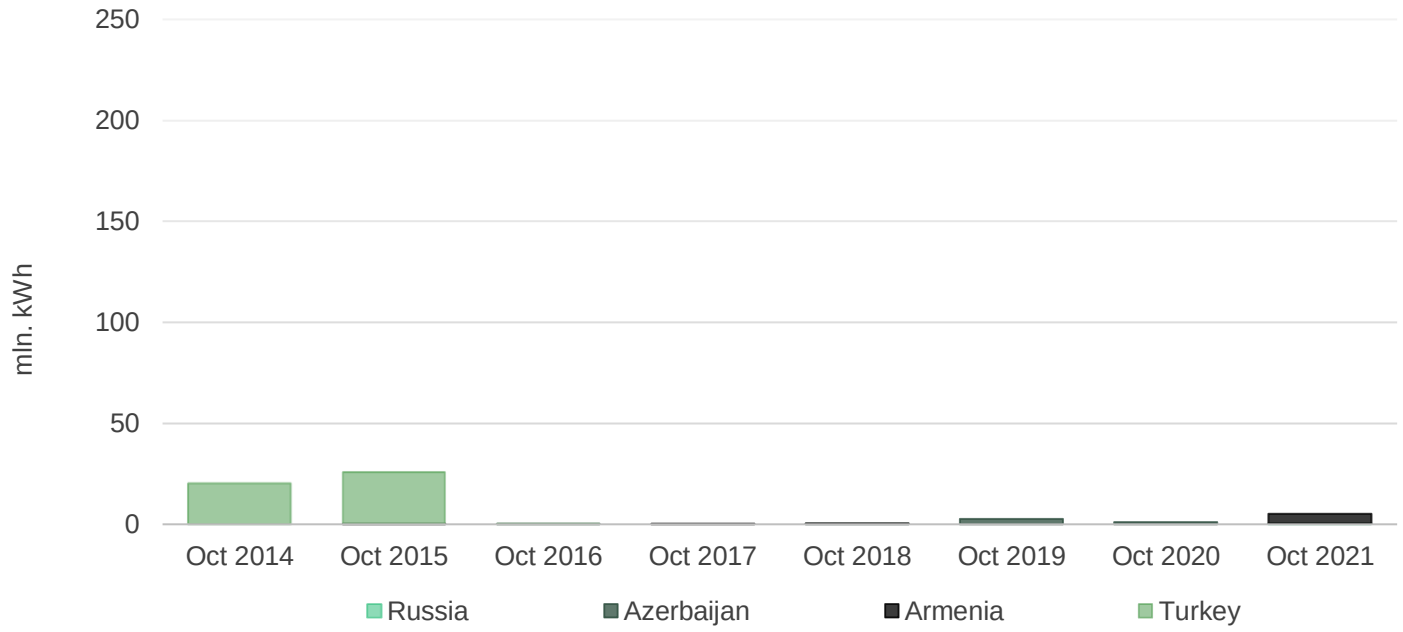
Compared to October 2020, imports decreased by 93%, reaching the historic low for the month of October (Figure 9).

Figure 9 - Imports by Year



Source: ESCO

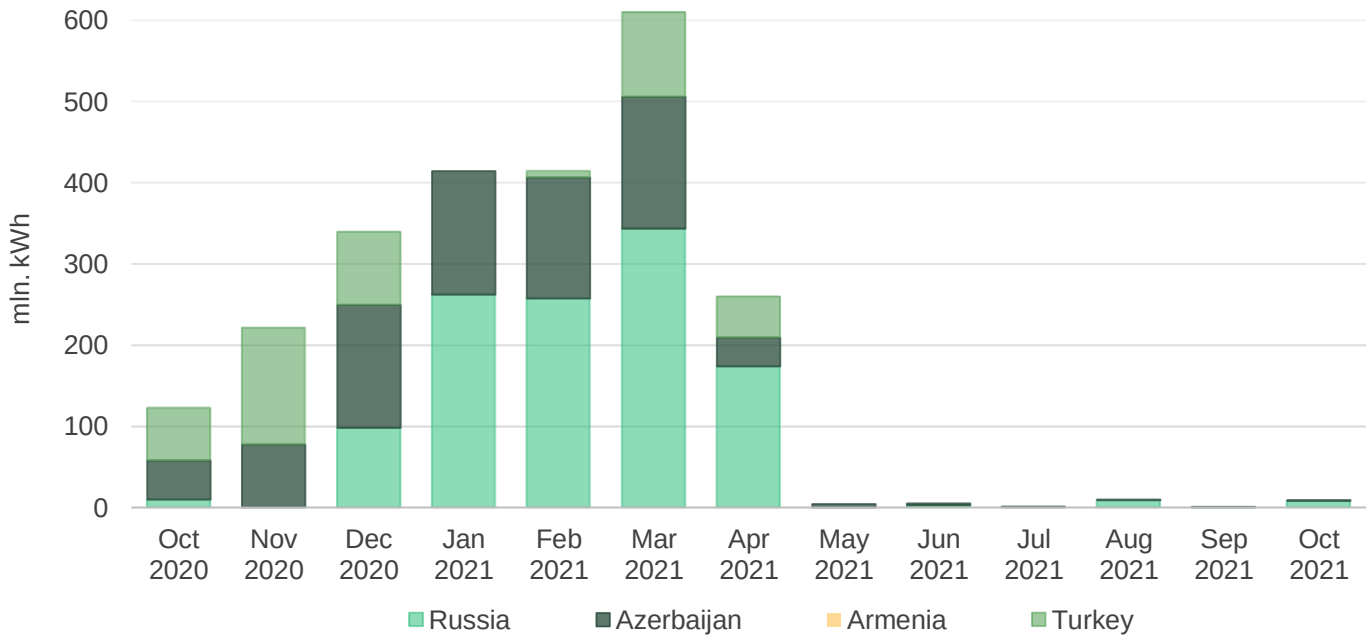
Figure 10 - **Exports by Year**



Source: ESCO

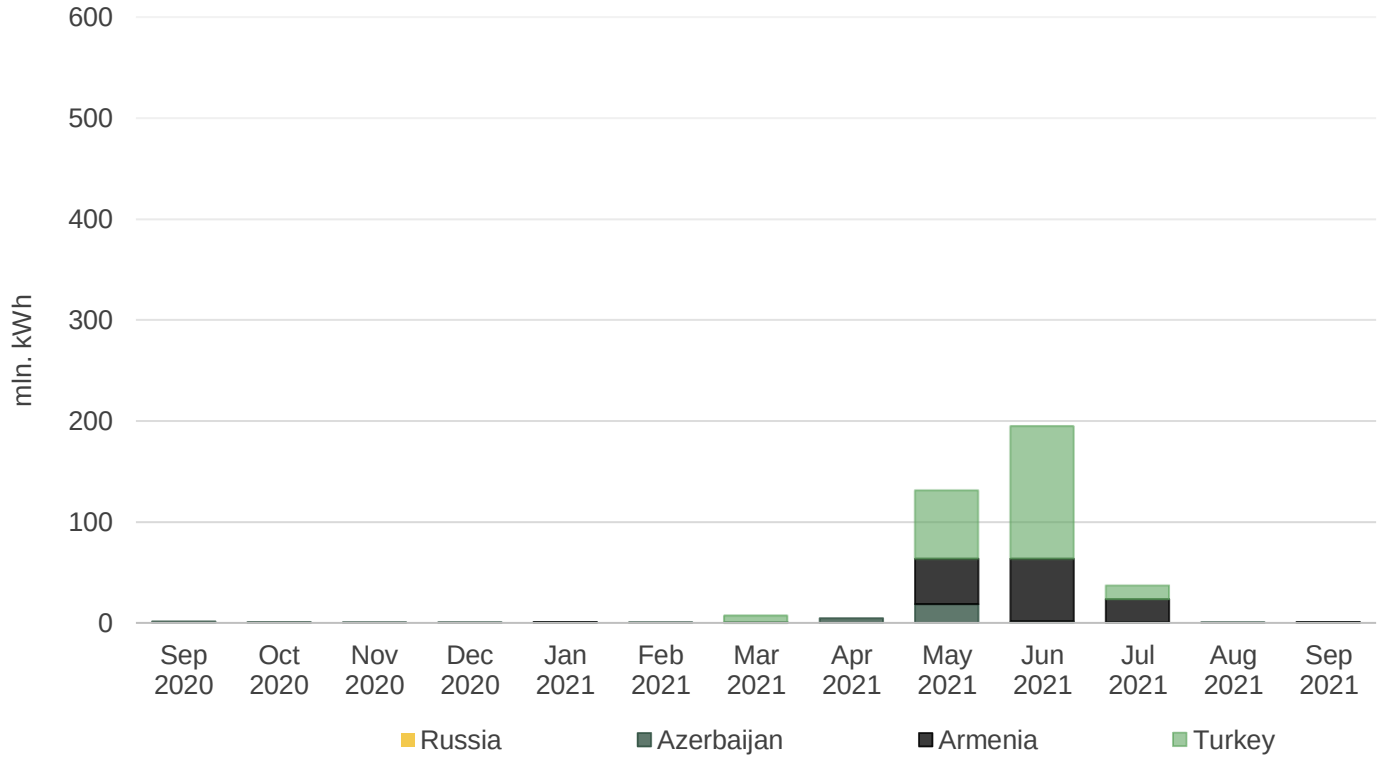
In October 2021, electricity imports increased 56 times compared to September 2021 (Figure 11), remaining very low in absolute terms. Electricity exports increased 10 times compared to September 2021, but the level is still very low (The export comprised only 5 mln. kWh, compared to 0.5 mln. kWh in September 2021) (Figure 12). Therefore, similar to August and September, October was also characterized by self-sufficiency in terms of electricity generation-consumption.

Figure 11 - **Imports by Month**



Source: ESCO

Figure 12 **- Exports by Month**

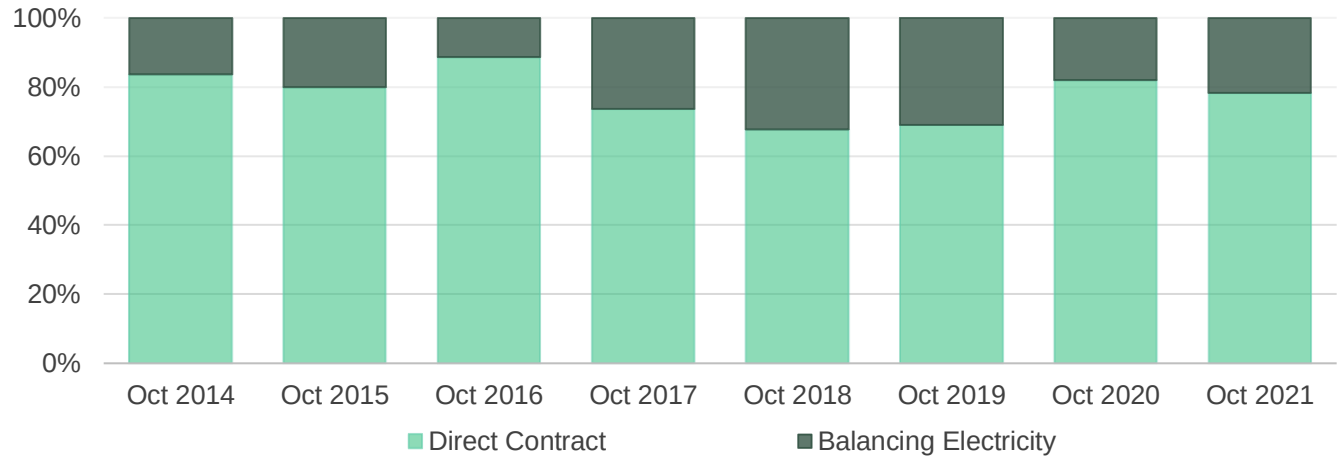


Source: ESCO

1. Market Operations

In October 2021, 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).

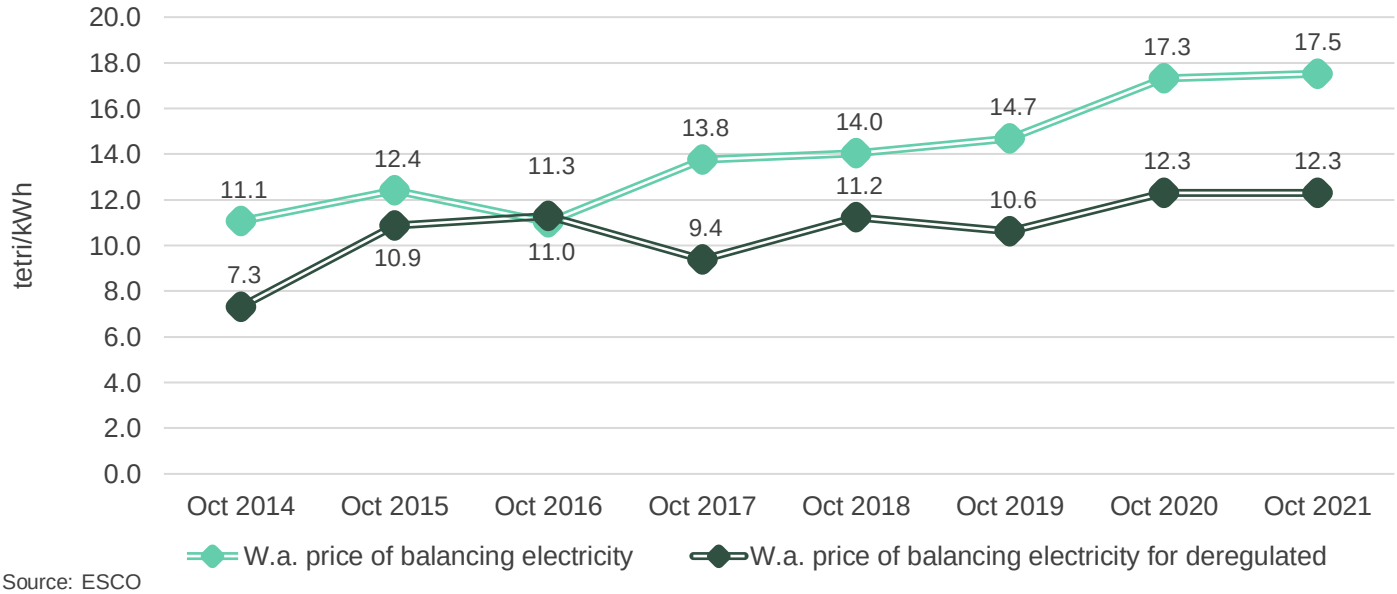
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In October 2021, the weighted average price of balancing electricity was 17.5 tetri/kWh, which corresponds to an annual increase of 1% compared to October 2020. As for the weighted average price for deregulated (small) HPPs, it was 12.3 tetri/kWh, which is identical to the price in October 2020 (Figure 14).

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

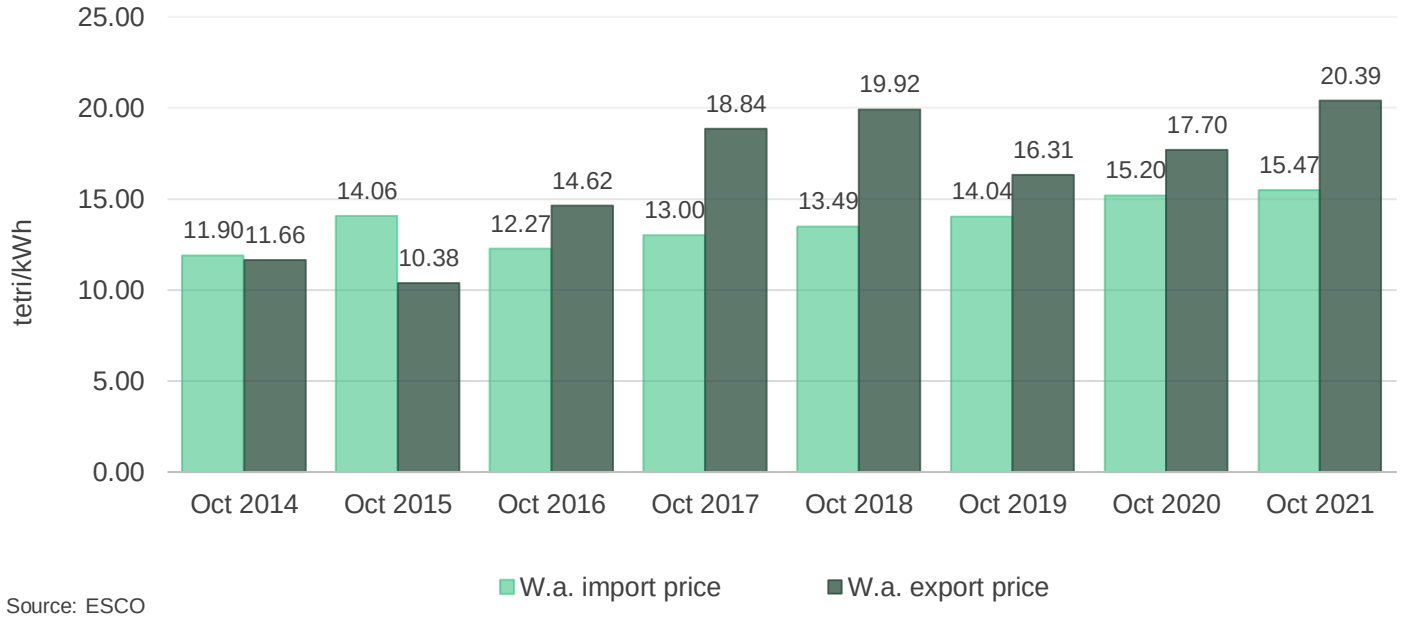


Source: ESCO

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

The weighted average electricity import price in October 2021 increased by 4% in USD, on an annual basis, and increased by approximately 2% in GEL (from 4.73 ¢, or 15.20 tetri per kWh in October 2020 to 4.93 ¢, or 15.47 tetri per kWh in October 2021 - Figure 15). The weighted average import price increased by 19% in USD, on an monthly basis, and increased by 20% in GEL (import price was 4.15 ¢, or 12.94 tetri per kWh in September 2021). The weighted average electricity export price in October 2021 increased by 18% in USD, on an annual basis, and increased by approximately 15% in GEL (from 5.50 ¢, or 17.70 tetri per kWh in October 2020 to 6.49 ¢, or 20.39 tetri per kWh in October 2021 - Figure 15). The weighted average export price increased by 30% USD, on a monthly basis, and increased by 31% in GEL (export price was 5.00 ¢, or 15.61 tetri per kWh in September 2021).

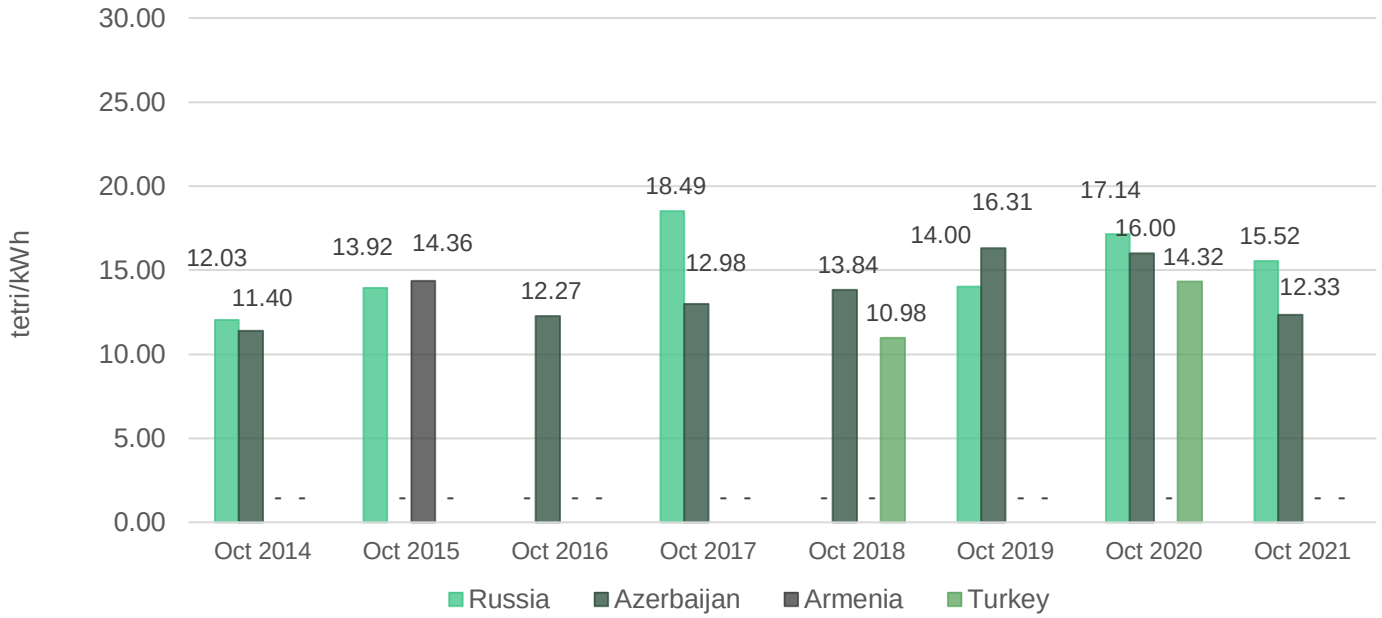
Figure 15 - Prices Import/Export



Source: ESCO

In October 2021, the electricity import price from Azerbaijan and Russia stood at 3.93 ¢ or 12.33 tetri, and 4.94 ¢ or 15.52 tetri per kWh, respectively. (Figure 16).

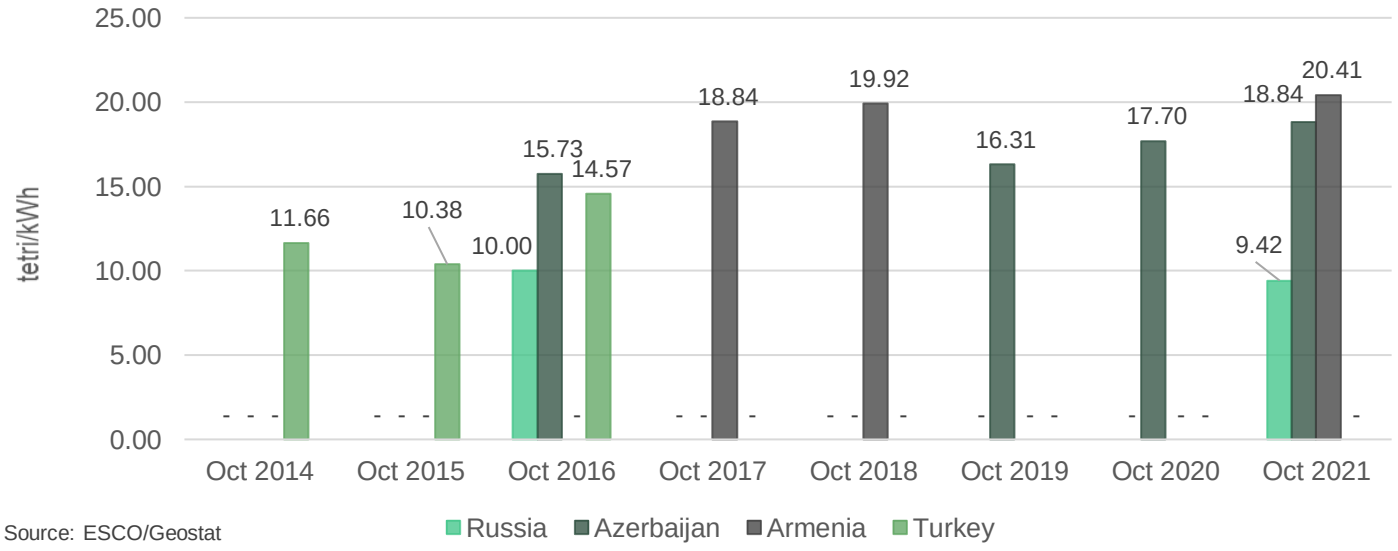
Figure 16 - Import Prices by Countries



Source: ESCO/Geostat

In October 2021, the electricity export price to Azerbaijan, Armenia, and Russia stood at 6.00 ¢ or 18.84 tetri, 6.50 ¢ or 20.41, and 3.00 ¢, or 9.42 tetri per kWh, respectively (Figure 17).

Figure 17 - Export Prices by Countries

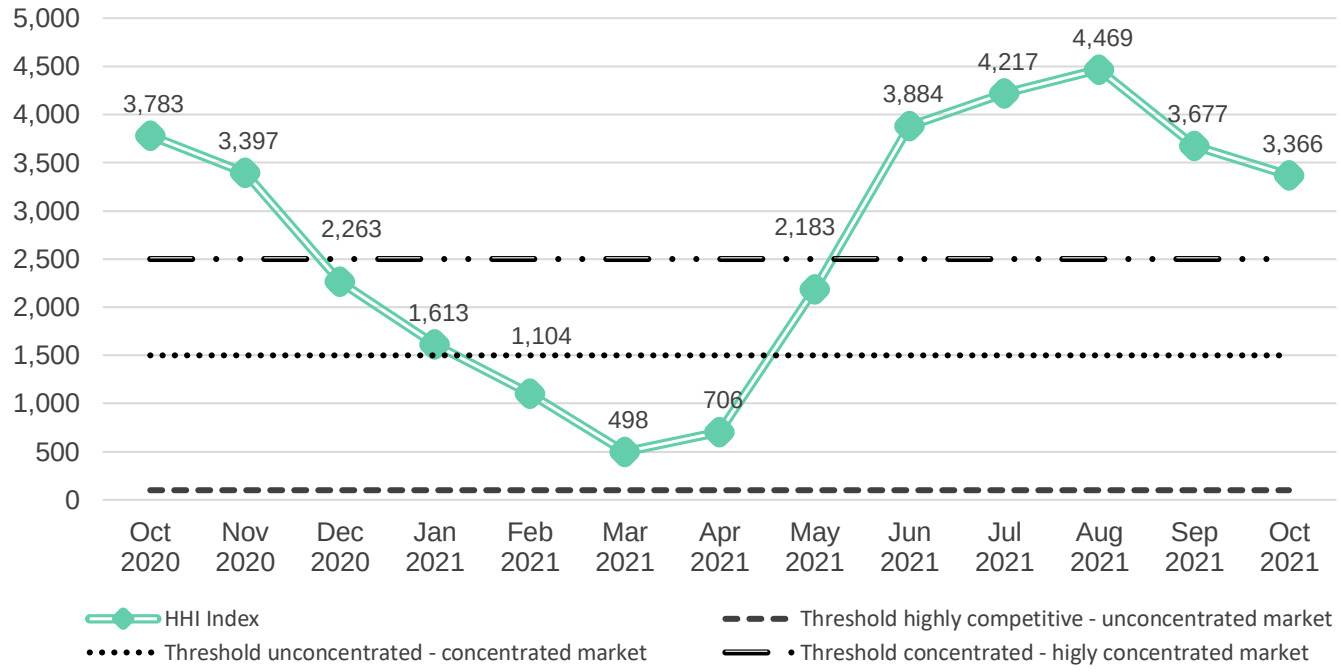


Source: ESCO/Geostat

2. Market Concentration

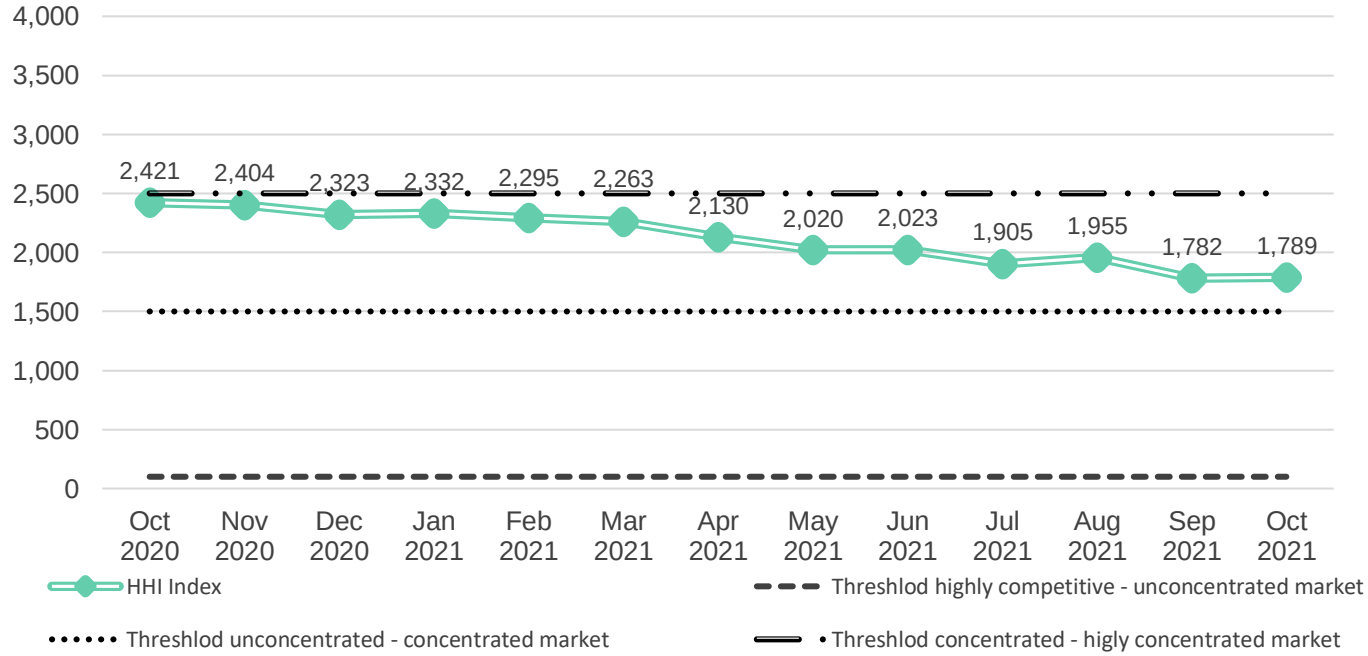
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In October 2021, the Georgian electricity generation market remained above the threshold of highly concentrated market, with an HHI value of 3,366 (Figure 18). This is slightly lower than the level in October 2020 (with an HHI value of 3,783), and also lower than the level in September 2021 (HHI was 3,677) As for the consumption segment, in October 2021, the HHI consumption index was below the threshold for a highly concentrated market, with an HHI value of 1,789 (substantially below the level in October 2020 – 2,421 and slightly above the level in September 2021 – 1,782). 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, an overall 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