

ISET

International School of Economics at TSU
Policy Institute

JULY
2023



ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE AGRICULTURE & RURAL POLICY RESEARCH CENTER

Authors:

Erekle Shubitidze
Senior Researcher

✉ erekle.shubitidze@iset.ge

INFORMATION

- In July 2023 there was an increase in the total electricity generation by 18% on a yearly basis and by 13% on a monthly basis.
- Consumption decreased by 4% on a yearly basis and increased by 12% compared to the previous month.
- Generation exceeded consumption by 440 mln. kWh which was 29% of the total generation and 40% of the total consumption in July 2023.
- There were imports of 0.66 mln. kWh in July.
- The main import partner country was Azerbaijan.
- There were exports of 384 mln. kWh in July.
- The main export partner country was Turkey.
- The price of imports reached 6.50 ჯ, or 16.88 tetri per kWh.
- The price of exports reached 6.97 ჯ, or 18.10 tetri per kWh.
- The HHI index for the Georgian electricity generation market remained above the threshold of highly concentrated market. In June 2023, its level was 5,650.
- The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. In June 2023, its level was 2,202.

ABBREVIATION USED

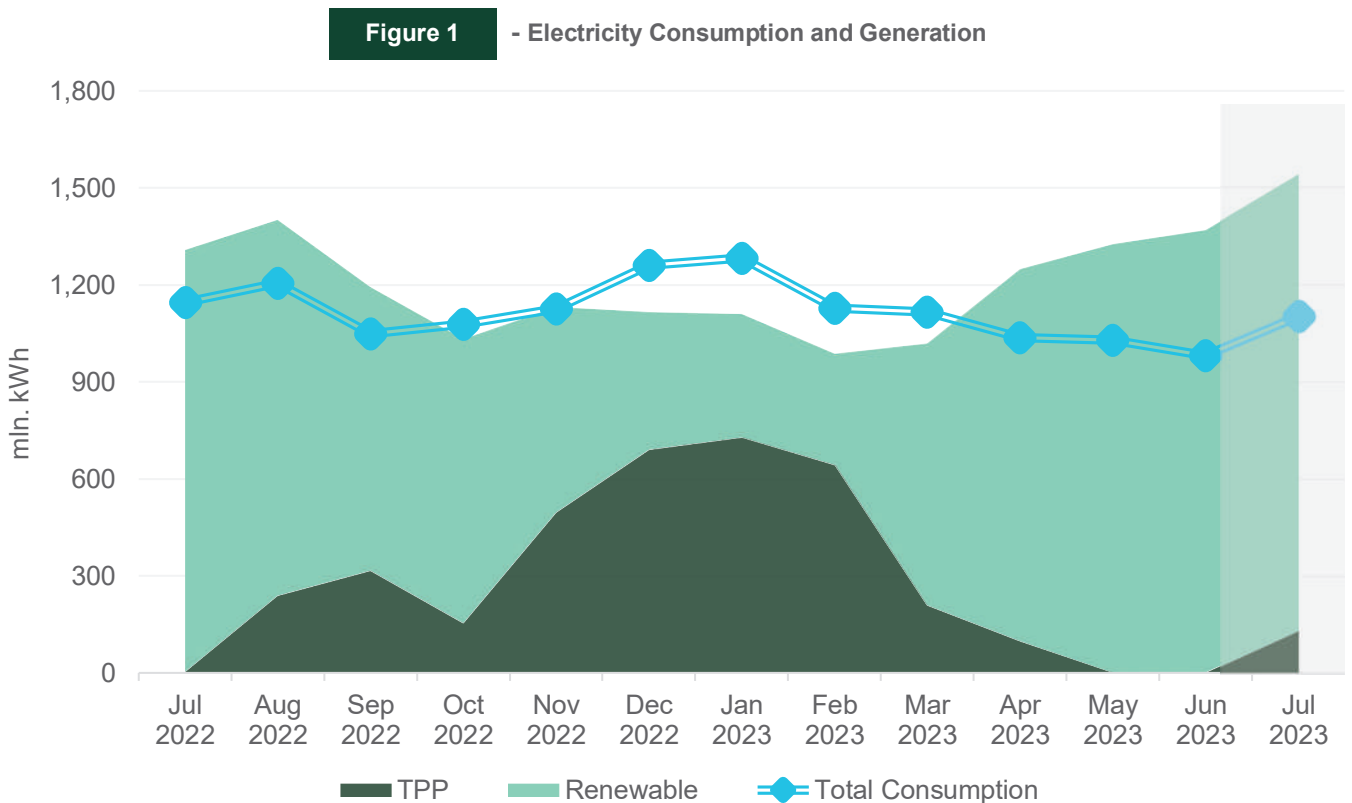
Mln	million
kWh	kilowatt-hour
HPP	Hydro Power Plant
WPP	Wind Power Plant
TPP	Thermal Power Plant
HHI	Hirschmann-Herfindahl Index
Telmico	Tbilisi Electricity Supply Company
Ep Georgia	Ep Georgia Supply
Geostat	National Statistics Office of Georgia
ESCO	Electricity System Commercial Operator

Generation – Consumption – Trade

In July 2023, Georgian power plants generated 1,541 mln. kWh of electricity (Figure 1). This represents an 18% increase in the total generation compared to the previous year (in July 2022, the total generation was 1,308 mln. kWh). The rise in generation on a yearly basis comes from a rise of 8% in Hydro and 8% in wind and 45 times in thermal power generation.

On a monthly basis, the generation increased by approximately 13% (in June 2023, the total generation was 1,369 mln. kWh) (Figure 1). The monthly rise in total generation is induced by a 3% increase in hydro, 59% increase in wind and increase over 73 times in thermal power generation.

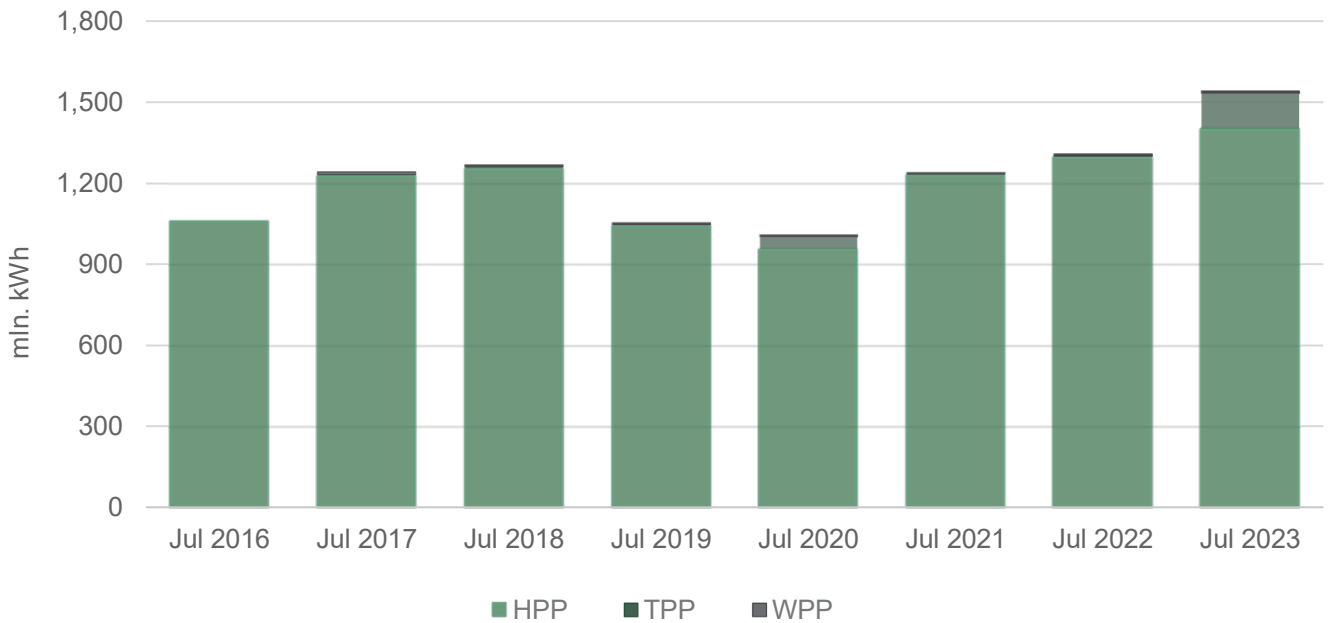
The consumption of electricity on the local market was 1,102 mln. kWh (-4% compared to July 2022, and +12% compared to June 2023) (Figure 1). In July 2023, power generation exceeded consumption by 440 mln. kWh which was 29% of the total generation and 40% of the total consumption (in July 2022, the difference between the total generation and the consumption resulted in a surplus of 161 mln. kWh, around 12% of the total generation and 14% of the total consumption for the month).



Source: Electricity System Commercial Operator (ESCO)

In July 2023, hydro power plants were the leading source of generation. In July 2023, hydro power (HPP) generation amounted to 1,401 mln. kWh (91% of total), thermal power (TPP) generation was 132 mln. kWh (8.5% of the total generation), while wind power (WPP) generation amounted to 9 mln. kWh (0.5% of the total generation) (Figure 2).

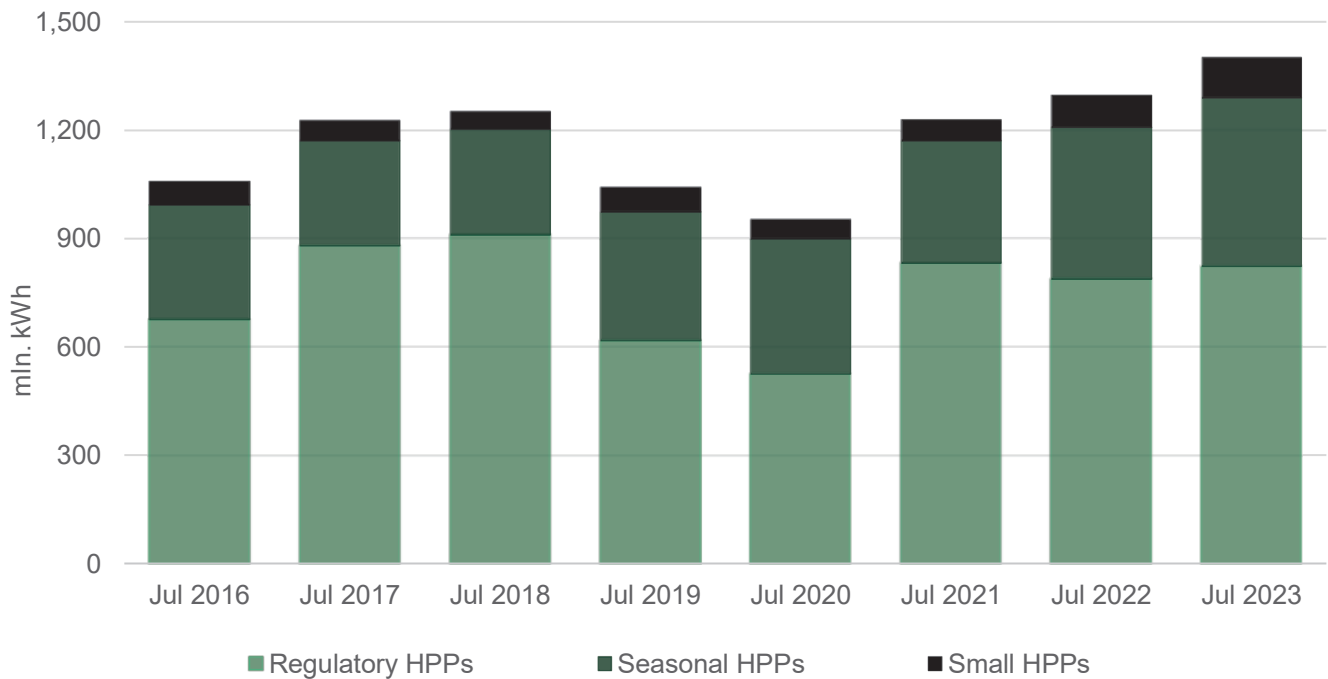
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 59% (833 mln. kWh) of electricity, while seasonal and small HPPs produced 33% (466 mln. kWh) and 8% (112 mln. kWh), respectively (Figure 3).

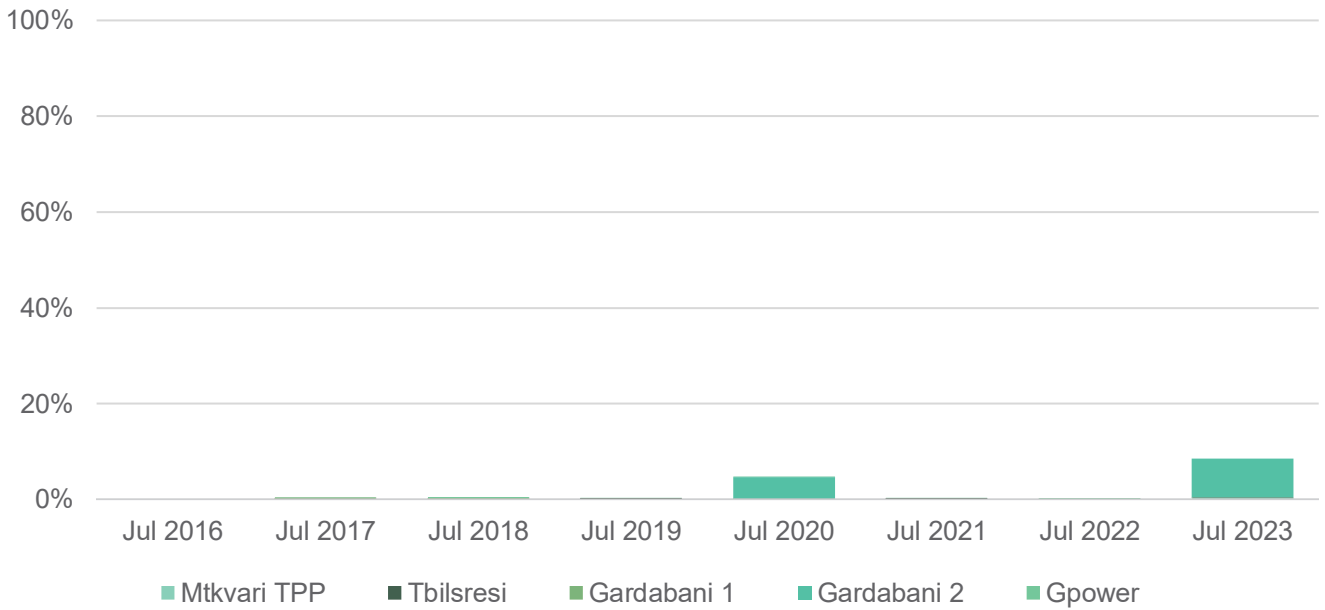
Figure 3 - HPP Generation by Type



Source: ESCO

As for thermal power generation, Tbilisresi generated 3 mln. kWh electricity (2.4% of TPP generation and 0.2% of total power generation), Mtkvari TPP generated 5 mln. kWh electricity (4% of TPP generation and 0.3% of total power generation), and Gardabani 2 generated 123 mln. kWh (93.7% of TPP generation and 8% of total power generation) (Figure 4).

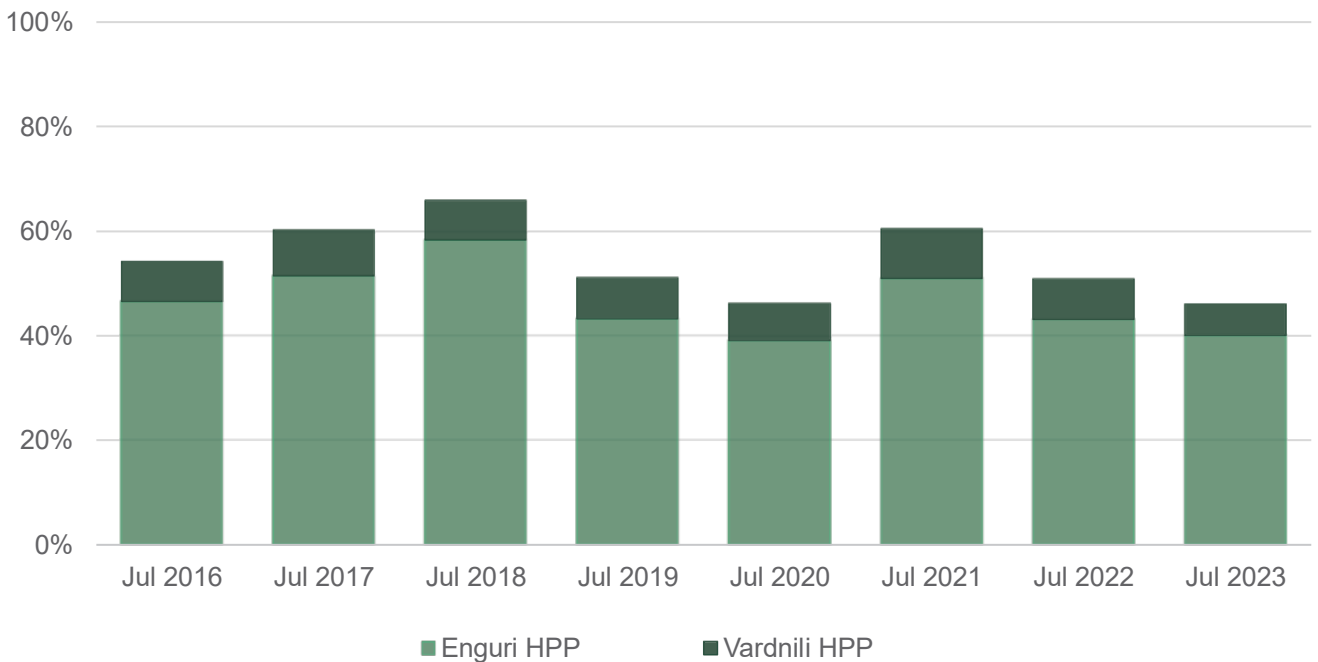
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 95 mln. kWh (12% of generation for regulatory HPPs and 6% of total generation). Enguri HPP generated 618 mln. kWh, which represents 75% of generation of regulatory HPPs and 40% of total generation (Figure 5).

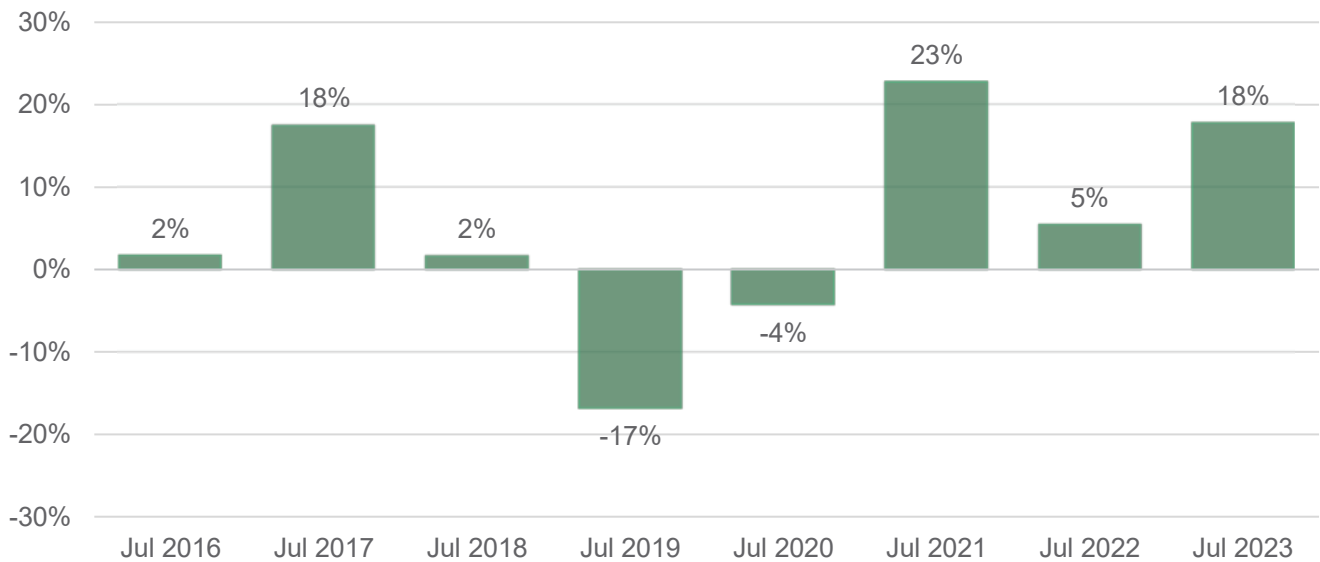
Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, the total generation increased by 18% compared to July 2022 (Figure 6).

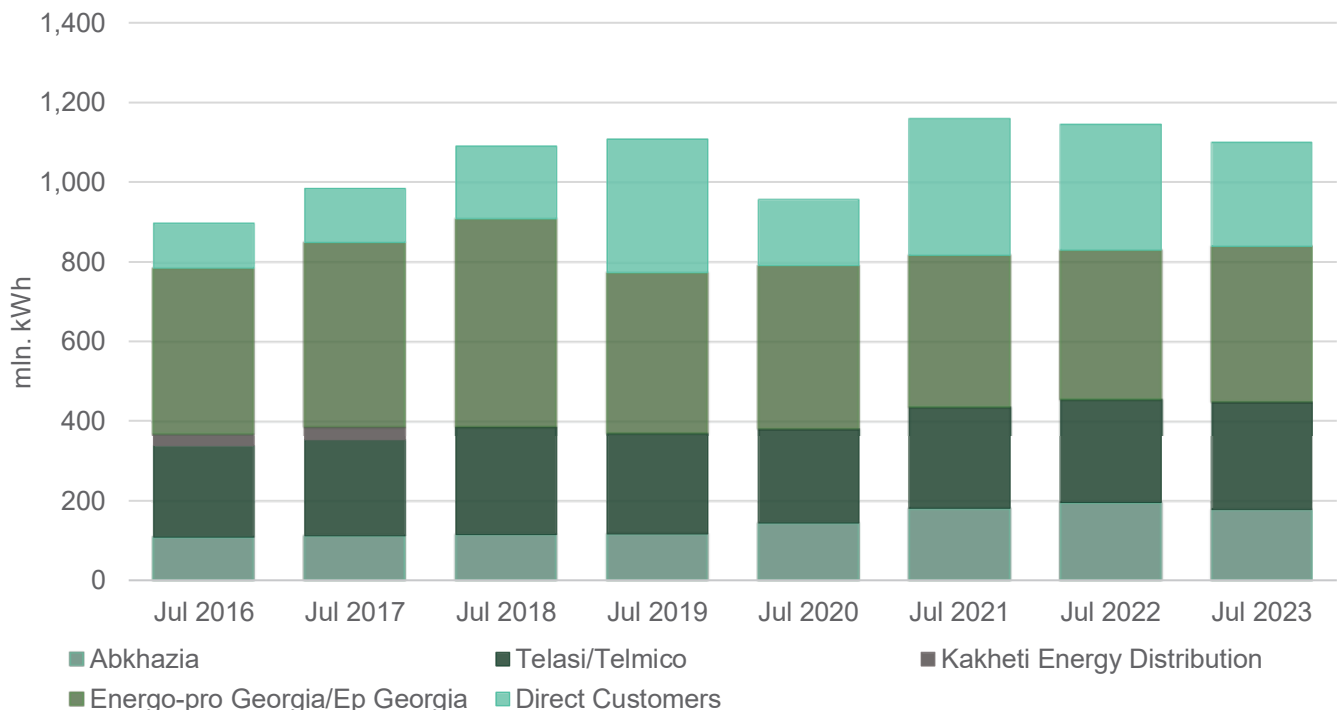
Figure 6 - Growth of Generation (% , y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia¹ (36% - 392 mln. kWh), Abkhazia (16% - 178 mln. kWh), Telasi/Telmico² (25% - 270 mln. kWh), and direct customers (24% - 260 mln. kWh) (Figure 7). Annual demand from Abkhazia and direct customers fell by 10% and 17%, while it increased from Telasi/Telmico and Energo-Pro Georgia/Ep Georgia by 4% and 5%, respectively. Overall, there was an annual decrease of 4% in the total electricity consumption in July 2023, compared to July 2022 (Figure 8).

Figure 7 - Electricity Consumption by Type of Consumer

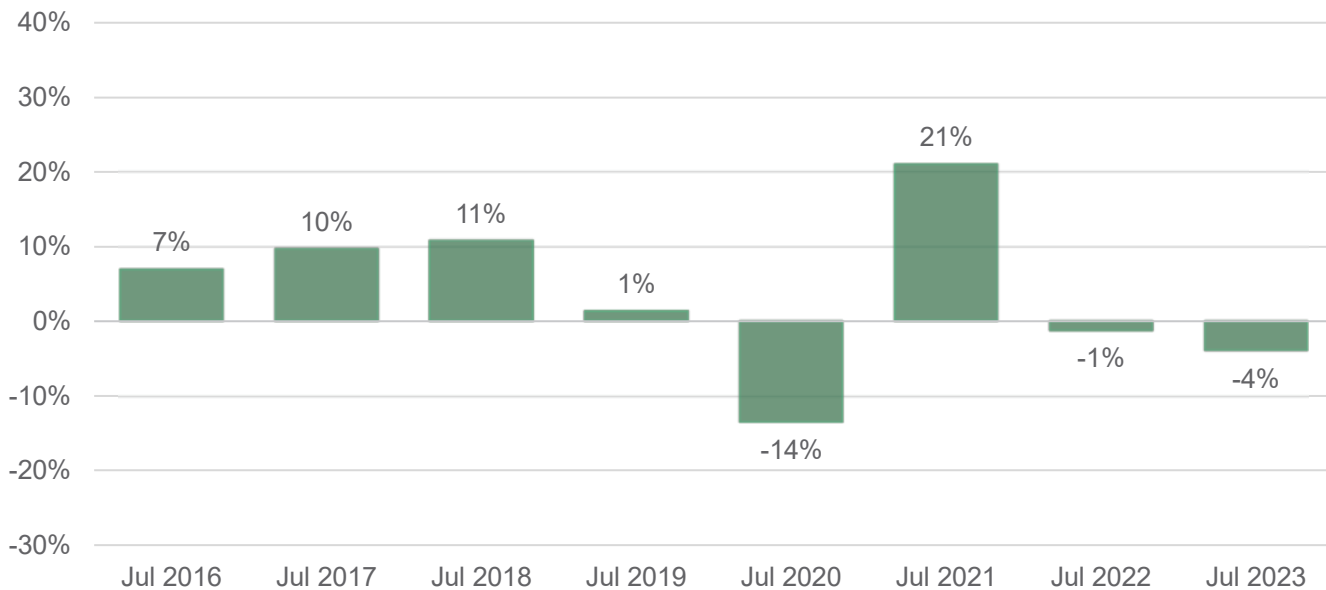


Source: ESCO

¹ Energo-Pro Georgia acquired Kakheta 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)

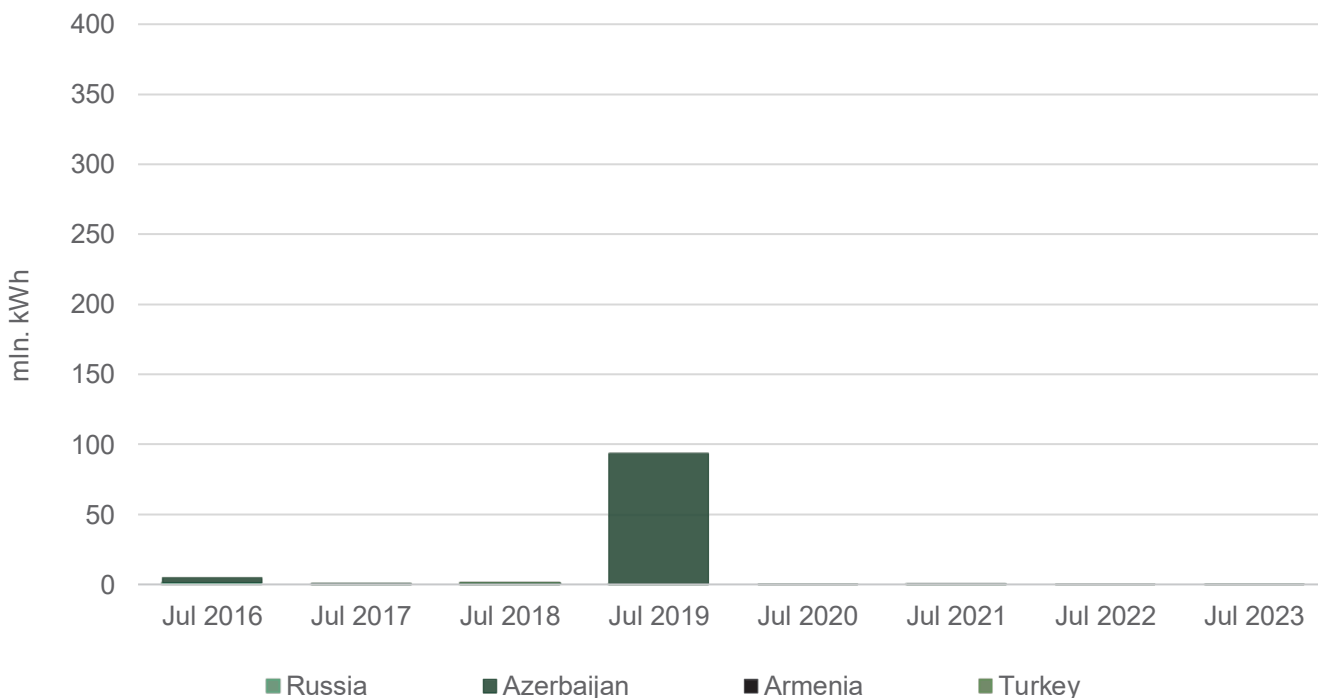


Source: ESCO

In July 2023, there was an import of 0.66 mln. kWh of electricity from Azerbaijan (in July 2022, there was 0.15 mln. kWh of electricity imports from Azerbaijan) (Figure 9). In July 2023, there was an export of 384 mln. kWh of electricity (compared to 115 mln. kWh in July 2022) (Figure 10). 96.3% of this export went to Turkey, 2.1% went to Azerbaijan, 1.5% to Armenia and insignificant amount to Russia (in July 2022, 100% of exports went to Turkey). There was 32 mln. kWh transit in July 2023 from Russia to Turkey (in July 2022, there was 334 mln. kWh transit from Azerbaijan to Turkey).

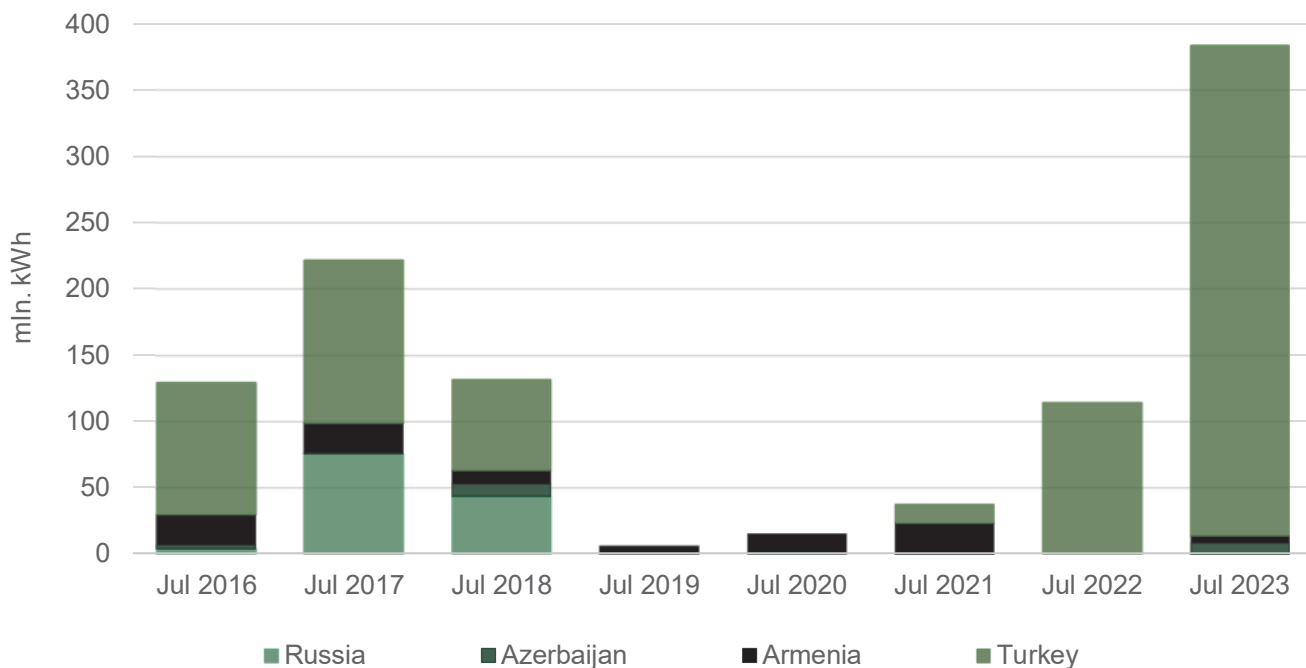
In July 2023, imports increased by 350% compared to July 2022, while exports increased by 235%.

Figure 9 - Imports by Year



Source: ESCO

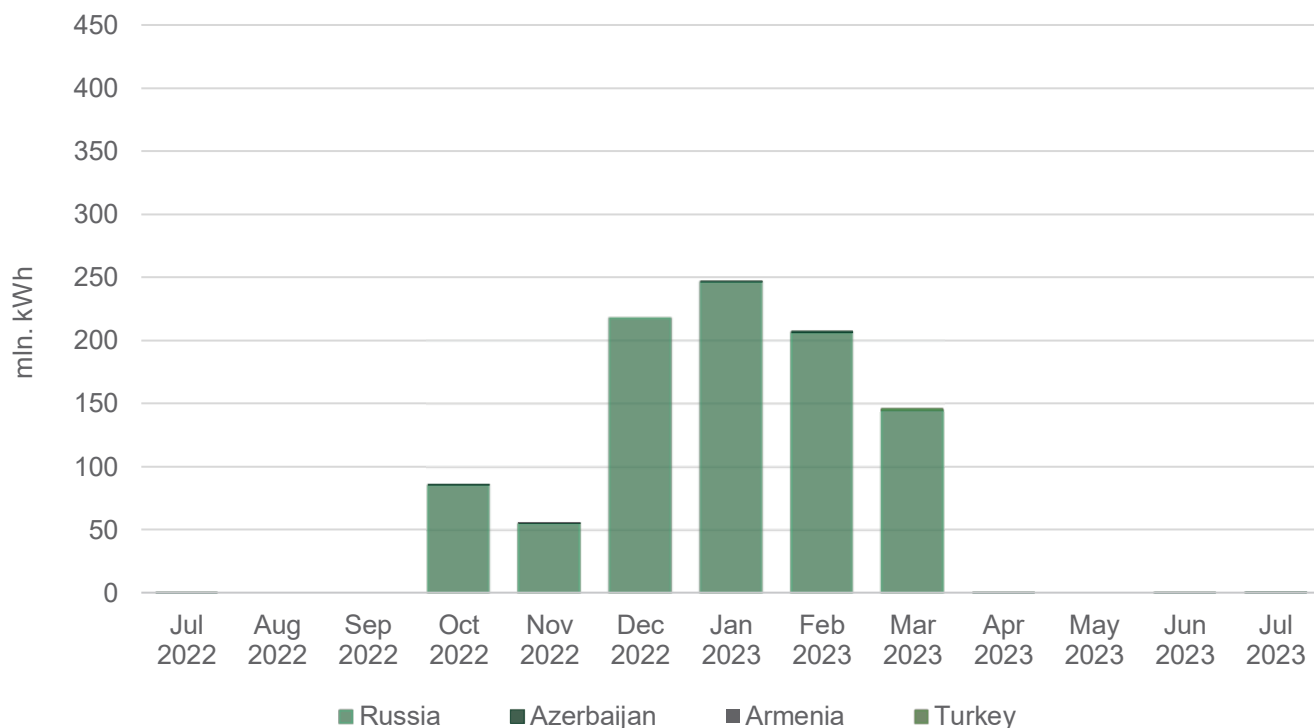
Figure 10 - Exports by Year



Source: ESCO

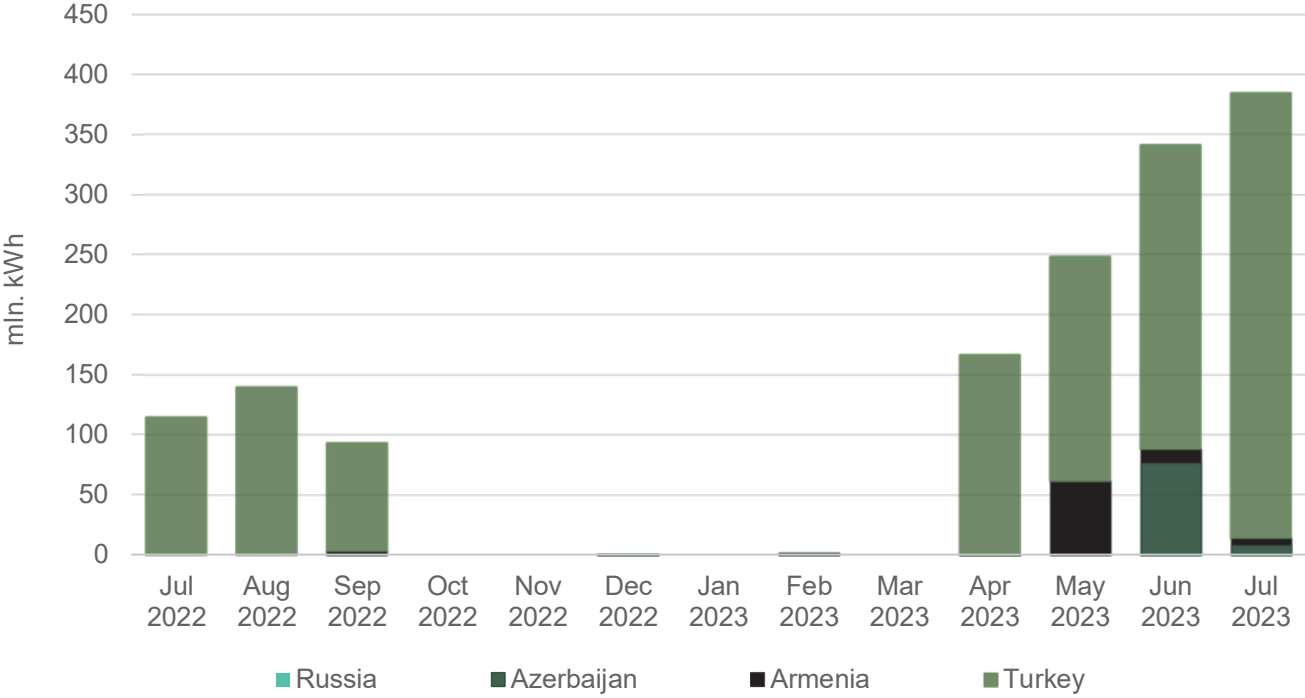
Electricity imports increased 40 times in July 2023, compared to June 2023 (Figure 11). Electricity exports increased by 13% in July 2023, compared to June 2023 (Figure 12).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

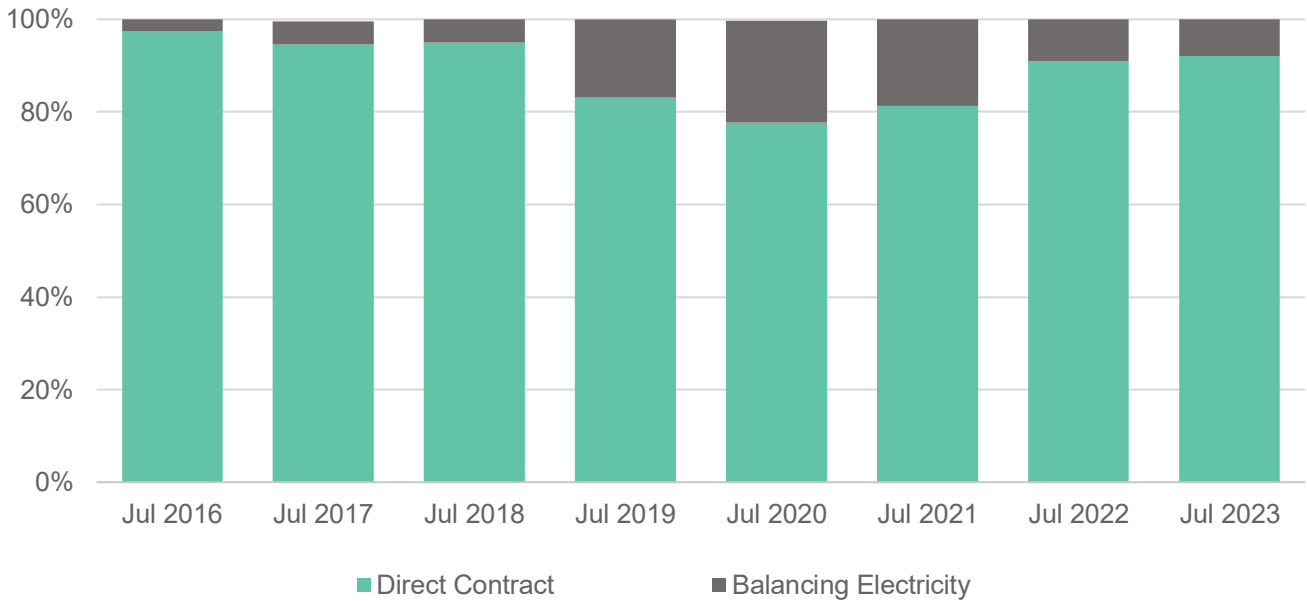


Source: ESCO

1. Market Operations

In July 2023, 92% of the electricity sold on/from the local market was sold through direct contracts. The remaining 8% was sold as balancing electricity (Figure 13).

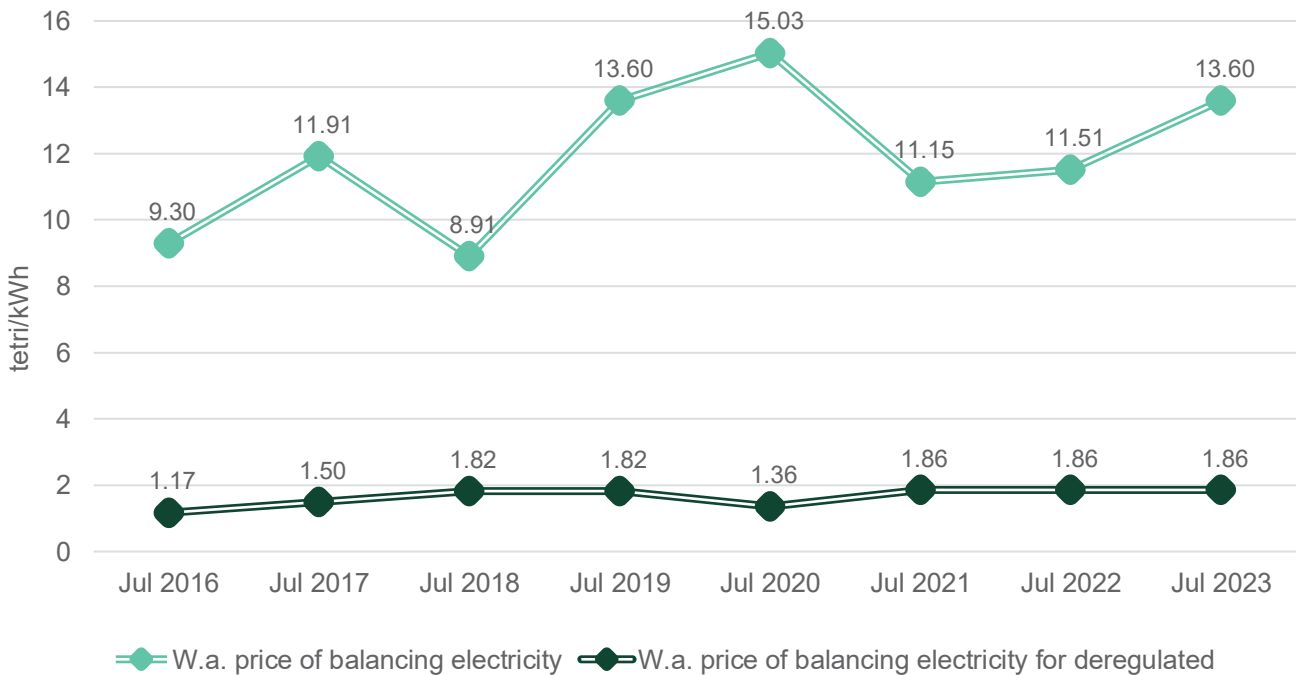
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In July 2023, the weighted average price of balancing electricity was 13.6 tetri/kWh, which corresponds to an annual increase of 18% compared to July 2022. As for the weighted average price for deregulated (small) HPPs, it was 1.86 tetri/kWh, same price as in July 2022 (Figure 14).

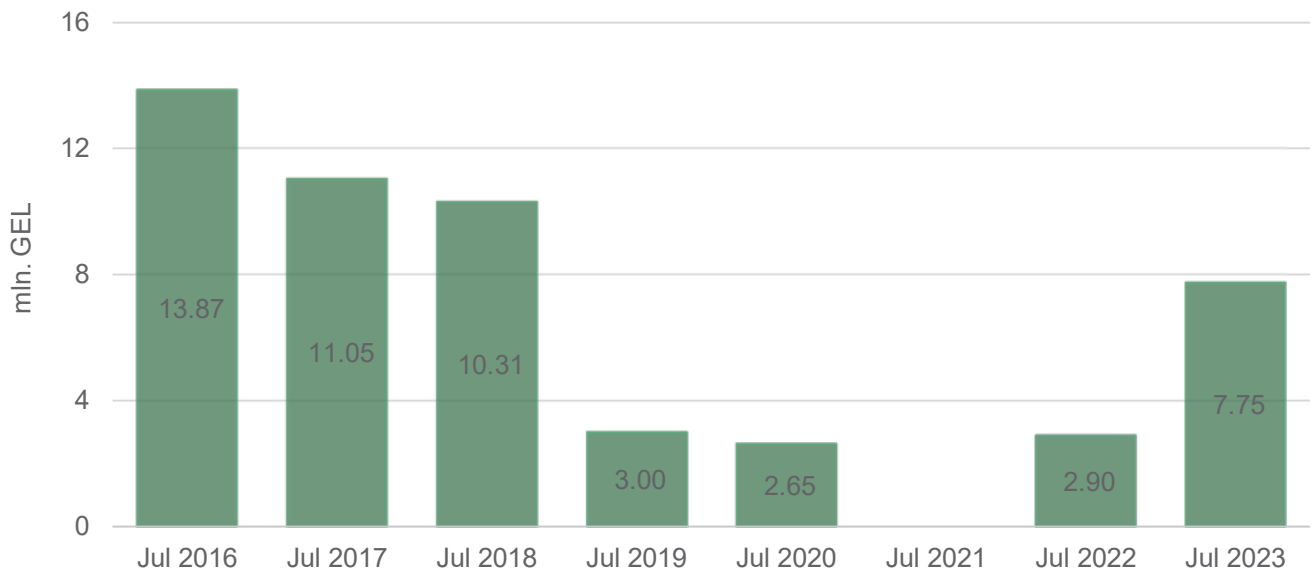
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in July 2023 were roughly 7.75 mln. GEL, which represents a 170% increase compared to July 2022 (Figure 15).

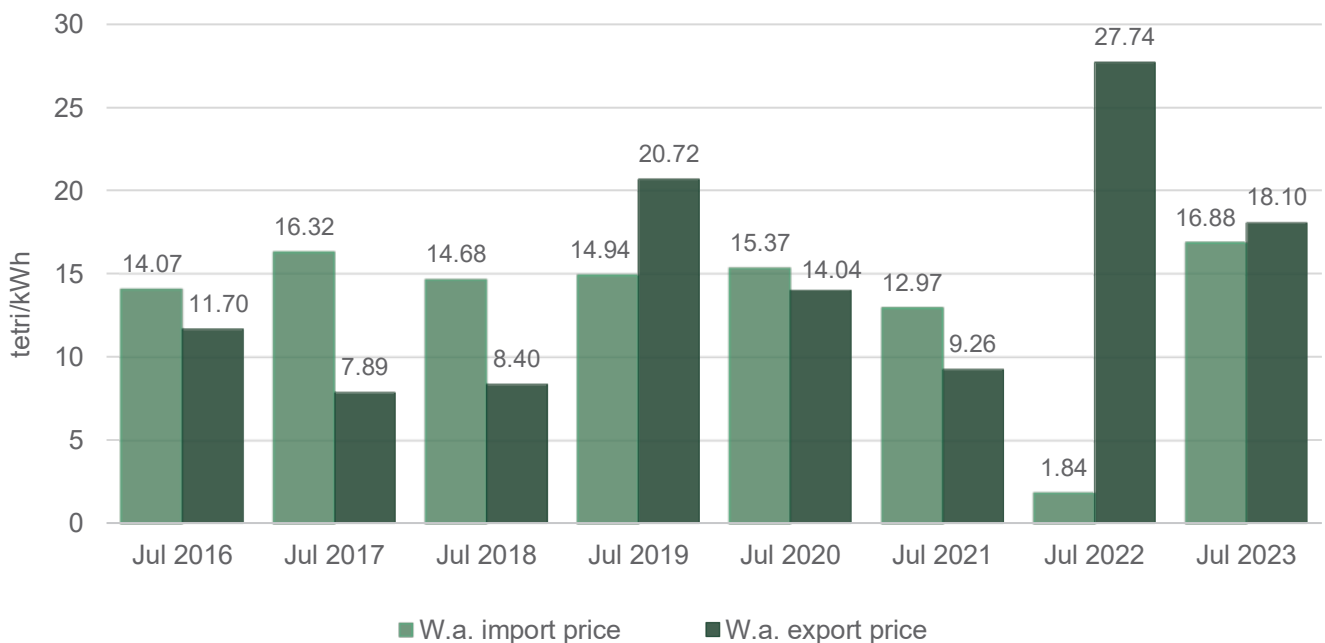
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

In July 2023 electricity import prices were 6.50 ϕ , or 16.88 tetri per kWh (Figure 16). This corresponds to an annual increase in price 9 times in USD and 8 times in GEL (prices were 0.65 ϕ , or 1.84 tetri per kWh in July 2022). Compared to June 2023, import prices decreased by 2% in USD and by 3% in GEL (prices were 6.63 ϕ , or 17.34 tetri per kWh in June 2023). The electricity export prices in July 2023 were 6.97 ϕ , or 18.10 tetri per kWh (Figure 16). This corresponds to an annual decrease in price by 29% in USD and 35% in GEL (prices were 9.74 ϕ , or 27.74 tetri per kWh in July 2022). Compared to June 2023, export price increased by 6% in USD and 6% in GEL (prices were 6.54 ϕ , or 17.13 tetri per kWh in June 2023).

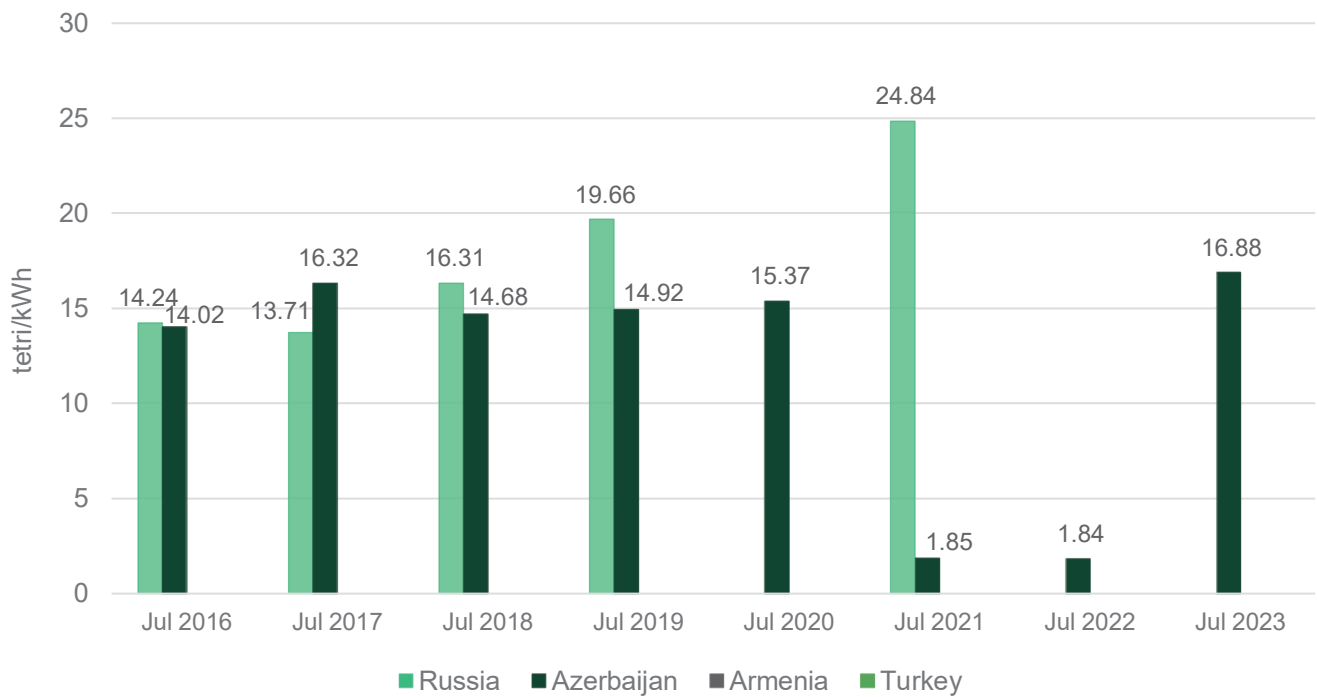
Figure 16 - Prices Import/Export



Source: ESCO

In July 2023, electricity import price from Azerbaijan stood at 6.50 ¢ or 16.88 tetri (Figure 17).

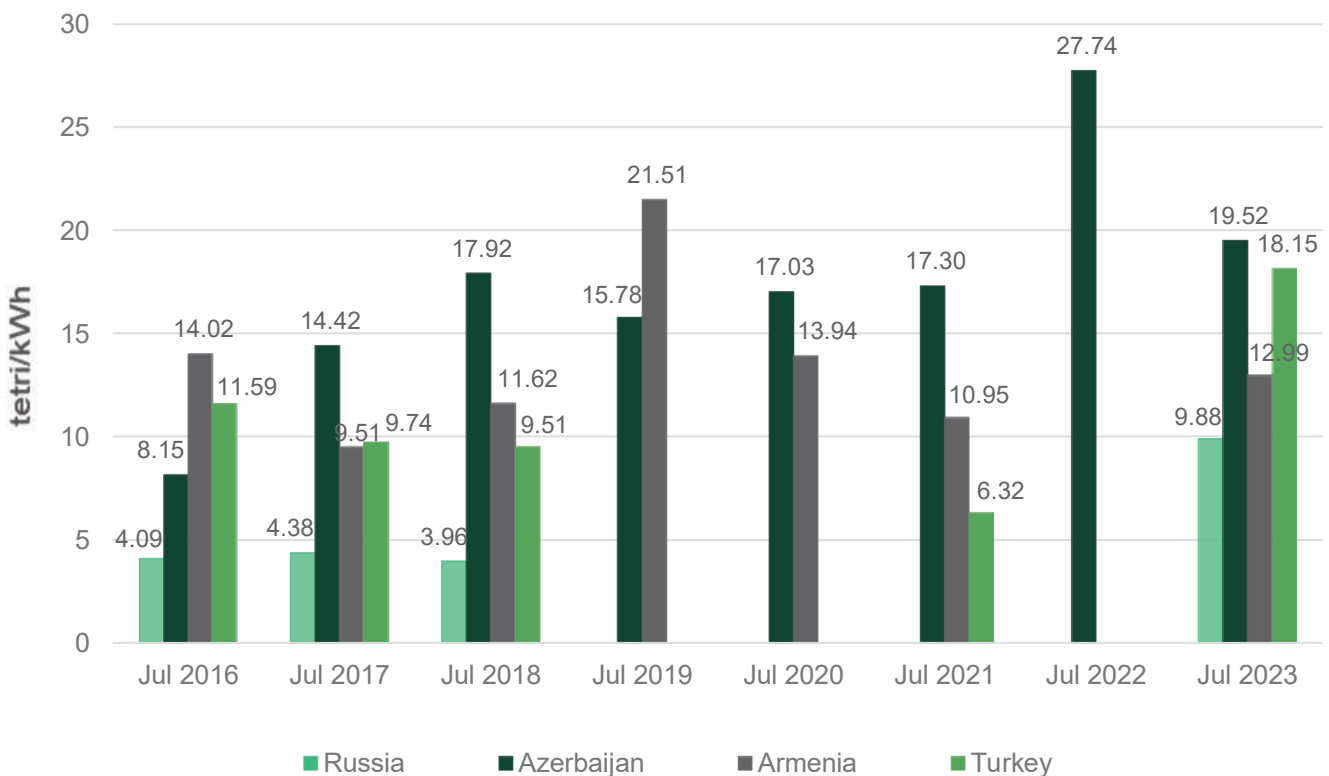
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In July 2023, the electricity export price from Azerbaijan, Armenia, Russia, and Turkey stood at 7.51 ¢ or 19.52 tetri, 5 ¢ or 12.99 tetri, 3.8 ¢ or 9.88 tetri and 6.99 ¢ or 18.15 tetri, respectively (Figure 18).

Figure 18 - Export Prices by Countries

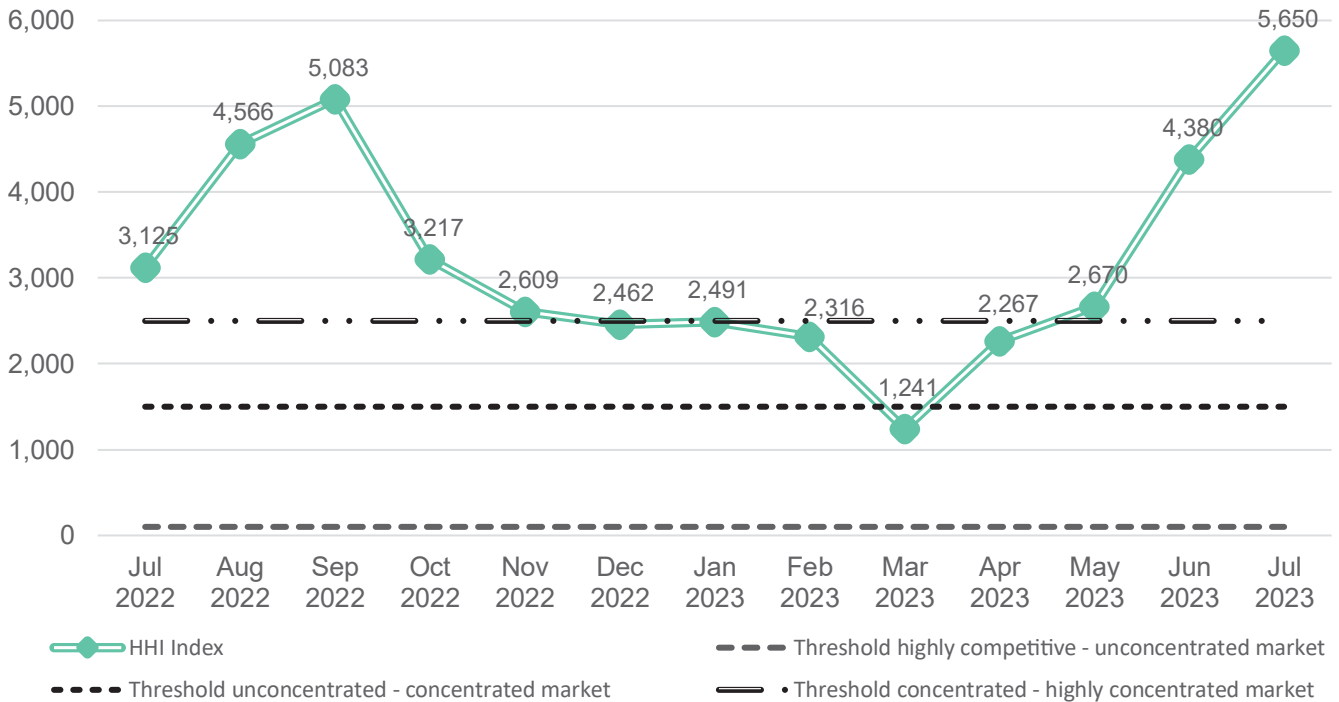


Source: ESCO/Geostat

2. Market Concentration

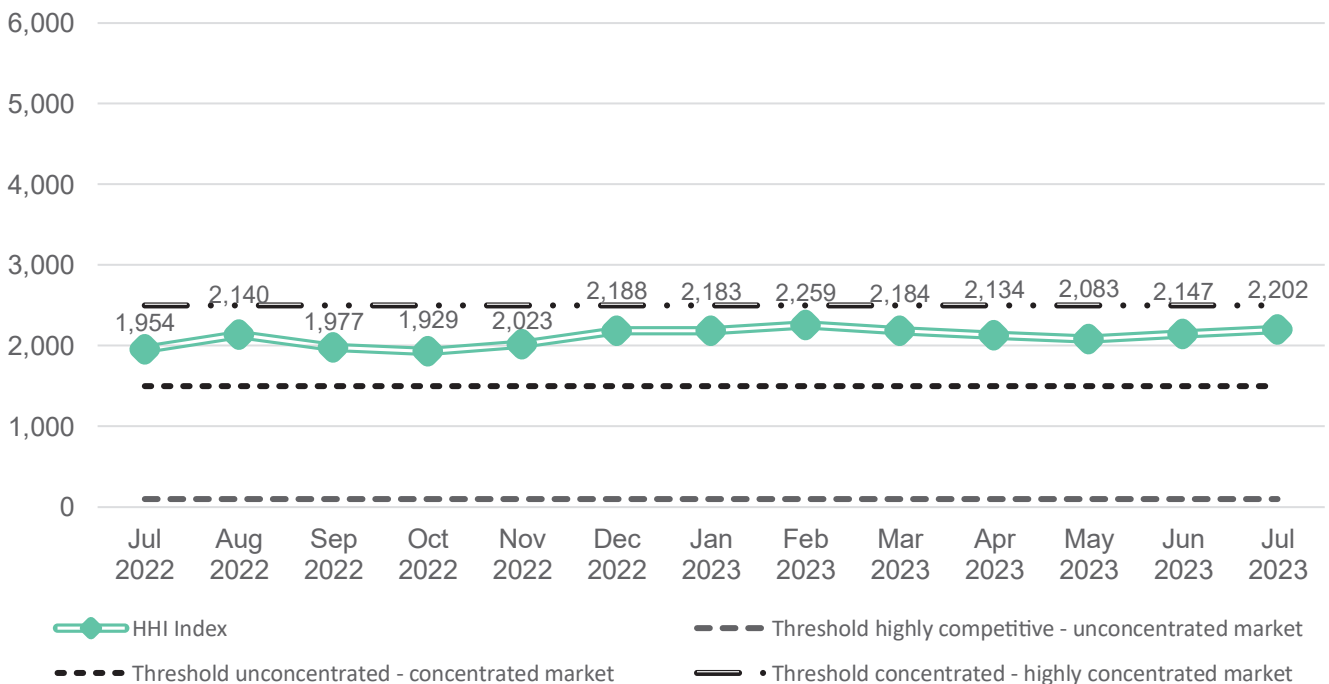
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In July 2023, Georgian electricity generation market index remained above the threshold of highly concentrated market with an HHI value of 5,650 (Figure 19). This is higher than the level in July 2022 (with an HHI value of 3,125), and higher than the level in June 2023 (the HHI was 4,380). As for the consumption segment, in July 2023, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 2,202 (above the level in July 2022 – 1,954 and the level in June 2023 – 2,147). In fact, September 2020 was the last month when the index value was above the level of a highly concentrated market, which indicates that the market is becoming increasingly competitive (Figure 20).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO