

ISET

International School of Economics at TSU
Policy Institute

DECEMBER

2023



ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE AGRICULTURE & RURAL POLICY RESEARCH CENTER

Author:

Erekle Shubitidze
Senior Researcher

✉ erekle.shubitidze@iset.ge

INFORMATION

- In December 2023 there was an increase in the total electricity generation by 4% on a yearly basis and increase by 16% on a monthly basis.
- Consumption decreased by 3% on a yearly basis and increased by 18% compared to the previous month.
- Consumption exceeded generation by 53 mln. kWh which was 5% of the total generation and 4% of the total consumption in December 2023.
- There were imports of 108.1 mln. kWh in December 2023.
- There were exports of 0.01 mln. kWh in December 2023.
- The main import partner country was Russia.
- The main export partner country was Turkey.
- The price of imports reached 0.13 ჯ, or 0.34 tetri per kWh.
- The price of exports reached 6.7 ჯ, or 18 tetri per kWh.
- The HHI index for the Georgian electricity generation market remained between the threshold of highly concentrated and concentrated market. In December 2023, its level was 2,140.
- The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. In December 2023, its level was 2,284.

ABBREVIATION USED

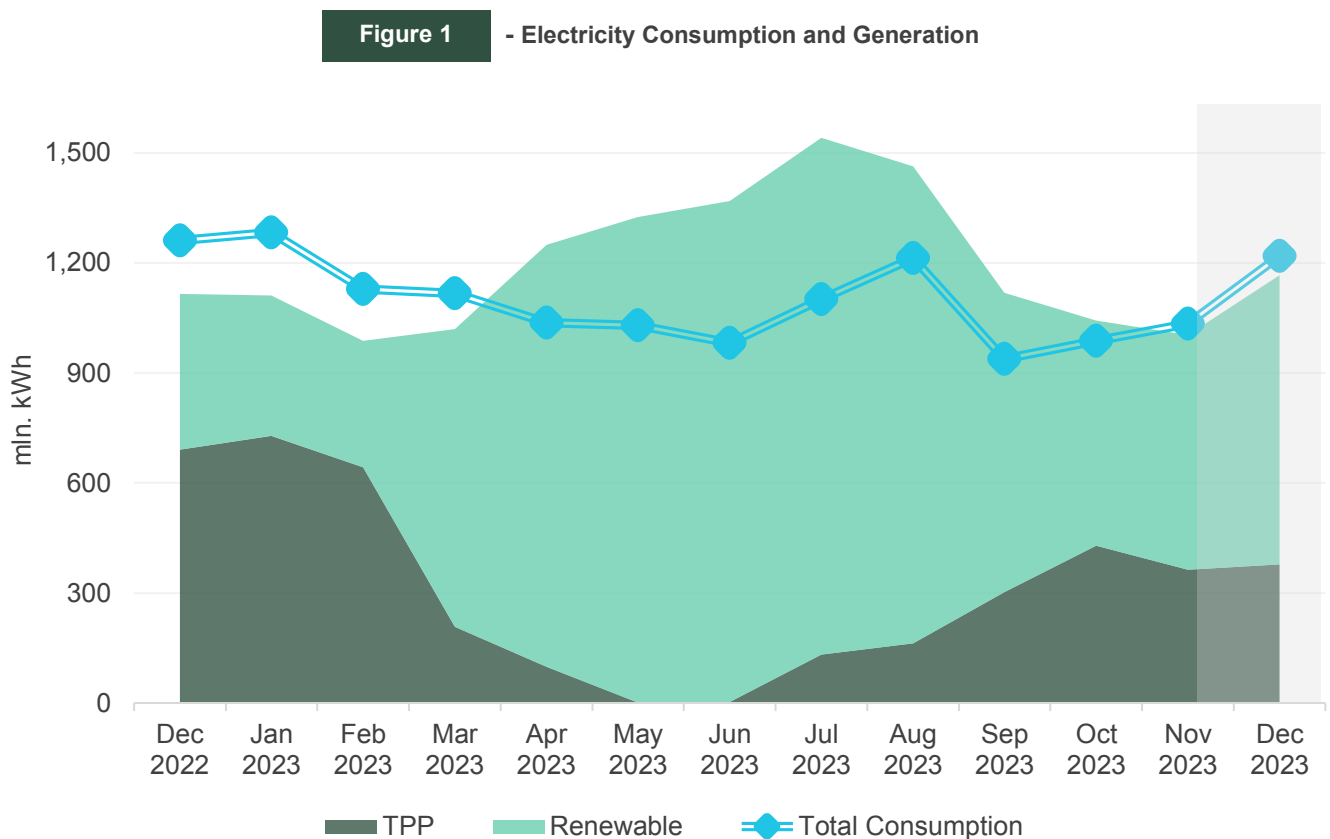
Mln	million
kWh	kilowatt-hour
HPP	Hydro Power Plant
WPP	Wind Power Plant
TPP	Thermal Power Plant
HHI	Hirschmann-Herfindahl Index
Telmico	Tbilisi Electricity Supply Company
Ep Georgia	Ep Georgia Supply
Geostat	National Statistics Office of Georgia
ESCO	Electricity Market Operator

Generation – Consumption – Trade

In December 2023, Georgian power plants generated 1,166 mln. kWh of electricity (Figure 1). This represents a 4% increase in the total generation compared to the previous year (in December 2022, the total generation was 1,116 mln. kWh). The rise in generation on a yearly basis comes from an increase in hydro power generation by 87%, while generation of thermal and wind power plants decreased by 45% and 16%, respectively.

On a monthly basis, the generation increased by approximately 16% (in November 2023, the total generation was 1,003 mln. kWh) (Figure 1). The monthly rise in total generation is induced by an increase of thermal and hydro power generation by 4% and 23%, respectively, while wind power generation decreased by 1%.

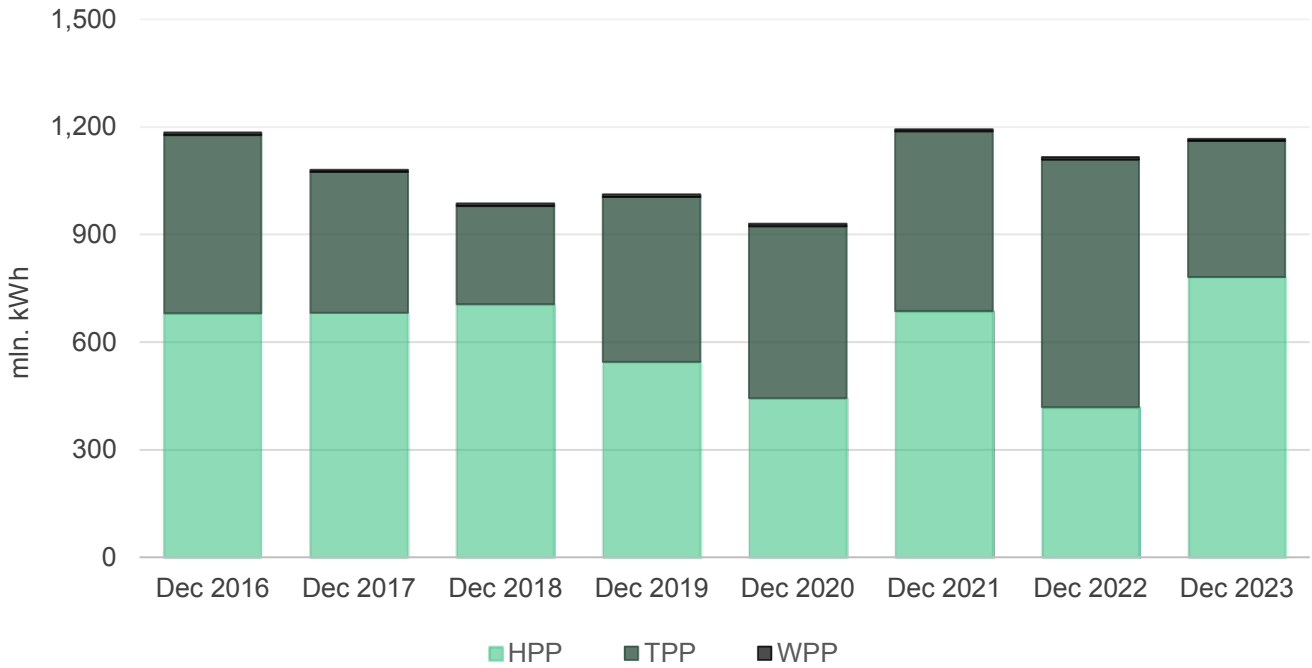
The consumption of electricity on the local market was 1219 mln. kWh (-3% compared to December 2022, and +18% compared to November 2023) (Figure 1). In December 2023, power consumption exceeded generation by 53 mln. kWh which was 5% of the total generation and 4% of the total consumption (in December 2022, the difference between the total generation and the consumption resulted in a deficit of 145 mln. kWh, around 13% of the total generation and 11% of the total consumption for the month).



Source: Electricity System Commercial Operator (ESCO)

In December 2023, hydro power plants were the leading source of generation. In December 2023, hydro power (HPP) generation amounted to 782 mln. kWh (67% of total), thermal power (TPP) generation was 378 mln. kWh (32.4% of the total generation), while wind power (WPP) generation amounted to 6 mln. kWh (0.5% of the total generation) (Figure 2).

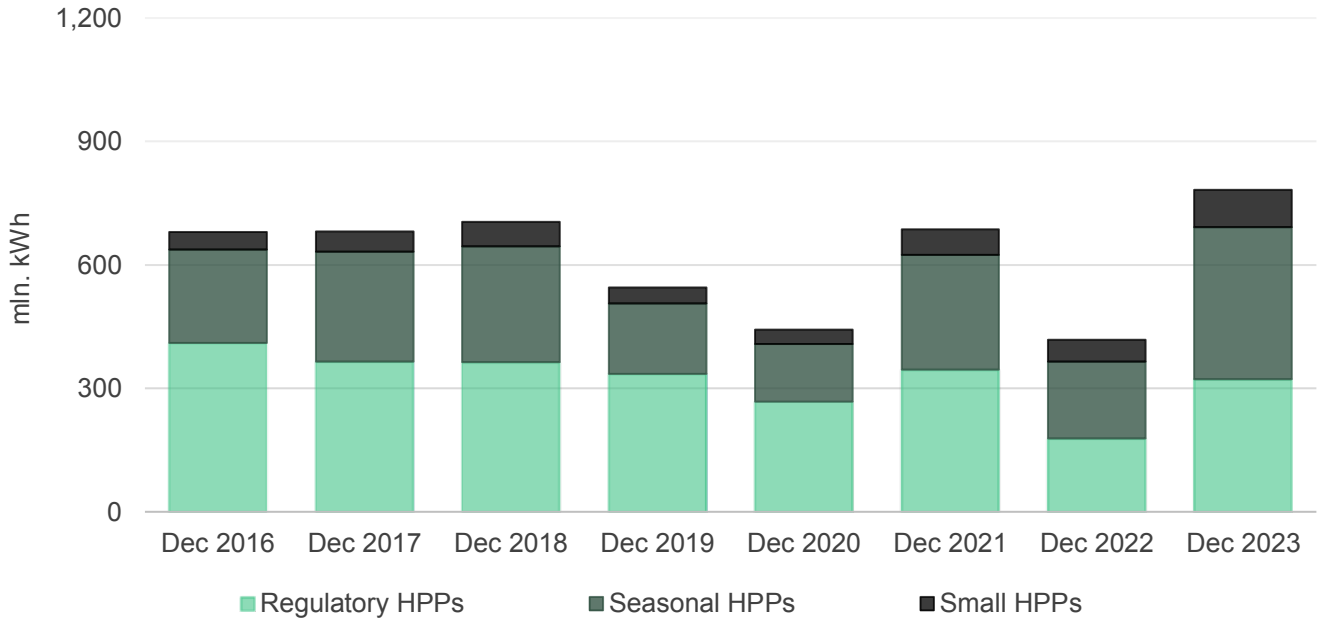
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 41.2% (322 mln. kWh) of electricity, while seasonal and small HPPs produced 47.2% (369 mln. kWh) and 11.6% (90 mln. kWh), respectively (Figure 3).

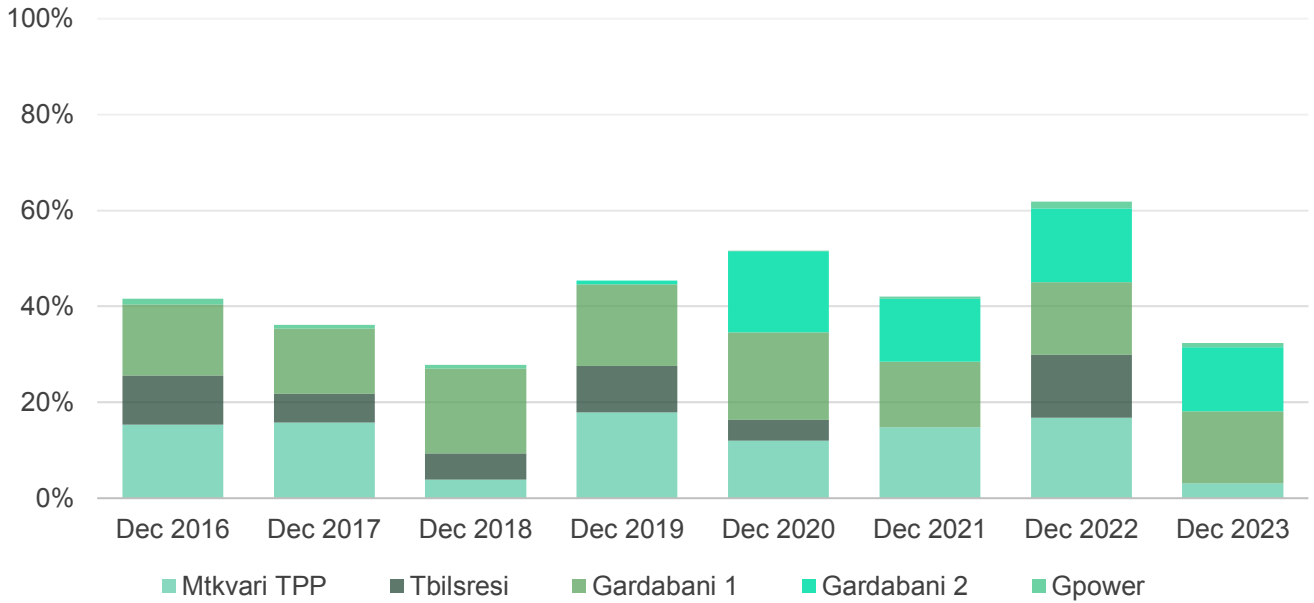
Figure 3 - HPP Generation by Type



Source: ESCO

As for thermal power generation, Gardabani 1 generated 176 mln. kWh (46.5% of TPP generation and 15.1% of total power generation), Gardabani 2 generated 155 mln. kWh (41.1% of TPP generation and 13.3% of total power generation), Mtkvari TPP generated 36 mln. kWh (9.5% of TPP generation and 3.1% of total power generation) and Gpower generated 11 mln. kWh (2.9% of TPP generation and 0.9% of total power generation) (Figure 4).

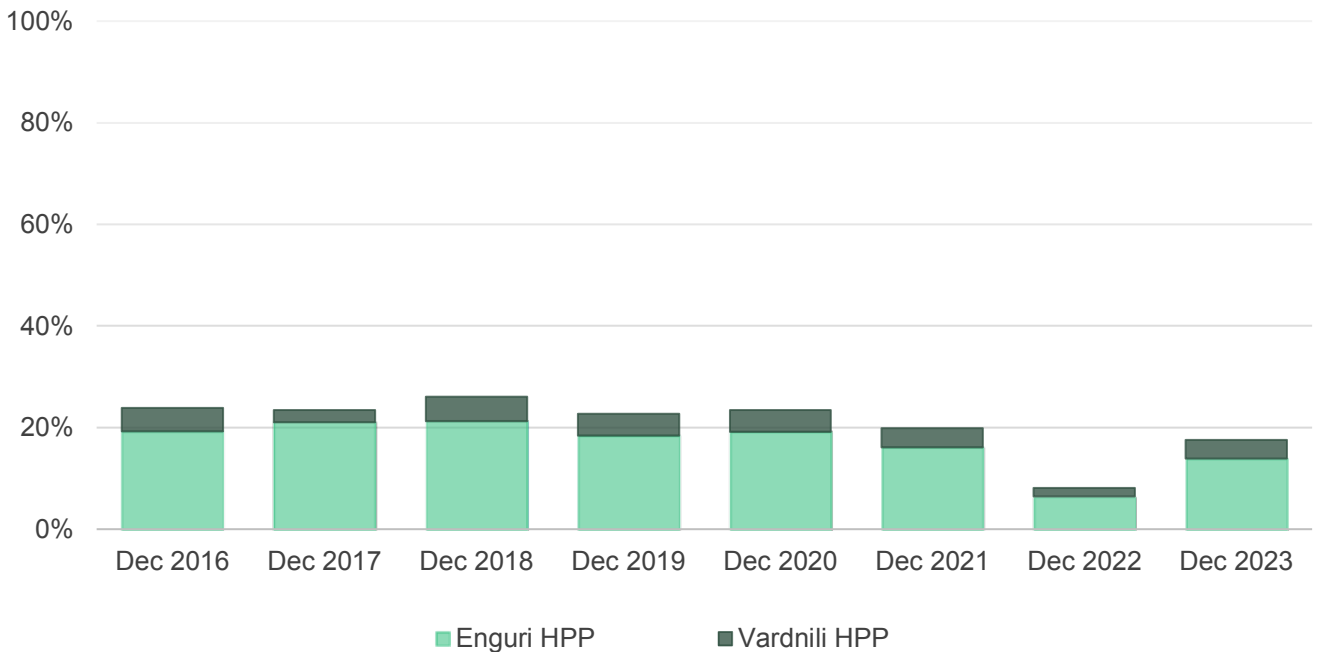
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 42 mln. kWh (14.7% of generation for regulatory HPPs and 3.6% of total generation). Enguri HPP generated 162 mln. kWh, which represents 50.3% of generation of regulatory HPPs and 13.9% of total generation (Figure 5).

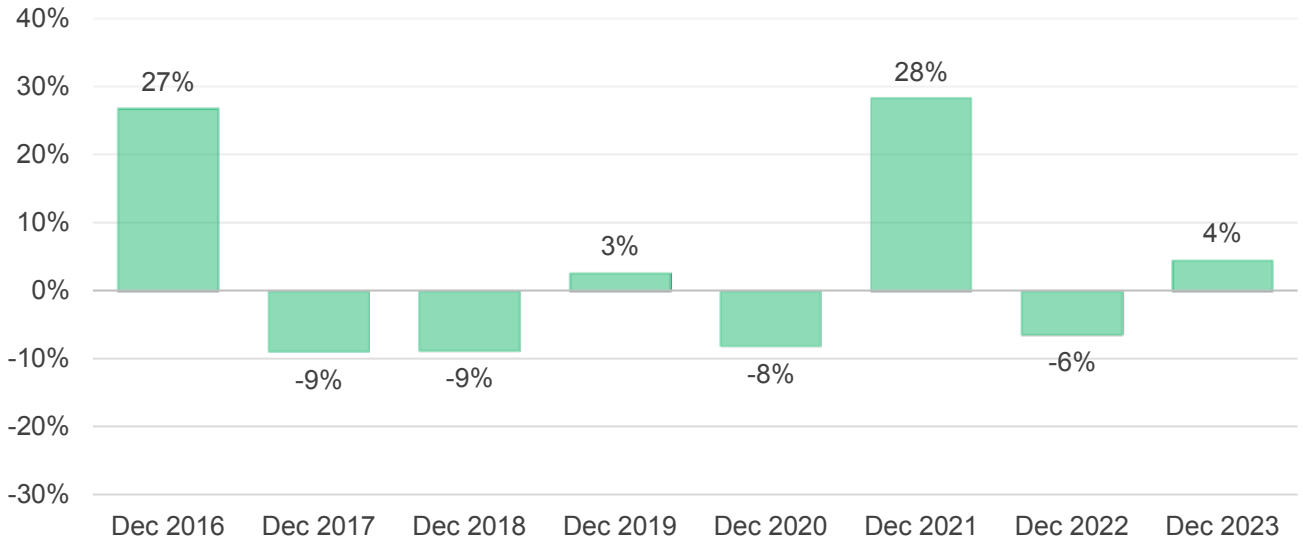
Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, the total generation increased by 4% compared to December 2022 (Figure 6).

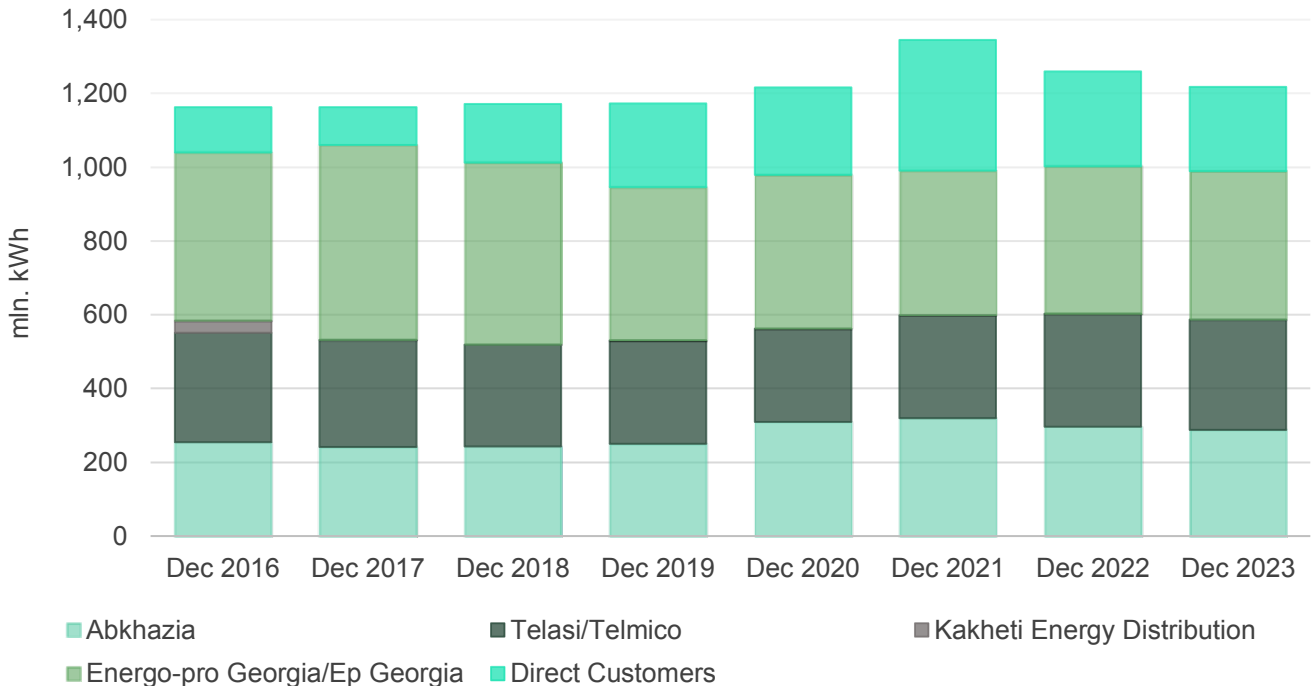
Figure 6 - Growth of Generation (% , y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia¹ (33% - 402 mln. kWh), Abkhazia (24% - 288 mln. kWh), Telasi/Telmico² (25% - 299 mln. kWh), and direct customers (19% - 229 mln. kWh) (Figure 7). Annual demand from Abkhazia, Telasi/Telmico and direct customers fell by 3%, 2% and 11%, respectively, while it increased from Energo-Pro Georgia/Ep Georgia by 0.7%. Overall, there was an annual decrease of 3% in the total electricity consumption in December 2023, compared to December 2022 (Figure 8).

Figure 7 - Electricity Consumption by Type of Consumer

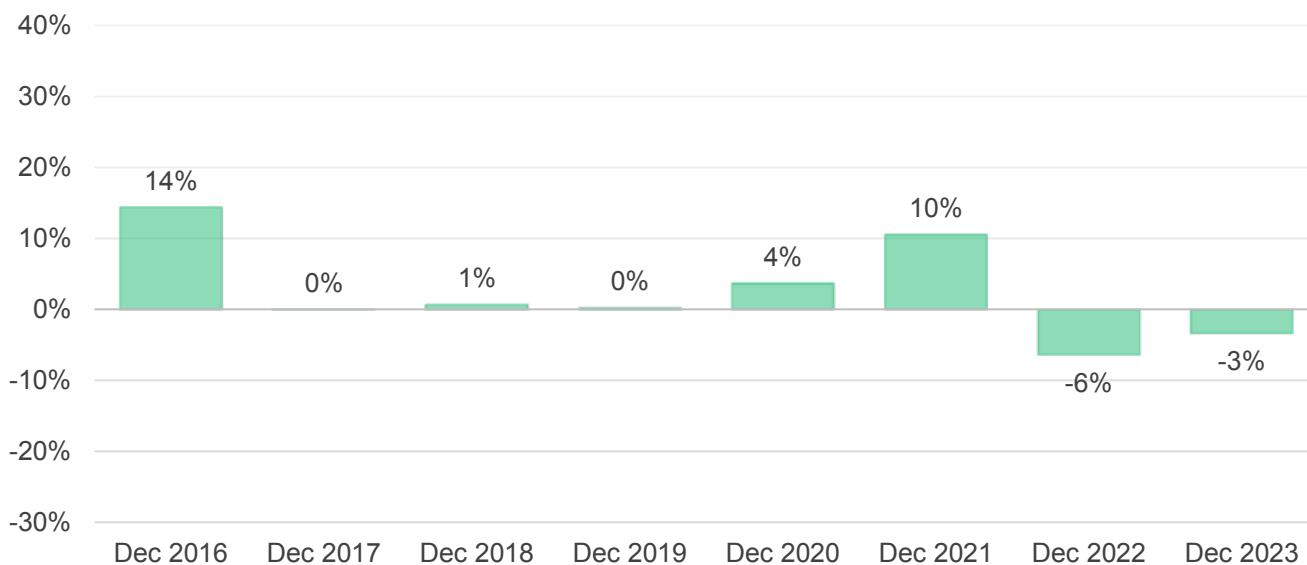


Source: ESCO

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)

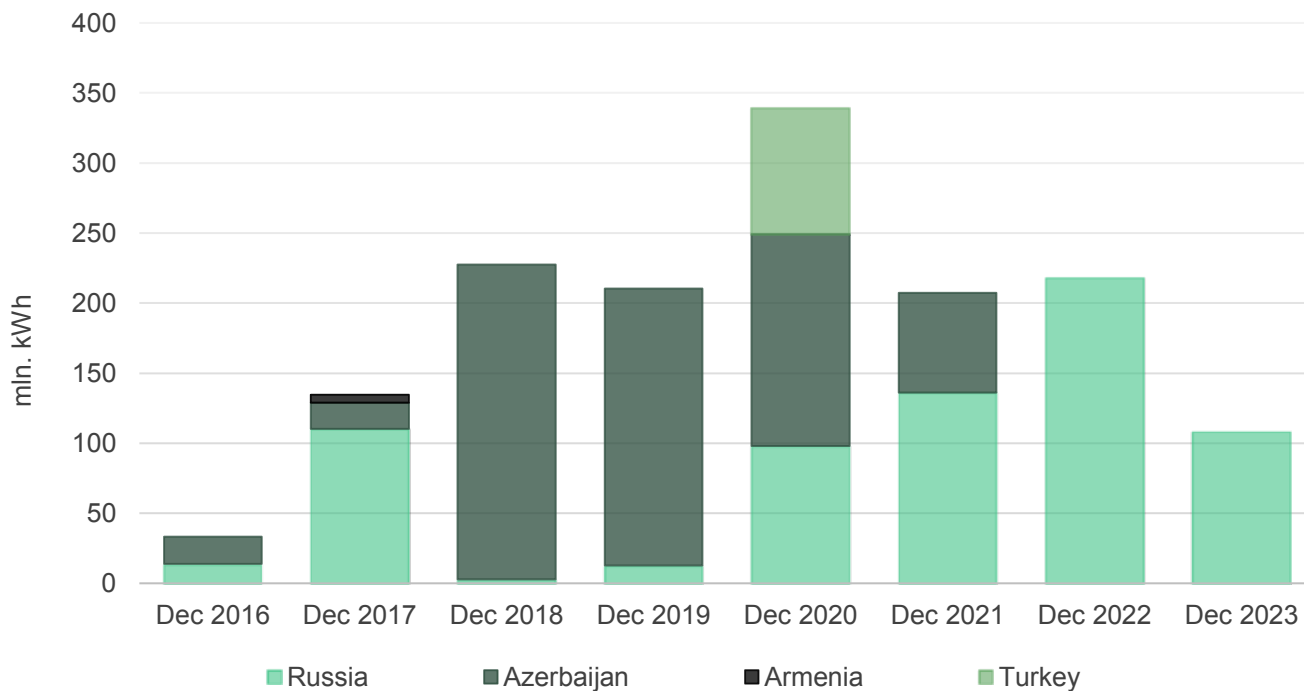


Source: ESCO

In December 2023, there was an import of 108.1 mln. kWh of electricity (in December 2022, there was import of 217.6 mln electricity) (Figure 9). 100% of this import came from Russia (in December 2022, 100% of import came from Russia as well). In December 2023, there was an export of 0.01 mln. kWh of electricity to Russia (there was export of 0.033 mln. electricity to Russia, and 0.017 mln electricity to Azerbaijan in December 2022) (Figure 10). There was 486 mln. kWh transit in December 2023 from Azerbaijan to Turkey (in December 2022, there was 446 mln. kWh transit from Azerbaijan to Turkey, and 71 mln. kWh transit from Armenia to Turkey).

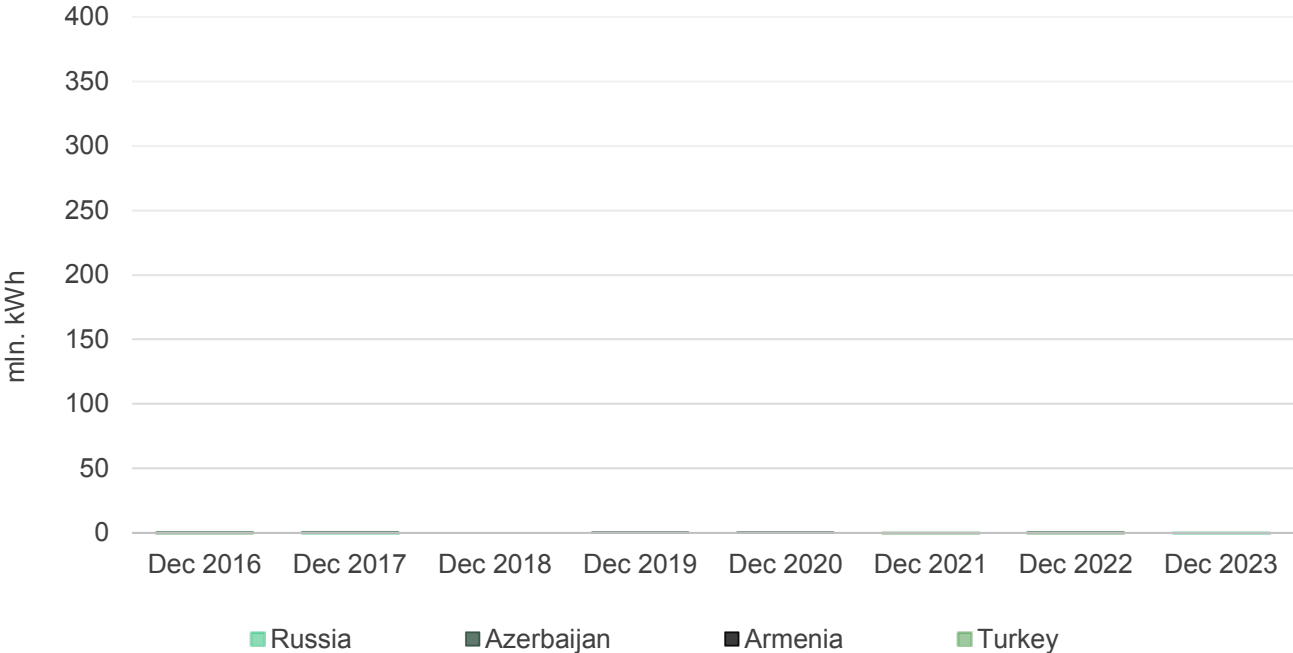
In December 2023, imports decreased by 50%, while exports decreased by 80% compared to December 2022.

Figure 9 - Imports by Year



Source: ESCO

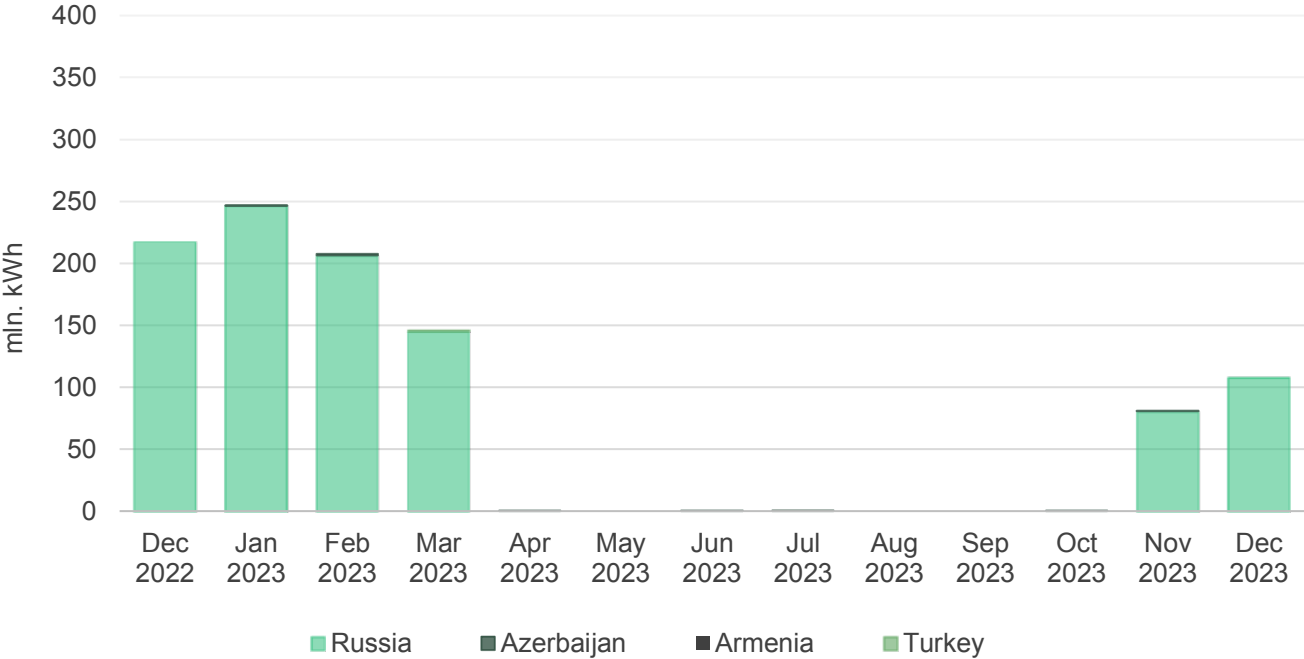
Figure 10 - Exports by Year



Source: ESCO

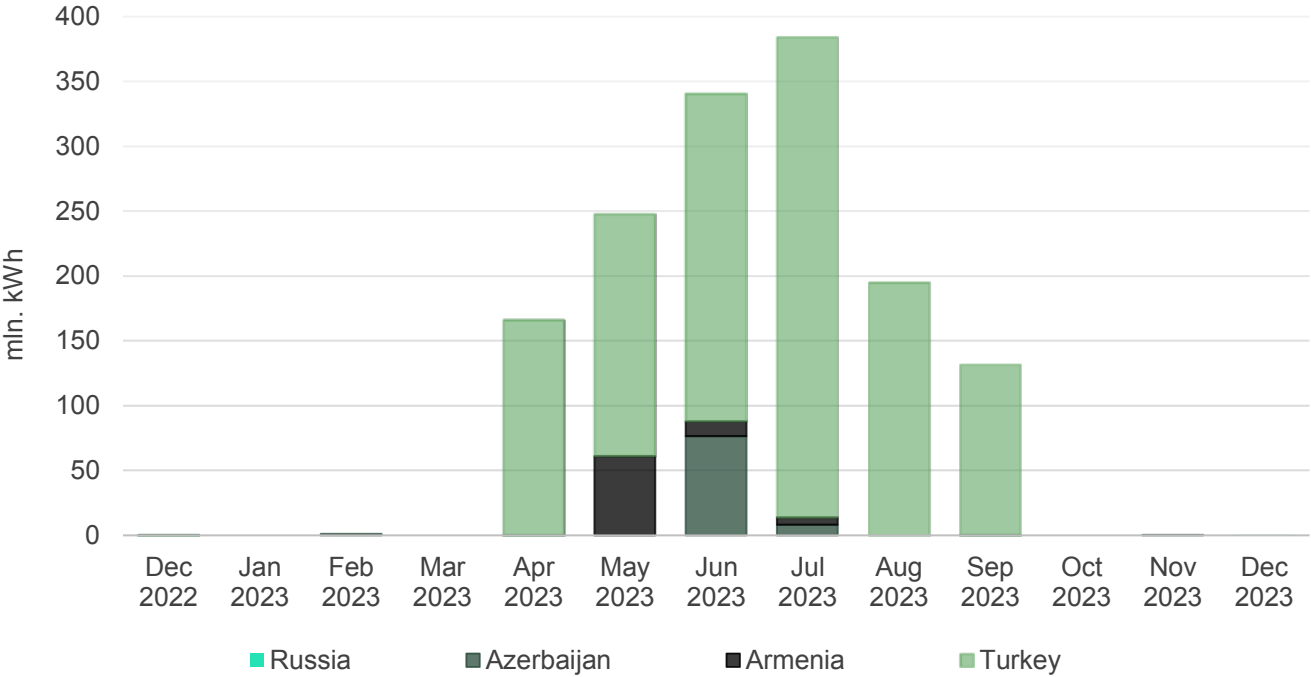
Electricity imports increased by 34% in December 2023, compared to November 2023 (Figure 11). Electricity exports decreased by 94% in December 2023, compared to November 2023 (Figure 12).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

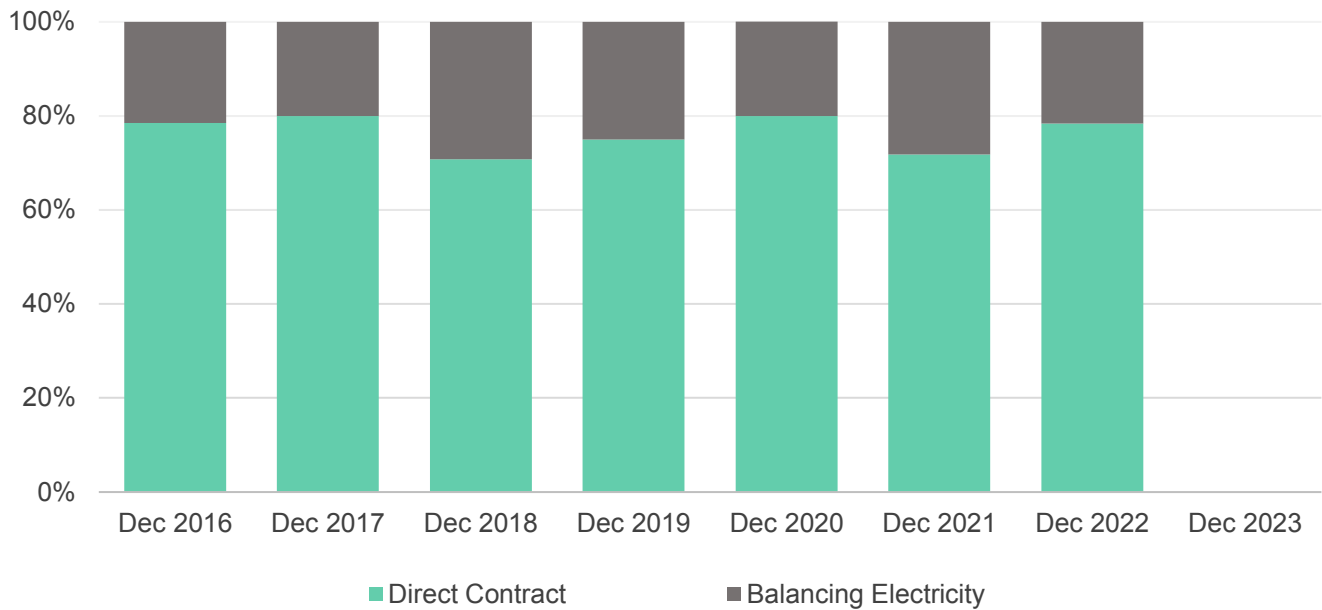


Source: ESCO

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). Unfortunately, the data for December 2023 was not available.

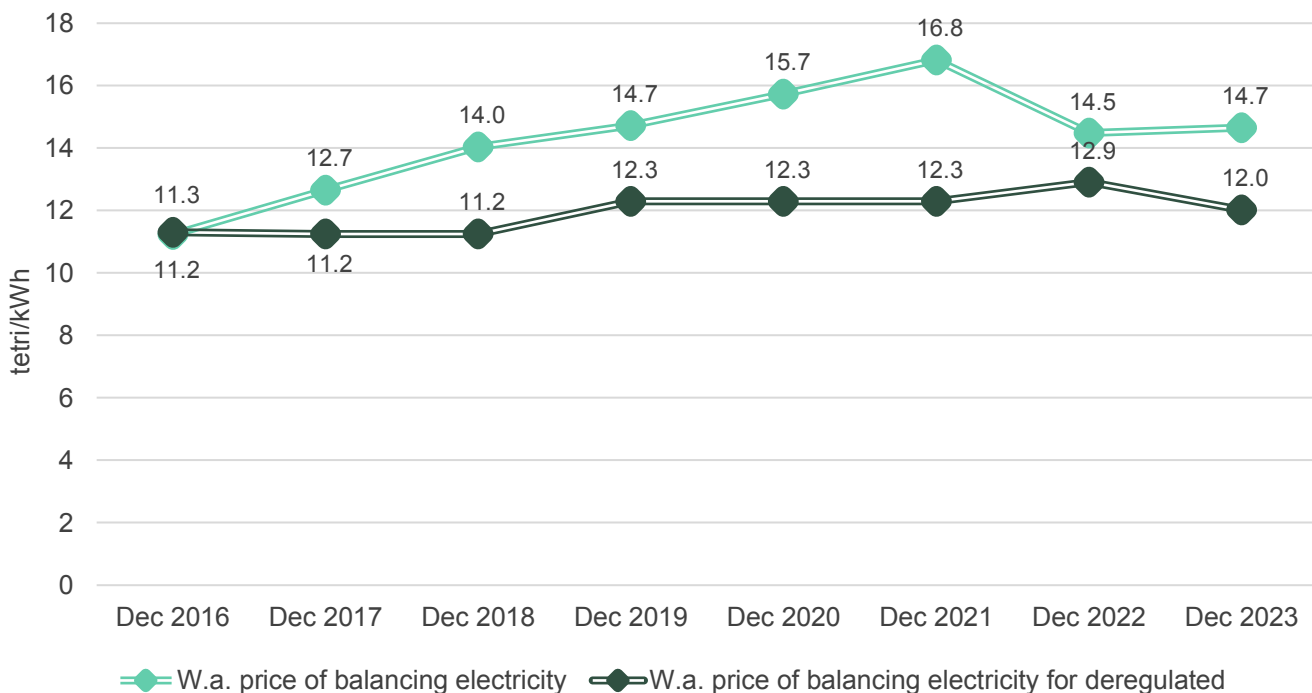
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In December 2023, the weighted average price of balancing electricity was 14.7 tetri/kWh, which corresponds to an annual increase of 1.2% compared to December 2022. As for the weighted average price for deregulated (small) HPPs, it was 12 tetri/kWh, which corresponds to an annual decrease of 6.9% compared to December 2022 (Figure 14).

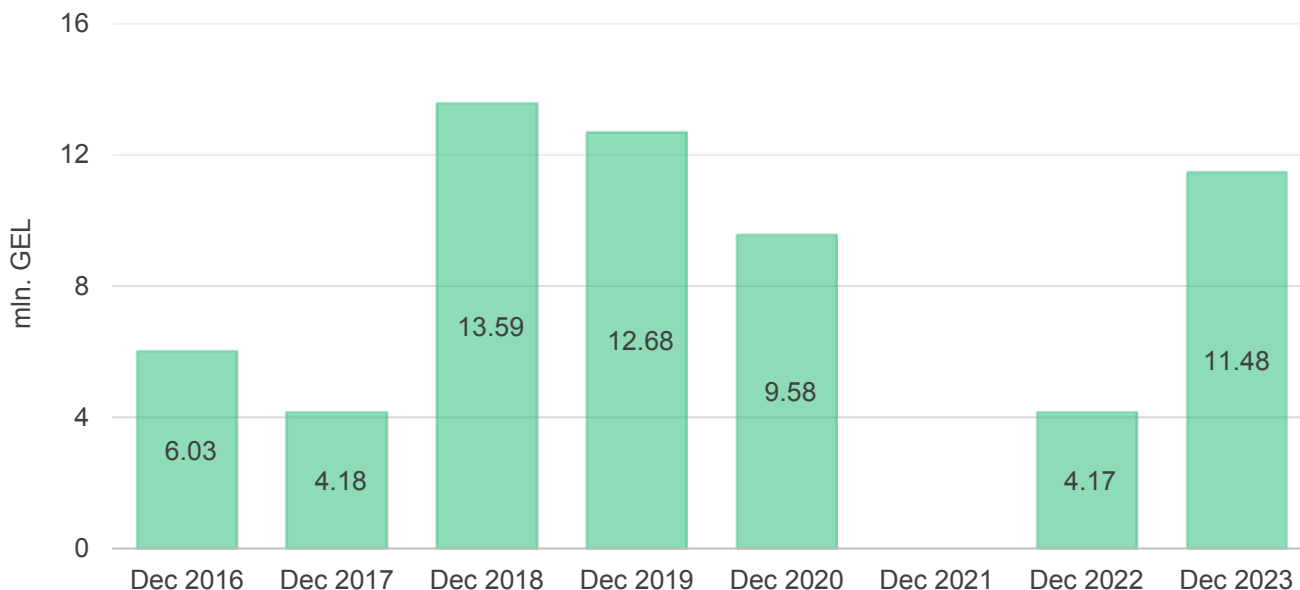
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in December 2023 were roughly 11.48 mln. GEL, which represents a 175% increase compared to December 2022 (Figure 15).

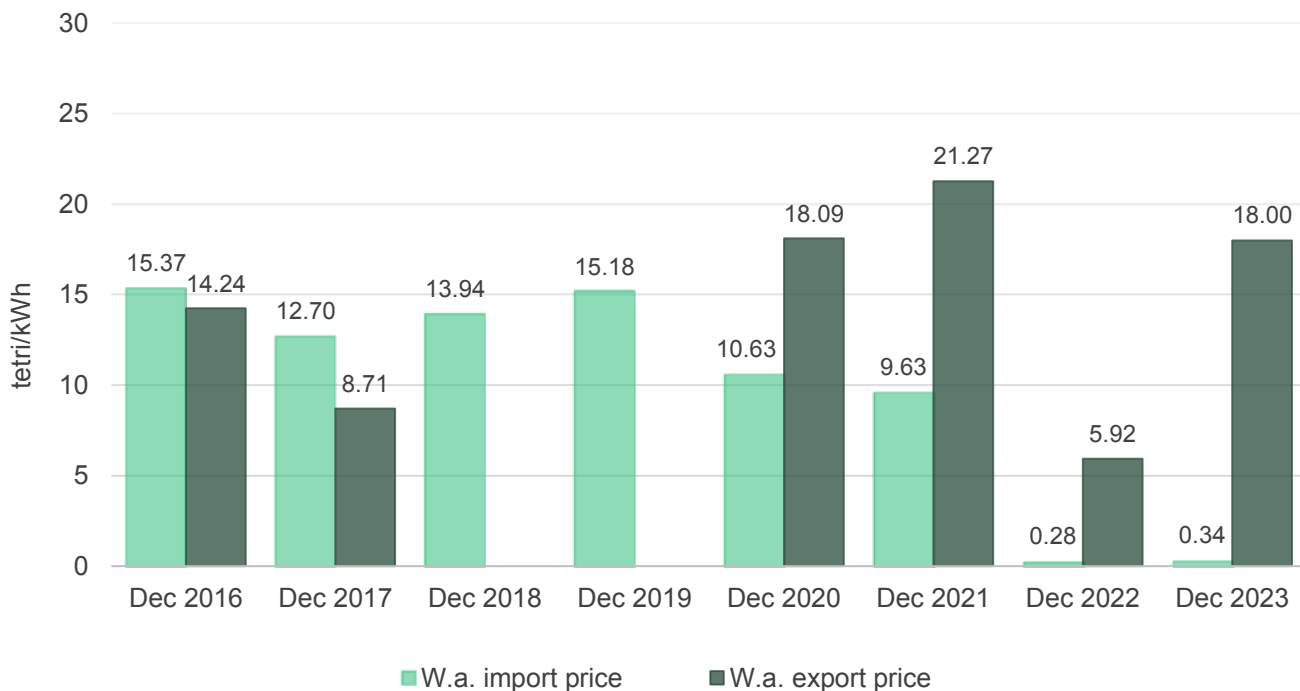
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The electricity import prices in December 2023 were 0.13 ϕ , or 0.34 tetri per kWh (Figure 16). This corresponds to an annual increase in price by 18% in USD and 18% in GEL (prices were 0.11 ϕ , or 0.28 tetri per kWh in December 2022). In November 2023, electricity import prices were 0.14 ϕ , or 0.37 tetri per kWh (Figure 16). This corresponds to a monthly decrease in prices by 9% in USD and 10% in Gel. The electricity export prices in December 2023 were 6.70 ϕ , or 18 tetri per kWh (Figure 16). This corresponds to an annual increase in price by 204% in USD and 204% in GEL (prices were 2.2 ϕ , or 5.92 tetri per kWh in December 2022). In November 2023, electricity export prices were 6.50 ϕ , or 17.60 tetri per kWh (Figure 16). This corresponds to a monthly increase in prices by 3% in USD and 2% in Gel.

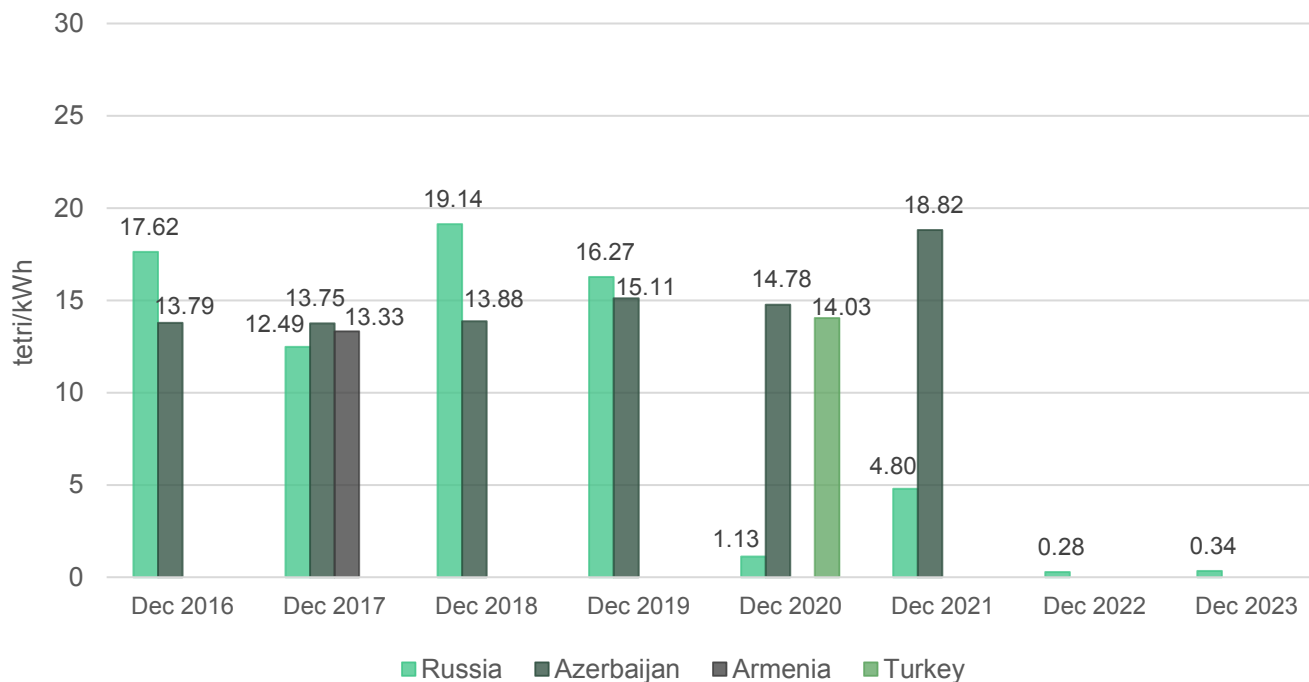
Figure 16 - Prices Import/Export



Source: ESCO

In December 2023, the electricity import price from Russia stood at 0.13 ¢ or 0.34 tetri (Figure 17).

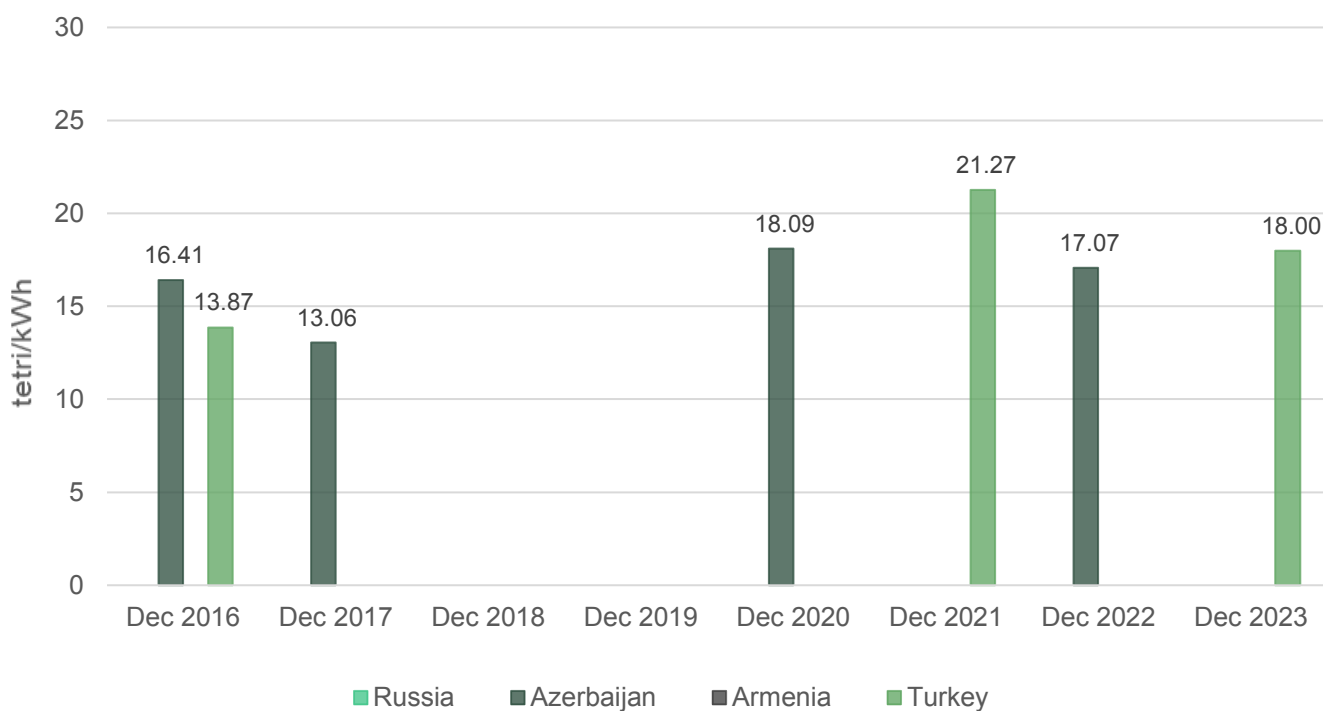
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In December 2023, the electricity export price from Turkey stood at 6.70 ¢ or 18 tetri (Figure 18).

Figure 18 - Export Prices by Countries

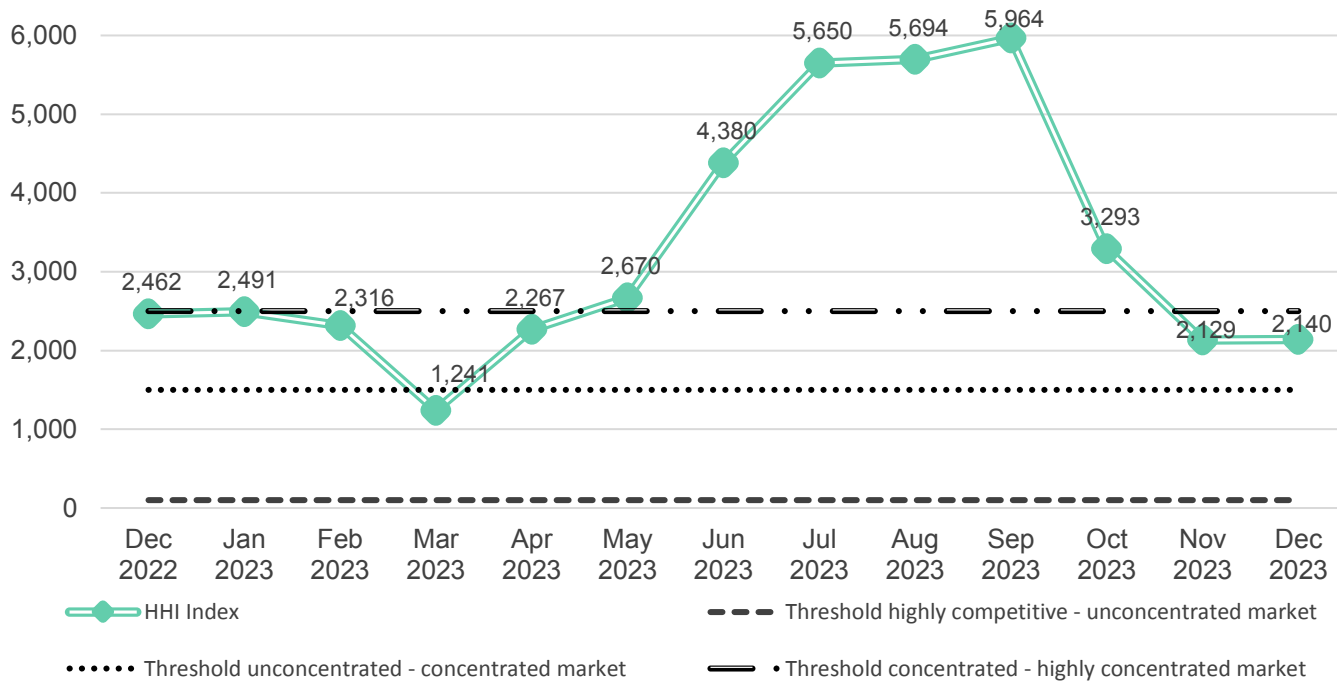


Source: ESCO/Geostat

2. Market Concentration

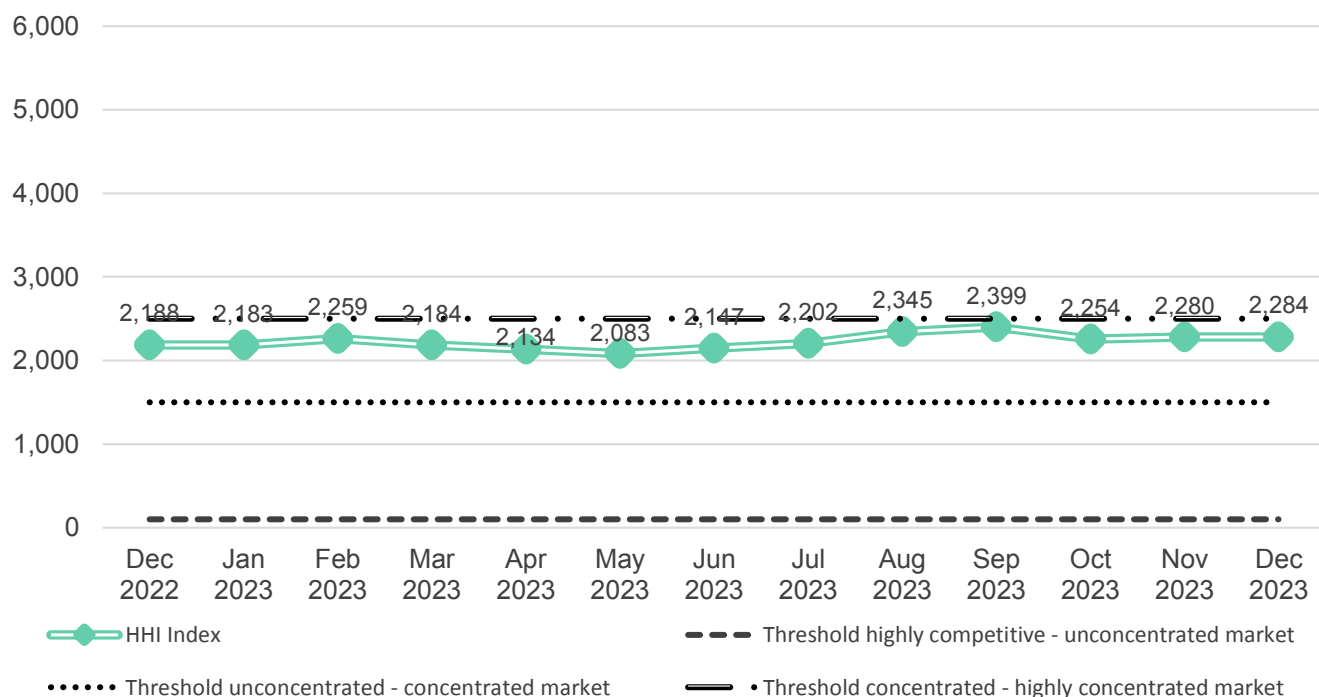
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In December 2023, Georgian electricity generation market index remained between the threshold of highly concentrated and concentrated market with an HHI value of 2,140 (Figure 19). This is lower than the level in December 2022 (with an HHI value of 2,462), and higher than the level in November 2023 (the HHI was 2,129). As for the consumption segment, in December 2023, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 2,284 (above the level in December 2022 – 2,188 and above the level in November 2023 – 2,280). 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