

# ISET

International School of Economics at TSU  
Policy Institute

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# **ELECTRICITY MARKET REVIEW**



# ISET POLICY INSTITUTE

## ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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## INFORMATION

- In January 2023 there was an increase in the total electricity generation by 8% on a yearly basis and decrease by 0.5% on a monthly basis.
- Consumption decreased by 7% on yearly basis and increased by 2% compared to the previous month.
- Consumption exceeded generation by 172 mln. kWh which was 16% of the total generation and 13% of the total consumption in January 2023.
- There was an import of 247 mln. kWh in January.
- There was no export in January.
- The main import partner country was Russia. 99% of the import from Russia went to Abkhazia.
- The price of imports reached 0.11 ჯ, or 0.3 tetri per kWh.
- The HHI index for the Georgian electricity generation market remained below the threshold of highly concentrated market. In January 2023, its level was 2,491.
- The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. In January 2023, its level was 2,183.

## ABBREVIATION USED

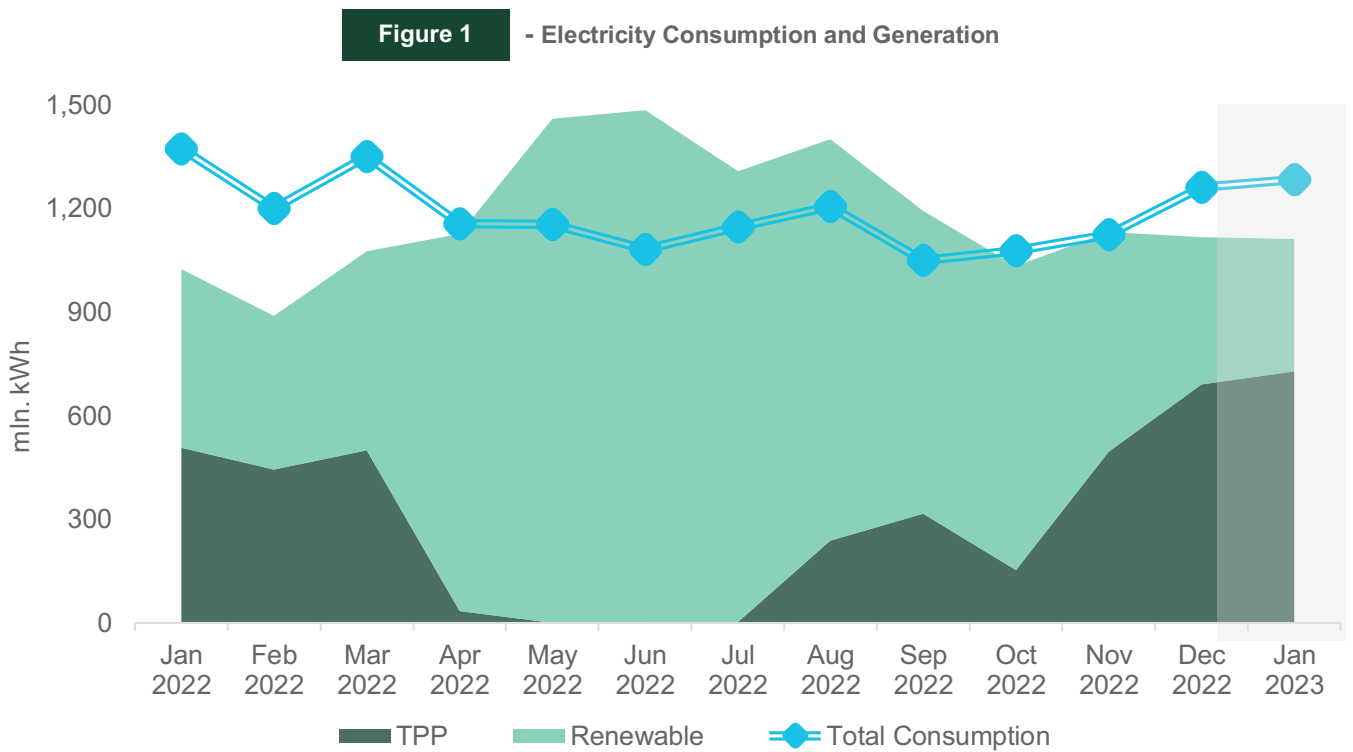
Mln	million
kWh	kilowatt-hour
HPP	Hydro Power Plant
WPP	Wind Power Plant
TPP	Thermal Power Plant
HHI	Hirschmann-Herfindahl Index
Telmico	Tbilisi Electricity Supply Company
Ep Georgia	Ep Georgia Supply
Geostat	National Statistics Office of Georgia
ESCO	Electricity System Commercial Operator

## Generation – Consumption – Trade

In January 2023, Georgian power plants generated 1,111 mln. kWh of electricity (Figure 1). This represents an 8% increase in the total generation compared to the previous year (in January 2022, the total generation was 1,025 mln. kWh). The increase in the generation on a yearly basis comes from a rise of 43% in thermal and 22% in wind power, while the hydro power generation decreased by 27%.

On a monthly basis, the generation decreased by approximately 0.5% (in December 2022, the total generation was 1,116 mln. kWh) (Figure 1). The monthly fall in the total generation is induced by a 10% decrease in hydro power generation. Meanwhile, wind and thermal power generation increased by 7% and 5%, respectively.

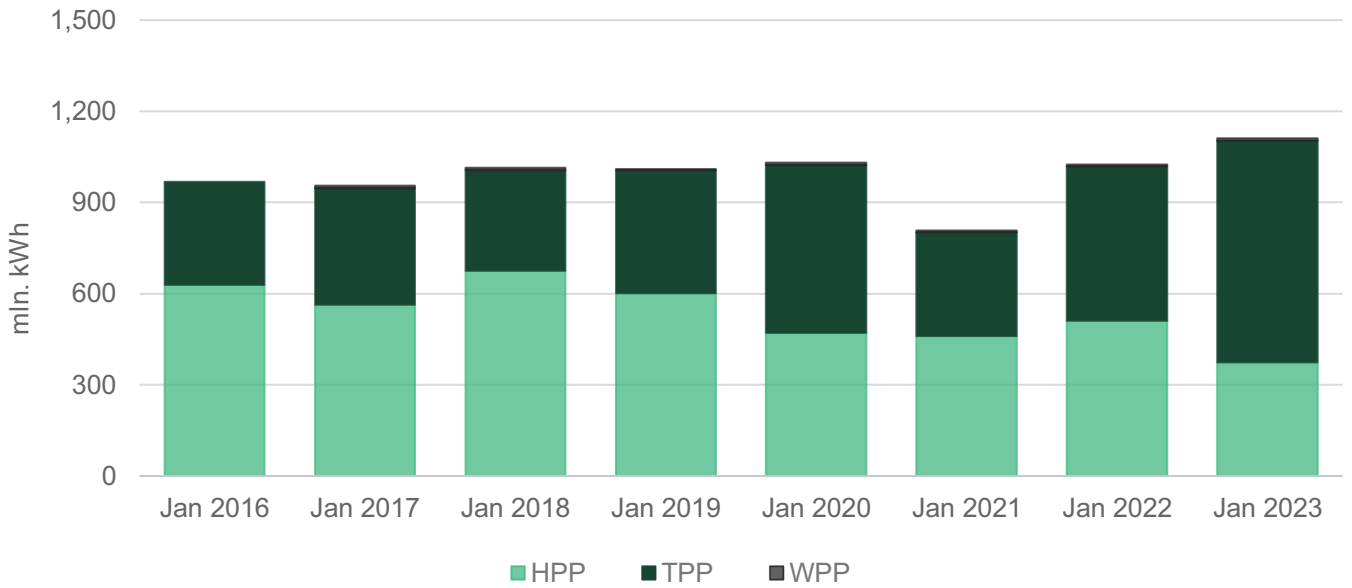
The consumption of electricity on the local market was 1,283 mln. kWh (-7% compared to January 2022, and +2% compared to December 2022) (Figure 1). In January 2023, power consumption exceeded generation by 172 mln. kWh which was 16% of the total generation and 13% of the total consumption (in January 2022, the difference between the total generation and the consumption resulted in a deficit of 349 mln. kWh, around 34% of the total generation and 25% of the total consumption for the month).



Source: Electricity System Commercial Operator (ESCO)

In January 2023, thermal power plants were the leading source of generation. In January 2023, thermal power (TPP) generation amounted to 728 mln. kWh (65.6% of total), hydro power (HPP) generation was 374 mln. kWh (33.7% of the total generation), while wind power (WPP) generation amounted to 8 mln. kWh (0.7% of the total generation) (Figure 2).

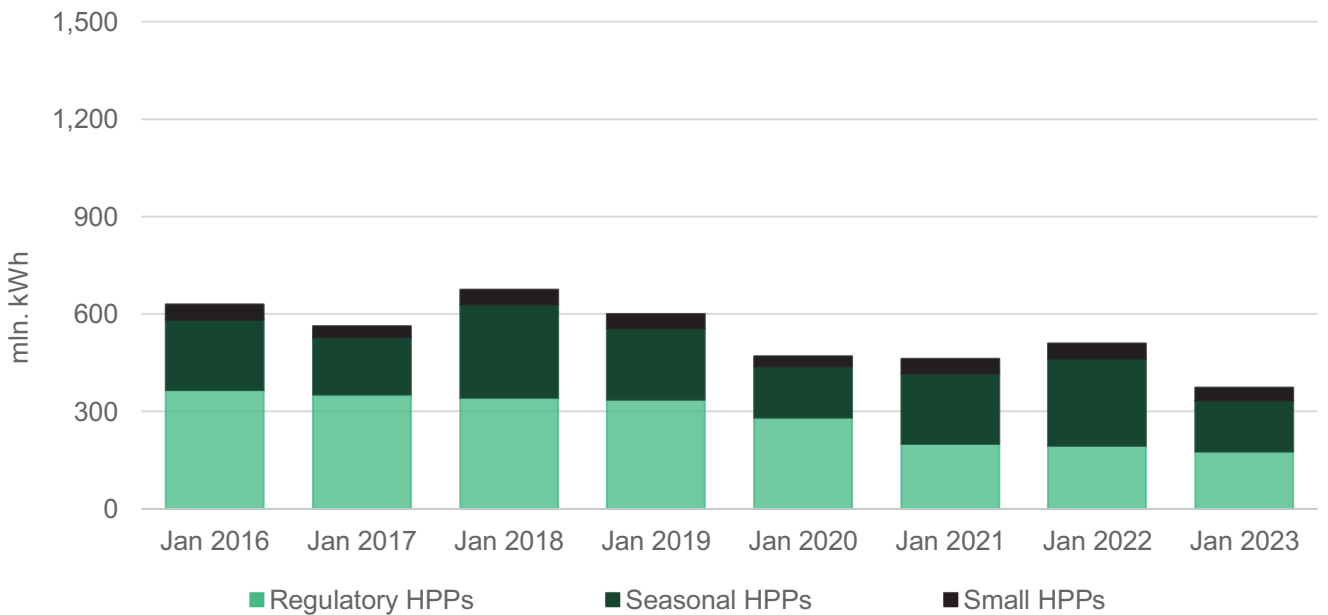
**Figure 2** - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 47% (176 mln. kWh) of electricity, while seasonal and small HPPs produced 42% (158 mln. kWh) and 11% (40 mln. kWh), respectively (Figure 3).

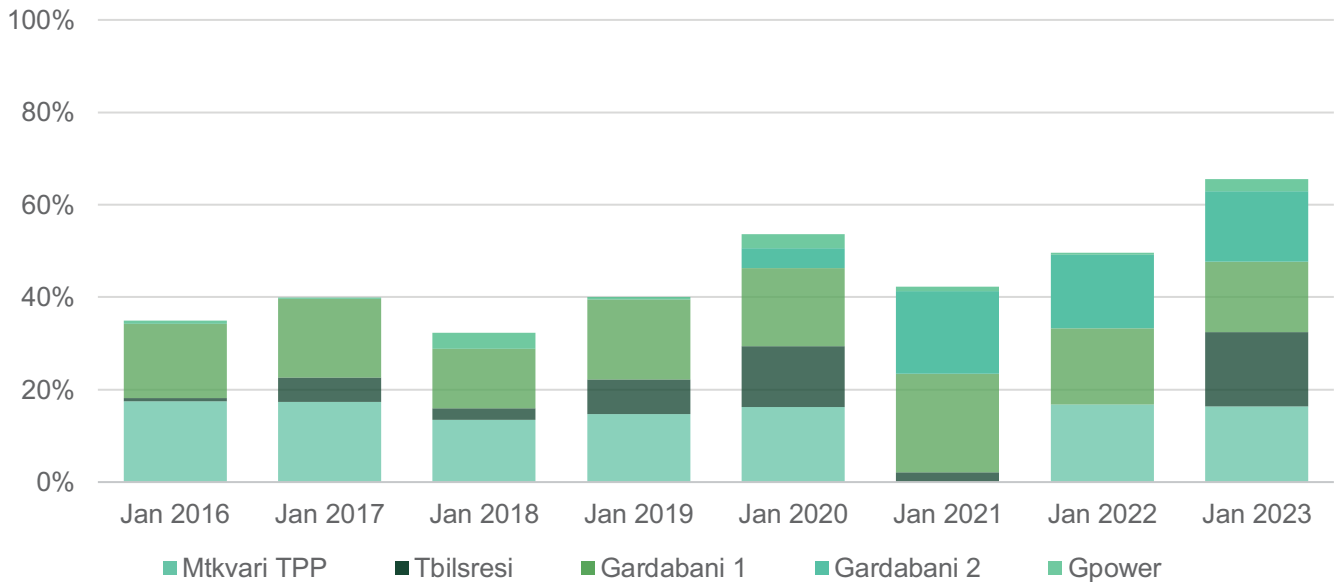
**Figure 3** - HPP Generation by Type



Source: ESCO

As for the thermal power generation, Gardabani 1 TPP generated 169 mln. kWh electricity (23% of TPP generation and 15% of total power generation), Gardabani 2 TPP generated 170 mln. kWh (23% of TPP generation and 15% of total power generation), Mtkvari TPP generated 182 mln. kWh (25% of TPP generation and 16% of total power generation), Tbilisresi generated 179 mln. kWh (25% of TPP generation and 16% of total power generation). The remaining 4% of TPP generation was produced by Gpower (3% of total power generation) (Figure 4).

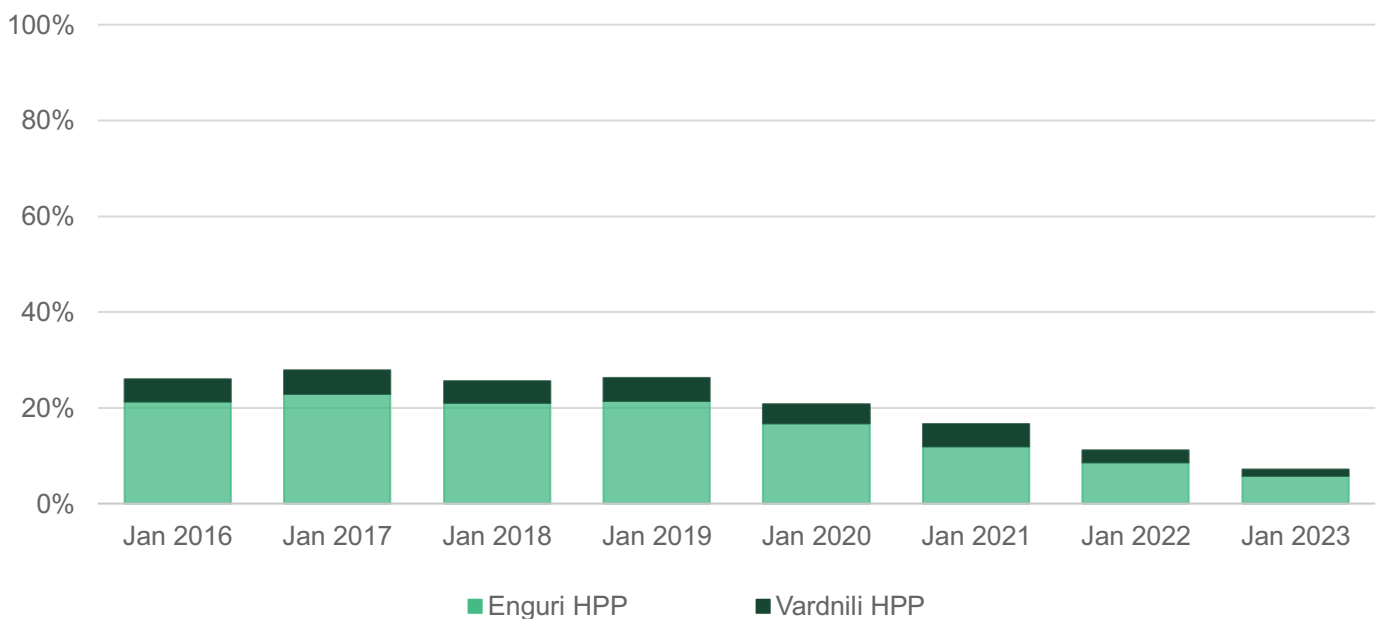
**Figure 4** - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 14 mln. kWh (8% of generation for regulatory HPPs and 1% of total generation). Enguri HPP generated 64 mln. kWh, which represents 36% of generation of regulatory HPPs and 6% of total generation (Figure 5).

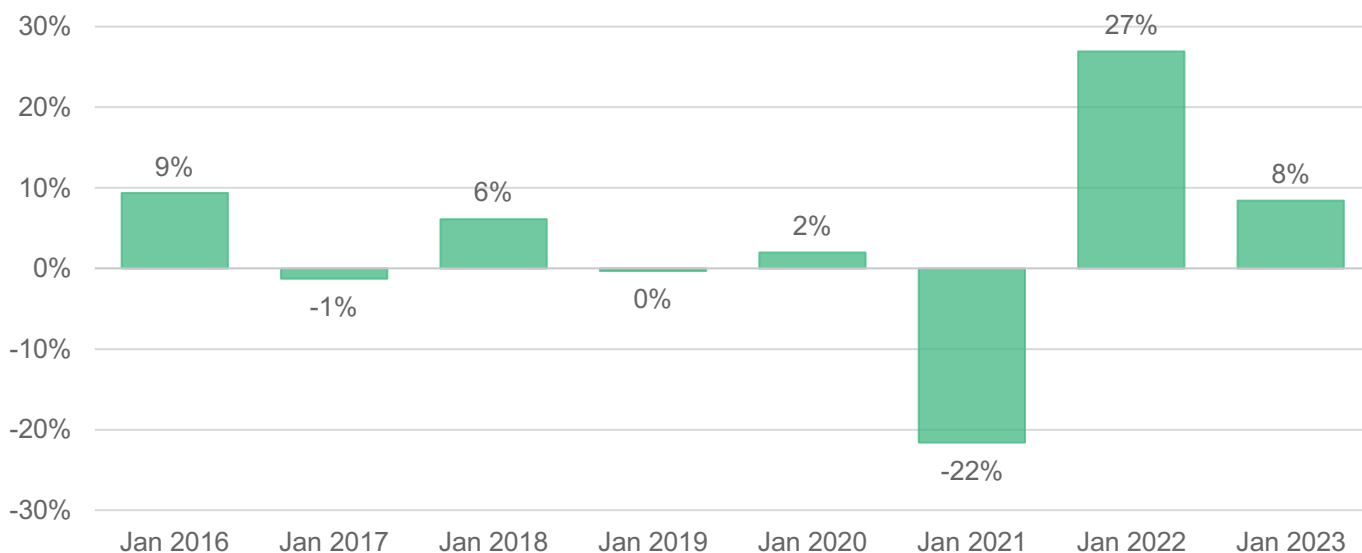
**Figure 5** - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, the total generation increased by 8% compared to January 2022 (Figure 6).

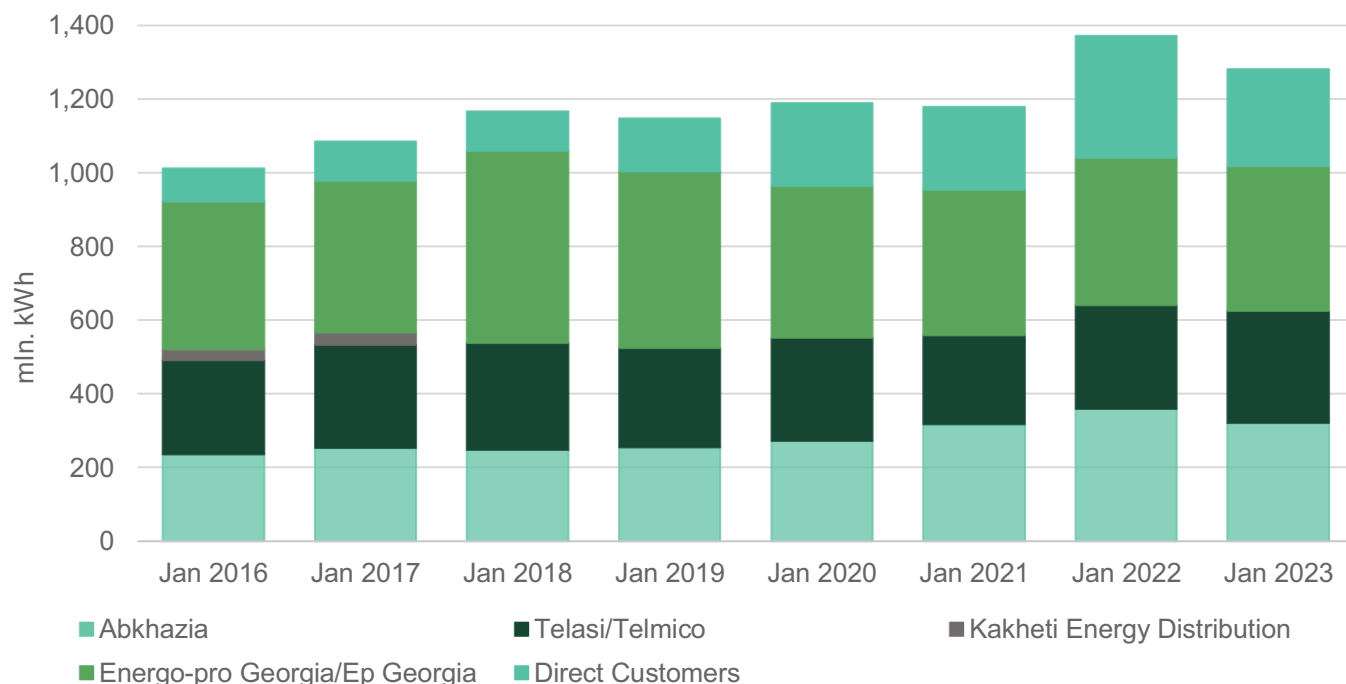
**Figure 6** - Growth of Generation (% , y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia<sup>1</sup> (31% - 393 mln. kWh), Abkhazia (25% - 320 mln. kWh), Telasi/Telmico<sup>2</sup> (24% - 304 mln. kWh), and direct customers (21% - 264 mln. kWh) (Figure 7). Annual demand from Telasi/Telmico increased by 8%, while the demand from Abkhazia, Energo-Pro Georgia/Ep Georgia, and direct customers fell by 11%, 2% and 20%, respectively. Overall, there was an annual decrease of 7% in the total electricity consumption in January 2023, compared to January 2022 (Figure 8).

**Figure 7** - Electricity Consumption by Type of Consumer

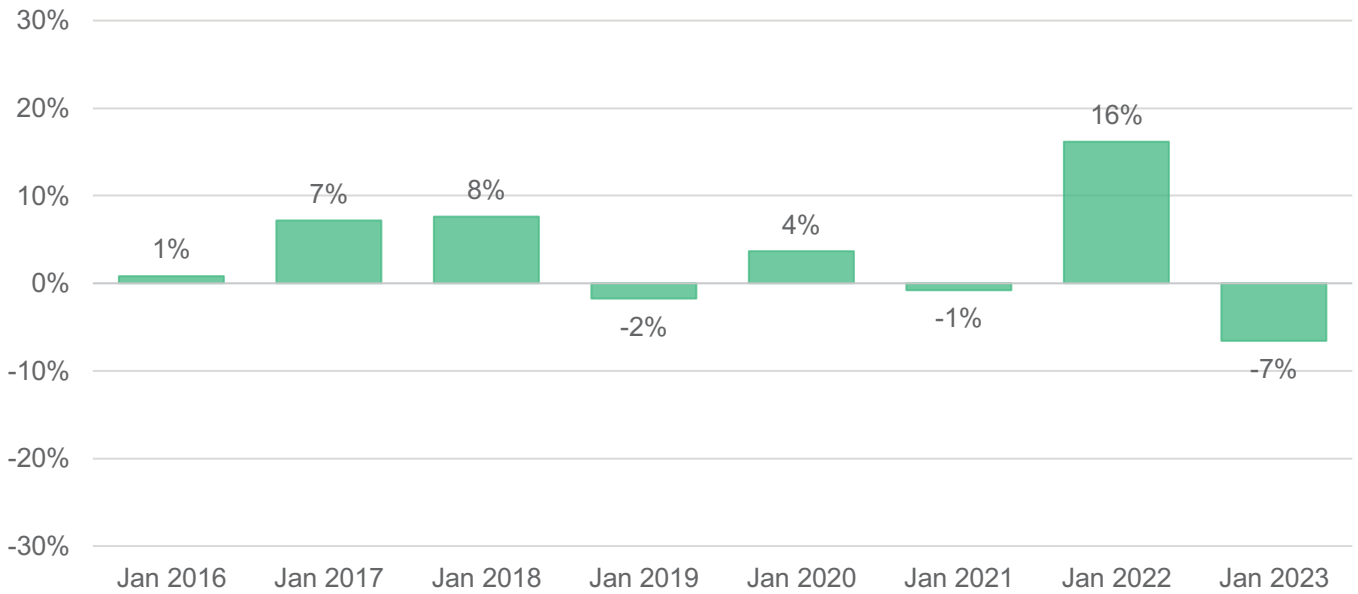


Source: ESCO

<sup>1</sup> Energo-Pro Georgia acquired Kakheta Energy Distribution in September 2017.

<sup>2</sup> 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)

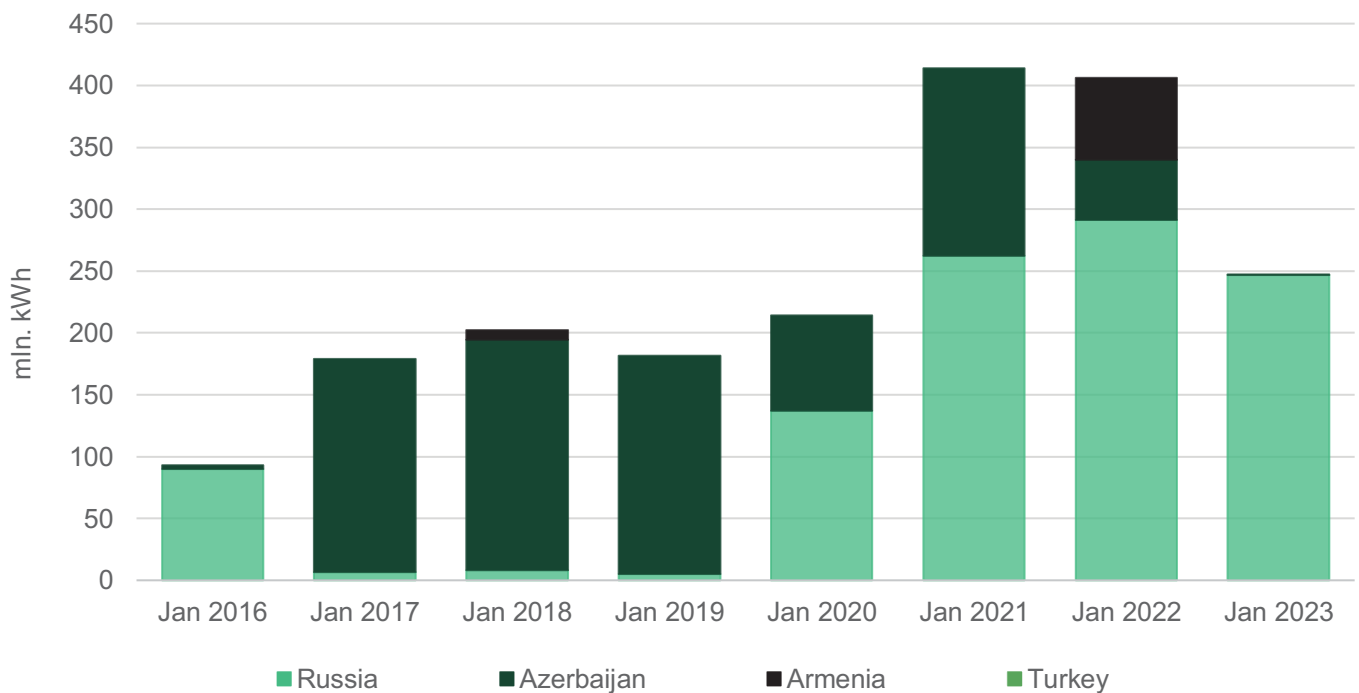


Source: ESCO

In January 2023, there was the import of 247 mln. kWh of electricity (compared to 406 mln. kWh in January 2022) (Figure 9). Almost 100% of this import came from Russia (out of which 99% went to Abkhazia), and there was insignificant amount of electricity imports from Azerbaijan (in January 2022, 72% of imports came from Russia, while 12% and 16% of imports came from Azerbaijan and Armenia, respectively). In January 2023, there was no export of electricity (there was 2.6 mln. kWh export to Turkey and 0.001 mln. kWh to Azerbaijan in January 2022) (Figure 10). There was 492 mln. kWh transit from Azerbaijan to Turkey and 29 mln. kWh transit from Armenia to Turkey (there was 186 mln. kWh transit from Azerbaijan to Turkey in January 2022).

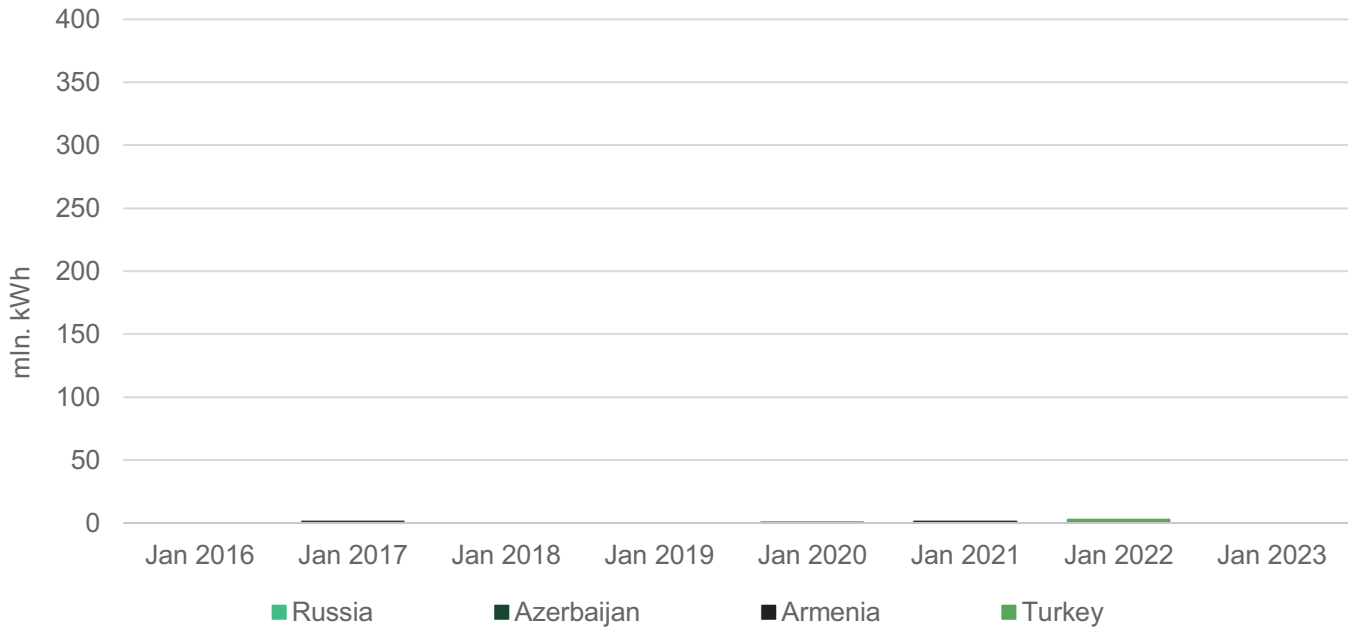
In January 2023, imports decreased by 39% compared to January 2022, while exports were reduced to 0.

**Figure 9** - Imports by Year



Source: ESCO

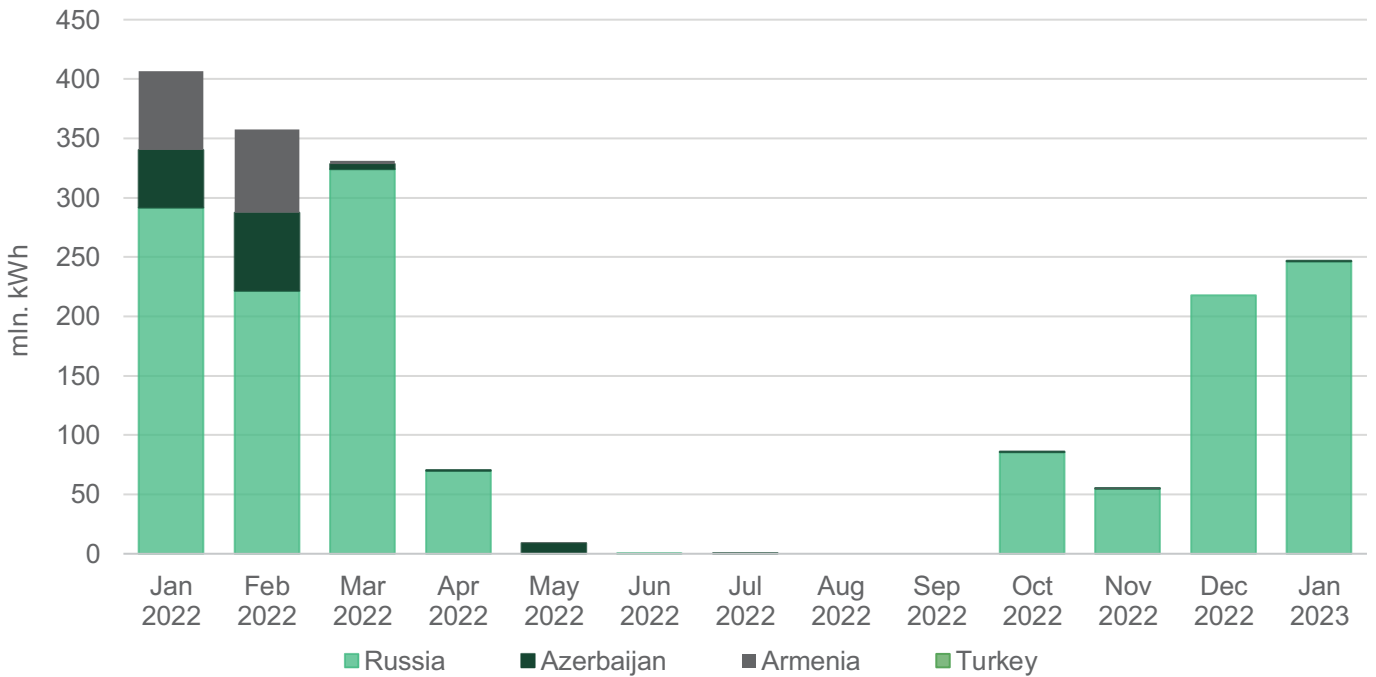
**Figure 10** - Exports by Year



Source: ESCO

Electricity imports increased by 14%, compared to December 2022 (Figure 11). Electricity exports decreased by 100% (Figure 12).

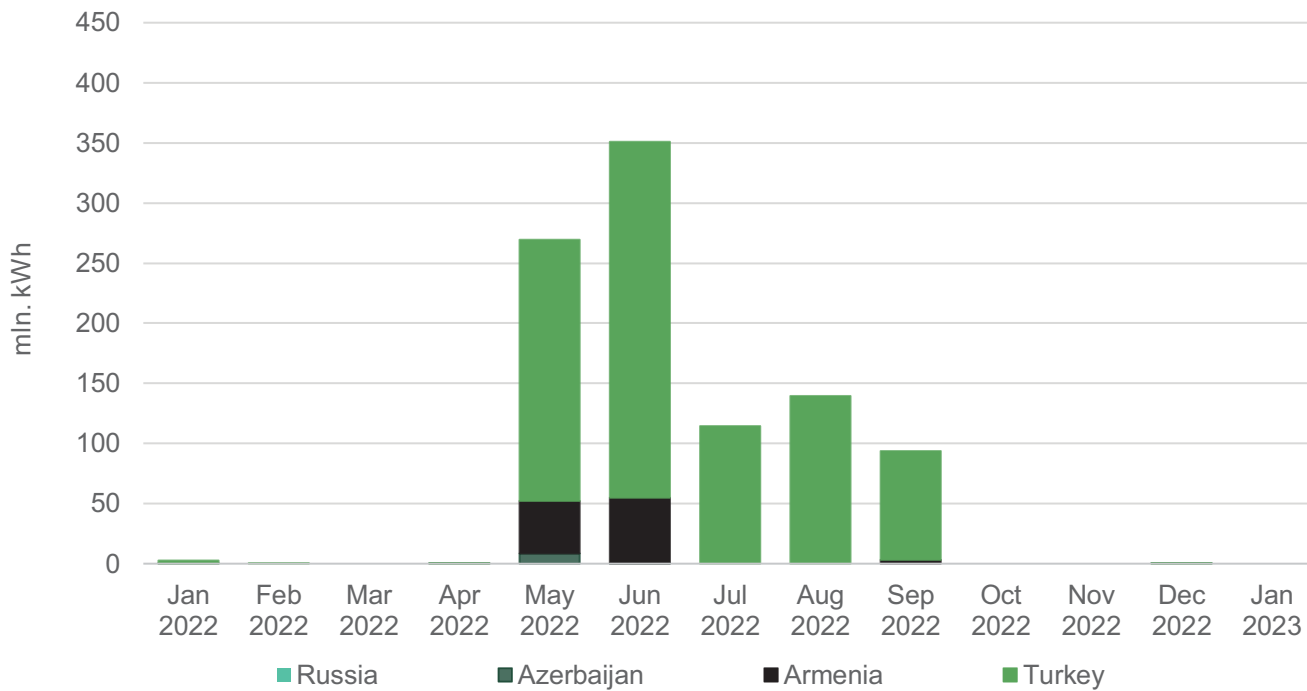
**Figure 11** - Imports by Month



Source: ESCO



**Figure 12** - Exports by Month

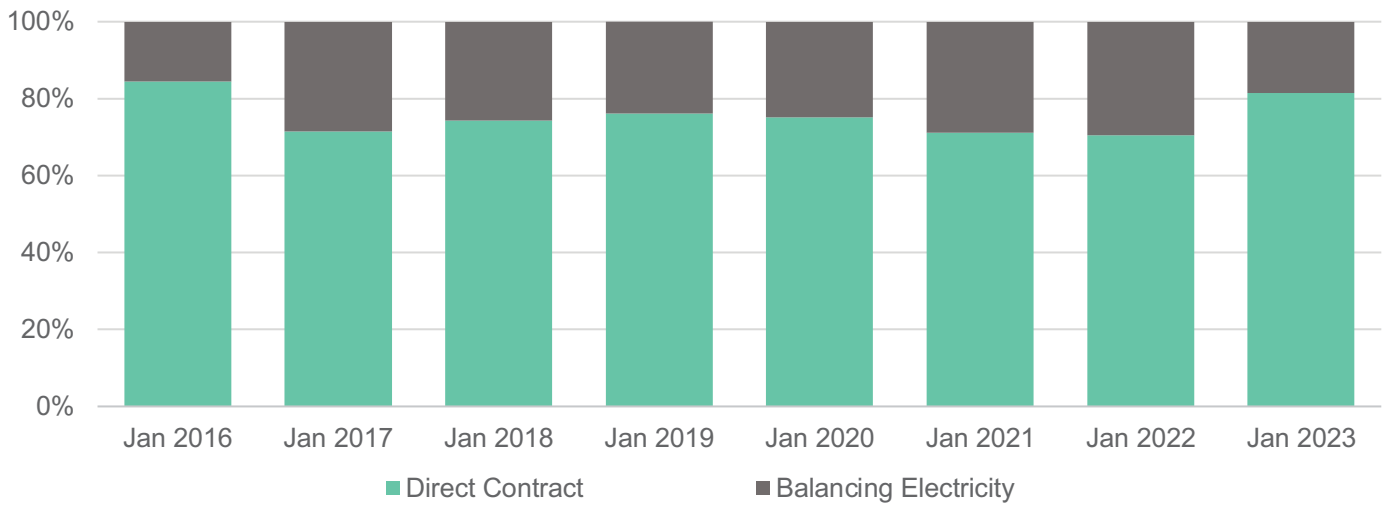


Source: ESCO

## 1. Market Operations

In January 2023, 82% of the electricity sold on/from the local market was sold through direct contracts. The remaining 18% was sold as balancing electricity (Figure 13).

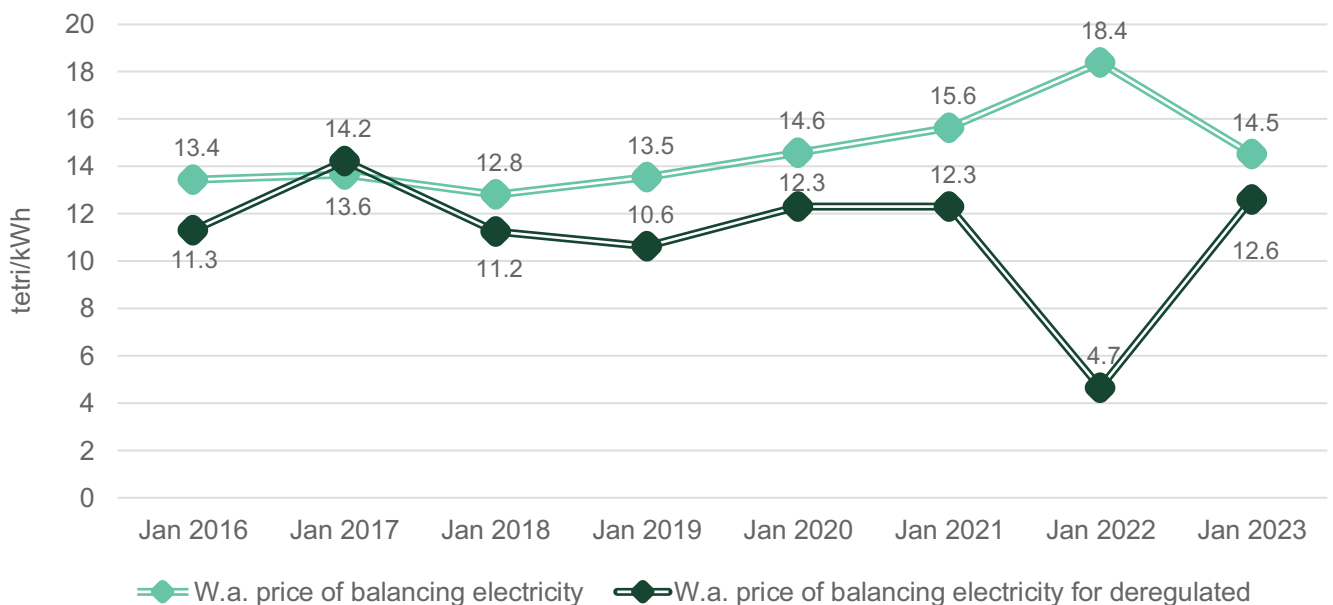
**Figure 13** - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In January 2023, the weighted average price of balancing electricity was 14.5 tetri/kWh, which corresponds to an annual decrease of 21% compared to January 2022. As for the weighted average price for deregulated (small) HPPs, it was 12.6 tetri/kWh, 171% more than the price in January 2022 (Figure 14).

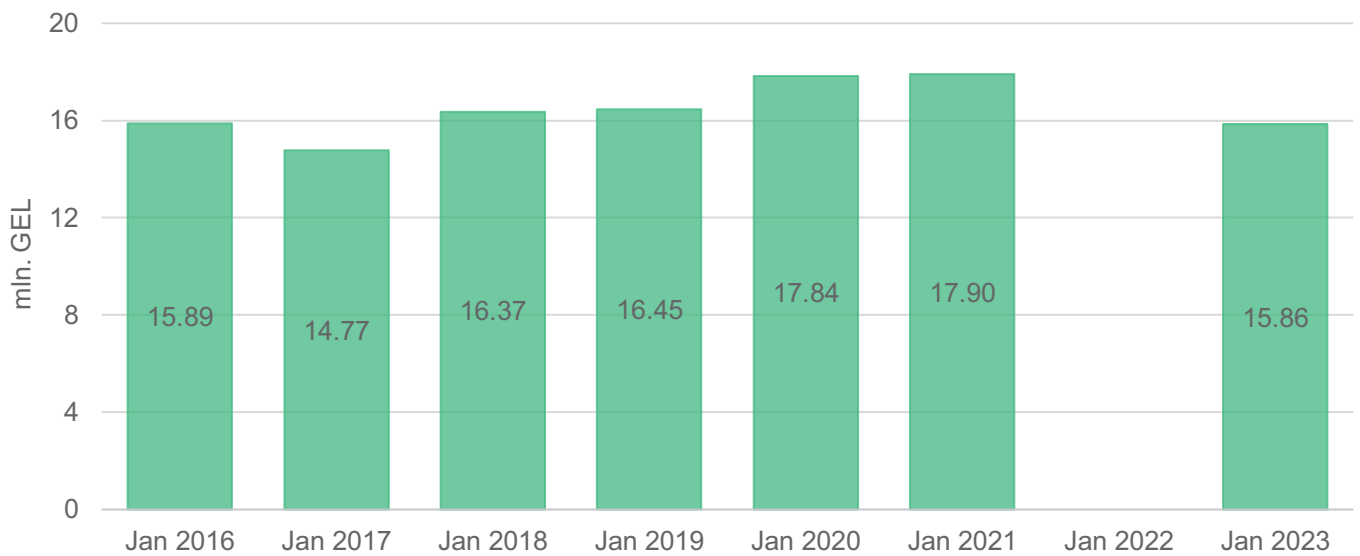
**Figure 14** - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in January 2023 were roughly 16 mln. GEL, which represents an 11% decrease compared to January 2021. The data about January 2022 are not available (Figure 15).

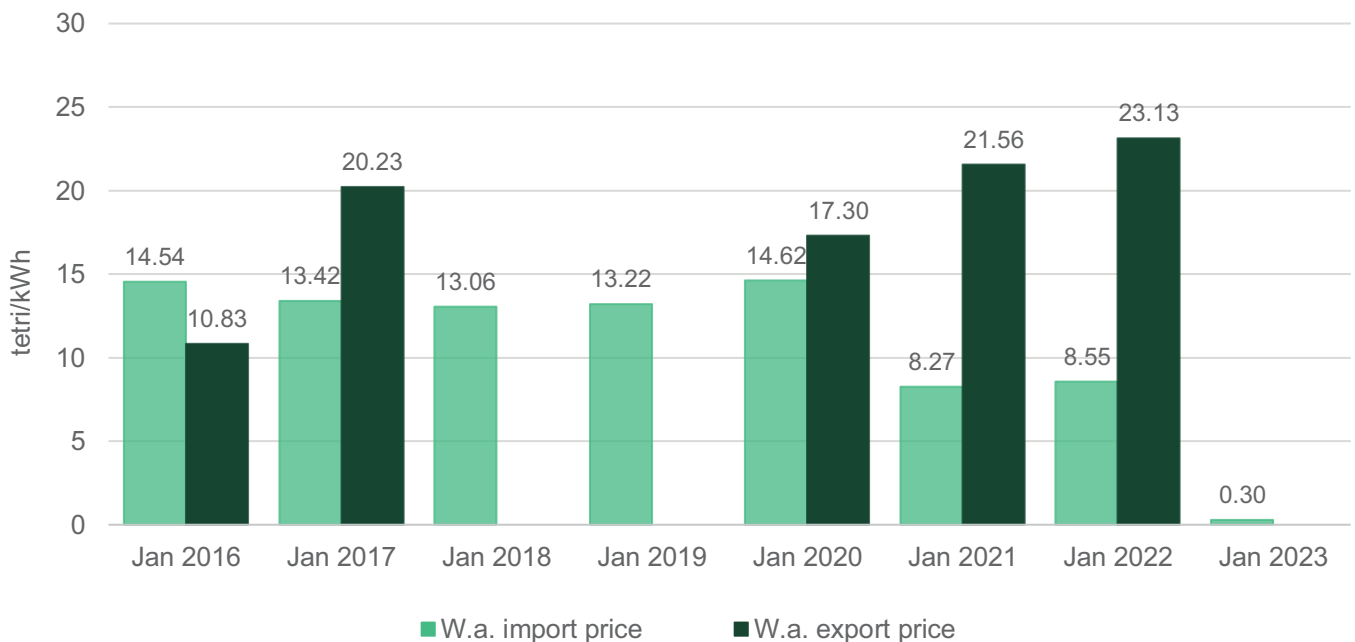
**Figure 15** - Cost of Guaranteed Capacity



Source: ESCO

The electricity import price in January 2023 reached 0.11  $\phi$ , or 0.3 tetri per kWh (Figure 16). This corresponds to an annual decrease in price by 96% in USD and 96% in GEL (prices were 2.78  $\phi$ , or 8.55 tetri per kWh in January 2022). Compared to December 2022, import price increased by 6% in USD and 6% in GEL (prices were 0.11  $\phi$ , or 0.28 tetri per kWh in December 2022). There was no export in January 2023, so the price dynamics cannot be assessed.

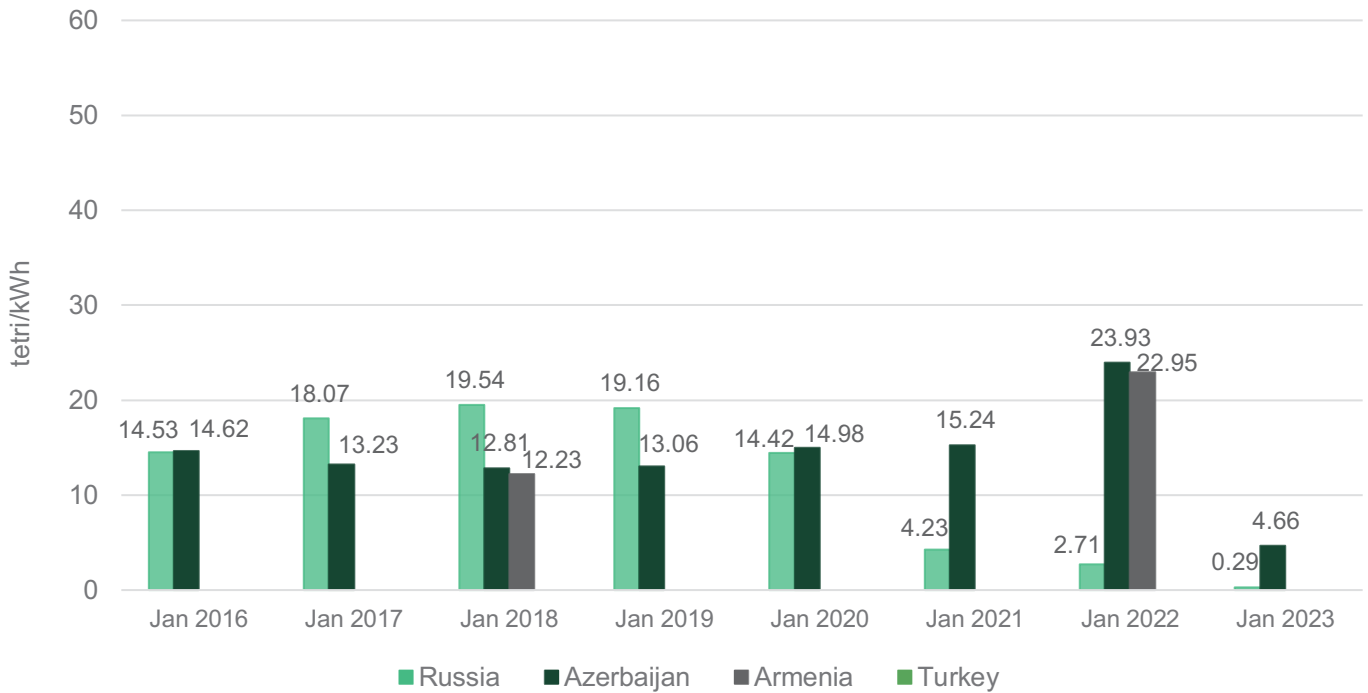
**Figure 16** - Prices Import/Export



Source: ESCO

In January 2023, the electricity import price from Russia and Azerbaijan stood at 0.11 ¢ or 0.29 tetri and 1.74 ¢ or 4.66 tetri, respectively (Figure 17).

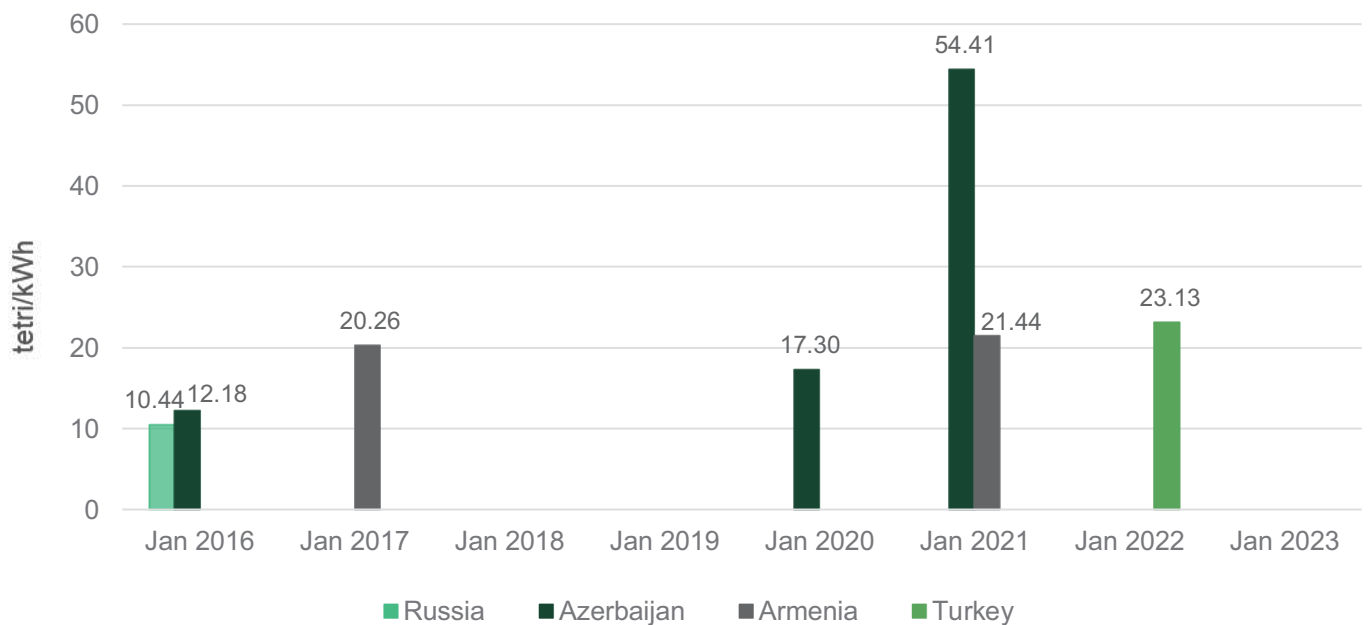
**Figure 17** - Import Prices by Countries



Source: ESCO/Geostat

In January 2023, there were no electricity exports (Figure 18).

**Figure 18** - Export Prices by Countries

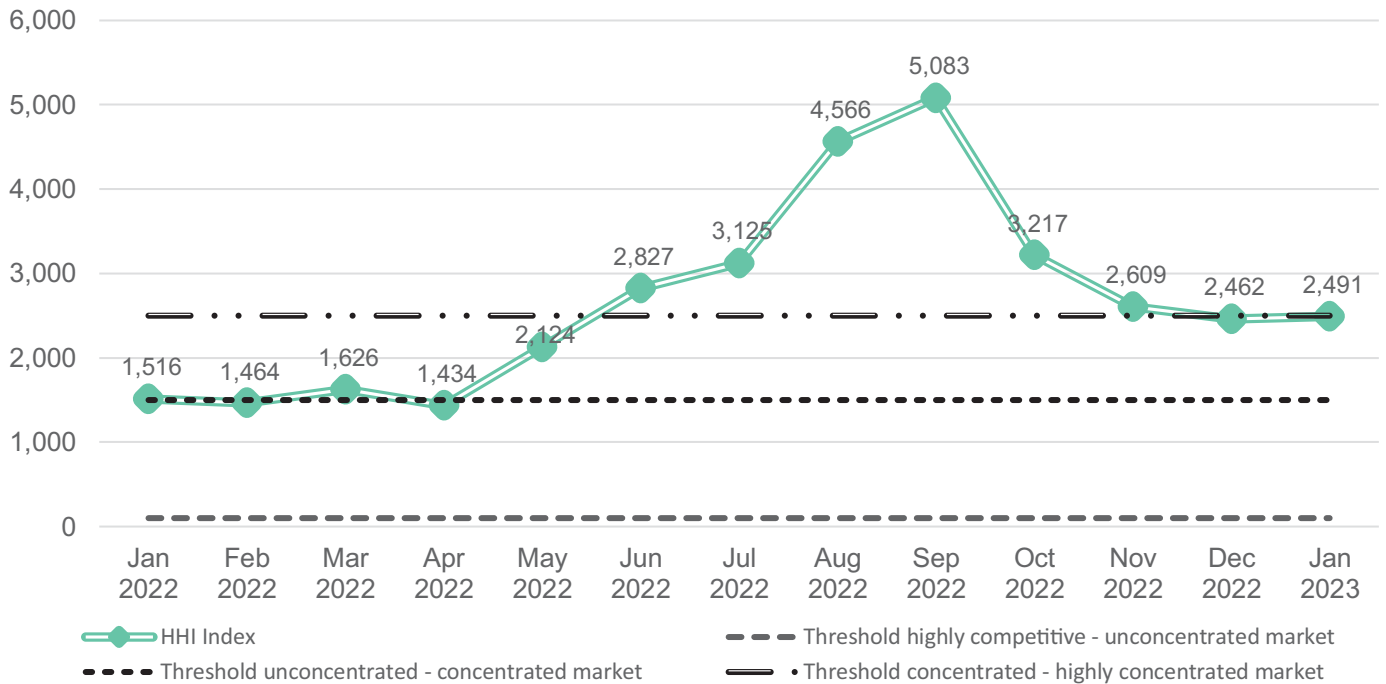


Source: ESCO/Geostat

## 2. Market Concentration

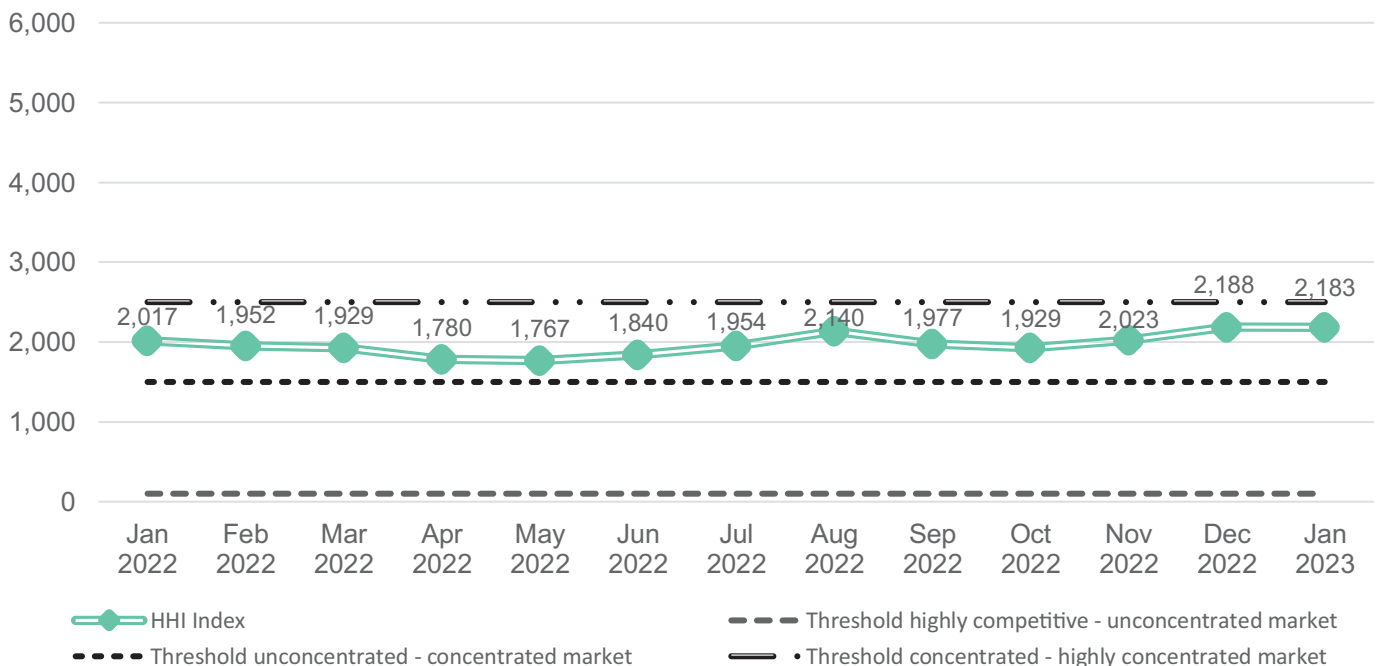
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In January 2023, Georgian electricity generation market index remained below the threshold of highly concentrated market with an HHI value of 2,491 (Figure 19). This is higher than the level in January 2022 (with an HHI value of 1,516), and higher than the level in December 2022 (the HHI was 2,462). As for the consumption segment, in January 2023, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 2,183 (above the level in January 2022 – 2,017 and below the level in December 2022 – 2,188). 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