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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In February 2023 there was an increase in the total electricity generation by 11% on a yearly basis and decrease by 11% on a monthly basis.
- Consumption decreased by 6% on yearly basis and increased by 12% compared to the previous month.
- Consumption exceeded generation by 141 mln. kWh which was 14% of the total generation and 12% of the total consumption in February 2023.
- There was an import of 207 mln. kWh in February.
- There was an export of 1 mln. kWh in February.
- The main import partner country was Russia. 99% of the import from Russia went to Abkhazia.
- The price of imports reached 0.15 ¢, or 0.4 tetri per kWh.
- The HHI index for the Georgian electricity generation market remained below the threshold of highly concentrated market. In February 2023, its level was 2,316.
- The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. In February 2023, its level was 2,259.

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 Off e of Georgia
ESCO	Electricity System Commercial Operator

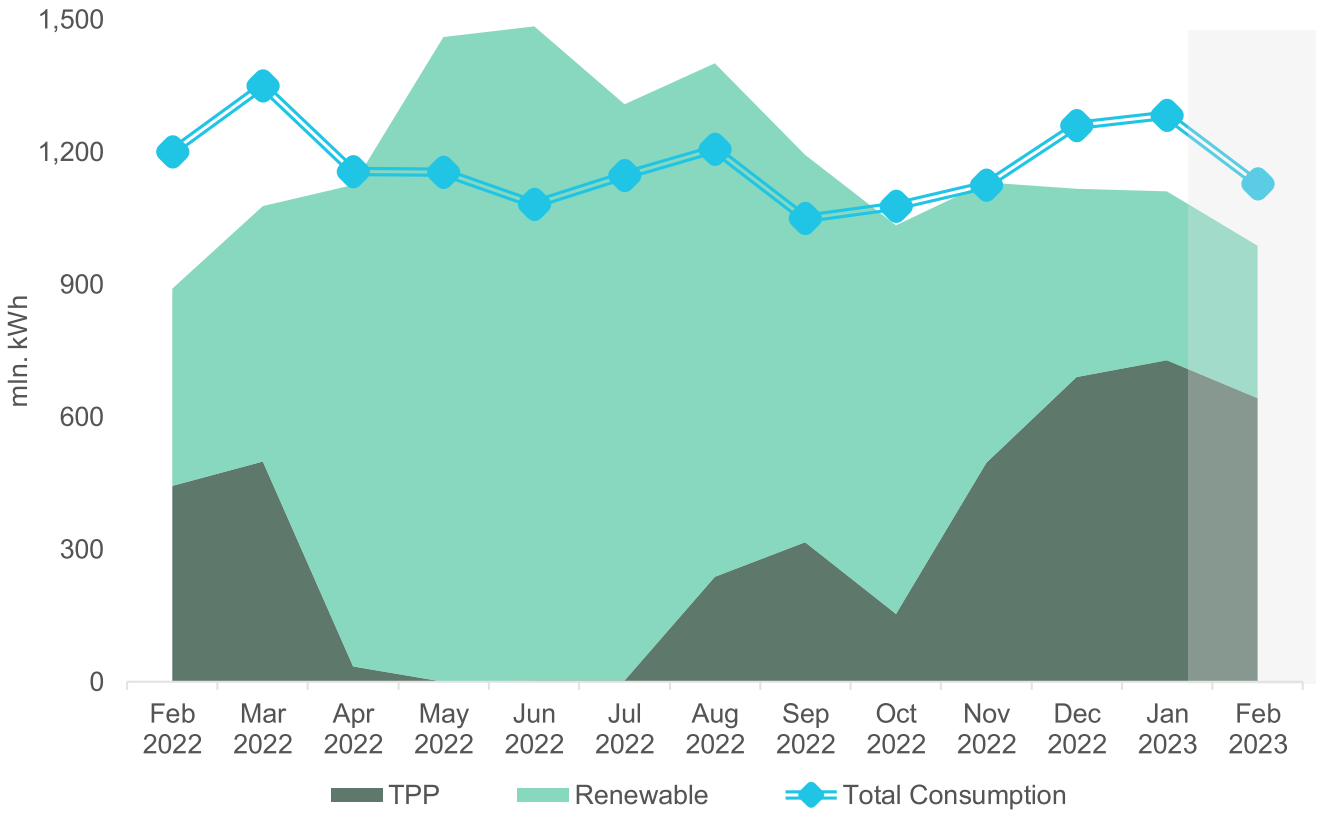
Generation – Consumption – Trade

In February 2023, Georgian power plants generated 987 mln. kWh of electricity (Figure 1). This represents an 11% increase in the total generation compared to the previous year (in February 2022, the total generation was 890 mln. kWh). The increase in the generation on a yearly basis comes from a rise of 45% in thermal and 7% in wind power, while the hydro power generation decreased by 23%.

On a monthly basis, the generation decreased by approximately 11% (in January 2023, the total generation was 1,111 mln. kWh) (Figure 1). The monthly fall in the total generation is induced by a 9% decrease in hydro power generation, a 28% decrease in wind power generation, and a 12% decrease in thermal power generation.

The consumption of electricity on the local market was 1,128 mln. kWh (-6% compared to February 2022, and -12% compared to January 2023) (Figure 1). In February 2023, power consumption exceeded generation by 141 mln. kWh which was 14% of the total generation and 12% of the total consumption (in February 2022, the difference between the total generation and the consumption resulted in a deficit of 311 mln. kWh, around 35% of the total generation and 26% of the total consumption for the month).

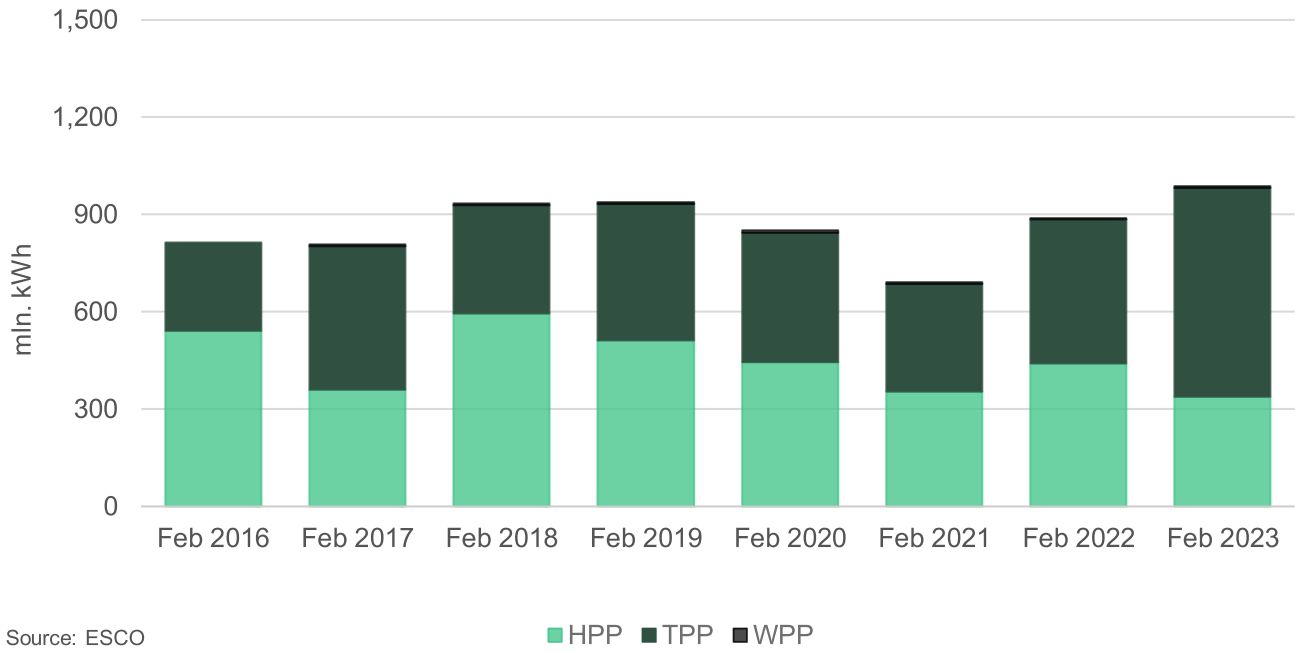
Figure 1 **- Electricity Consumption and Generation**



Source: Electricity System Commercial Operator (ESCO)

In February 2023, thermal power plants were the leading source of generation. In February 2023, thermal power (TPP) generation amounted to 643 mln. kWh (65% of total), hydro power (HPP) generation was 339 mln. kWh (34% of the total generation), while wind power (WPP) generation amounted to 6 mln. kWh (1% of the total generation) (Figure 2).

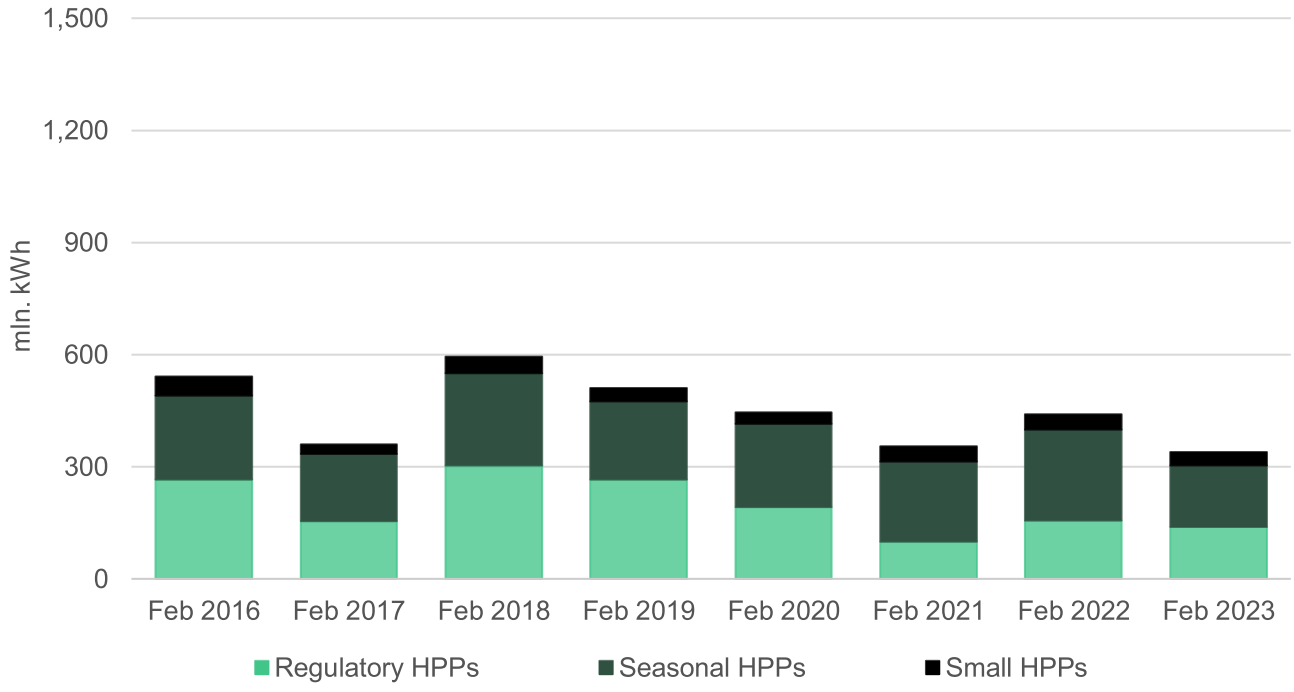
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 41% (140 mln. kWh) of electricity, while seasonal and small HPPs produced 49% (164 mln. kWh) and 10% (35 mln. kWh), respectively (Figure 3).

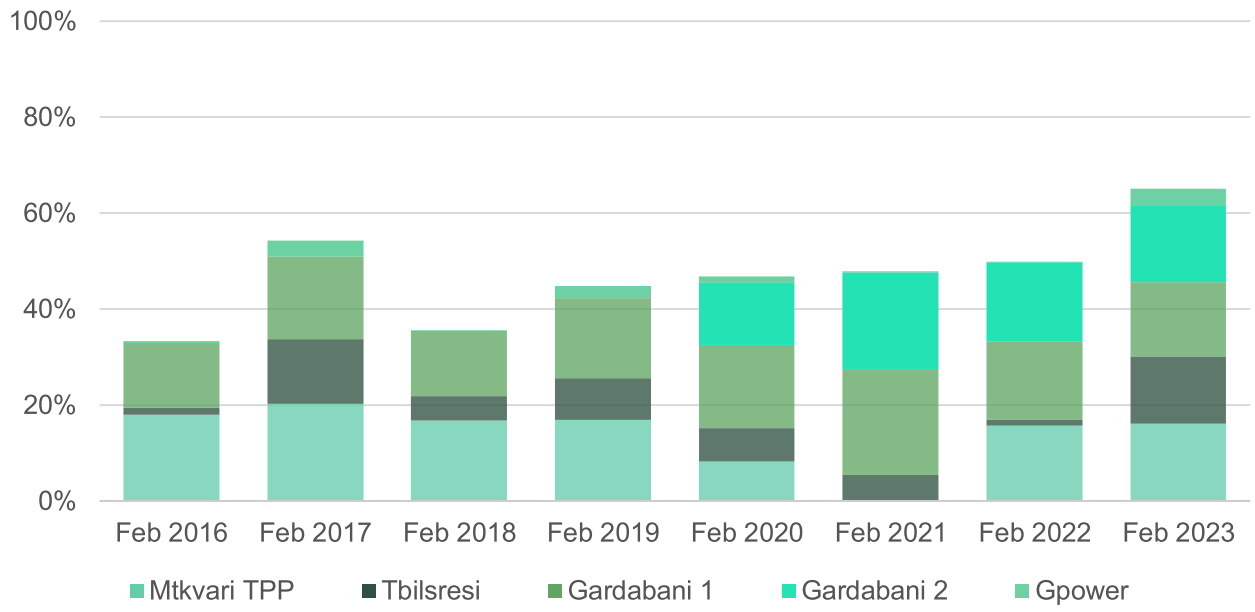
Figure 3 - HPP Generation by Type



Source: ESCO

As for the thermal power generation, Gardabani 1 TPP generated 153 mln. kWh electricity (24% of TPP generation and 15% of total power generation), Gardabani 2 TPP generated 156 mln. kWh (24% of TPP generation and 16% of total power generation), Mtkvari TPP generated 159 mln. kWh (25% of TPP generation and 16% of total power generation), Tbilsresi generated 139 mln. kWh (22% of TPP generation and 14% of total power generation). The remaining 6% of TPP generation was produced by Gpower (4% of total power generation) (Figure 4).

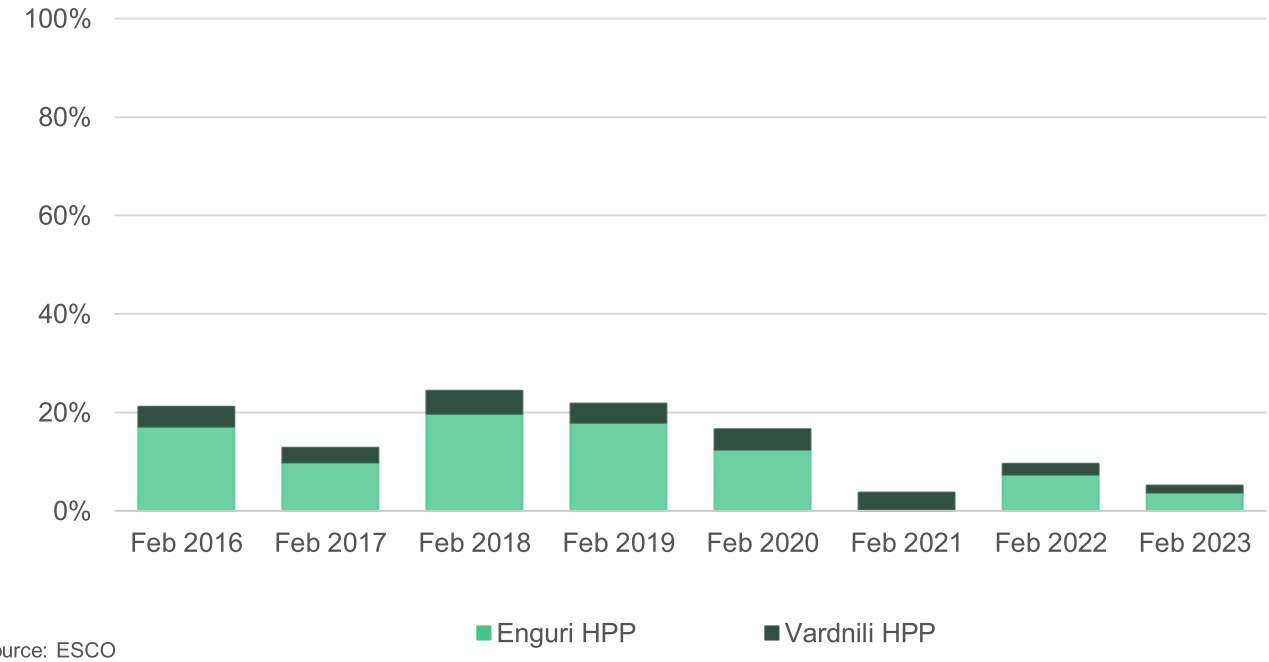
Figure 4 **- Share of Large TPPs in Total Generation**



Source: ESCO

As for HPP generation, Vardnili HPP generated 14 mln. kWh (10% of generation for regulatory HPPs and 1% of total generation). Enguri HPP generated 37 mln. kWh, which represents 27% of generation of regulatory HPPs and 4% of total generation (Figure 5).

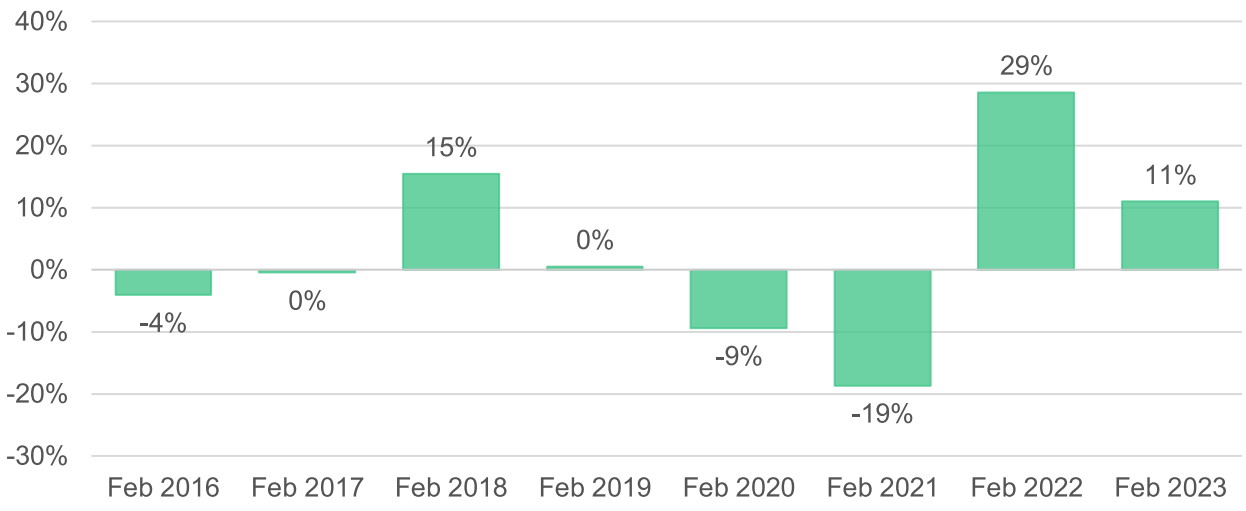
Figure 5 **- Share of Enguri and Vardnili in Total Generation**



Source: ESCO

Overall, the total generation increased by 11% compared to February 2022 (Figure 6).

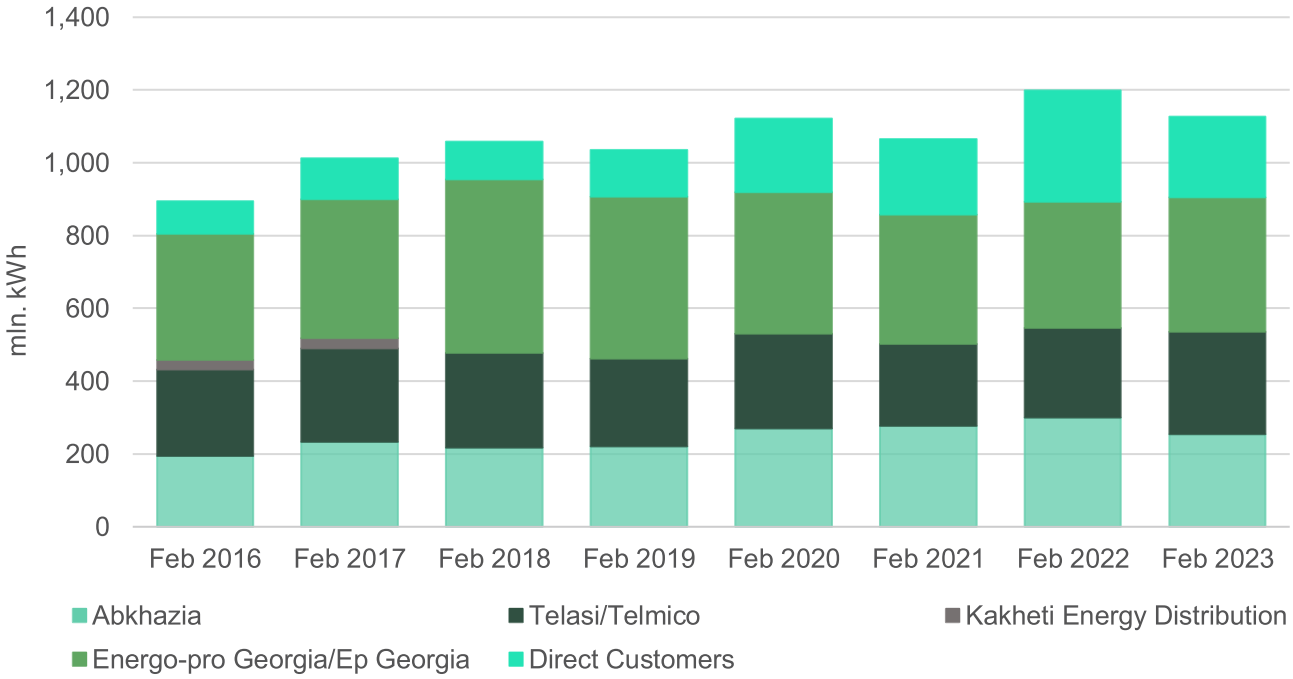
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia[1] (33% - 369 mln. kWh), Abkhazia (23% - 255 mln. kWh), Telasi/Telmico[2] (25% - 281 mln. kWh), and direct customers (20% - 222 mln. kWh) (Figure 7). Annual demand from Telasi/Telmico and Energo-Pro Georgia/Ep Georgia increased by 14% and 7%, respectively, while the demand from Abkhazia and direct customers fell by 15%, and 27%, respectively. Overall, there was an annual decrease of 6% in the total electricity consumption in February 2023, compared to February 2022 (Figure 8).

Figure 7 - Electricity Consumption by Type of Consumer

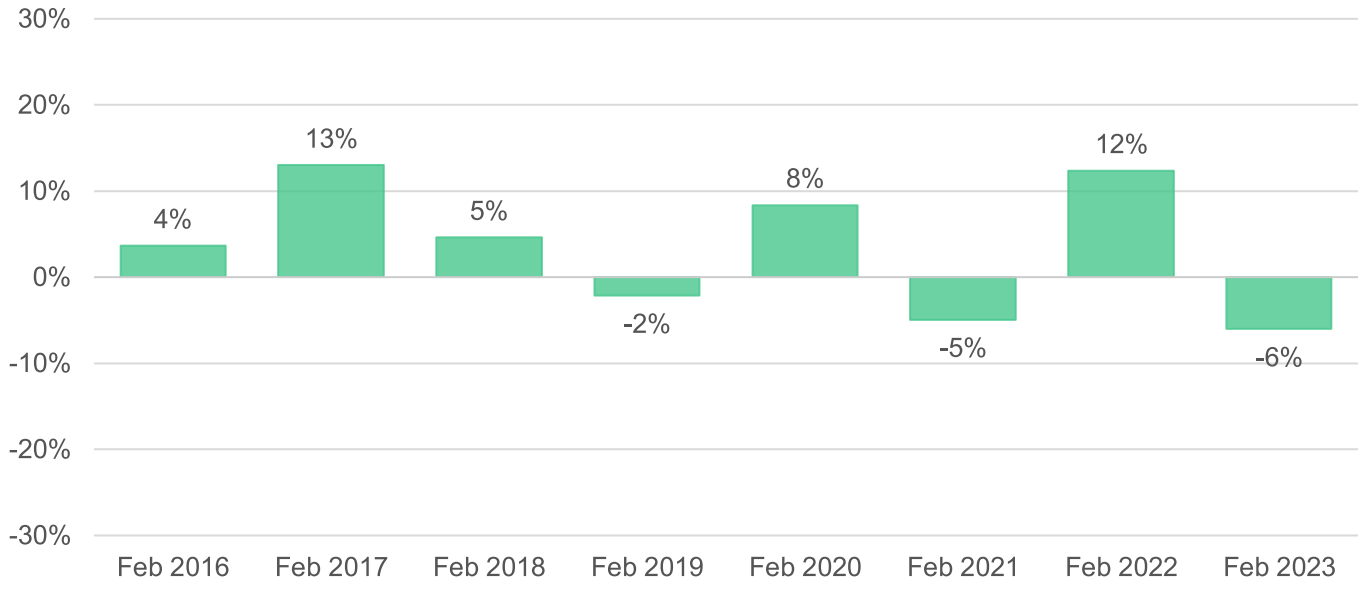


Source: ESCO

[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)

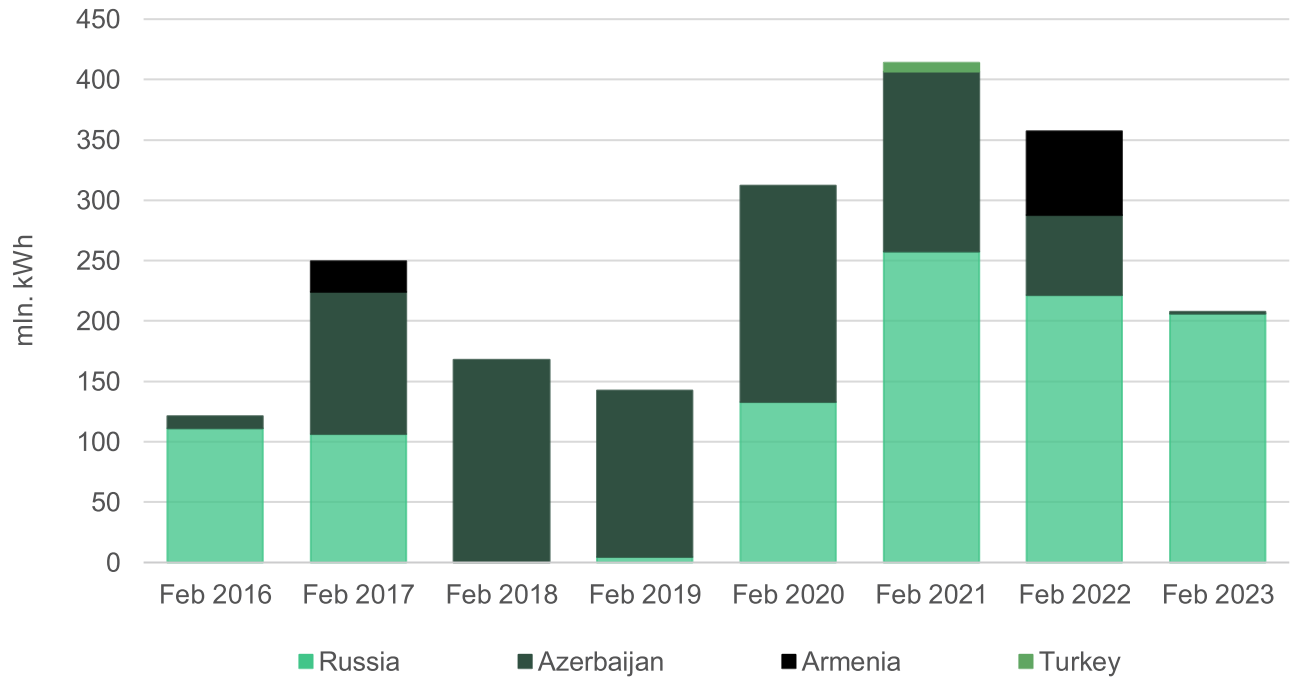


Source: ESCO

In February 2023, there was the import of 207 mln. kWh of electricity (compared to 357 mln. kWh in February 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 February 2022, 62% of imports came from Russia, while 18% and 20% of imports came from Azerbaijan and Armenia, respectively). In February 2023, there was the export of 1 mn. kWh to Azerbaijan (there was only an insignificant export to Turkey in February 2022) (Figure 10). There was 317 mln. kWh transit from Azerbaijan to Turkey and 53 mln. kWh transit from Armenia to Turkey (there was 168 mln. kWh transit from Azerbaijan to Turkey in February 2022).

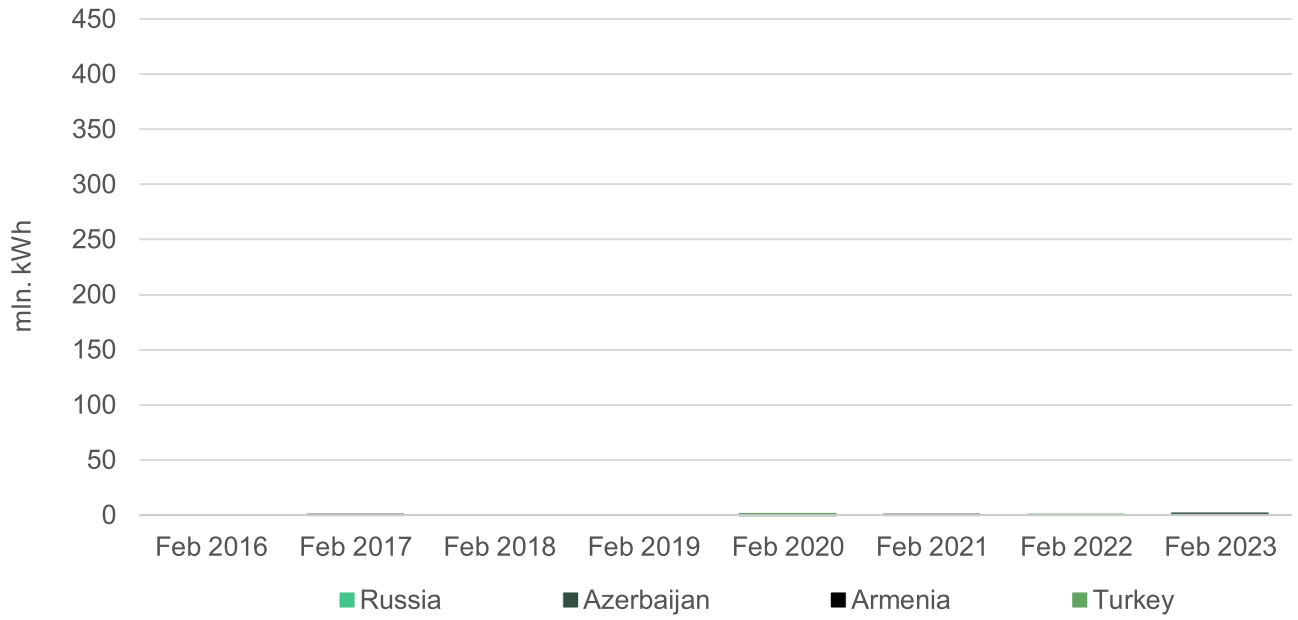
In February 2023, imports decreased by 42% compared to February 2022, while exports increased by 380% (the effect of small numbers).

Figure 9 - Imports by Year



Source: ESCO

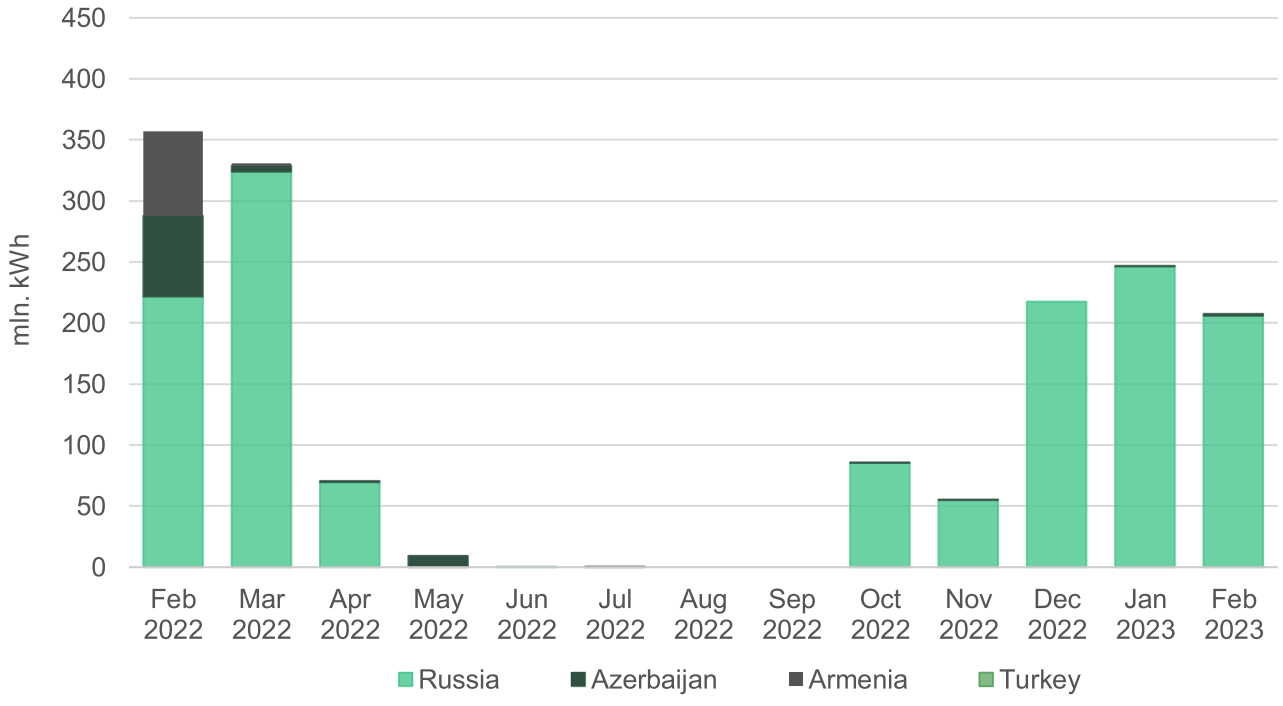
Figure 10 - **Exports by Year**



Source: ESCO

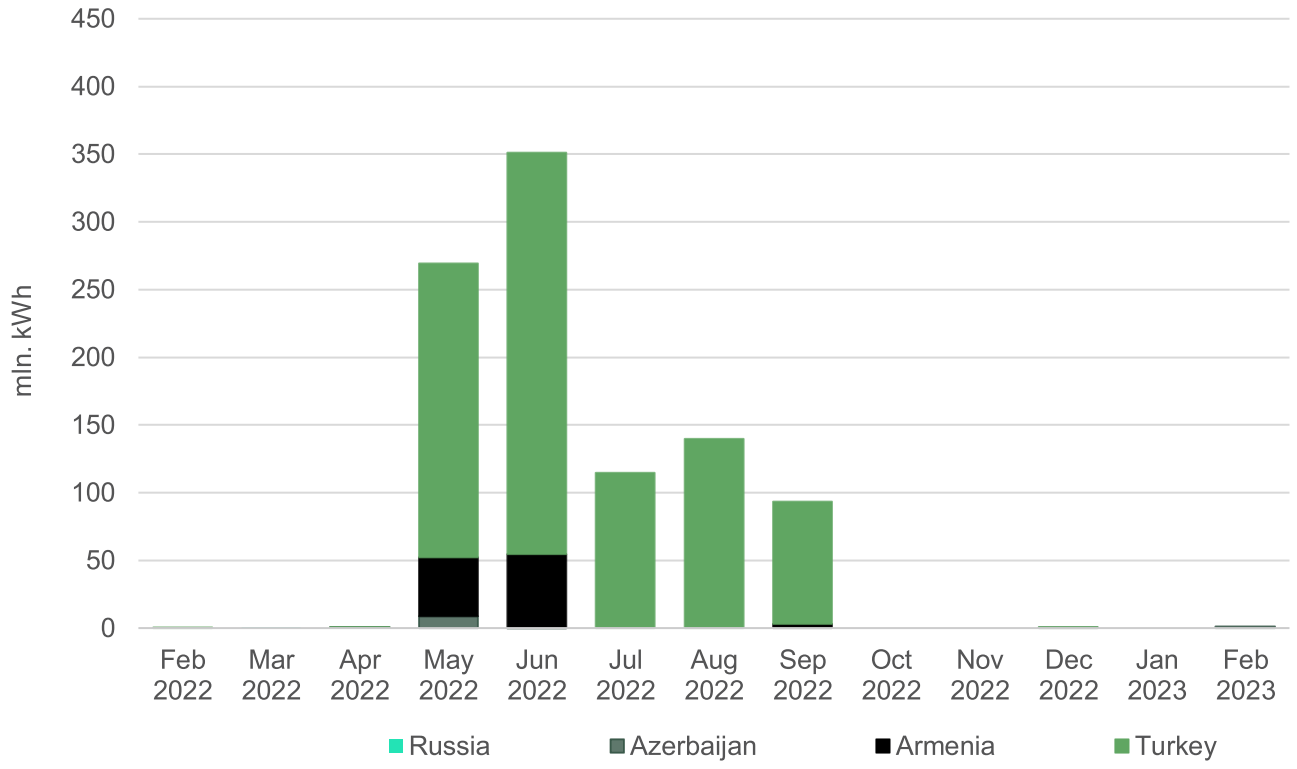
Electricity imports decreased by 16%, compared to January 2023 (Figure 11). Electricity exports in January 2023 were 0 (Figure 12).

Figure 11 - **Imports by Month**



Source: ESCO

Figure 12 **- Exports by Month**

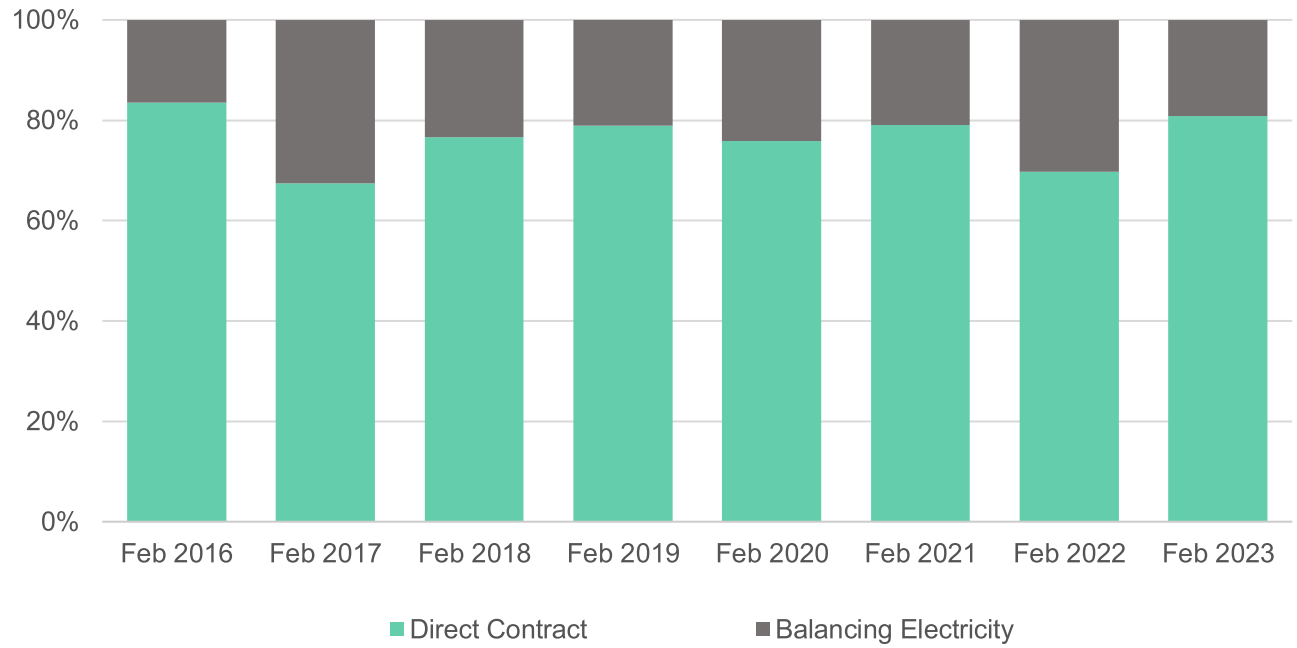


Source: ESCO

1. Market Operations

In February 2023, 81% of the electricity sold on/from the local market was sold through direct contracts. The remaining 19% was sold as balancing electricity (Figure 13).

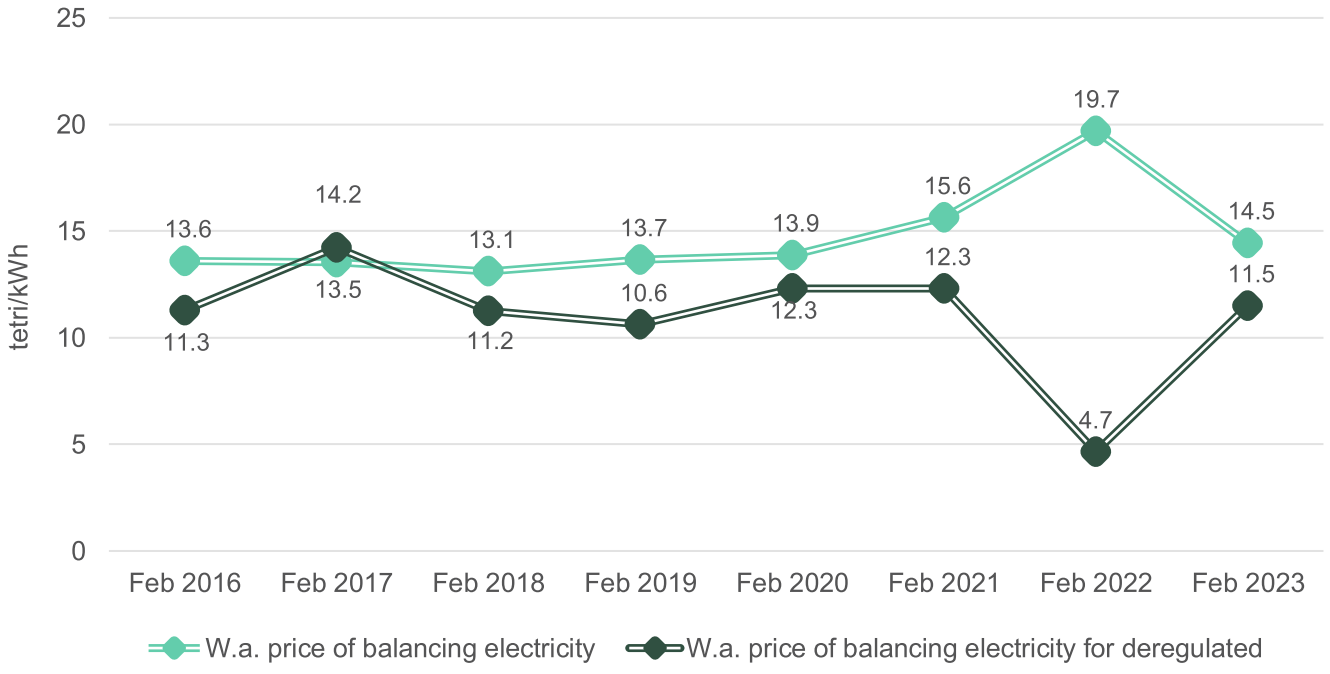
Figure 13 - **Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity**



Source: ESCO

In February 2023, the weighted average price of balancing electricity was 14.5 tetri/kWh, which corresponds to an annual decrease of 27% compared to February 2022. As for the weighted average price for deregulated (small) HPPs, it was 11.5 tetri/kWh, 147% more than the price in February 2022 (Figure 14).

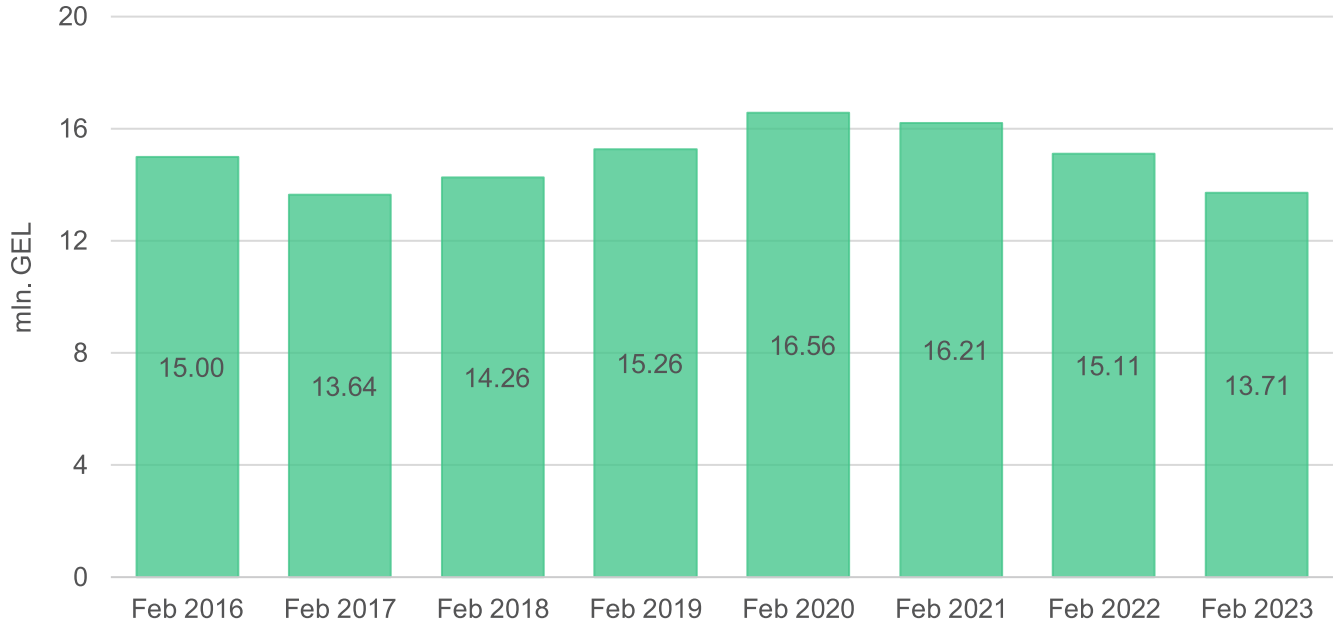
Figure 14 - **Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs**



Source: ESCO

Guaranteed capacity payments in February 2023 were roughly 14 mln. GEL, which represents an 9% decrease compared to February 2022 (Figure 15).

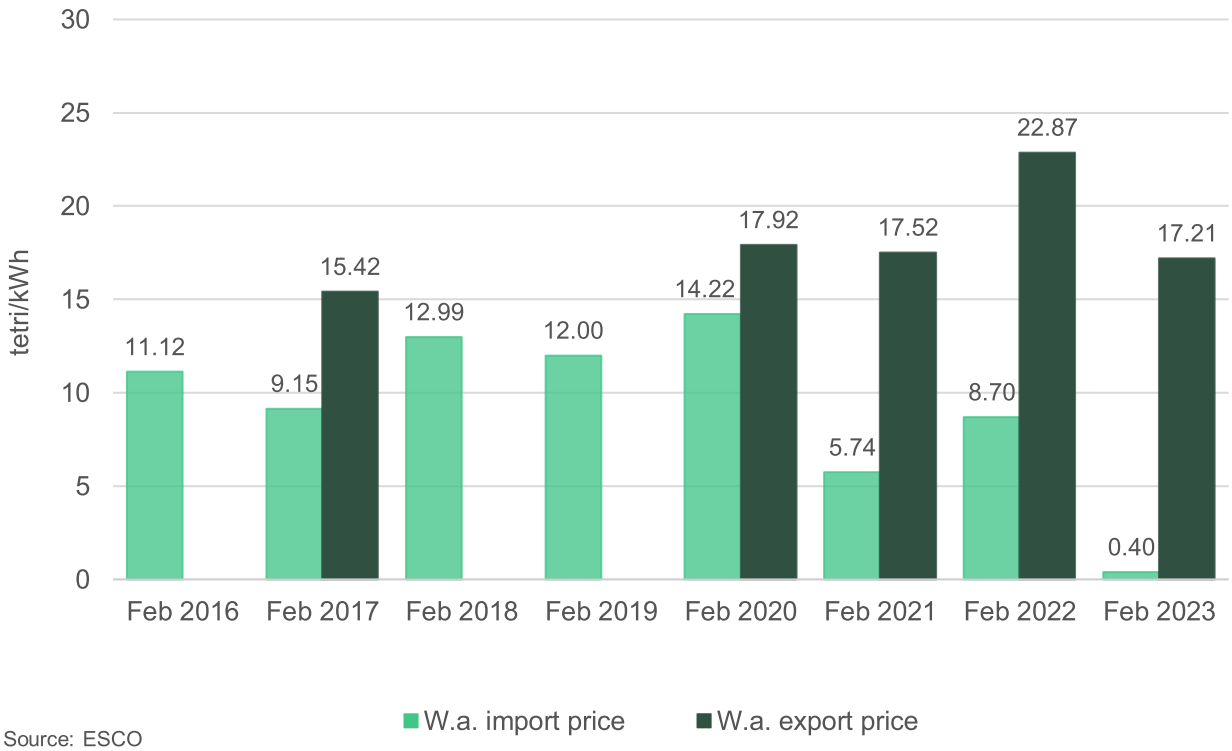
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The electricity import price in February 2023 reached 0.15 ¢, or 0.4 tetri per kWh (Figure 16). This corresponds to an annual decrease in price by 95% in both USD and GEL (prices were 2.89 ¢, or 8.70 tetri per kWh in February 2022). Compared to January 2023, import price increased by 33% in USD and 32% in GEL (prices were 0.11 ¢, or 0.30 tetri per kWh in January 2023). The electricity export price in February 2023 reached 6.50 ¢, or 17.21 tetri per kWh (Figure 16). This corresponds to an annual decrease in price by 15% in USD and by 25% in GEL (prices were 7.60 ¢, or 22.87 tetri per kWh in February 2022). There were no exports in January 2023, so monthly dynamics cannot be assessed.

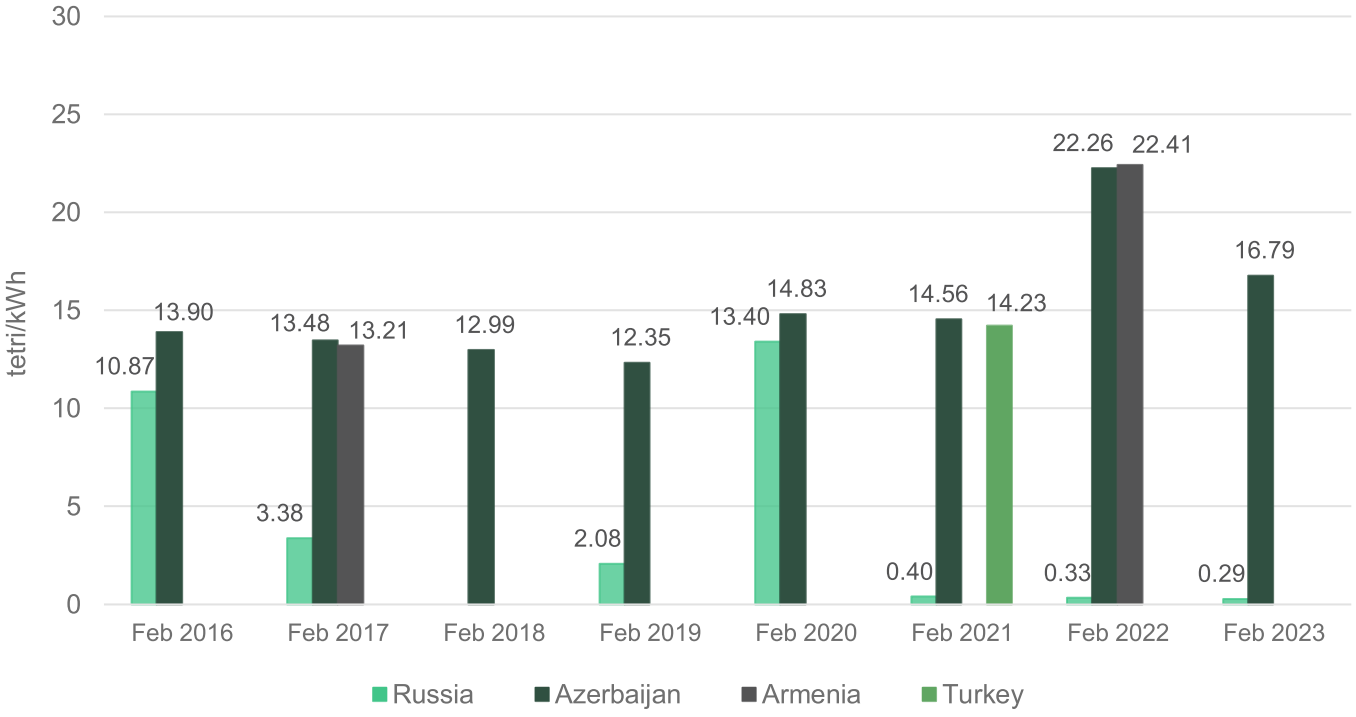
Figure 16 - Prices Import/Export



Source: ESCO

In February 2023, the electricity import price from Russia and Azerbaijan stood at 0.11 ¢ or 0.29 tetri and 6.34 ¢ or 16.79 tetri, respectively (Figure 17).

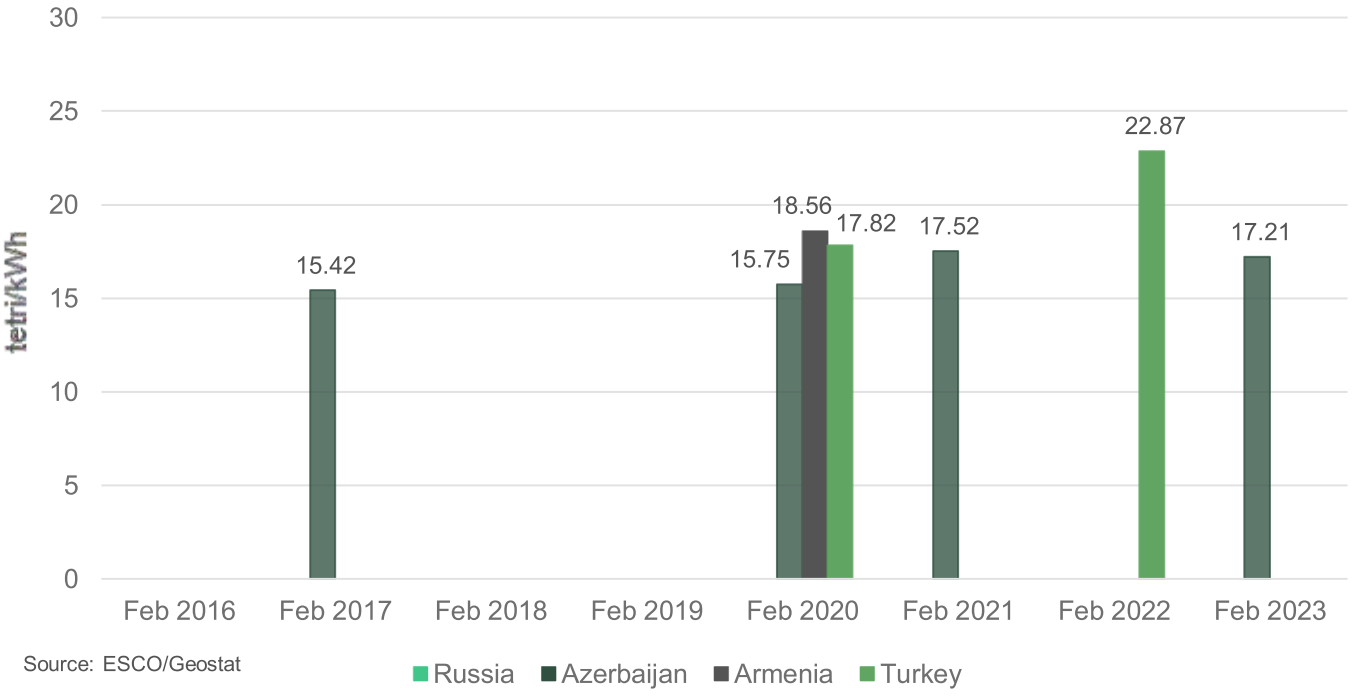
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In February 2023, the electricity import price from Azerbaijan stood at 6.50 ¢ or 17.21 tetri per kWh (Figure 18).

Figure 18 - Export Prices by Countries

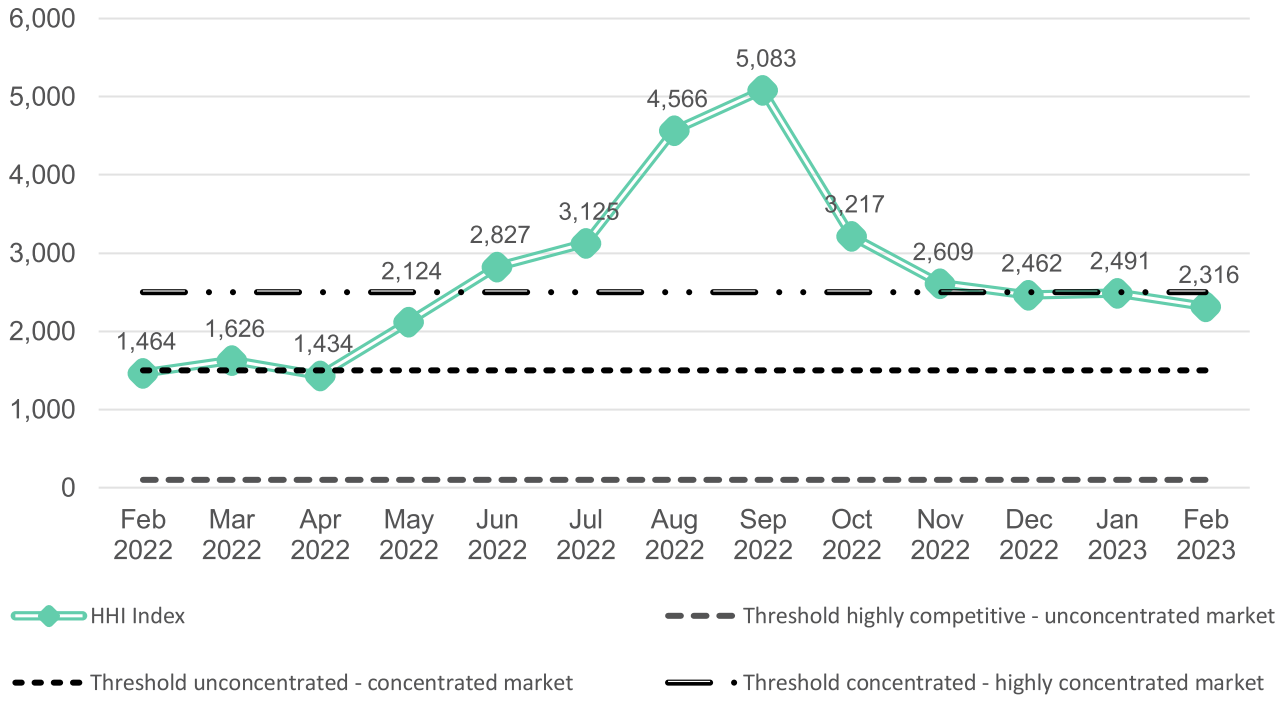


Source: ESCO/Geostat

2. Market Concentration

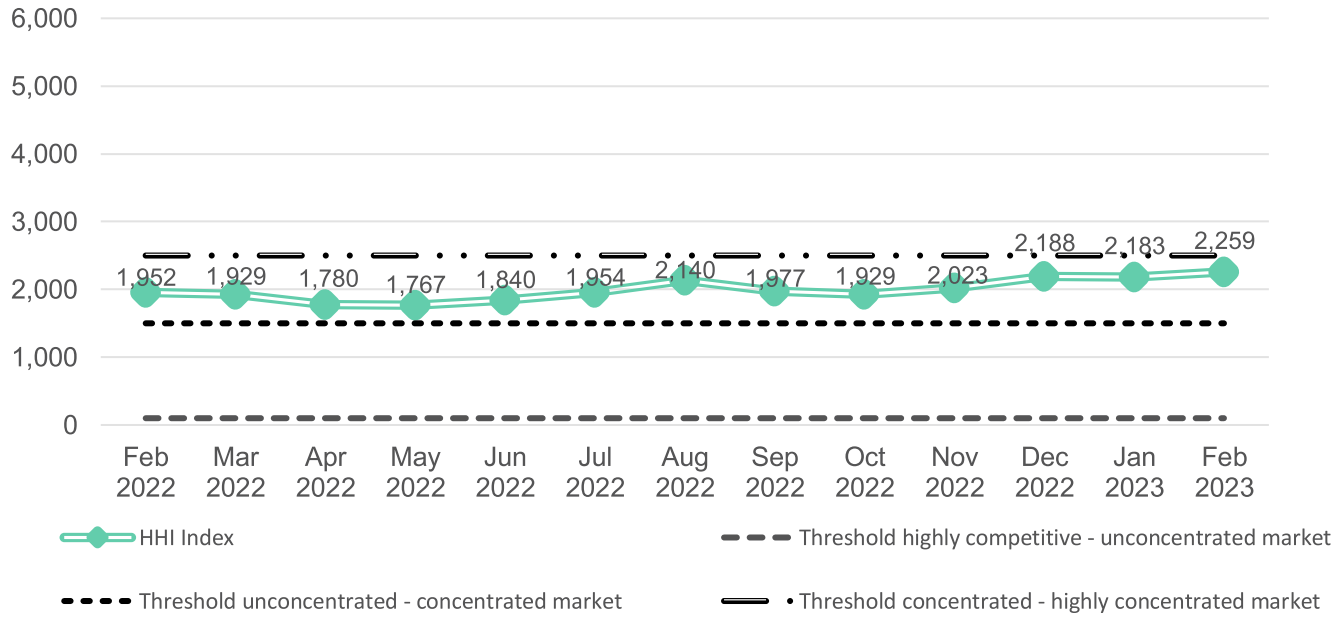
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In February 2023, Georgian electricity generation market index remained below the threshold of highly concentrated market with an HHI value of 2,316 (Figure 19). This is higher than the level in February 2022 (with an HHI value of 1,464), and lower than the level in January 2023 (the HHI was 2,491). As for the consumption segment, in February 2023, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 2,259 (above the level in February 2022 – 1,952 and above the level in January 2023 – 2,183). 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 (Figure 20).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO