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Policy Institute

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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In March 2023 there was a decrease in the total electricity generation by 5% on a yearly basis and increase by 3% on a monthly basis.
- Consumption decreased by 17% on a yearly basis and by 1% compared to the previous month.
- Consumption exceeded generation by 97 mln. kWh which was 10% of the total generation and 9% of the total consumption in March 2023.
- There was an import of 146 mln. kWh in March.
- There were no exports in March.
- The main import partner country was Russia. 97% of the import from Russia went to Abkhazia.
- The price of imports reached 0.12 ჯ, or 0.31 tetri per kWh.
- The HHI index for the Georgian electricity generation market fell below the threshold of concentrated market. In March 2023, its level was 1,241.
- The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. In March 2023, its level was 2,184.

ABBREVIATION USED

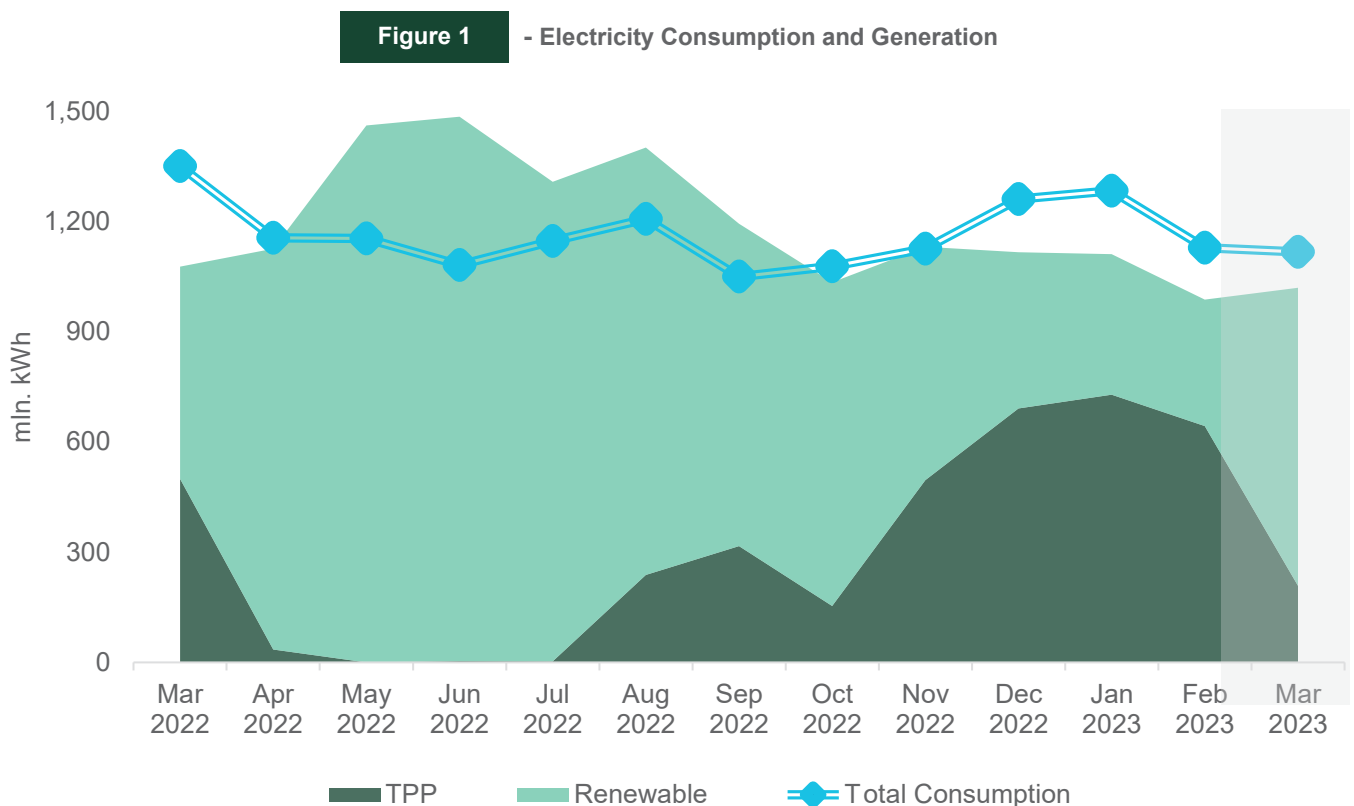
Mln	million
kWh	kilowatt-hour
HPP	Hydro Power Plant
WPP	Wind Power Plant
TPP	Thermal Power Plant
HHI	Hirschmann-Herfindahl Index
Telmico	Tbilisi Electricity Supply Company
Ep Georgia	Ep Georgia Supply
Geostat	National Statistics Office of Georgia
ESCO	Electricity System Commercial Operator

Generation – Consumption – Trade

In March 2023, Georgian power plants generated 1,019 mln. kWh of electricity (Figure 1). This represents a 5% decrease in the total generation compared to the previous year (in March 2022, the total generation was 1,077 mln. kWh). The decrease in the generation on a yearly basis comes from a fall of 58% in thermal and 2% in wind power, while the hydro power generation increased by 41%.

On a monthly basis, the generation increased by approximately 3% (in February 2023, the total generation was 987 mln. kWh) (Figure 1). The monthly rise in total generation is induced by a 137% increase in hydro power generation and 20% in wind power generation, while thermal power generation decreased by 68%.

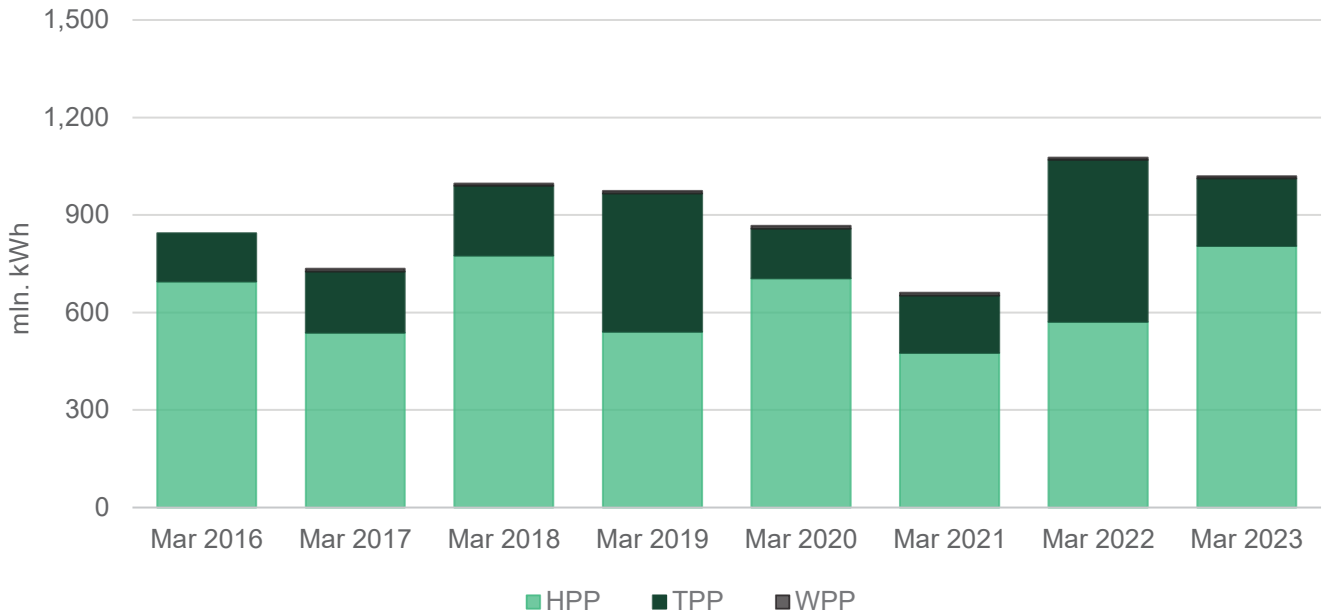
The consumption of electricity on the local market was 1,117 mln. kWh (-17% compared to March 2022, and -1% compared to February 2023) (Figure 1). In March 2023, power consumption exceeded generation by 97 mln. kWh which was 10% of the total generation and 9% of the total consumption (in March 2022, the difference between the total generation and the consumption resulted in a deficit of 273 mln. kWh, around 25% of the total generation and 20% of the total consumption for the month).



Source: Electricity System Commercial Operator (ESCO)

In March 2023, hydro power plants were the leading source of generation. In March 2023, hydro power (HPP) generation amounted to 804 mln. kWh (79% of total), thermal power (TPP) generation was 208 mln. kWh (20% of the total generation), while wind power (WPP) generation amounted to 7 mln. kWh (1% of the total generation) (Figure 2).

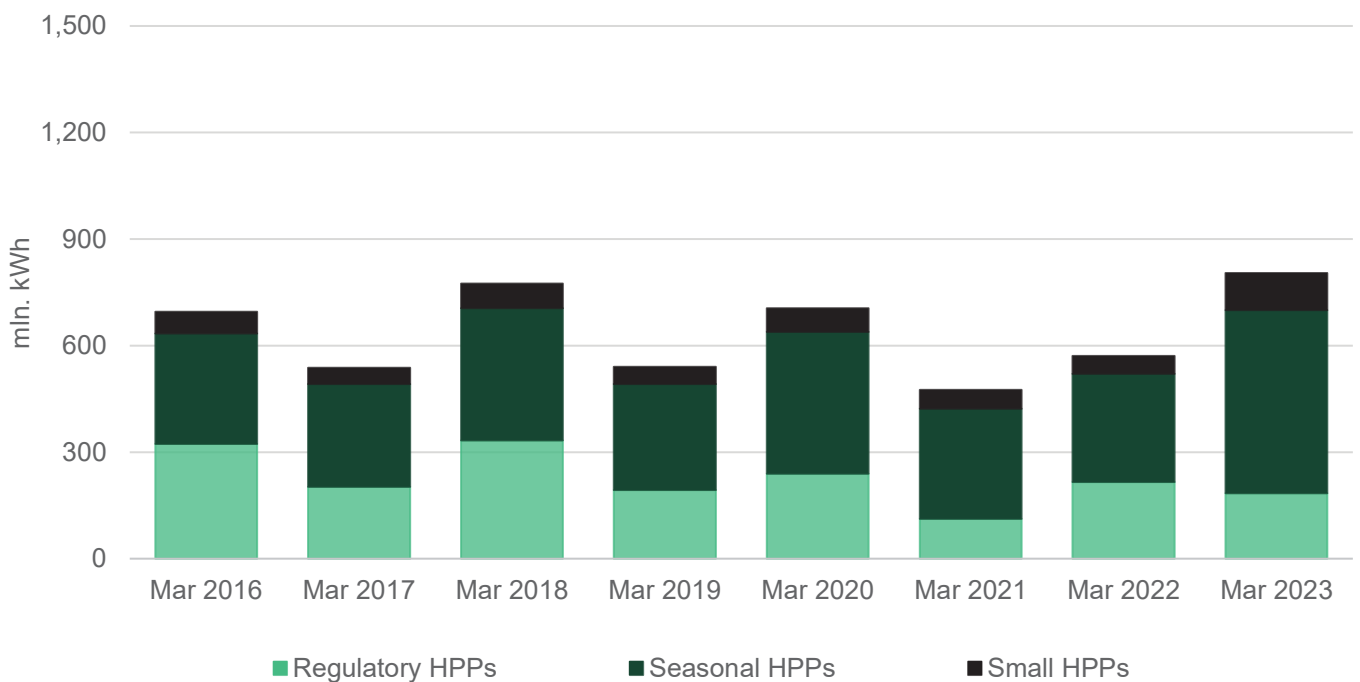
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 23% (185 mln. kWh) of electricity, while seasonal and small HPPs produced 64% (516 mln. kWh) and 13% (104 mln. kWh), respectively (Figure 3).

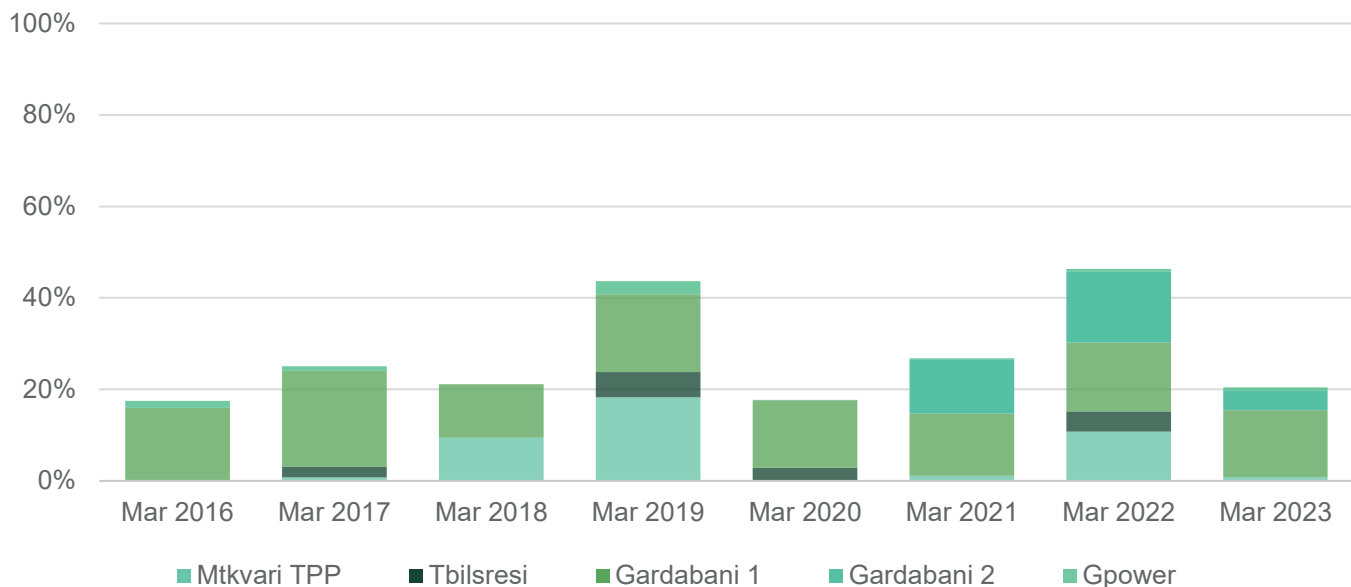
Figure 3 - HPP Generation by Type



Source: ESCO

As for thermal power generation, Gardabani 1 TPP generated 149 mln. kWh electricity (72% of TPP generation and 15% of total power generation), Gardabani 2 TPP generated 44 mln. kWh (21% of TPP generation and 4% of total power generation), Mtkvari TPP generated 8 mln. kWh (4% of TPP generation and 1% of total power generation). The remaining 3% of TPP generation was produced by Gpower (1% of total power generation) (Figure 4).

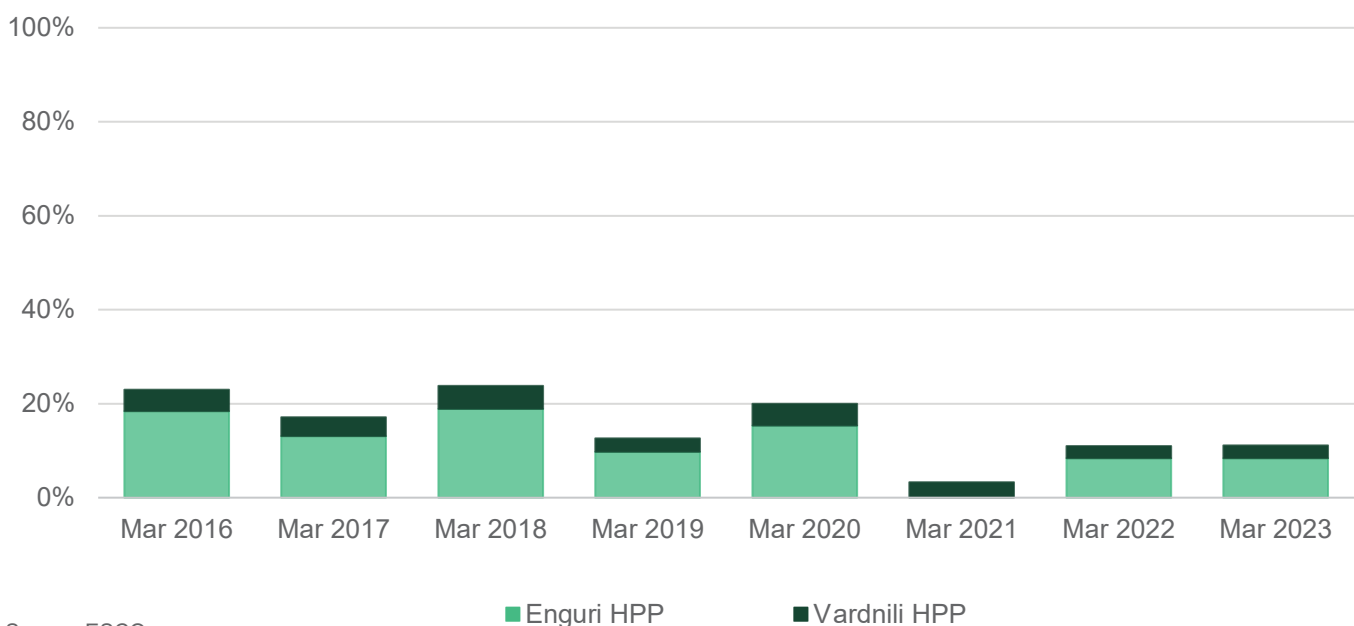
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 28 mln. kWh (15% of generation for regulatory HPPs and 3% of total generation). Enguri HPP generated 85 mln. kWh, which represents 46% of generation of regulatory HPPs and 8% of total generation (Figure 5).

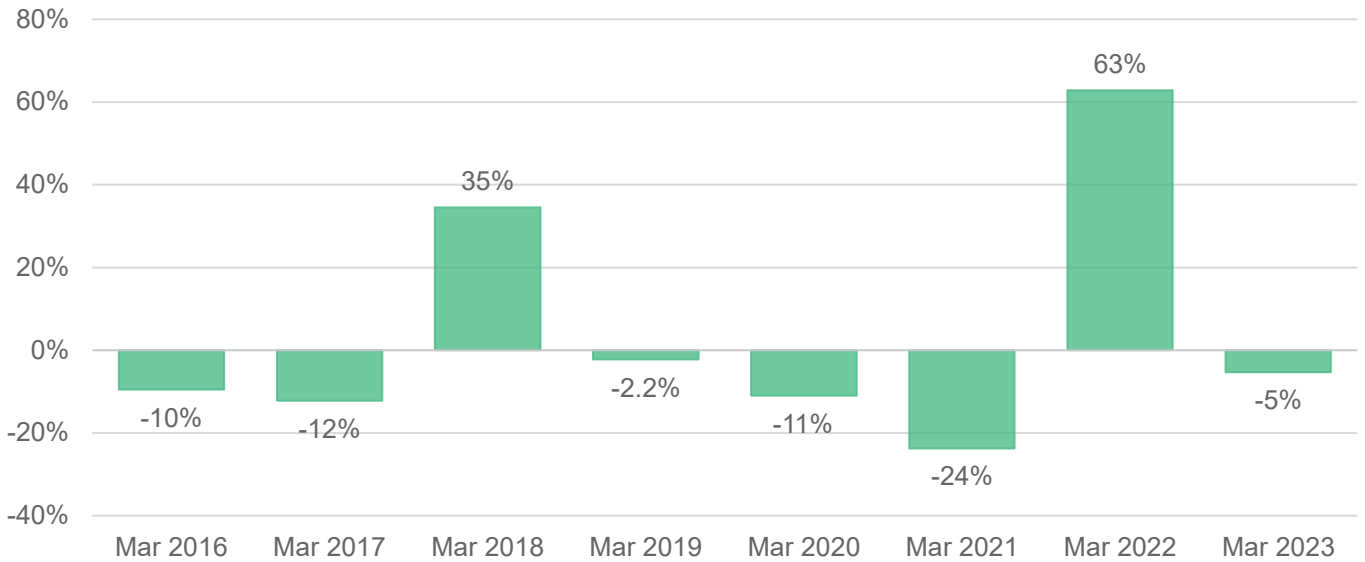
Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, the total generation decreased by 5% compared to March 2022 (Figure 6).

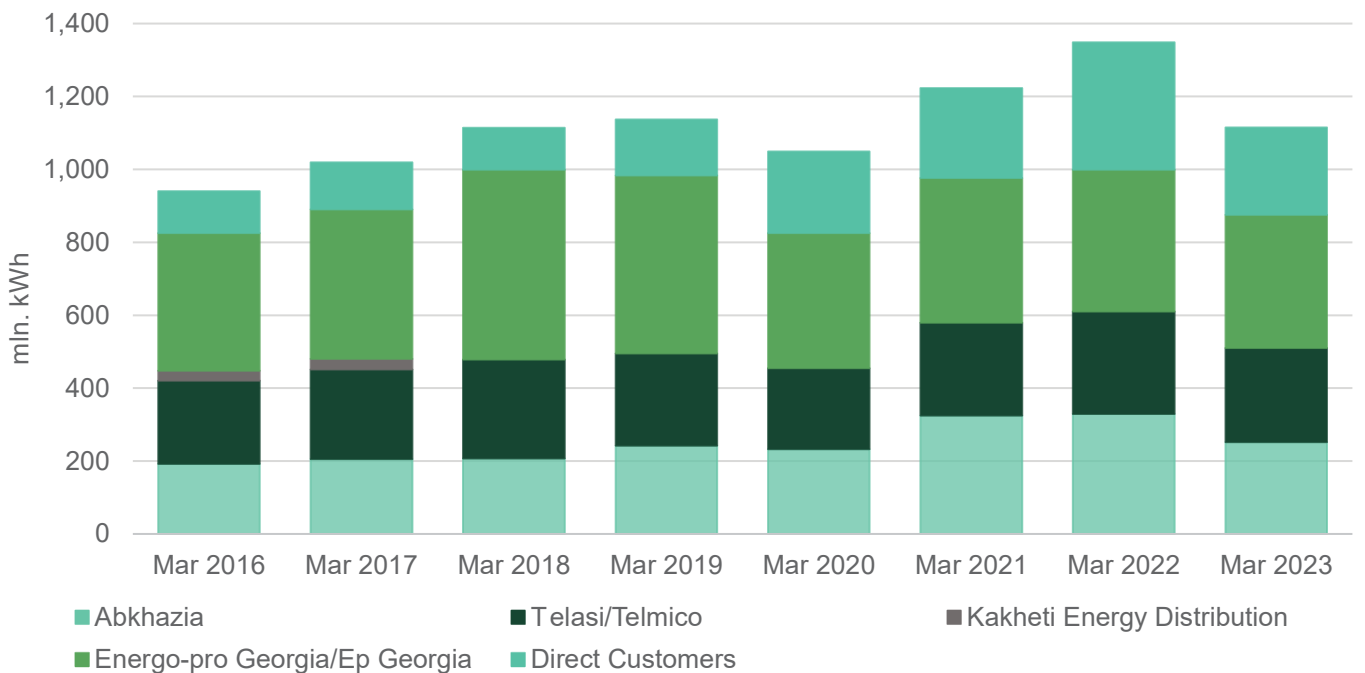
Figure 6 - Growth of Generation (% , y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia¹ (33% - 365 mln. kWh), Abkhazia (23% - 252 mln. kWh), Telasi/Telmico² (23% - 258 mln. kWh), and direct customers (22% - 240 mln. kWh) (Figure 7). Annual demand from Telasi/Telmico, Energo-Pro Georgia/Ep Georgia, Abkhazia and direct customers fell by 8%, 6%, 23%, and 31%, respectively. Overall, there was an annual decrease of 17% in the total electricity consumption in March 2023, compared to March 2022 (Figure 8).

Figure 7 - Electricity Consumption by Type of Consumer

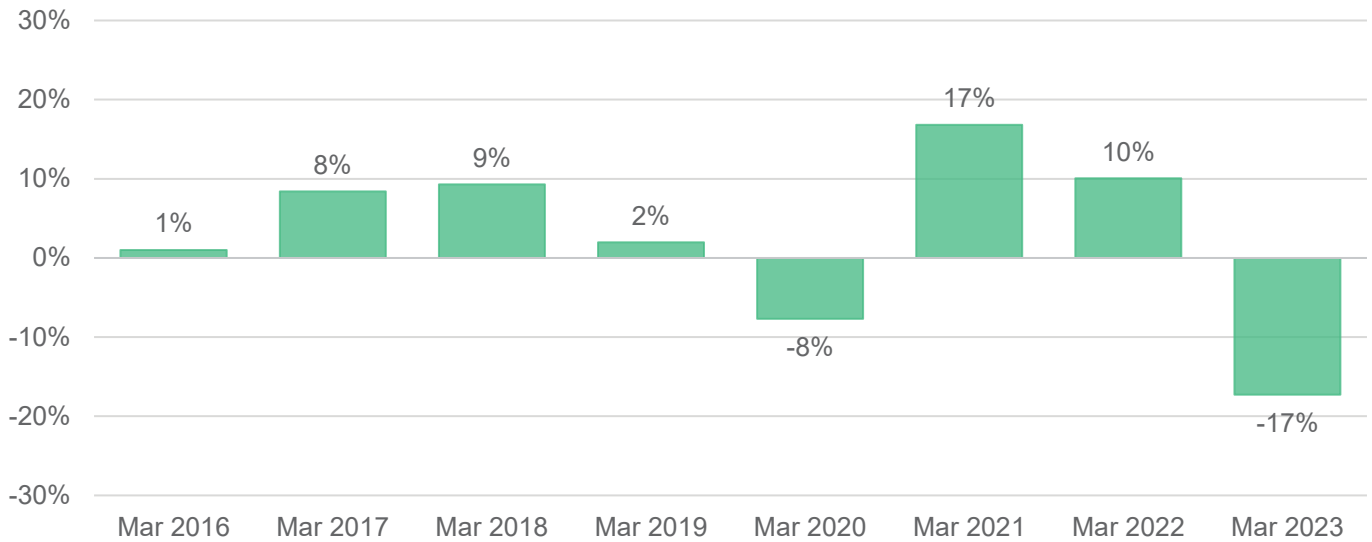


Source: ESCO

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)

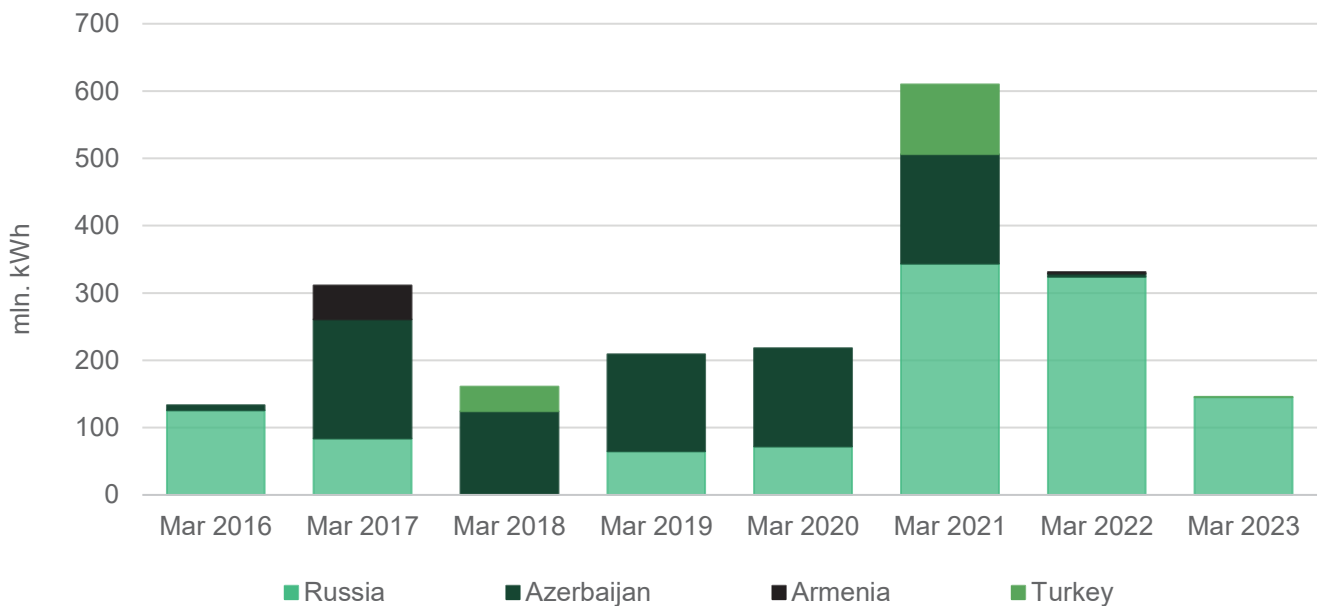


Source: ESCO

In March 2023, there was an import of 146 mln. kWh of electricity (compared to 331 mln. kWh in March 2022) (Figure 9). Almost 100% of this import came from Russia (out of which 97% went to Abkhazia), and there was insignificant amount of electricity imports from Turkey (in March 2022, 98% of imports came from Russia, while the remaining of imports came from Azerbaijan and Armenia). In March 2023, there was no export (there was only an insignificant export to Russia in March 2022) (Figure 10). There was 381 mln. kWh transit from Azerbaijan to Turkey and 63 mln. kWh transit from Armenia to Turkey (there was 92 mln. kWh transit from Russia to Turkey and 31 mln. kWh transit from Armenia to Turkey in March 2022).

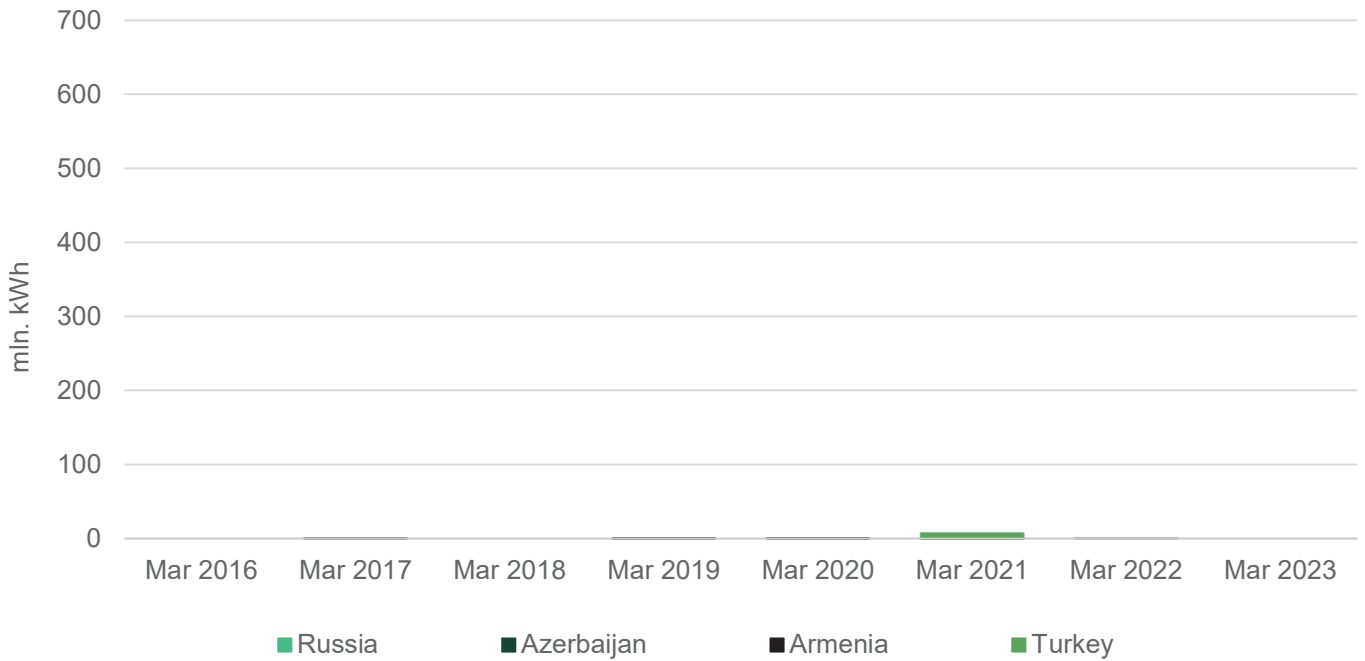
In March 2023, imports decreased by 56% compared to March 2022, while exports decreased by 100%.

Figure 9 - Imports by Year



Source: ESCO

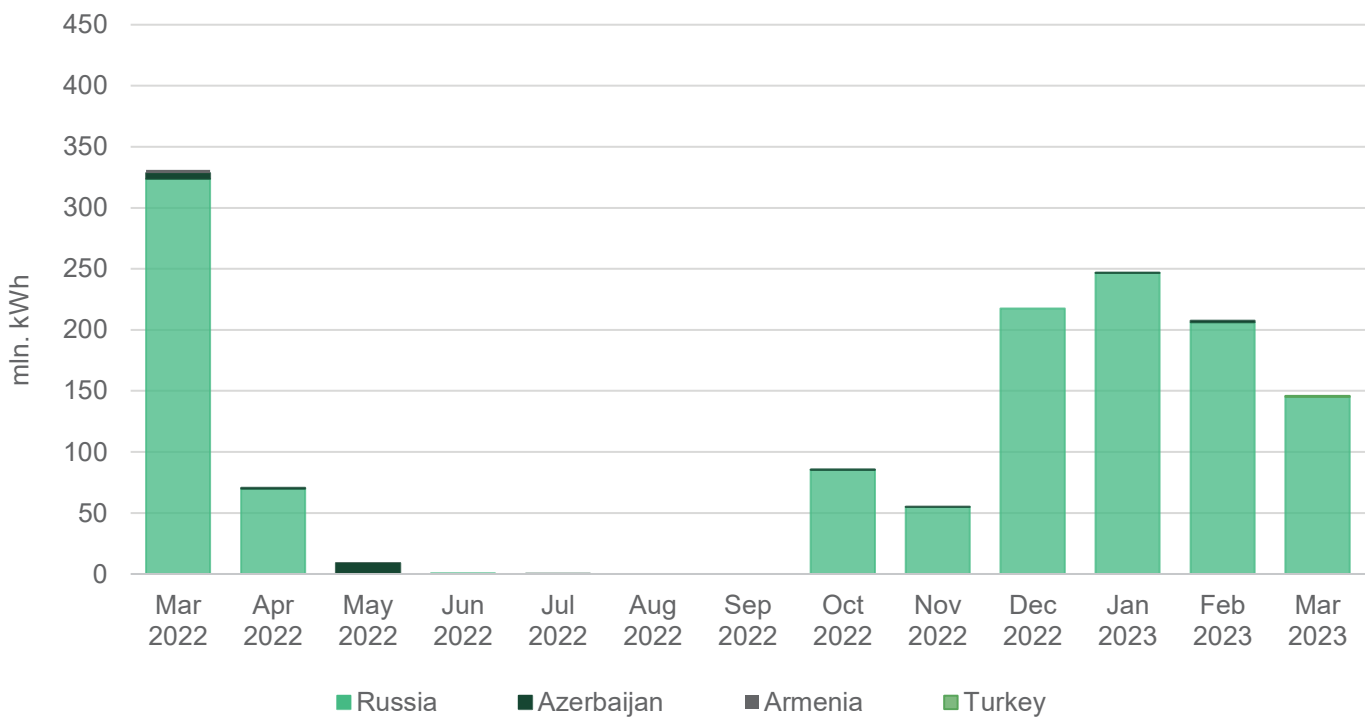
Figure 10 - Exports by Year



Source: ESCO

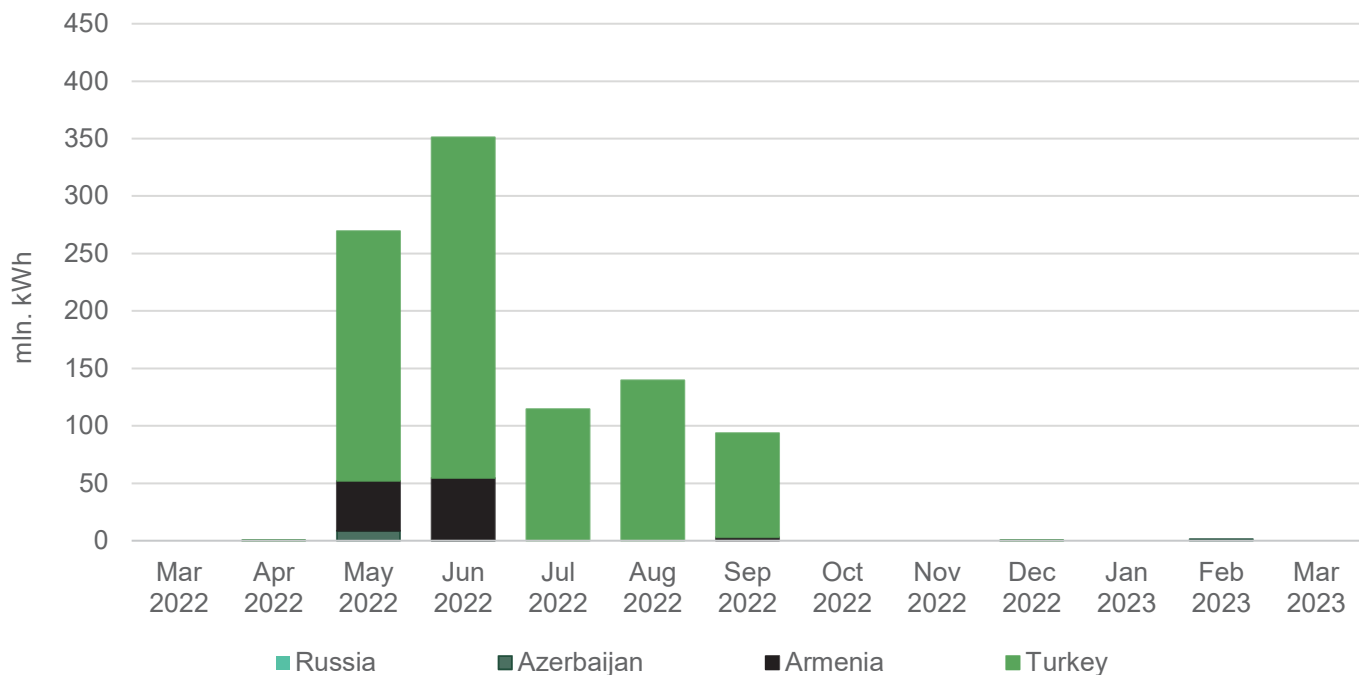
Electricity imports decreased by 30%, compared to February 2023 (Figure 11). Electricity exports decreased to 0 in March 2023 (Figure 12).

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

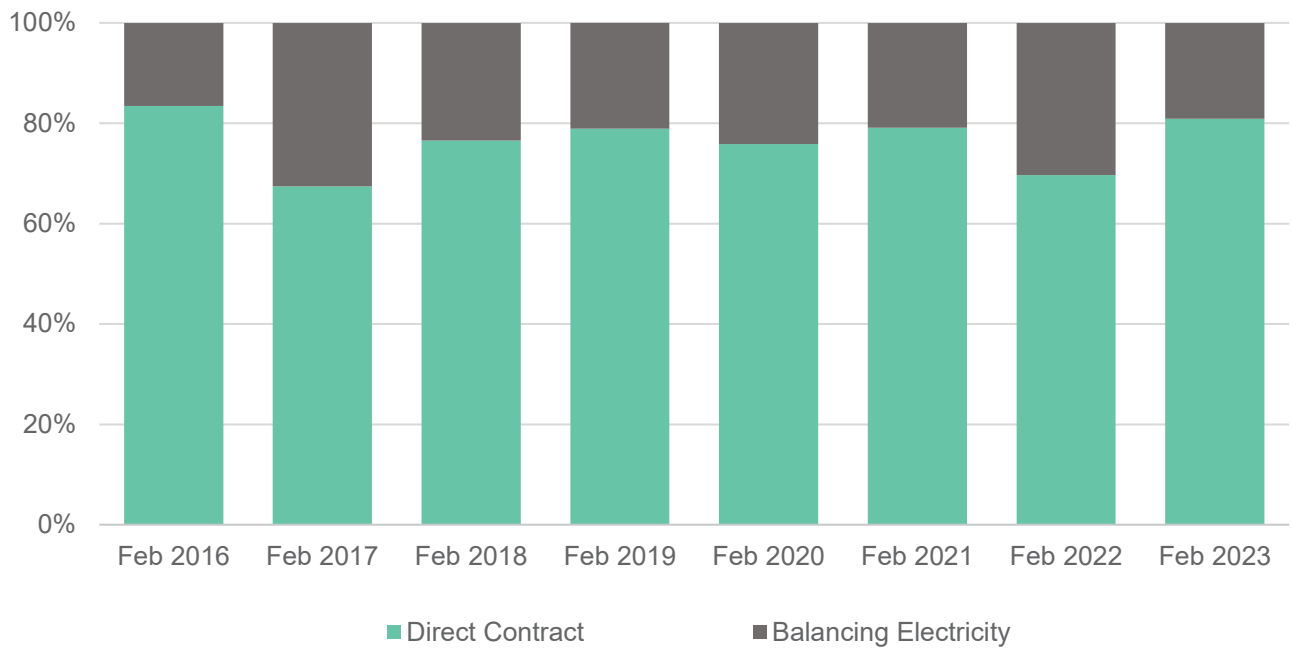


Source: ESCO

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).

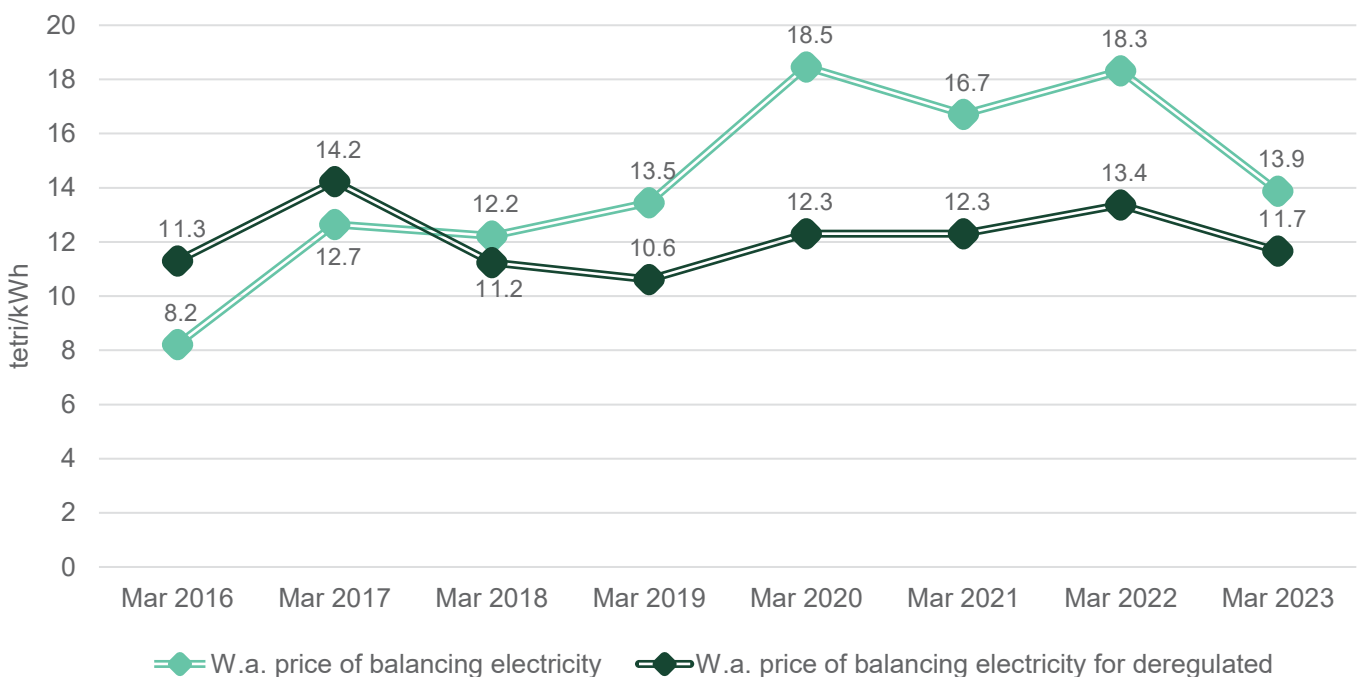
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In March 2023, the weighted average price of balancing electricity was 13.9 tetri/kWh, which corresponds to an annual decrease of 24% compared to March 2022. As for the weighted average price for deregulated (small) HPPs, it was 11.7 tetri/kWh, 13% less than the price in March 2022 (Figure 14).

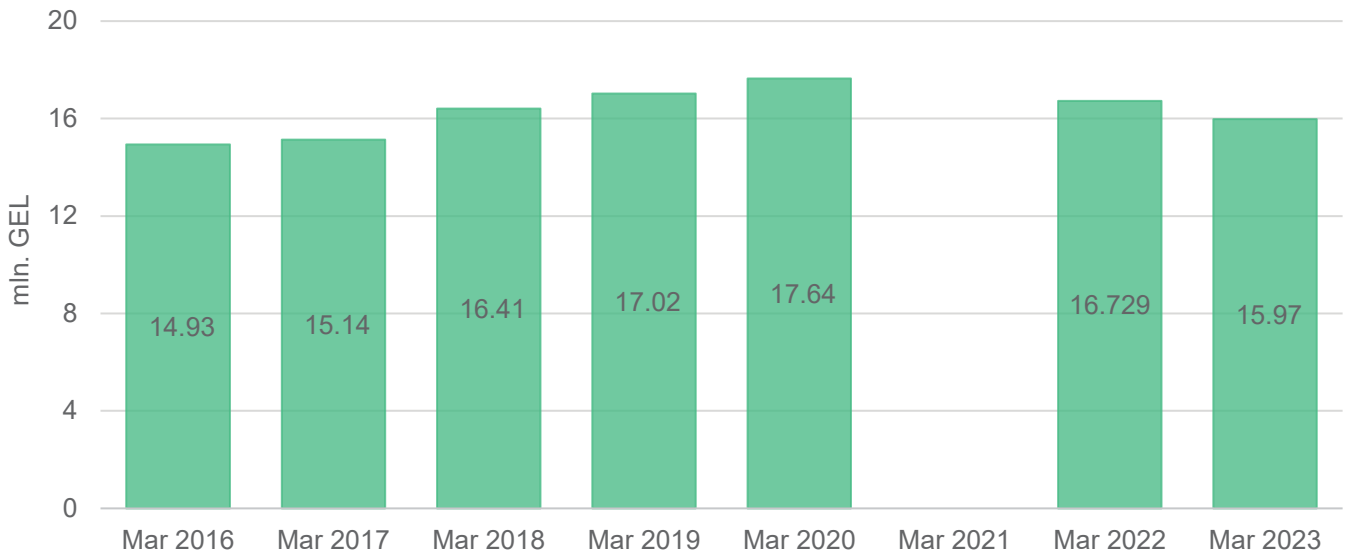
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in March 2023 were roughly 15.97 mln. GEL, which represents a 5% decrease compared to March 2022 (Figure 15).

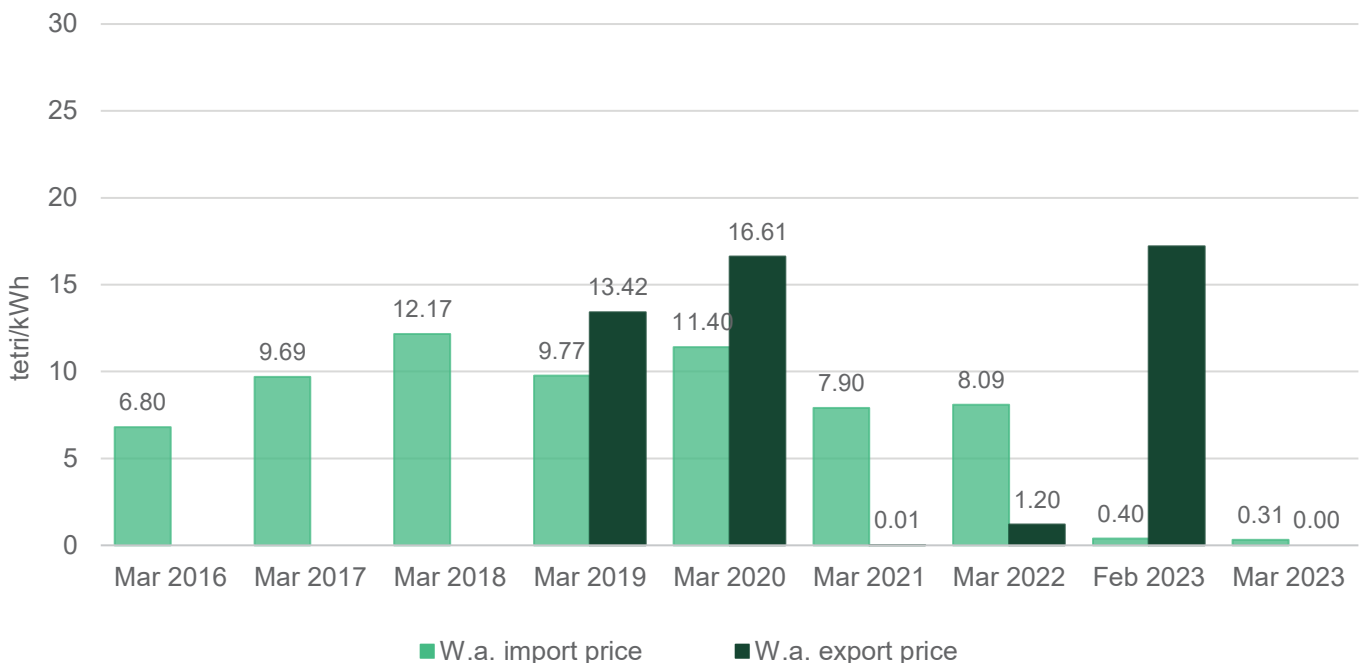
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The electricity import price in March 2023 reached 0.12 ϕ , or 0.31 tetri per kWh (Figure 16). This corresponds to an annual decrease in price by 95% in USD and 96% in GEL (prices were 2.50 ϕ , or 8.09 tetri per kWh in March 2022). Compared to February 2023, import price decreased by 20% in USD and 21% in GEL (prices were 0.15 ϕ , or 0.40 tetri per kWh in February 2023). There were no exports in March 2023, so neither monthly nor annual dynamics cannot be assessed (Figure 16).

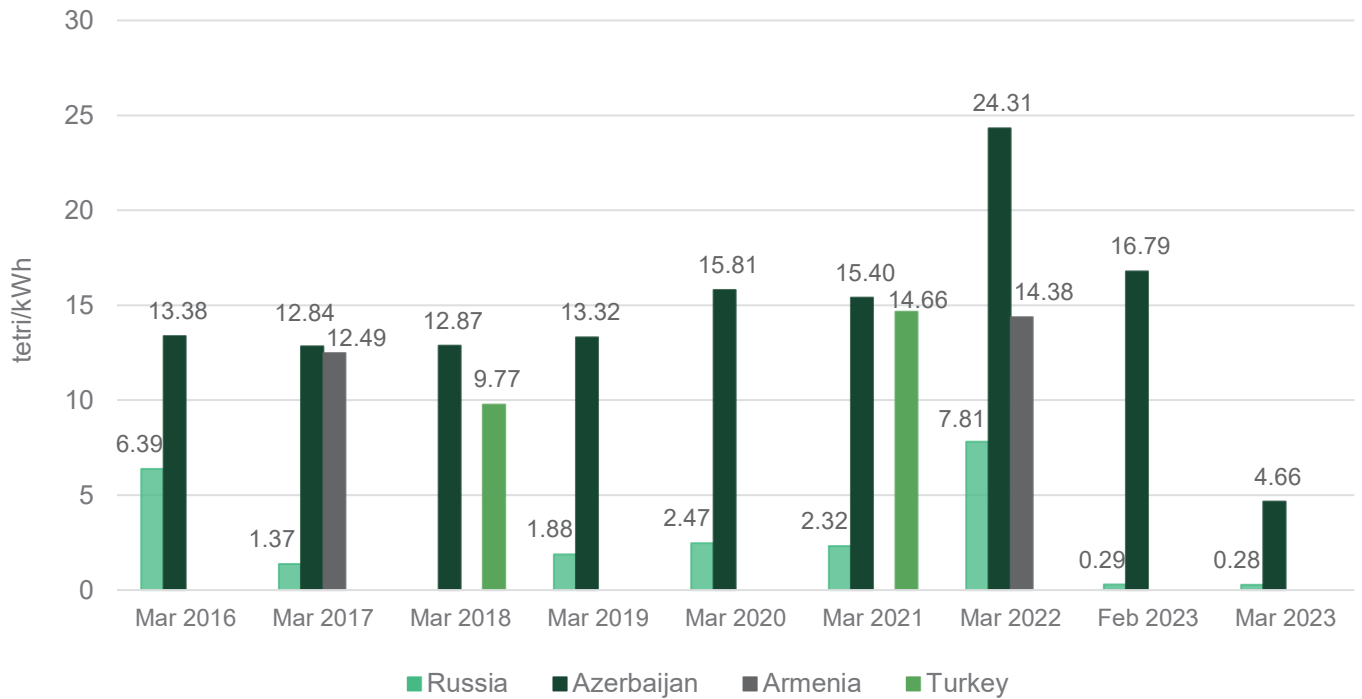
Figure 16 - Prices Import/Export



Source: ESCO

In March 2023, the electricity import price from Russia and Azerbaijan stood at 0.11 ¢ or 0.28 tetri and 1.80 ¢ or 4.66 tetri, respectively (Figure 17).

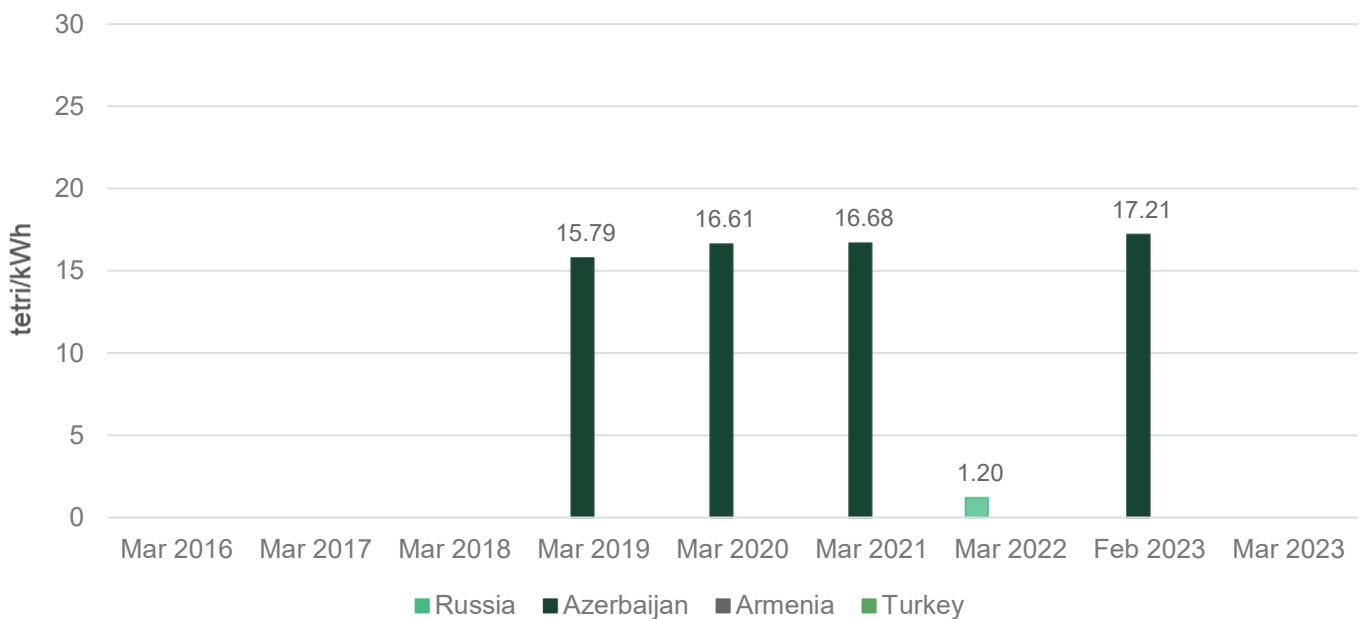
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In March 2023, there was no electricity export (Figure 18).

Figure 18 - Export Prices by Countries

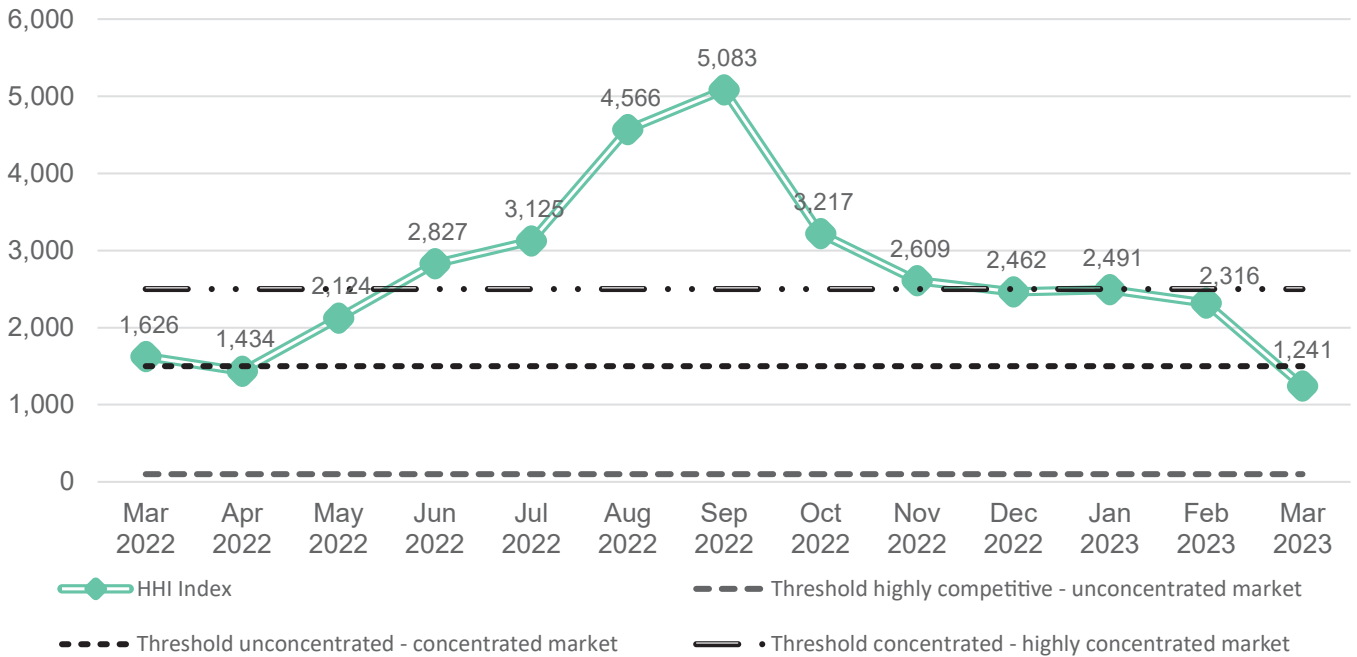


Source: ESCO/Geostat

2. Market Concentration

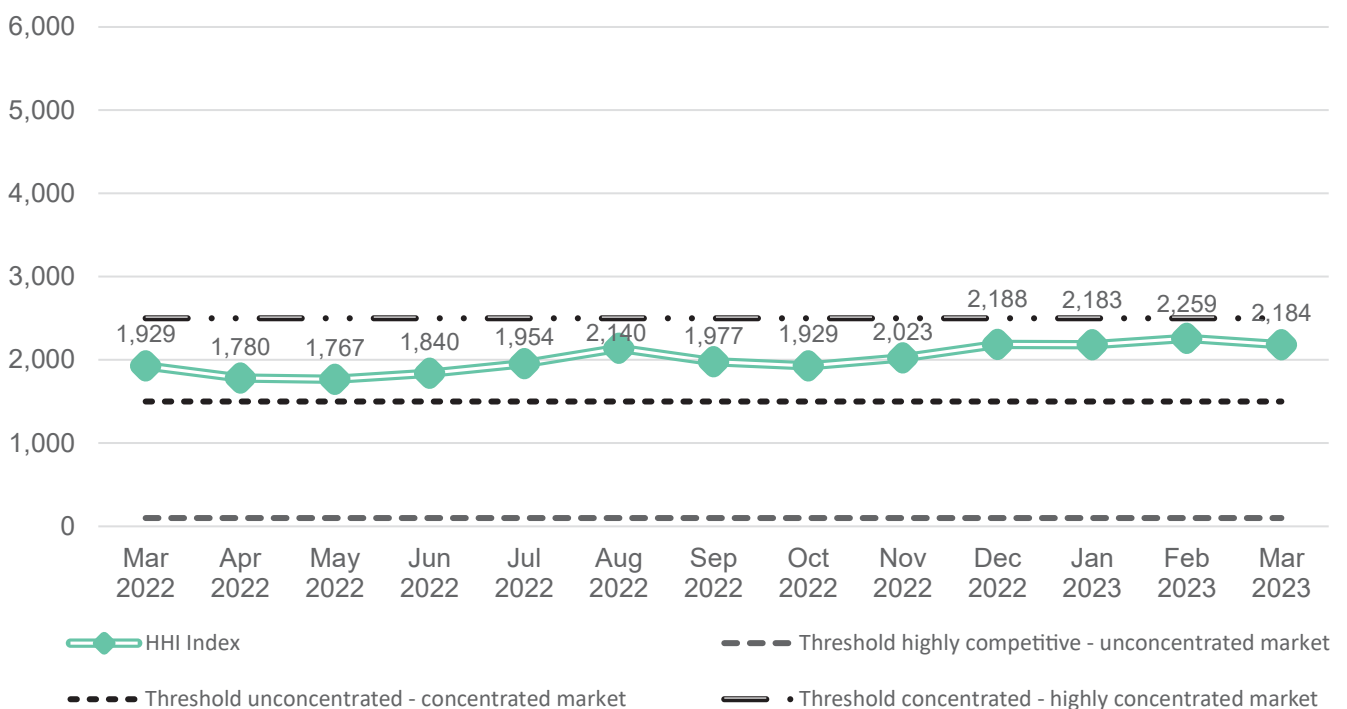
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In March 2023, Georgian electricity generation market index fell below the threshold of concentrated market with an HHI value of 1,241 due to a significant increase of seasonal HPP generation (Figure 19). This is lower than the level in March 2022 (with an HHI value of 1,626), and lower than the level in February 2023 (the HHI was 2,316). As for the consumption segment, in March 2023, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 2,184 (above the level in March 2022 – 1,929 and below the level in February 2023 – 2,259). 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