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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- In March 2022 there was an increase in total electricity generation by 63% on a yearly basis, and an increase by 21% on a monthly basis.
- Consumption increased by 10% on yearly basis and increased by 12% on a monthly basis.
- Consumption exceeded generation by 273 mln. kWh – 25% of total generation for March.
- There was a 46% decrease in imports annually.
- The main import partner country was Russia.
- The cost of imports from Russia was 7.81 tetri per kWh.
- The weighted average price of imports in GEL increased by 2% on a yearly basis and decreased by 7% on a monthly basis.
- The only export partner was Russia, although the level of exports was extremely small.
- The electricity export price to Russia was 1.2 tetri per kWh.
- For the third successive month, The HHI index for the Georgian electricity generation market remained below the threshold of concentrated market. In March 2022, it reached the level of 1499. It was higher compared to the levels in March 2021 and the level in February 2022 (498 and 1324, respectively).
- The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. September 2020 (index value of 2522) was the last month during which the index value was above the level of highly concentrated market. Since then, the trend of the index was downward, however it started to hike up starting from October 2021. Since reaching local peak in January 2022, the index started to decline once again reaching level of 1926 in March 2022.

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

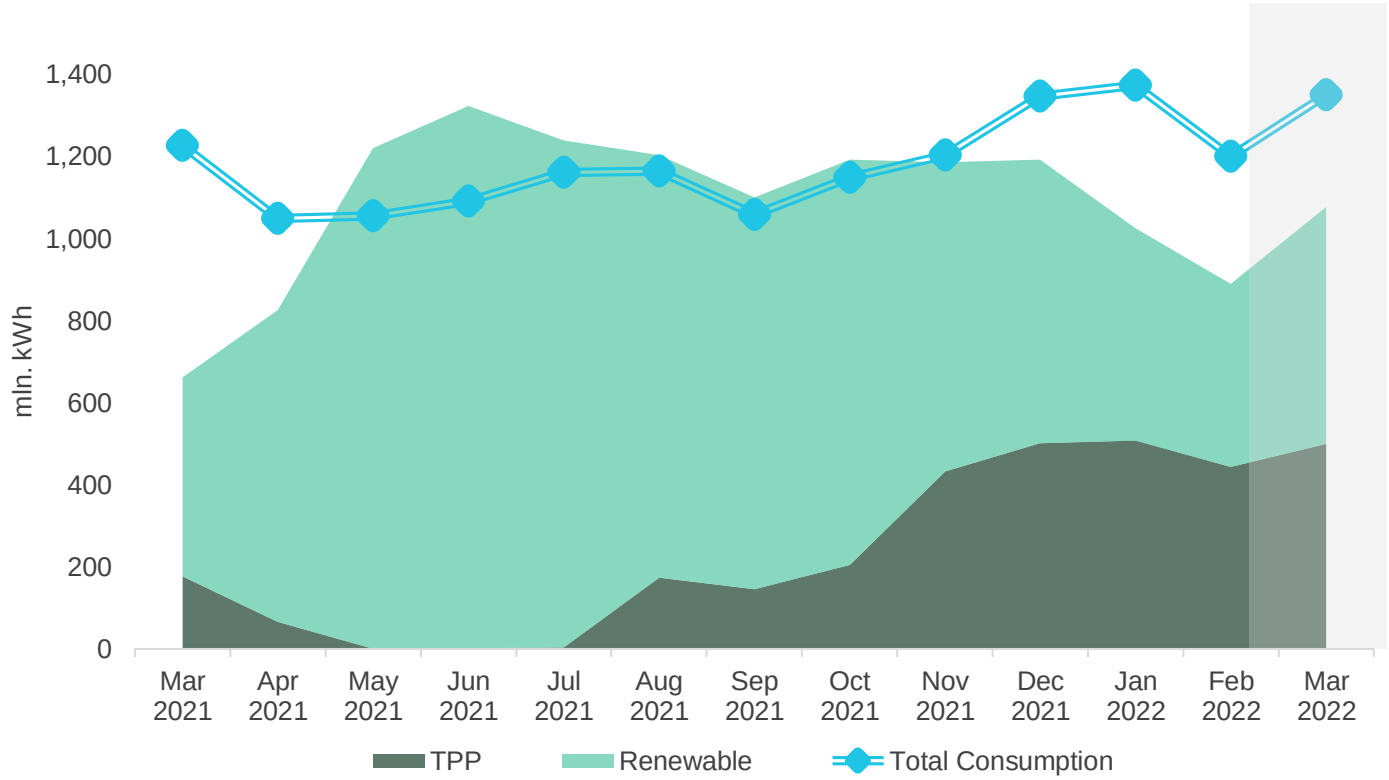
Generation – Consumption – Trade

In March 2022, Georgian power plants generated 1,077 mln. kWh of electricity (Figure 1). This represents a 63% increase in total generation, compared to the previous year (in March 2021, the total generation was 661 mln. kWh). The increase in generation on a yearly basis comes from the increase of 182% and 20% in thermal and hydro power generation, respectively, more than offsetting 20% decline in wind power generation.

On a monthly basis, generation increased by approximately 21% (in February 2022, total generation was 890 mln. kWh) (Figure 1). The monthly increase in total generation, is induced by a 12%, 30%, and 31% increase in thermal, hydro, and wind power generation, respectively. February is a significantly shorter month than March, so this increase of generation is not a surprise.

The consumption of electricity on the local market was 1350 mln. kWh (+10% compared to March 2021, and +12% compared to February 2022) (Figure 1). In March 2022, power consumption exceeded generation by 273 mln. kWh which was 25% of total generation (in March 2021 difference between total generation and consumption resulted in a deficit of 566 mln. kWh, around 86% of the total generation for the month).

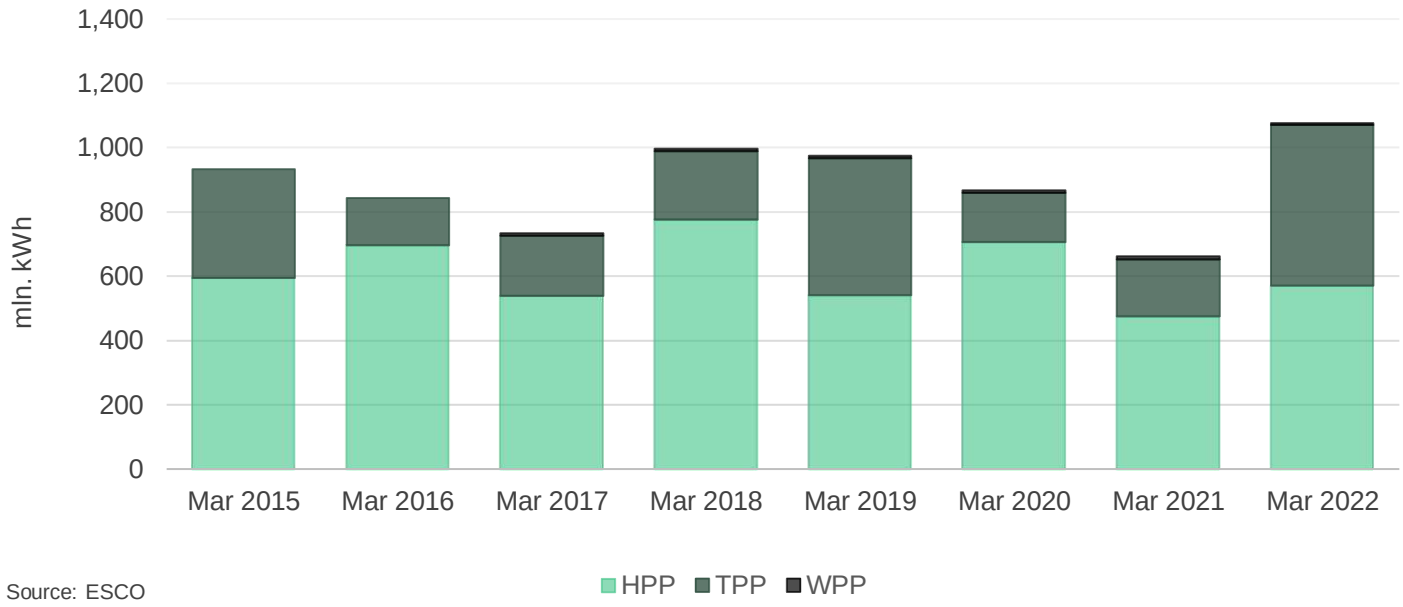
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

In March 2022, hydro power plants returned to being the leading source of generation. In March 2022, hydro power (HPP) generation amounted to 571 mln. kWh (53% of total), while thermal power (TPP) generation was 499 mln. kWh, and wind power (WPP) generation was 7 mln. kWh (46% and 1% of the total generation, respectively) (Figure 2).

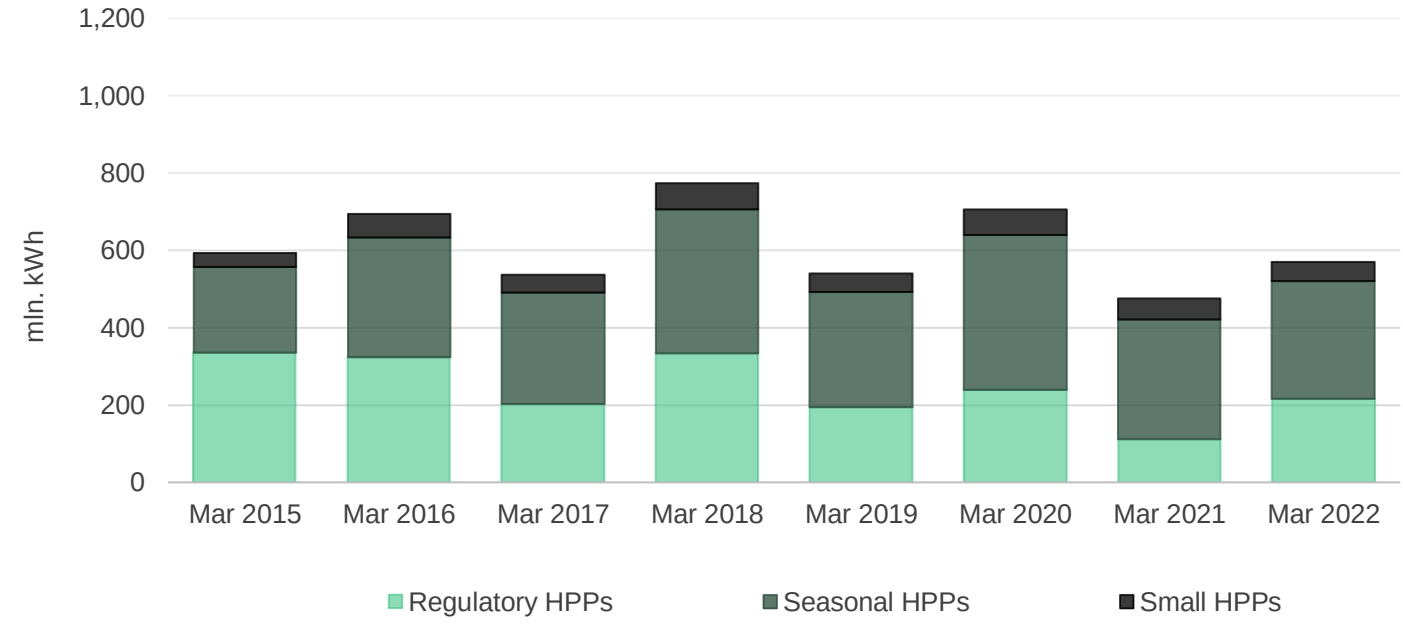
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 38% (216 mln. kWh) of electricity, while seasonal and small HPPs produced 53% (304 mln. kWh) and 9% (50 mln. kWh), respectively (Figure 3).

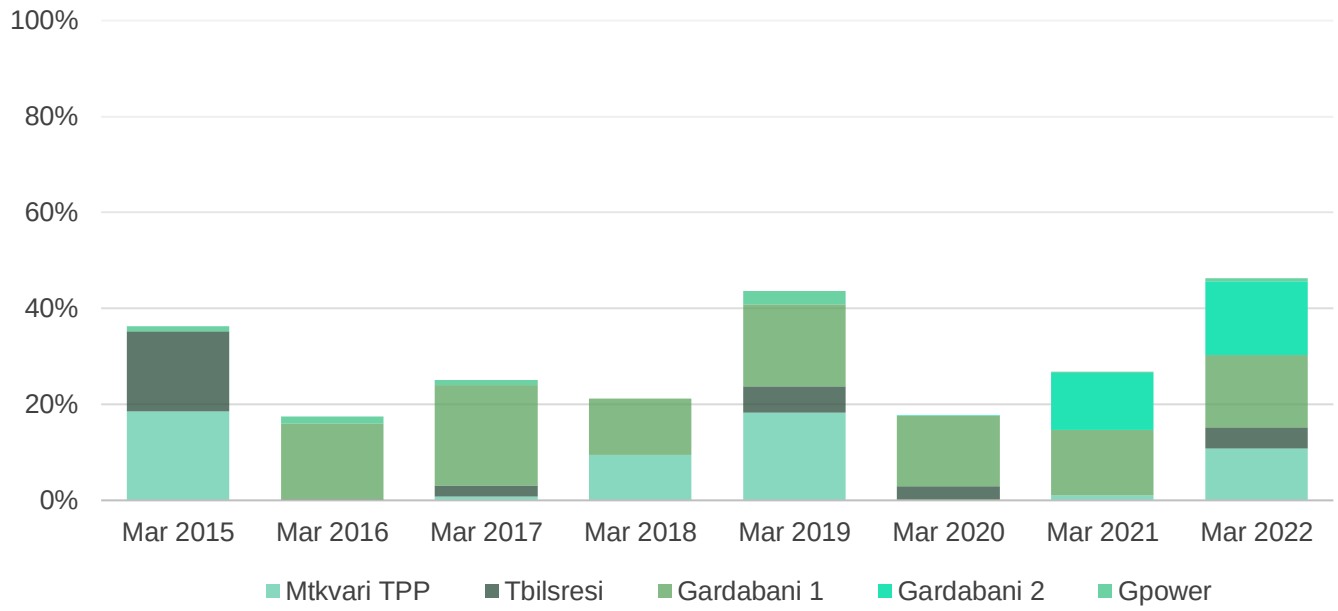
Figure 3 - HPP Generation by Type



Source: ESCO

Among thermal power plants, Mtkvari TPP generated 116 mln. kWh, 23% of total thermal power generation and 11% of total generation. Gardabani 1 TPP generated 162 mln. kWh, 32% of total thermal power generation and 15% of total generation. Gardabani 2 TPP generated 166 mln. kWh, 33% of total thermal power generation and 15% of total generation. The remaining 54 mln. kWh of TPP generation came from Gpower and Tbilsresi (Figure 4).

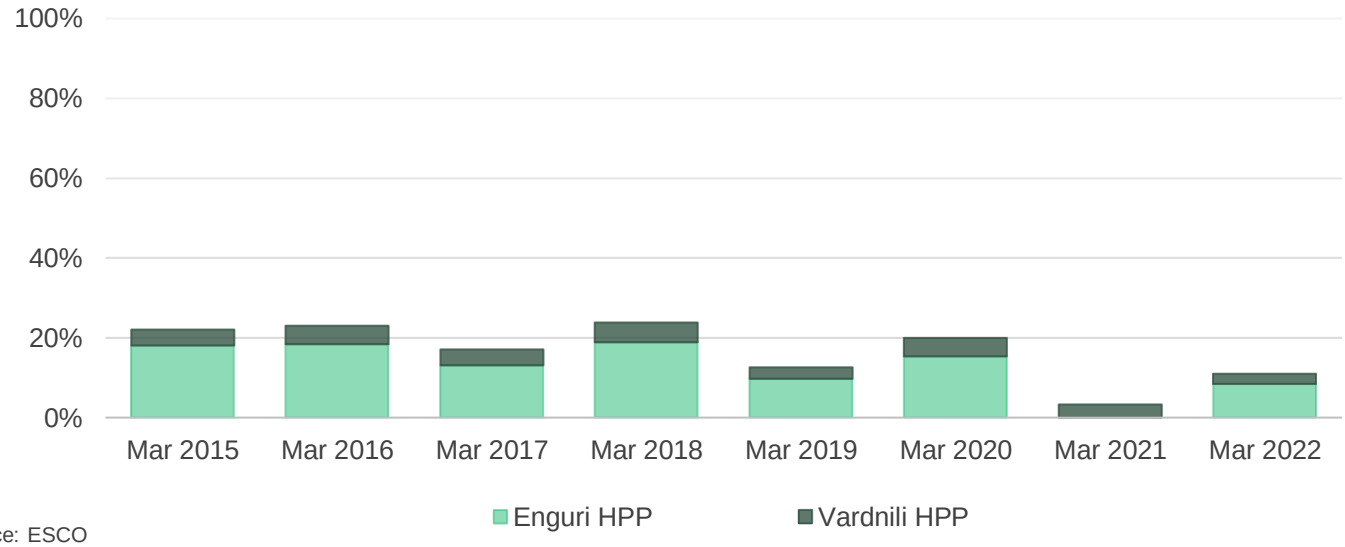
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 19 mln. kWh (12% of generation for regulatory HPPs and 2% of total generation). Enguri HPP generated 66 mln. kWh, which represents 42% of generation of regulatory HPPs and 7% of total generation (Figure 5).

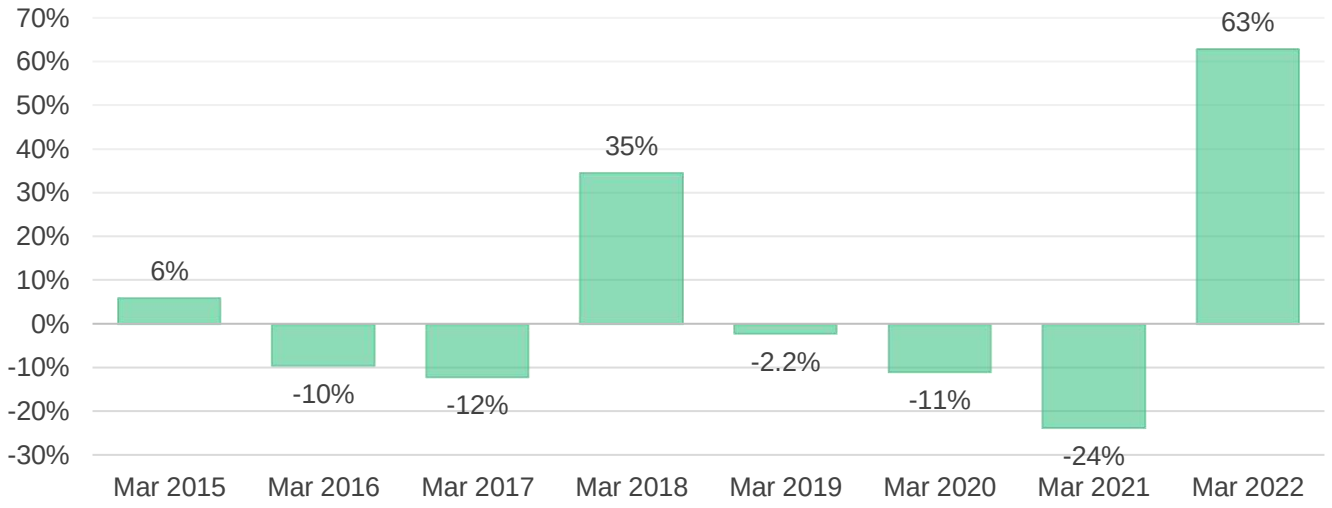
Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, total generation increased by 63% compared to March 2021 (Figure 6).

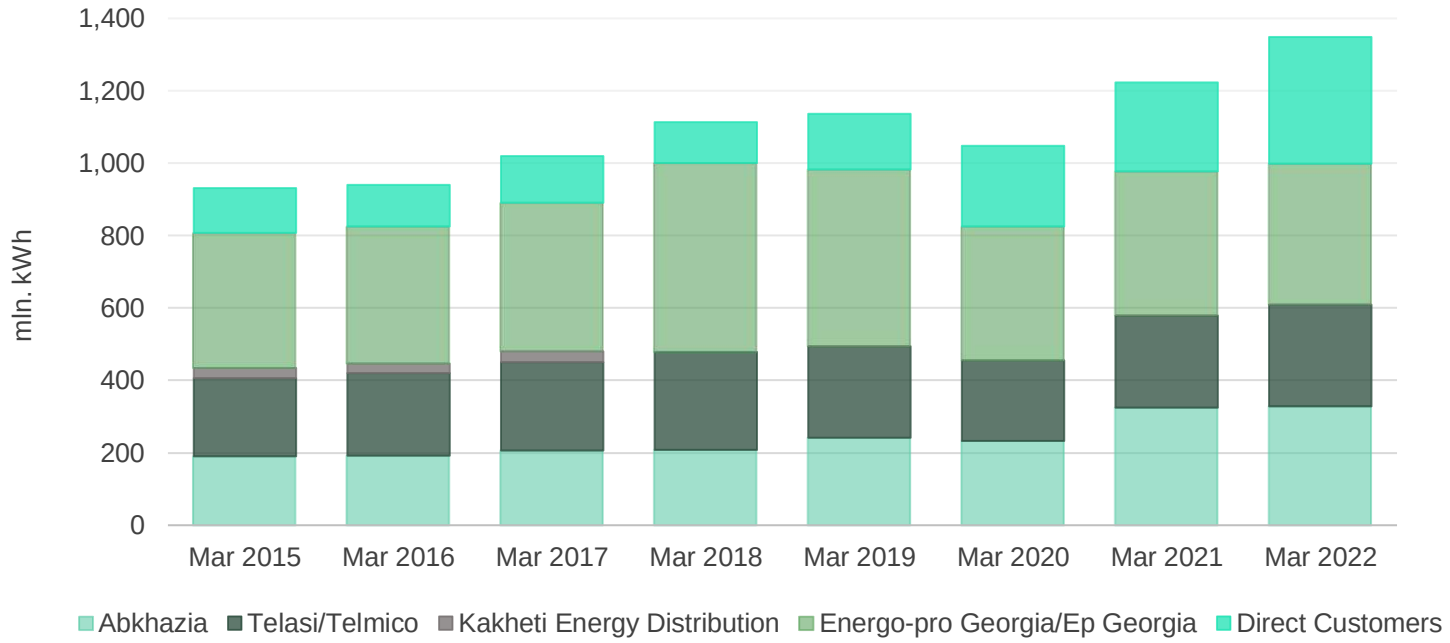
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia[1] (29% - 389 mln. kWh), Abkhazia (24% - 329 mln. kWh), Telasi/Telmico[2] (21% - 281 mln. kWh), and direct customers (26% - 350 mln. kWh) (Figure 7). Annual demand from Abkhazia, Telasi and direct customers increased by 1%, 10%, and 42%, respectively, while the demand from Energo-Pro Georgia fell by 2%. Overall, there was an annual growth of 10% in the total electricity consumption in March 2022, compared to March 2021 (Figure 8).

Figure 7 - Electricity Consumption by Type of Customer

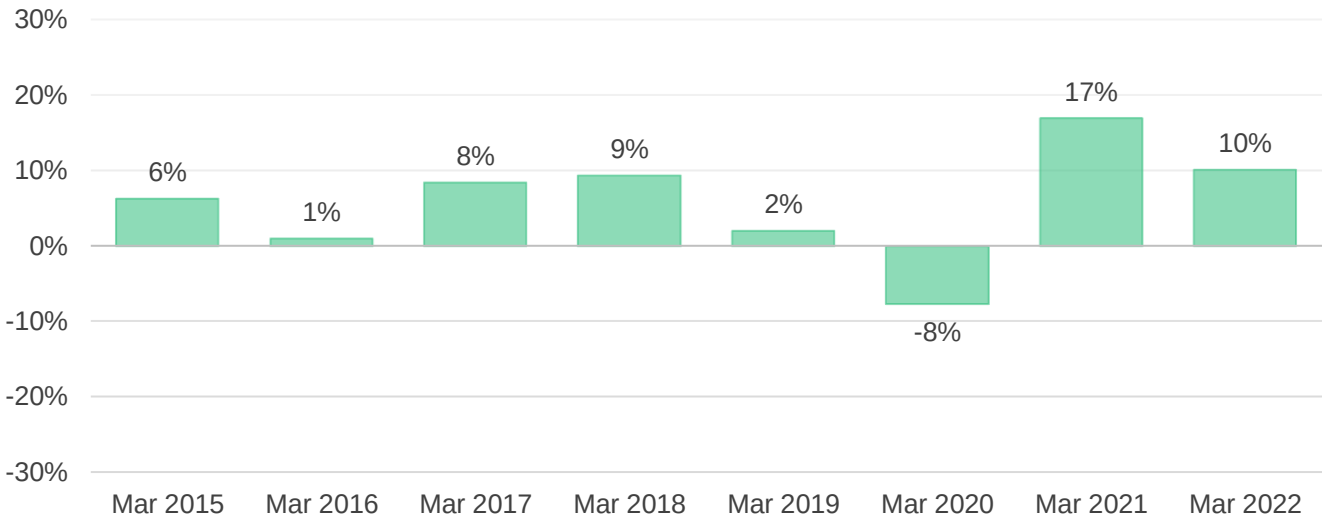


Source: ESCO

[1] Energo-Pro Georgia acquired Kakheti Energy Distribution in September 2017. Since July 2021, Ep Georgia is responsible for supply of electricity.

[2] Since July 2021, Telmico is responsible for supply of electricity.

Figure 8 - Electricity Consumption Growth (%, y/y)

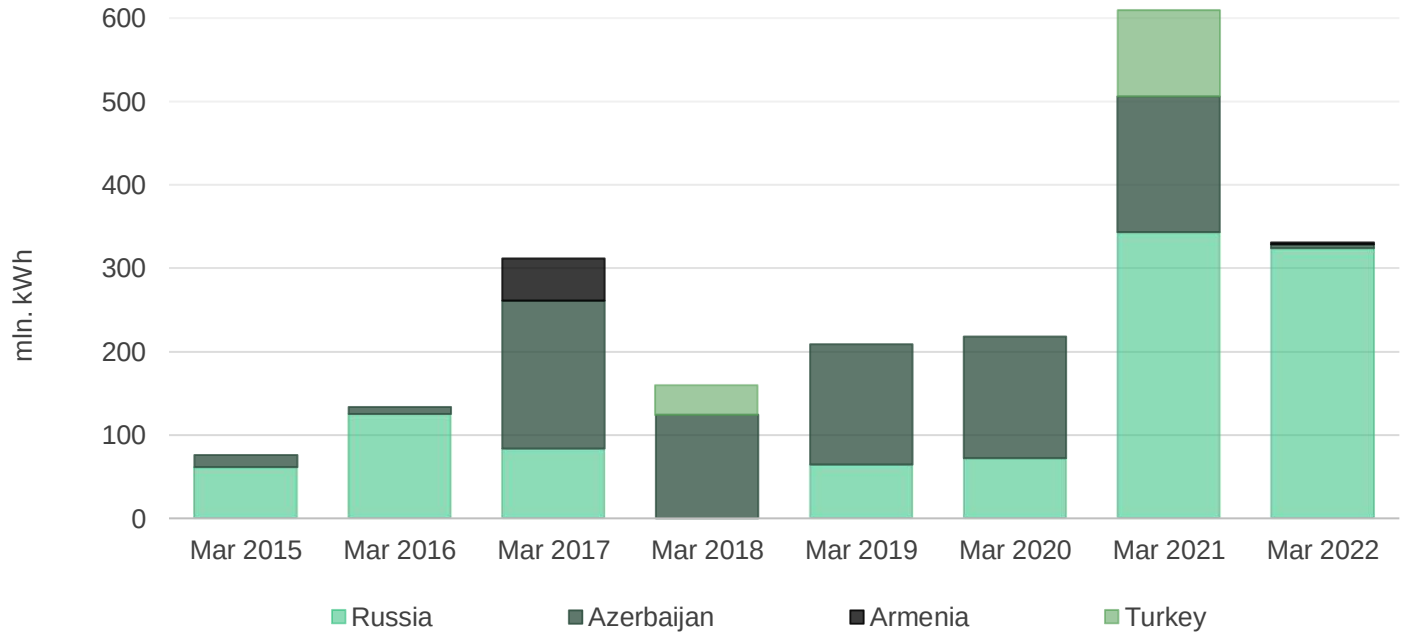


Source: ESCO

In March 2022, Georgia imported 331 mln. kWh of electricity (compared to 610 mln. kWh in March 2021). 98% of imports came from Russia (almost 60% of which was supplied to Abkhazia), while 1% came from Armenia and Azerbaijan each (Figure 9). In March 2022, Georgia exported less than 1 mln. kWh of electricity, all of which went to Russia (there was 8 mln. kWh export in March 2021) (Figure 10). There was 92 mln. kWh electricity transit from Russia to Turkey and 31 mln. kWh transit from Armenia to Turkey in March 2022 (In March 2021, there was no transit at all).

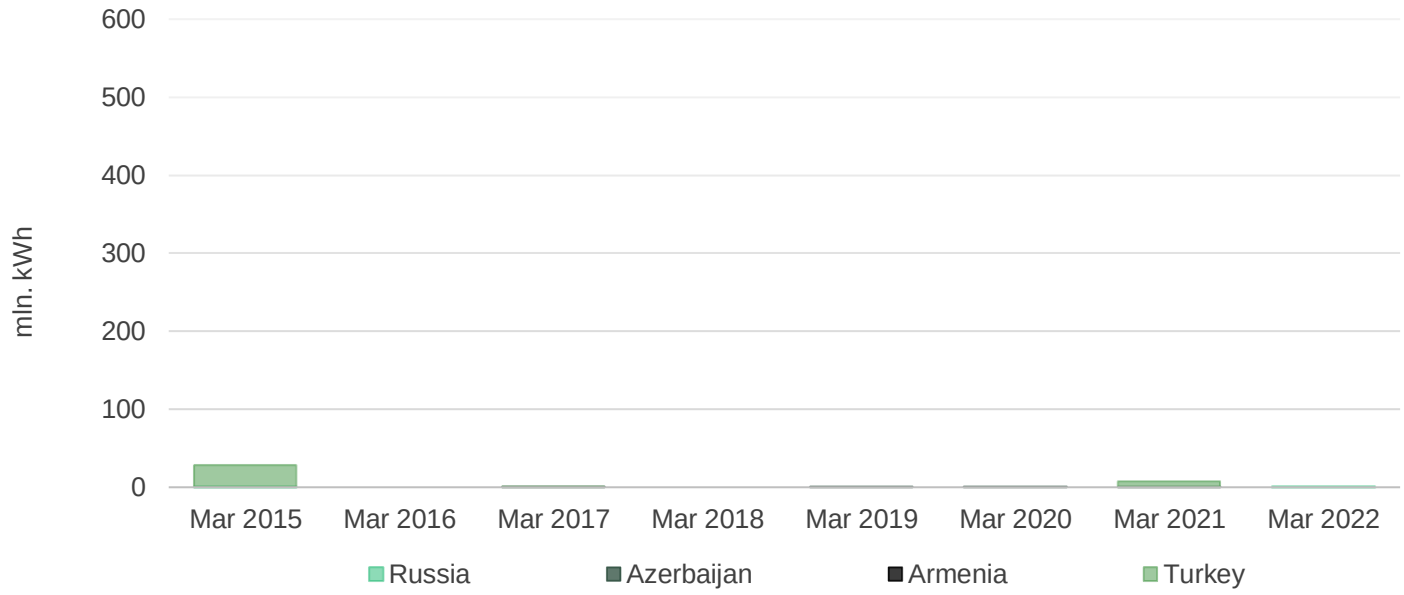
Compared to March 2021, imports decreased by 46%, while exports decreased by almost 100% (the effect of small numbers).

Figure 9 - Imports by Year



Source: ESCO

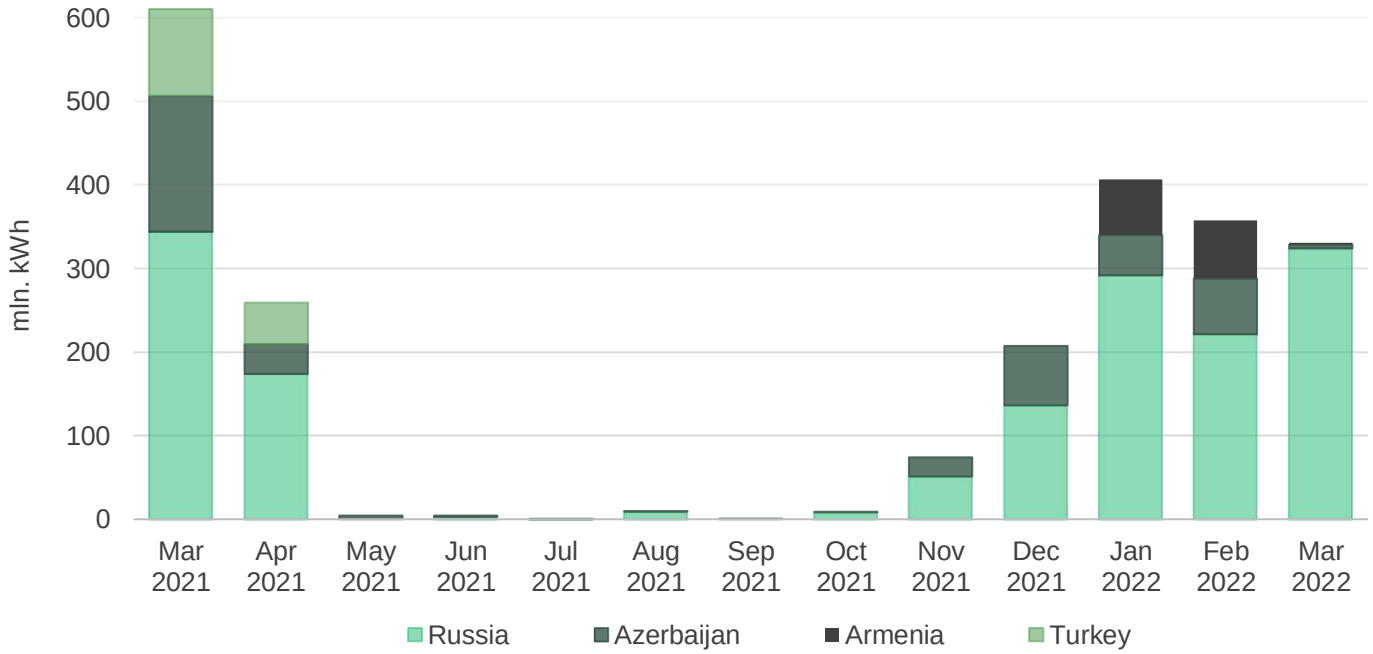
Figure 10 **- Exports by Year**



Source: ESCO

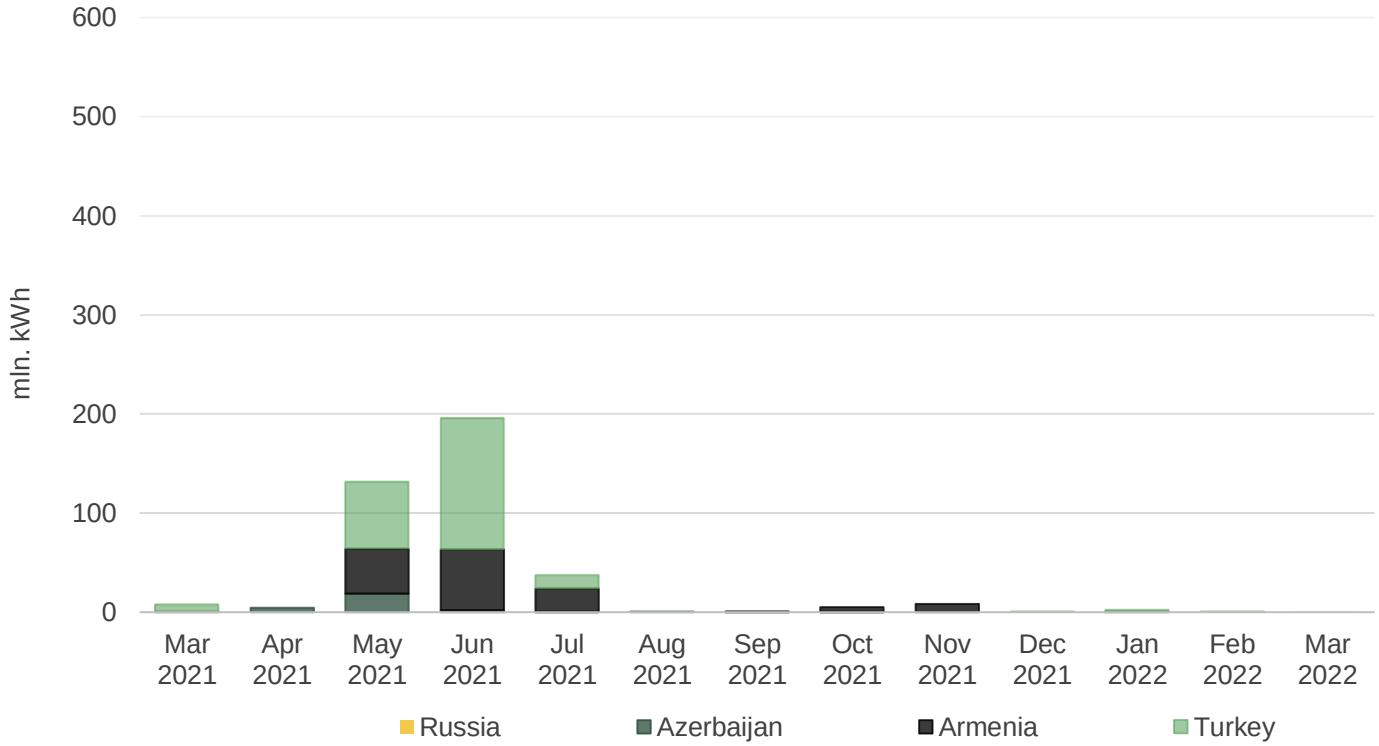
In March 2022, electricity imports decreased by 7% compared to February 2022 (Figure 11) Electricity exports decreased by 95%, compared to February 2022, and the level remains low (Figure 12). March was the fifth consecutive month to end up in generation-consumption deficit after a six-month surplus period.

Figure 11 **- Imports by Month**



Source: ESCO

Figure 12 **- Exports by Month**

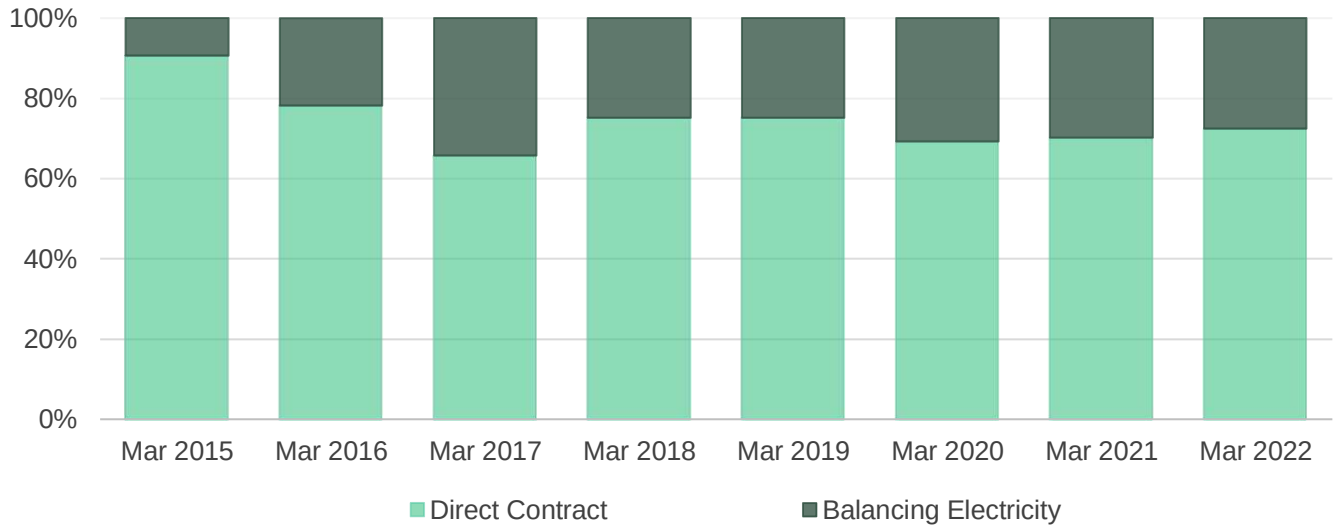


Source: ESCO

1. Market Operations

In March 2022, 72% of the electricity sold on/from the local market was sold through direct contracts. The remaining 28% was sold as balancing electricity (Figure 13).

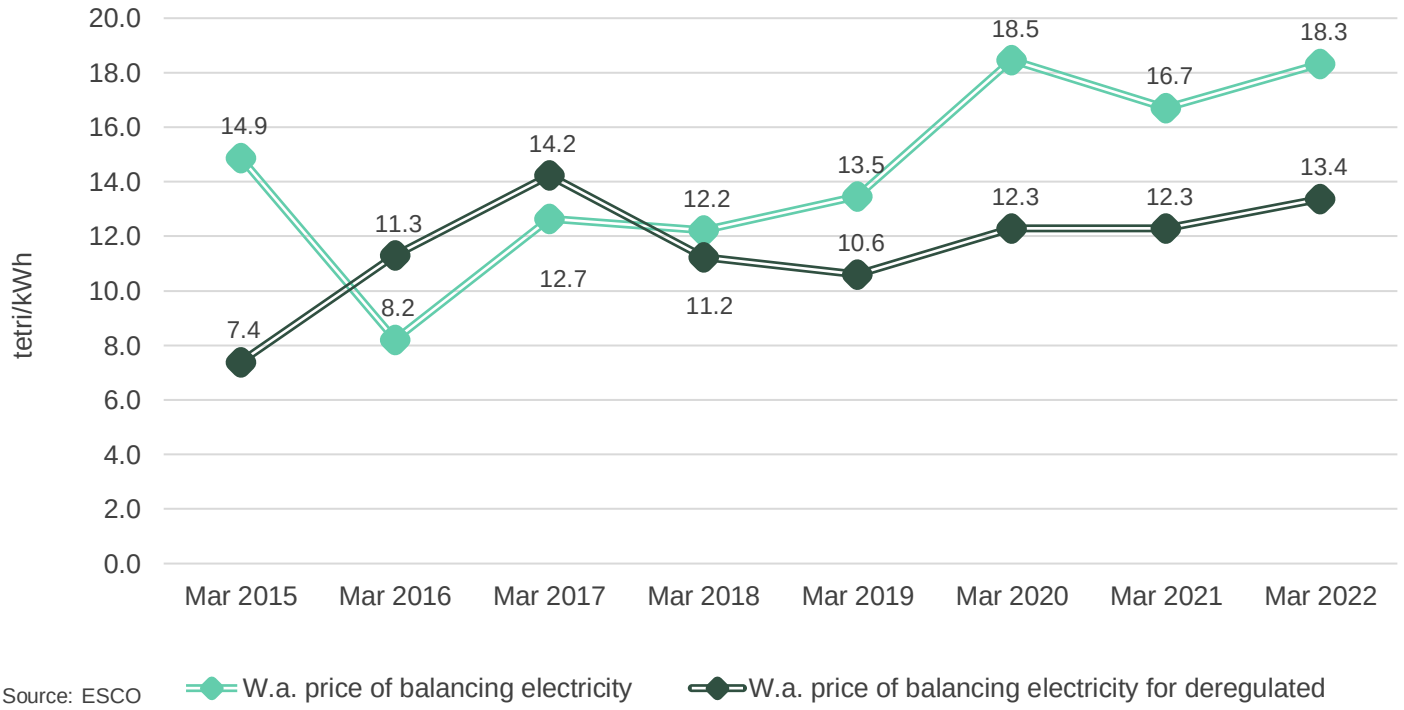
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In March 2022, the weighted average price of balancing electricity was 18.3 tetri/kWh, which corresponds to an annual increase of 10% compared to March 2021. As for the weighted average price for deregulated (small) HPPs, it was 13.4 tetri/kWh, which represents a 9% increase compared to March 2021 (Figure 14).

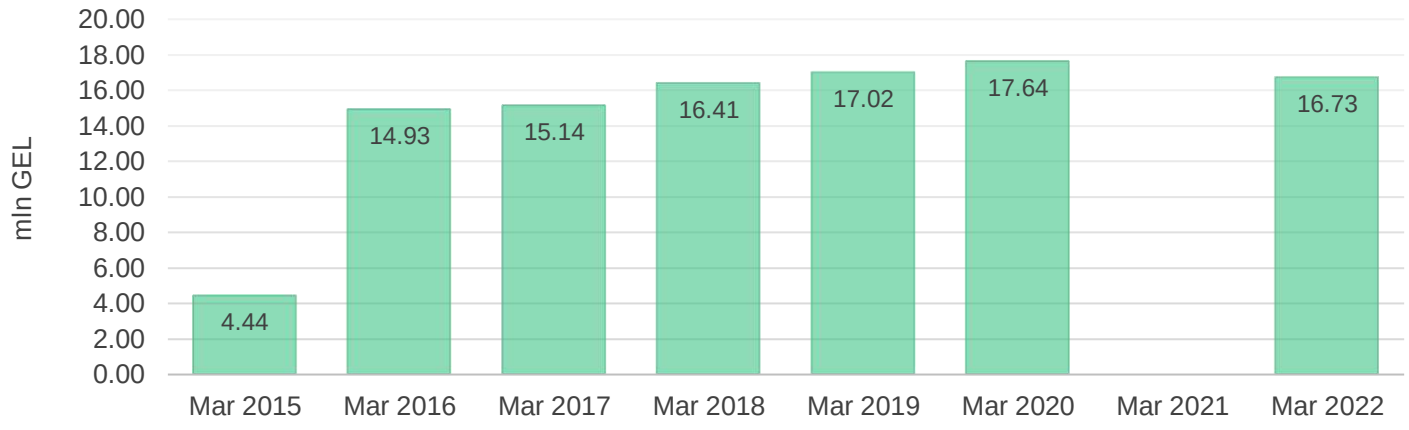
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in March 2022 were roughly 16.73 mln. GEL, which represents a 5% decrease compared to March 2020. The data about March 2021 is not available (Figure 15).

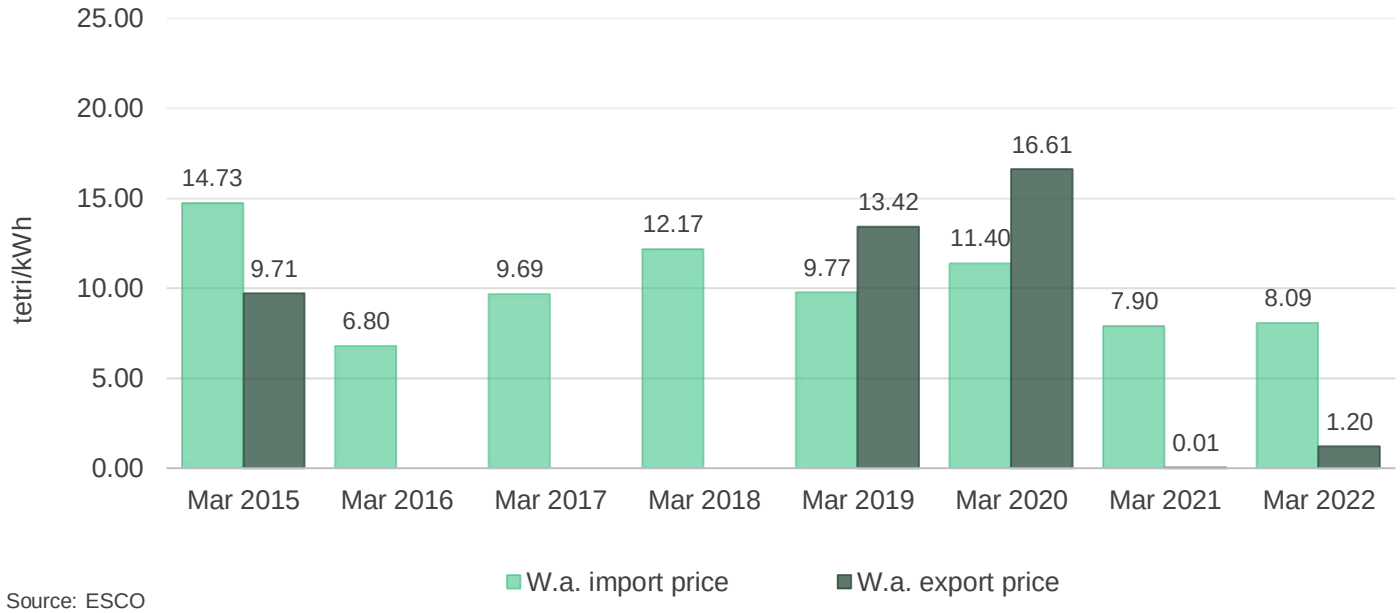
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The weighted average electricity import price in March 2022 increased by 5% in USD, on an annual basis, and increased by approximately 2% in GEL (from 2.37 ¢, or 7.90 tetri per kWh in March 2021 to 2.50 ¢, or 8.09 tetri per kWh in March 2022 - Figure 16). The weighted average import price decreased by 14% in USD and by 7% in GEL on a monthly basis (prices were 2.89 ¢, or 8.70 tetri per kWh in February 2022). The weighted average electricity export price in March 2022 increased by 139 times in USD, on an annual basis, and increased by approximately 135 times in GEL (from 0.003 ¢, or 10.01 tetri per kWh in March 2021 to 0.37 ¢, or 1.2 tetri per kWh in March 2022 - Figure 16). The weighted average export price decreased by 95% USD and decreased by 95% in GEL on a monthly basis (prices were 7.60 ¢, or 22.87 tetri per kWh in February 2022). It is noteworthy that export in March 2021 and March 2022 were extremely low and prices do not reflect the dynamics on the market.

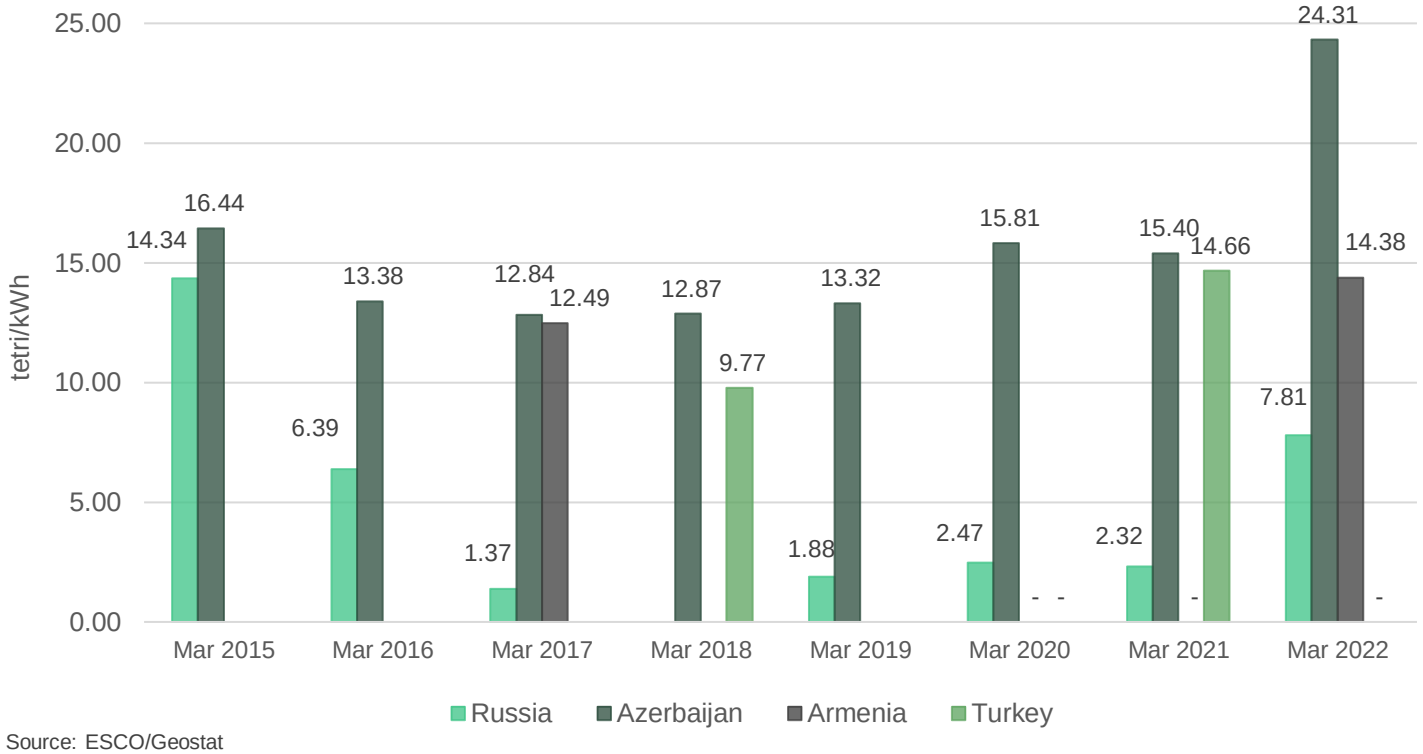
Figure 16 - Prices Import/Export



Source: ESCO

In March 2022, the electricity import price from Armenia, Azerbaijan and Russia stood at 4.43 ¢ or 14.38 tetri, 7.50 ¢ or 24.31 tetri and 2.41 ¢ or 7.81 tetri per kWh, respectively. (Figure 17).

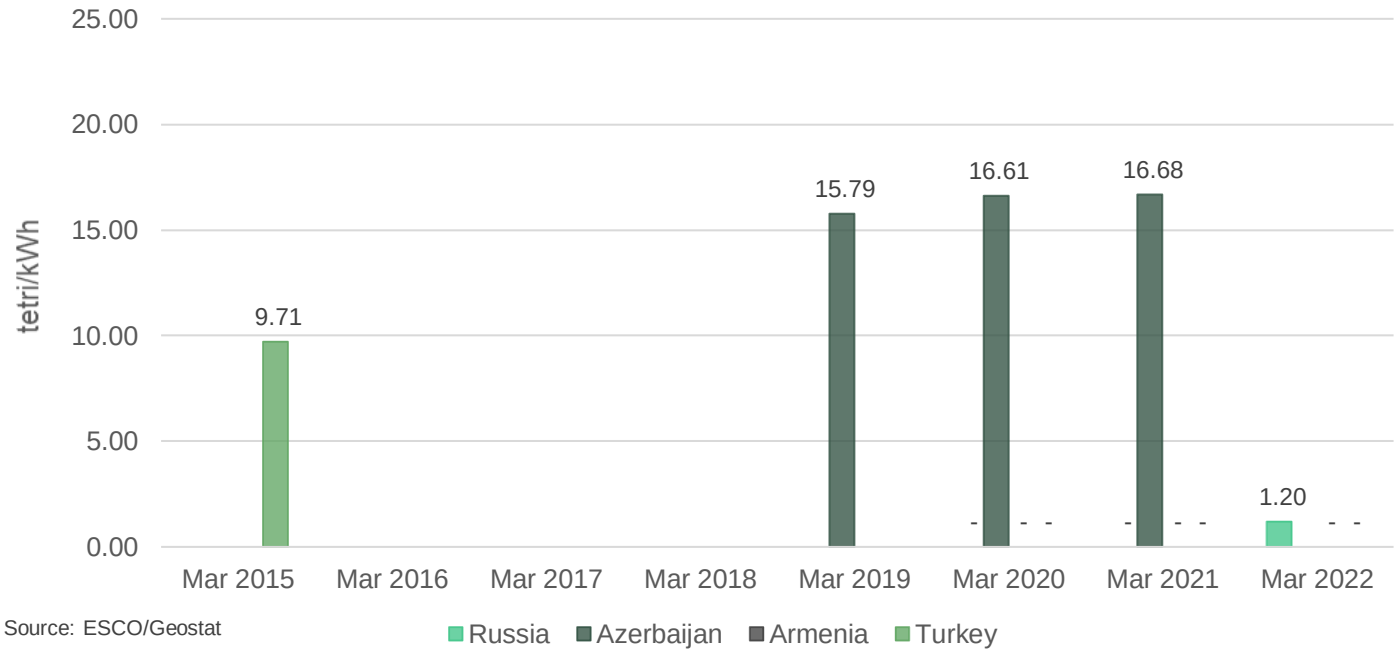
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In March 2022, the electricity export price to Russia stood at 0.37 ¢ or 1.2 tetri. (Figure 18).

Figure 18 - Export Prices by Countries

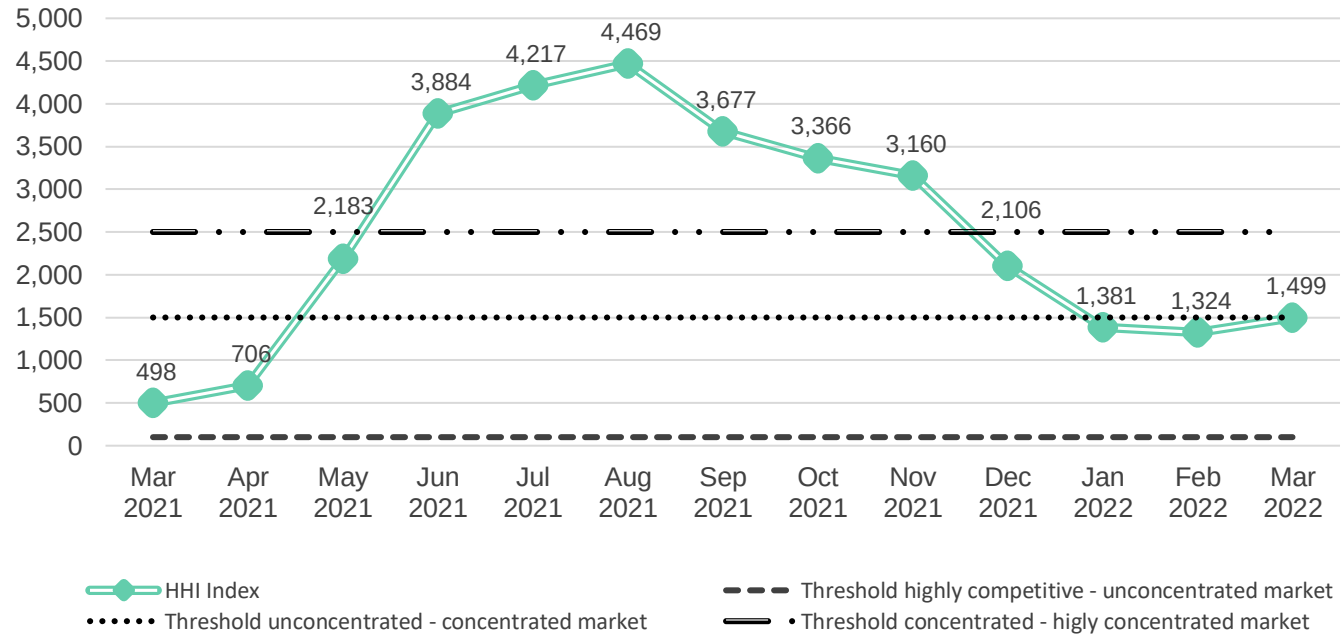


Source: ESCO/Geostat

2. Market Concentration

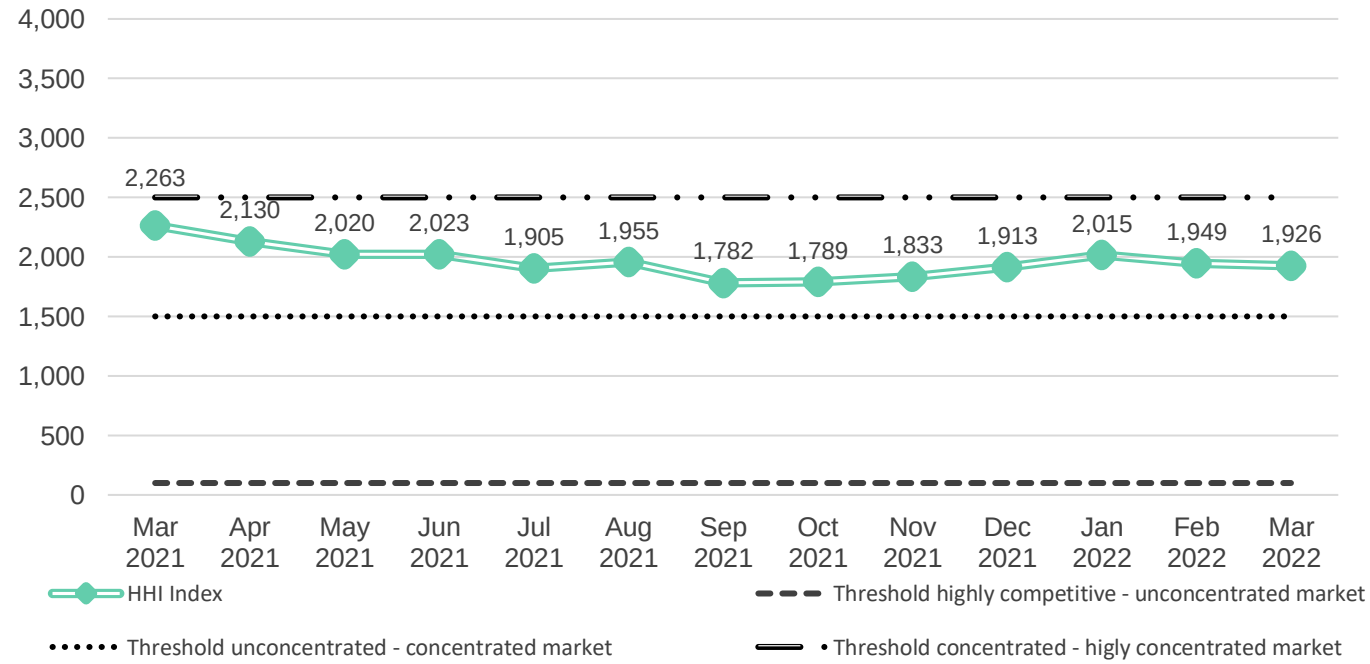
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In March 2022, the Georgian electricity generation market remained (barely) below the threshold between unconcentrated and concentrated markets (for the third consecutive month), with an HHI value of 1499 (Figure 19). This is higher than the level in March 2021 (with an HHI value of 498), and also higher than the level in February 2022 (HHI was 1324). We should keep in mind that Enguri HPP was not operating in March 2021, thus lowering the overall index then. As for the consumption segment, in March 2022, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 1926 (below the level in March 2021 – 2263 and below the level in February 2022 – 1949). In fact, September 2020 was the last month when the index value was above the level of highly concentrated market. Since then, an overall decreasing trend in the market concentration of consumption segment was observable. After reaching the local peak in January 2022, the index started to decline once again (Figure 20).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO