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International School of Economics at TSU
Policy Institute

MAY

2022

ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

·In April 2022 there was an increase in total electricity generation by 36% on a yearly basis, and an increase by 4% on a monthly basis.
·Consumption increased by 10% on yearly basis and decreased by 14% on a monthly basis.
·Consumption exceeded generation by 39 mln. kWh – 3% of total generation for April.
·There was a 73% decrease in imports annually.
·The main import partner country was Russia.
·The cost of imports from Russia went up 18.48 tetri per kWh, with a sharp increase both on a monthly (2.5 times) and on an annual (40 times) basis. This jump is linked to abnormally low prices in April 2021 and March 2022.
·As a result, the weighted average price of imports in GEL increased by 218% on a yearly basis and increased by 129% on a monthly basis.
·The main export partner was Turkey, although the level of exports was extremely small.
·The weighted average electricity export price was 10.18 tetri per kWh.
·For the fourth successive month, The HHI index for the Georgian electricity generation market remained below the threshold of a concentrated market. In April 2022, it reached the level of 1,468. It was higher compared to the level in April 2021 and lower than the level in March 2022 (706 and 1,499, respectively).
·The HHI for the Georgian electricity consumption market remained below the threshold of a highly concentrated market. September 2020 (index value of 2,522) was the last month during which the index value was above the level of a highly concentrated market. Since then, the trend of the index was mostly downward, reaching level of 1,777 in April 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

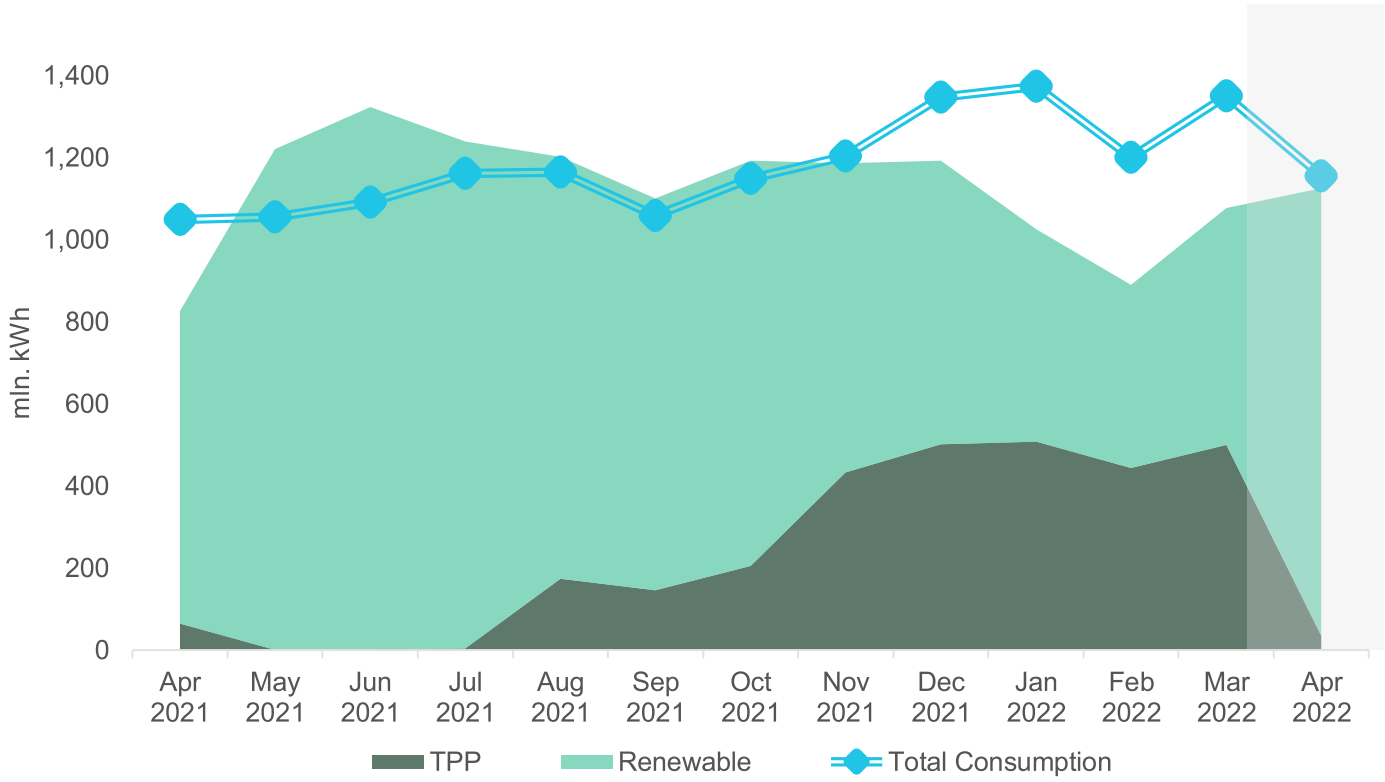
Generation – Consumption – Trade

In April 2022, Georgian power plants generated 1,125 mln. kWh of electricity (Figure 1). This represents a 36% increase in total generation, compared to the previous year (in April 2021, the total generation was 825 mln. kWh). The increase in generation on a yearly basis comes from the increase of 44% in hydro power generation, respectively, more than offsetting 46% and 6% decline in thermal power and wind power generation, respectively.

On a monthly basis, generation increased by approximately 4% (in March 2022, total generation was 1077 mln. kWh) (Figure 1). The monthly increase in total generation, is induced by a 90% increase in hydro power generation, while thermal power and wind power generation fell by 93%, and 9%, respectively.

The consumption of electricity on the local market was 1156 mln. kWh (+10% compared to April 2021, and -14% compared to March 2022) (Figure 1). In April 2022, power consumption exceeded generation by 30 mln. kWh which was 3% of total generation (in April 2021 difference between total generation and consumption resulted in a deficit of 224 mln. kWh, around 27% of the total generation for the month).

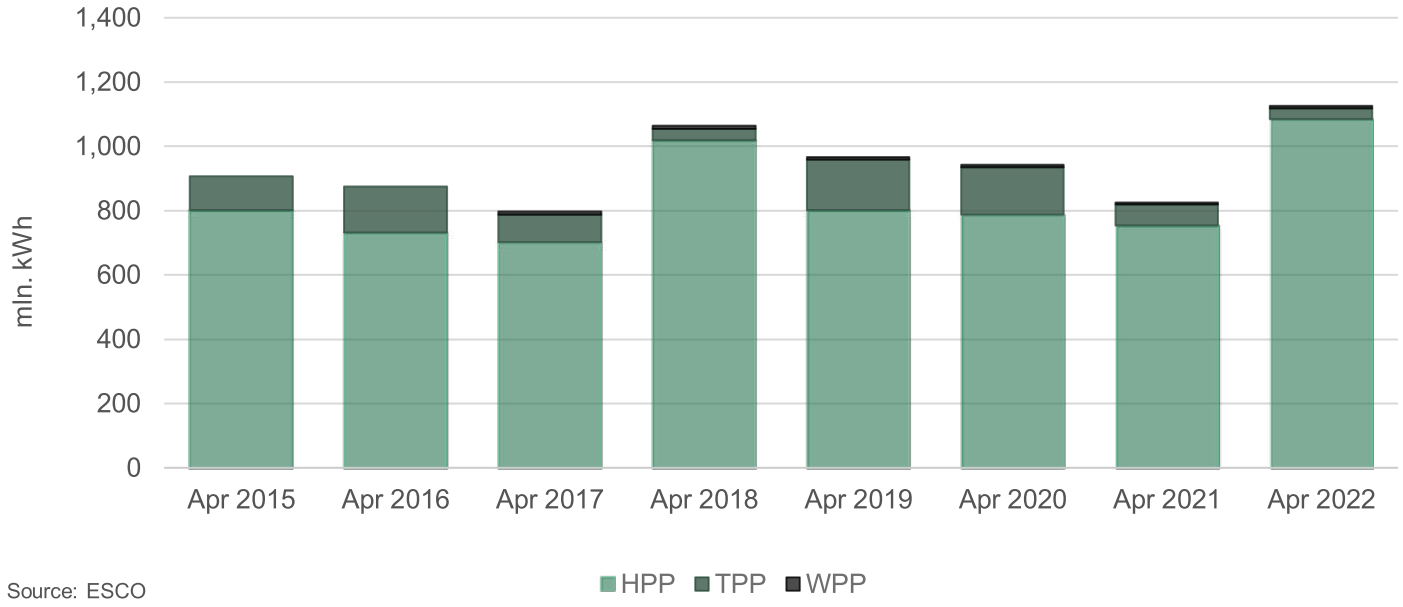
Figure 1 - **Electricity Consumption and Generation**



Source: Electricity System Commercial Operator (ESCO)

In April 2022, hydro power plants were the leading source of generation. In April 2022, hydro power (HPP) generation amounted to 1084 mln. kWh (96% of total), while thermal power (TPP) generation was 35 mln. kWh, and wind power (WPP) generation was 6 mln. kWh (3% and 1% of the total generation, respectively) (Figure 2).

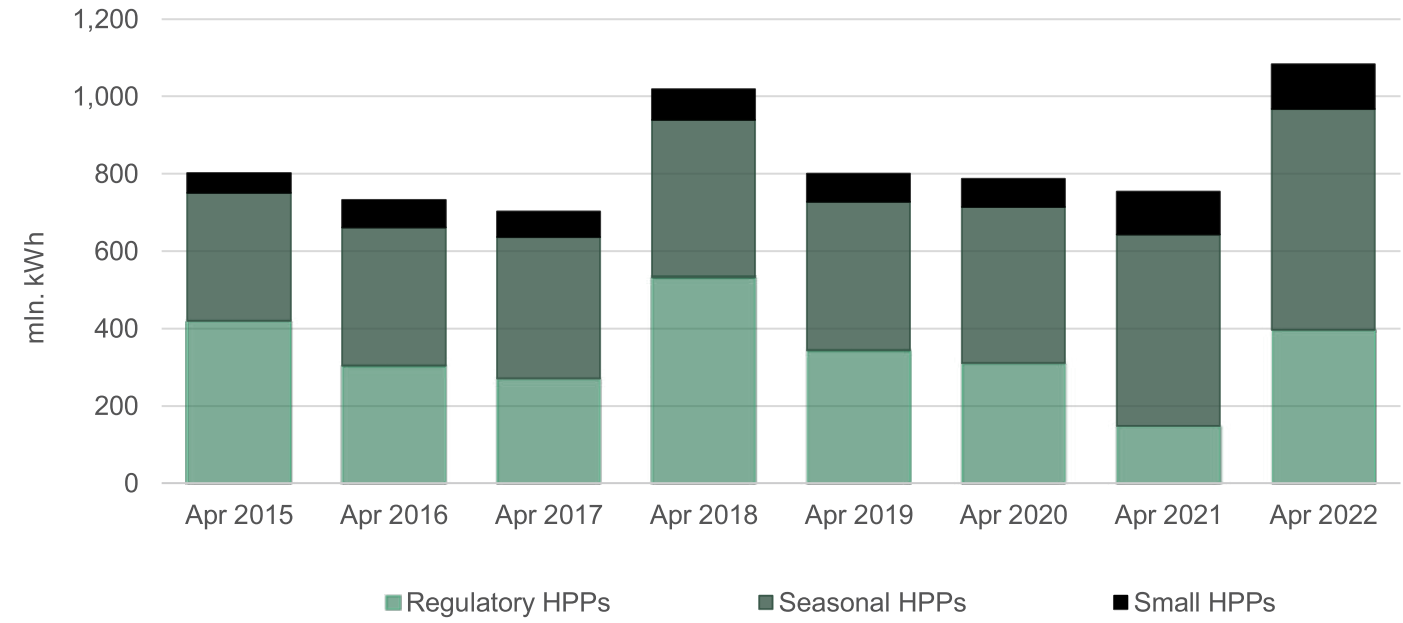
Figure 2 - Electricity Generation by Sources



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 37% (396 mln. kWh) of electricity, while seasonal and small HPPs produced 53% (572 mln. kWh) and 10% (116 mln. kWh), respectively (Figure 3).

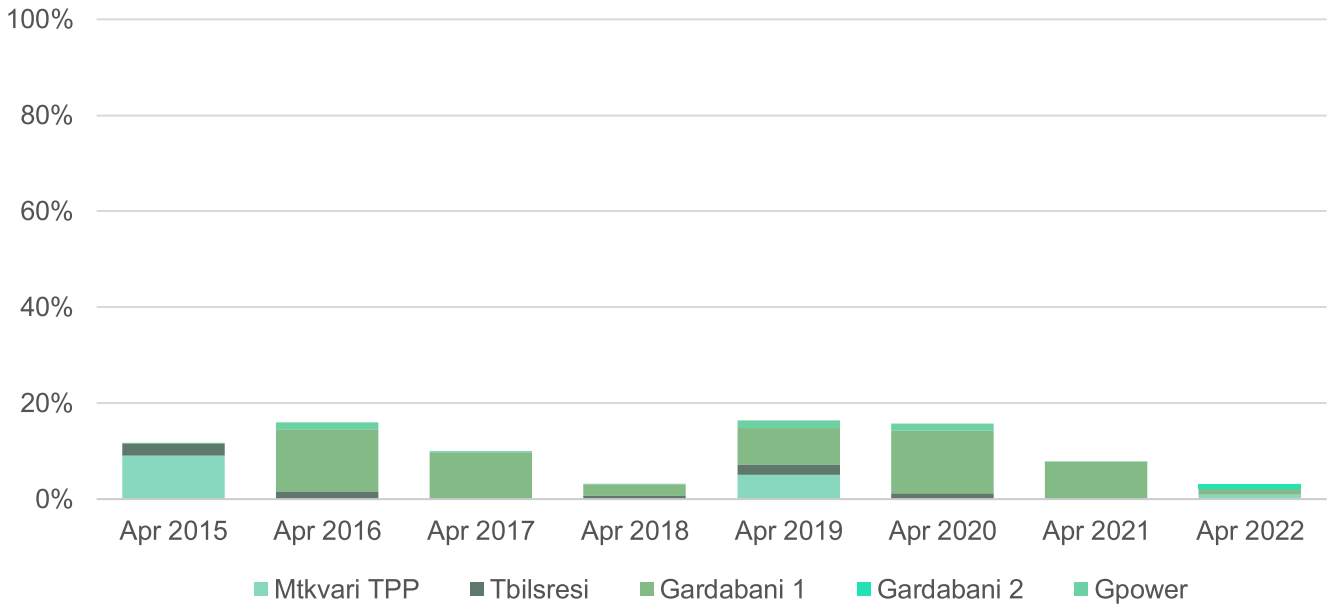
Figure 3 - HPP Generation by Type



Source: ESCO

Among thermal power plants, Mtkvari TPP generated less than 11 mln. kWh, 31% of total thermal power generation and 1% of total generation. Gardabani 1 TPP generated 13 mln. kWh, 37% of total thermal power generation and 1% of total generation. Gardabani 2 TPP generated 11 mln. kWh, 33% of total thermal power generation and 1% of total generation. (Figure 4).

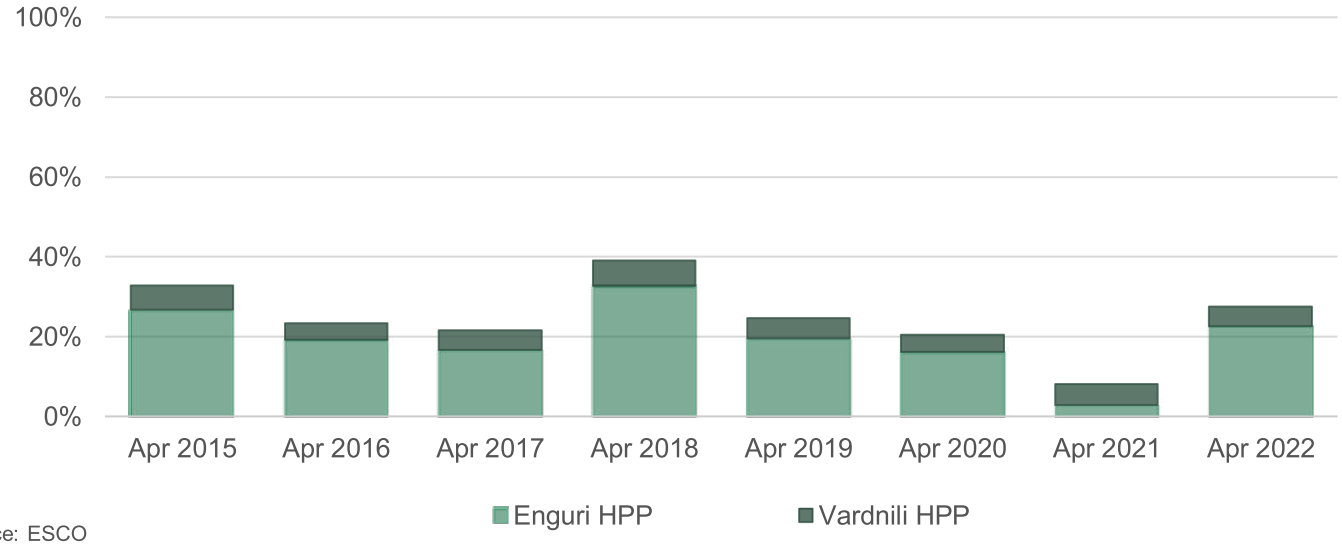
Figure 4 - Share of Large TPPs in Total Generation



Source: ESCO

As for HPP generation, Vardnili HPP generated 57 mln. kWh (14% of generation for regulatory HPPs and 5% of total generation). Enguri HPP generated 253 mln. kWh, which represents 64% of generation of regulatory HPPs and 23% of total generation (Figure 5).

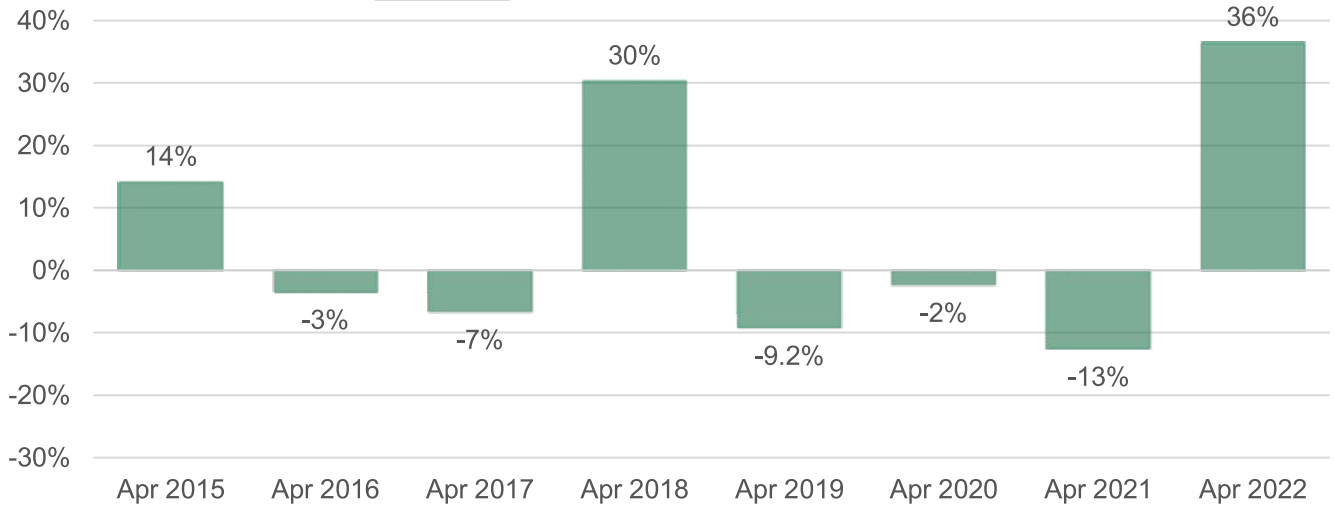
Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

Overall, total generation increased by 36% compared to April 2021 (Figure 6).

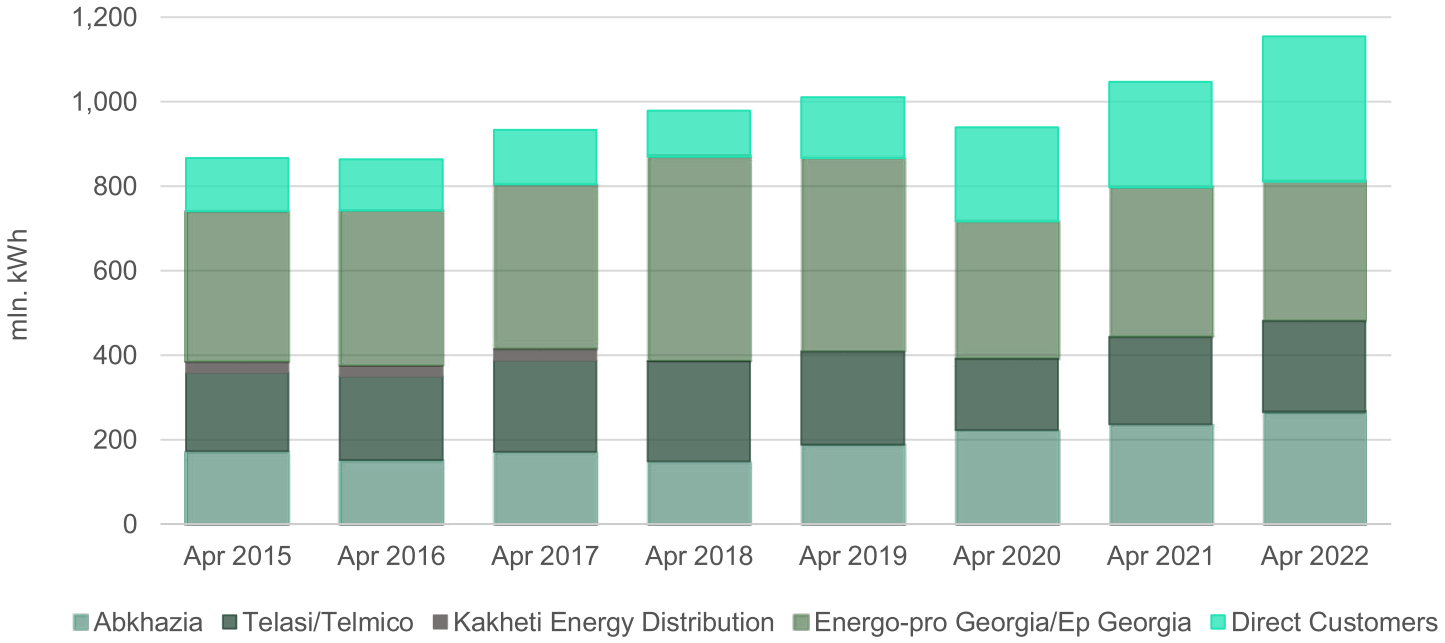
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia/Ep Georgia[1] (28% - 329 mln. kWh), Abkhazia (23% - 264 mln. kWh), Telasi/Telmico[2] (19% - 217 mln. kWh), and direct customers (30% - 344 mln. kWh) (Figure 7). Annual demand from Abkhazia, Telasi and direct customers increased by 12%, 4%, and 38%, respectively, while the demand from Energo-Pro Georgia fell by 7%. Overall, there was an annual growth of 10% in the total electricity consumption in April 2022, compared to April 2021 (Figure 8).

Figure 7 - Electricity Consumption by Type of Customer

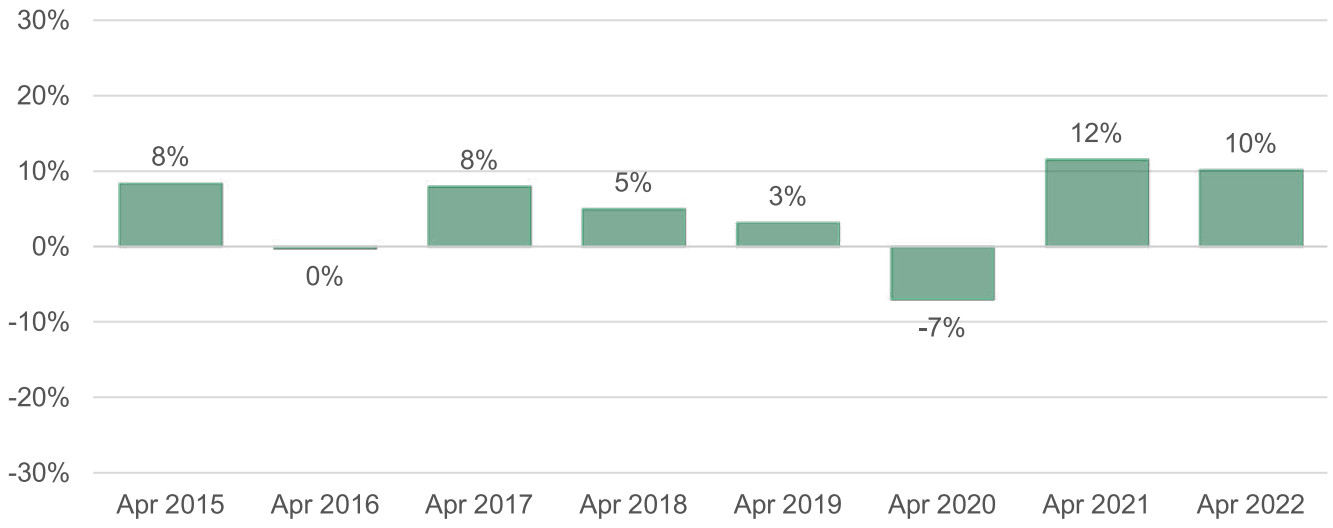


Source: ESCO

[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)

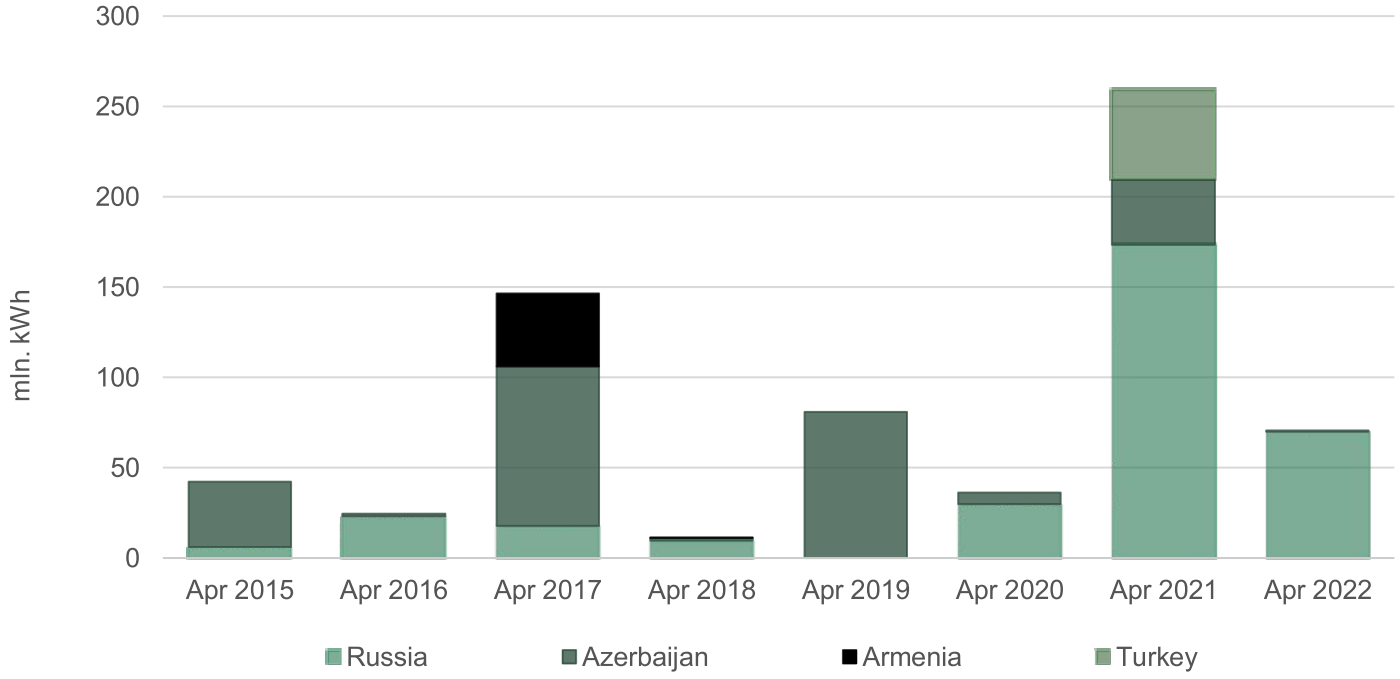


Source: ESCO

In April 2022, Georgia imported 71 mln. kWh of electricity (compared to 260 mln. kWh in April 2021). 99% of imports came from Russia, while 1% came from Azerbaijan (Figure 9). In April 2022, Georgia exported less than 1 mln. kWh of electricity, 60% of which went to Turkey, 34% went to Azerbaijan and 6% went to Russia (there was 5 mln. kWh export in April 2021) (Figure 10). There was 86 mln. kWh electricity transit from Russia to Turkey and 53 mln. kWh transit from Armenia to Turkey in April 2022 (In April 2021, there was no transit at all).

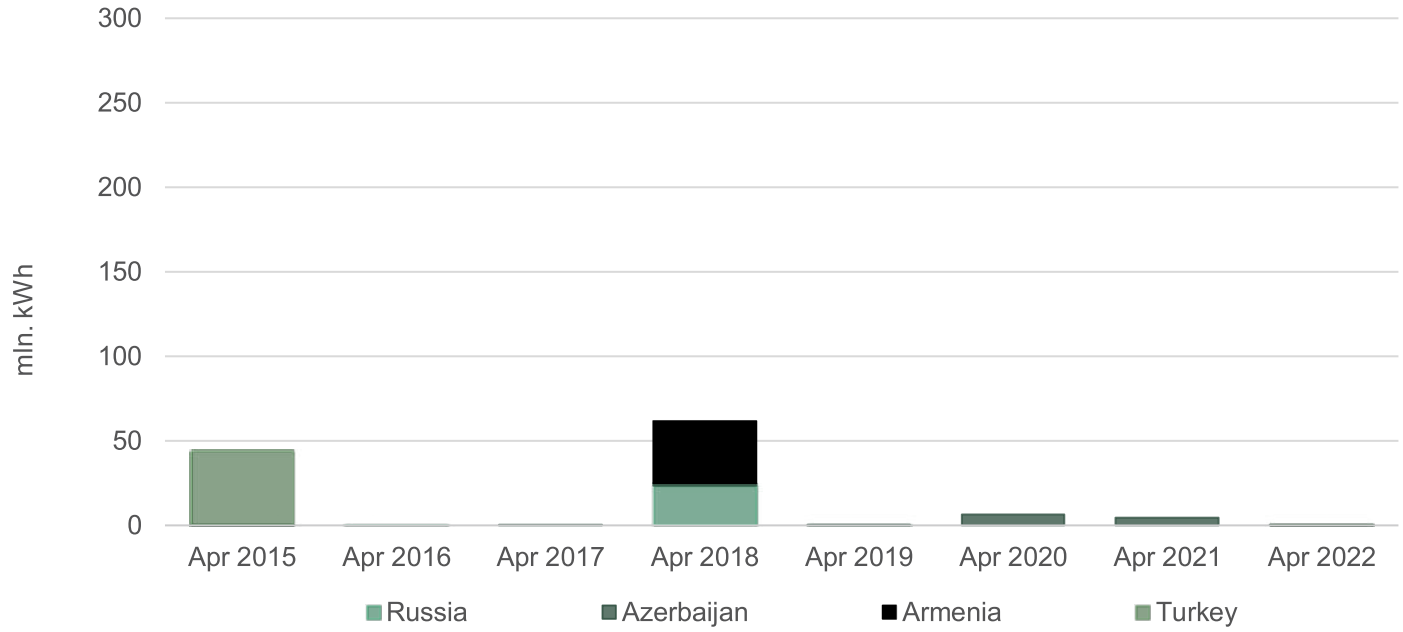
Compared to April 2021, imports decreased by 73%, while exports decreased by 96% (the effect of small numbers).

Figure 9 - Imports by Year



Source: ESCO

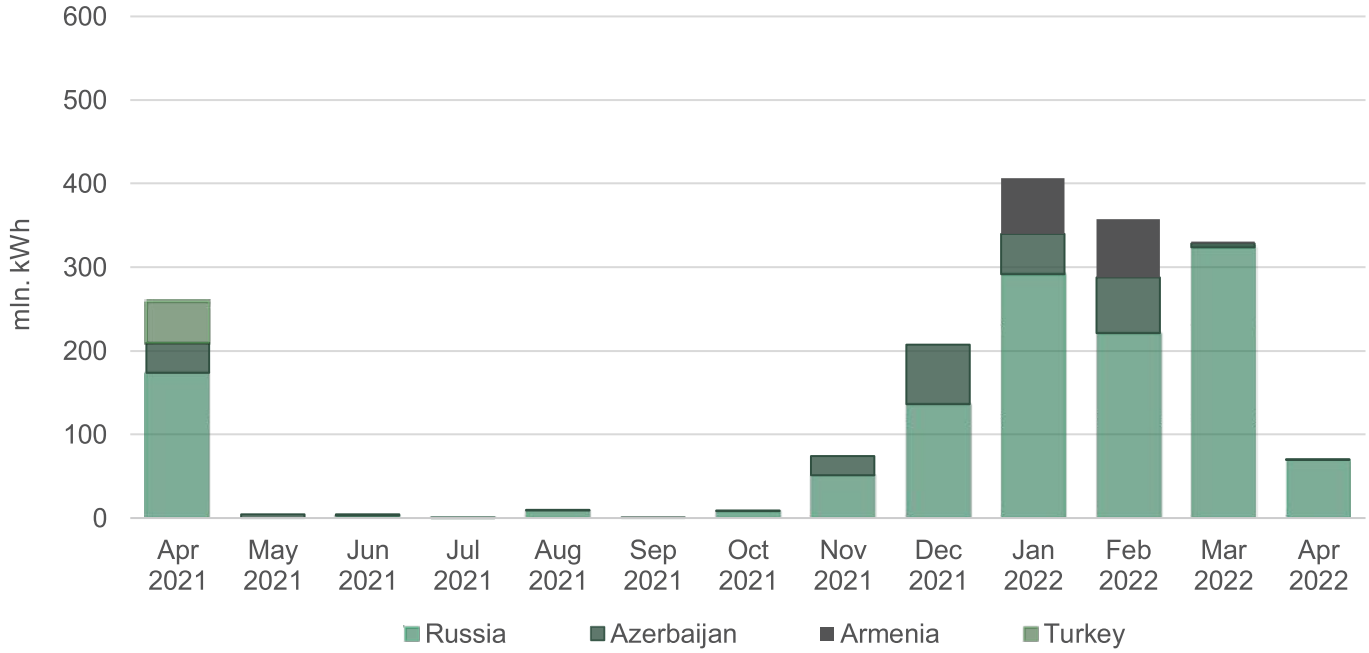
Figure 10 - **Exports by Year**



Source: ESCO

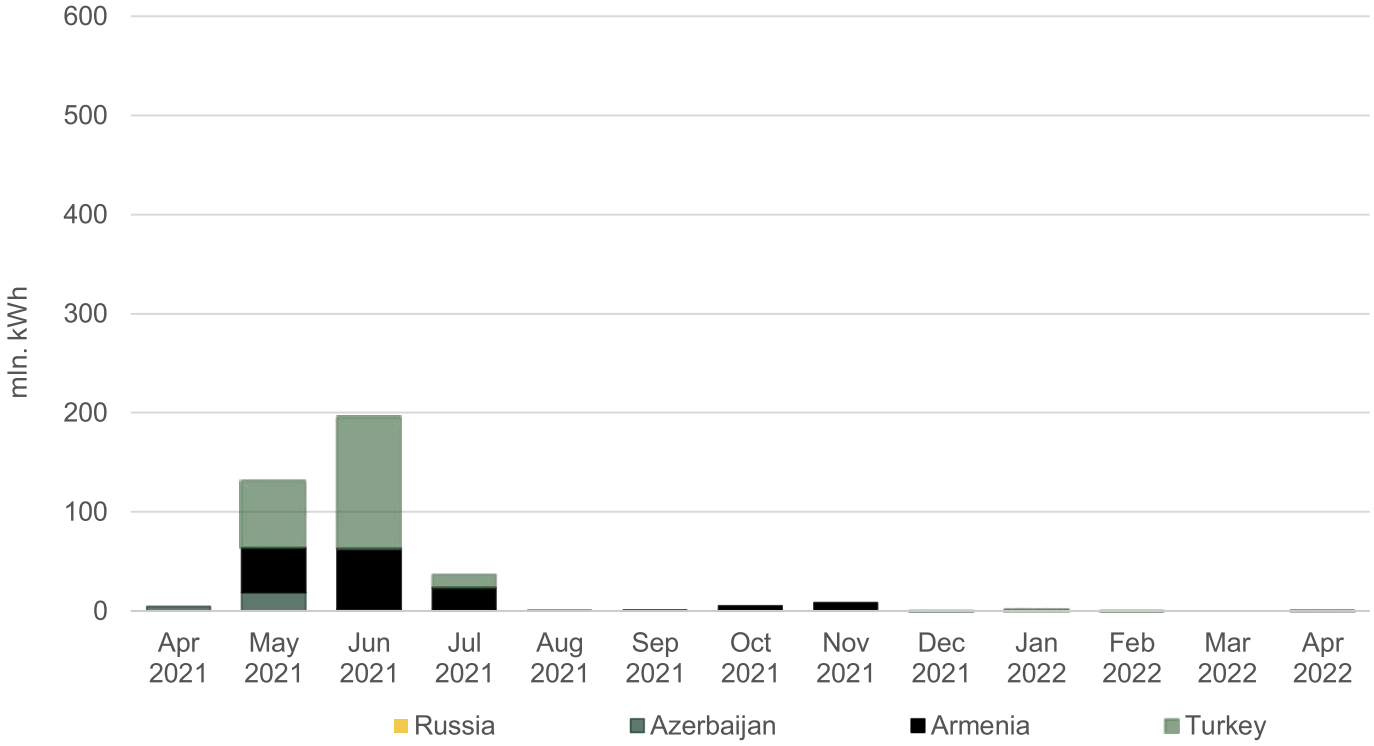
In April 2022, electricity imports decreased by 79% compared to March 2022 (Figure 11) Electricity exports increased 11 times (the effect of small numbers), compared to March 2022, and the level still remains low (Figure 12). April was the sixth consecutive month to end up in generation-consumption deficit after a six-month surplus period, however the gap was significantly reduced.

Figure 11 - **Imports by Month**



Source: ESCO

Figure 12 - Exports by Month

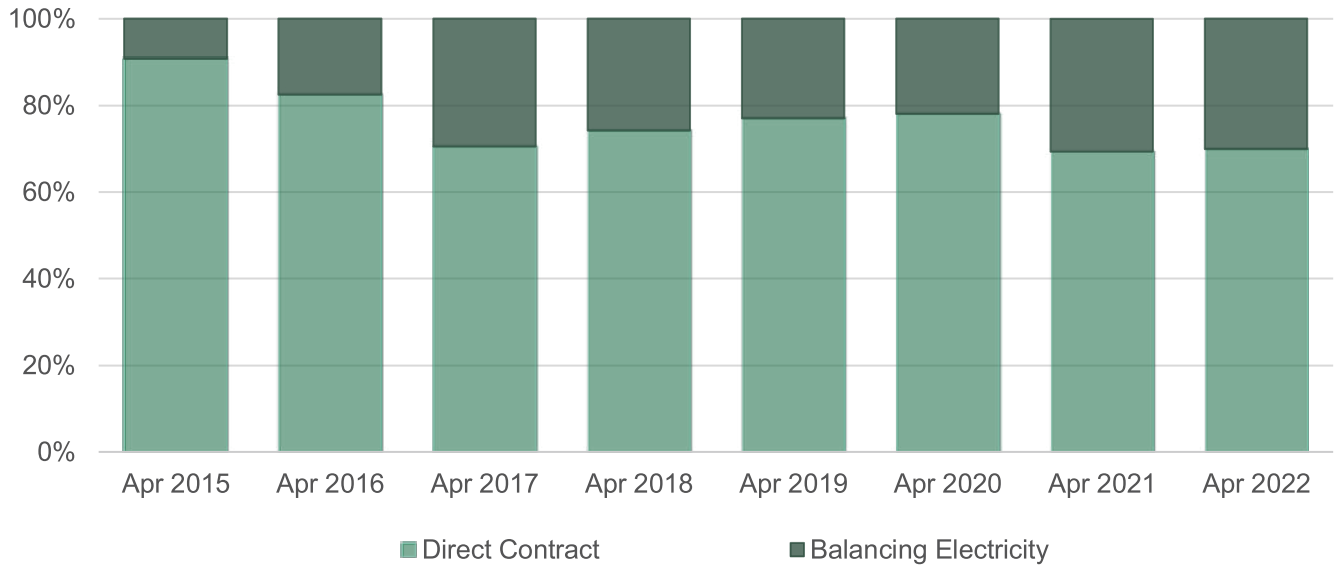


Source: ESCO

1. Market Operations

In April 2022, 70% of the electricity sold on/from the local market was sold through direct contracts. The remaining 30% was sold as balancing electricity (Figure 13).

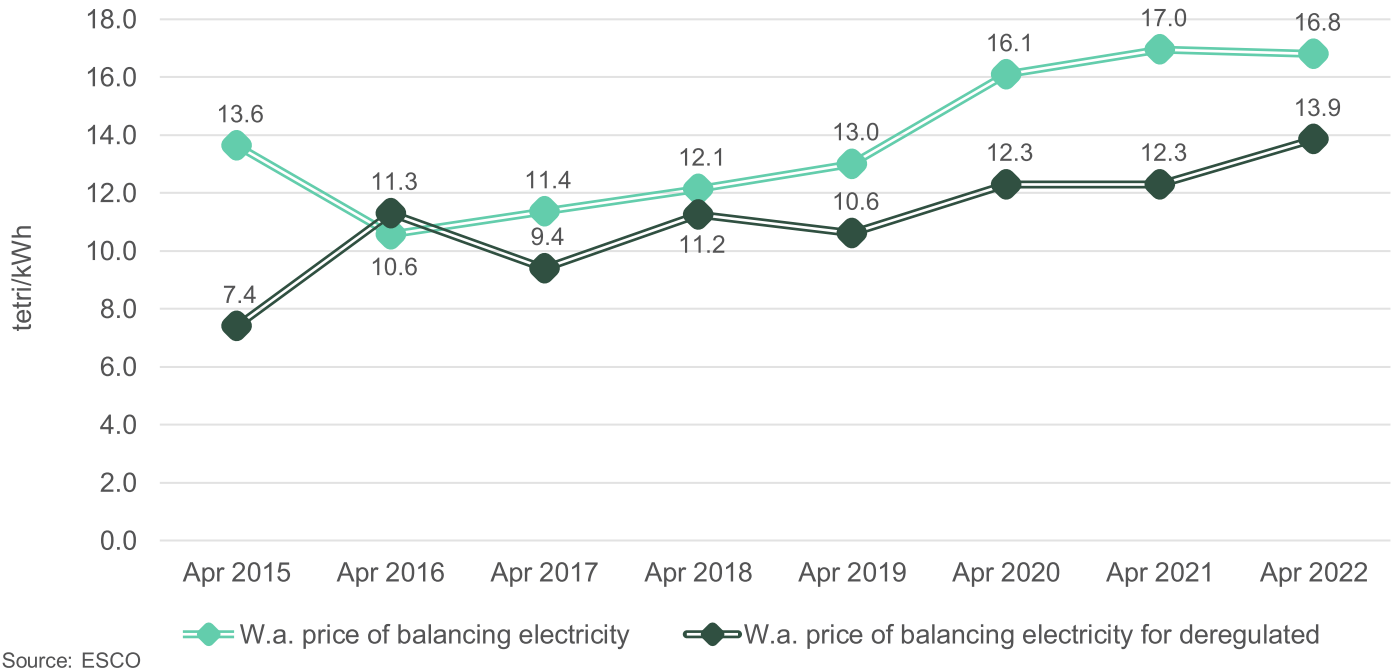
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In April 2022, the weighted average price of balancing electricity was 16.8 tetri/kWh, which corresponds to an annual decrease of 1% compared to April 2021. As for the weighted average price for deregulated (small) HPPs, it was 13.9 tetri/kWh, which represents a 13% increase compared to April 2021 (Figure 14).

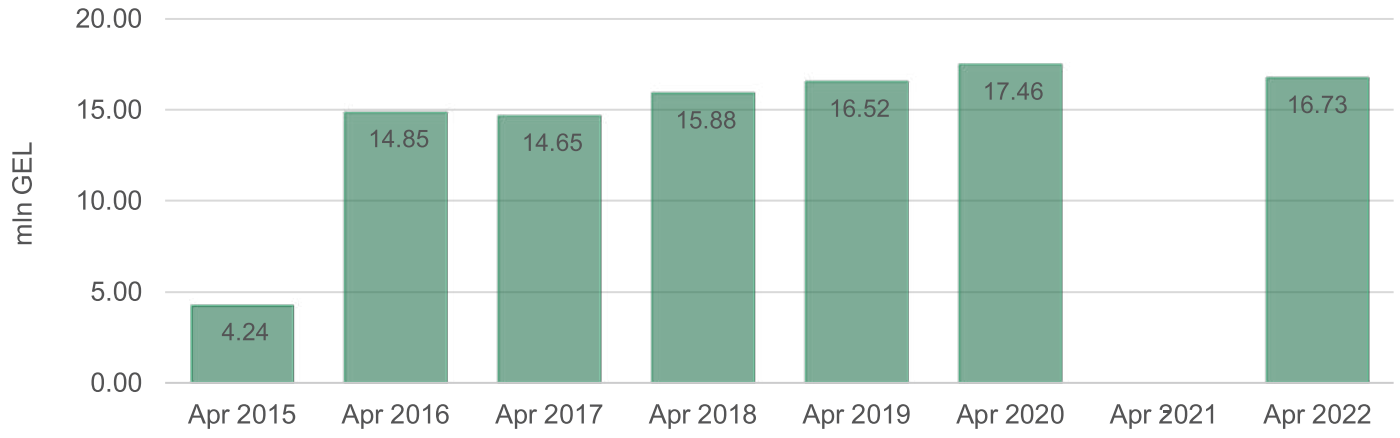
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in April 2022 were roughly 16.73 mln. GEL, which represents a 4% decrease compared to April 2020. The data about April 2021 is not available (Figure 15).

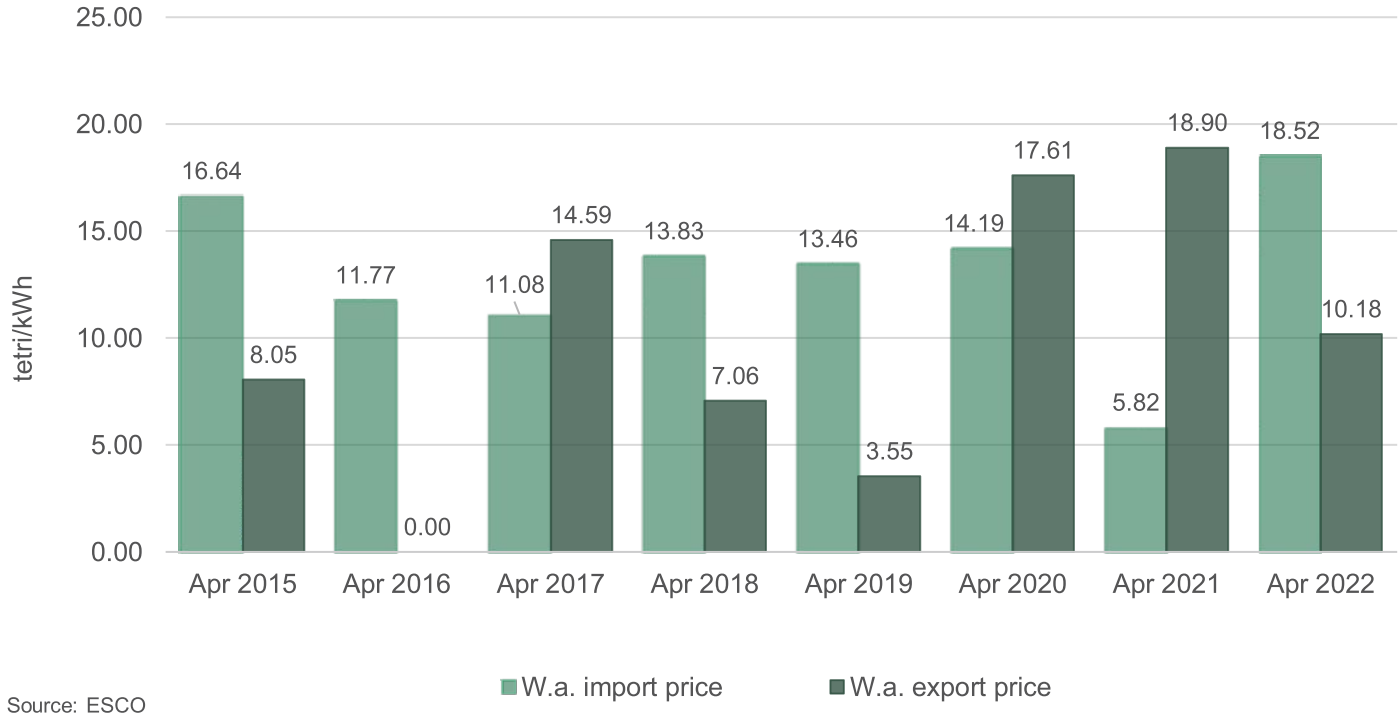
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The weighted average electricity import price in April 2022 increased by 257% in USD, on an annual basis, and increased by approximately 218% in GEL (from 1.69 ¢, or 5.82 tetri per kWh in April 2021 to 6.05 ¢, or 18.52 tetri per kWh in April 2022 - Figure 16). The weighted average import price increased by 143% in USD and by 129% in GEL on a monthly basis (prices were 2.50 ¢, or 8.09 tetri per kWh in March 2022). The weighted average electricity export price in April 2022 decreased by 39% in USD, on an annual basis, and decreased by approximately 46% in GEL (from 5.50 ¢, or 18.90 tetri per kWh in April 2021 to 3.33 ¢, or 10.18 tetri per kWh in April 2022 - Figure 16). The weighted average export price increased by 802% USD and increased by 751% in GEL on a monthly basis (prices were 0.37 ¢, or 1.20 tetri per kWh in March 2022).

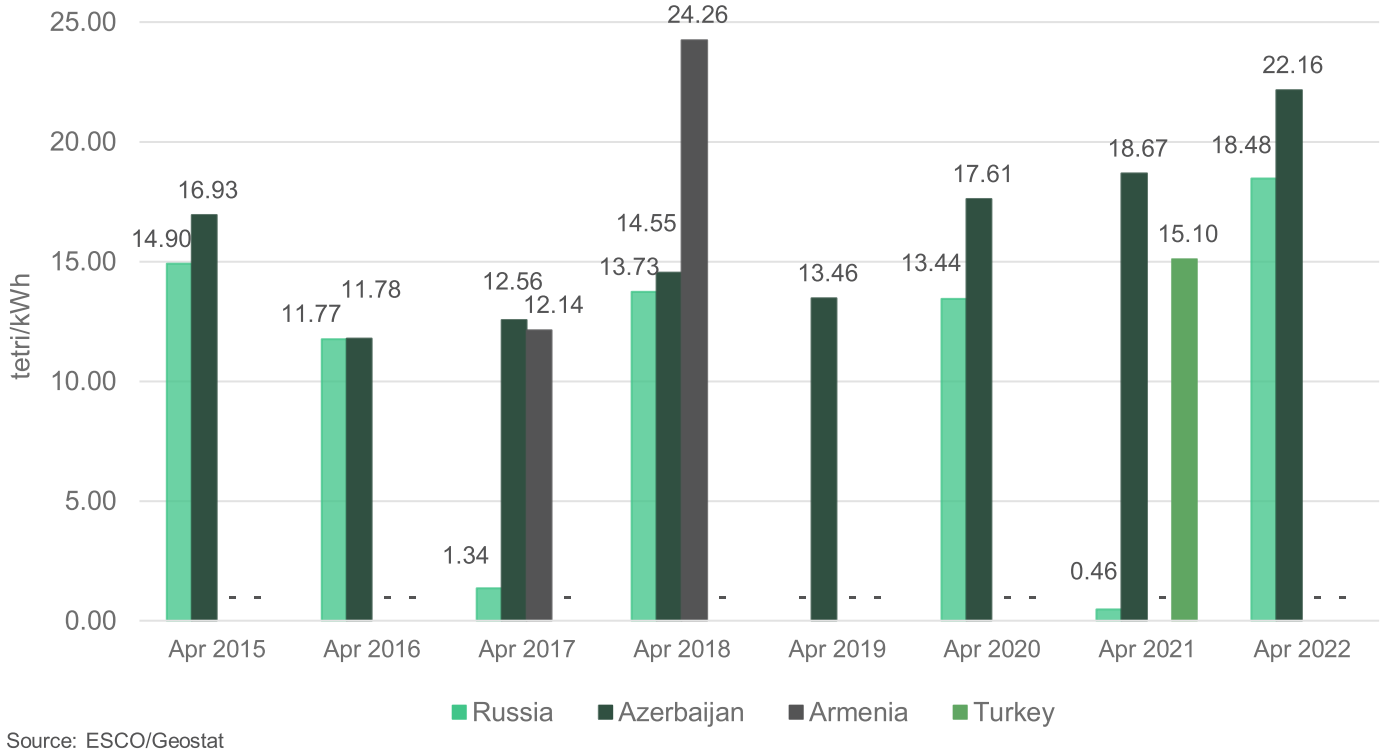
Figure 16 - Prices Import/Export



Source: ESCO

In April 2022, the electricity import price from Azerbaijan and Russia stood at 7.24 ¢ or 22.16 tetri, and 6.04 ¢ or 18.48 per kWh, respectively. (Figure 17).

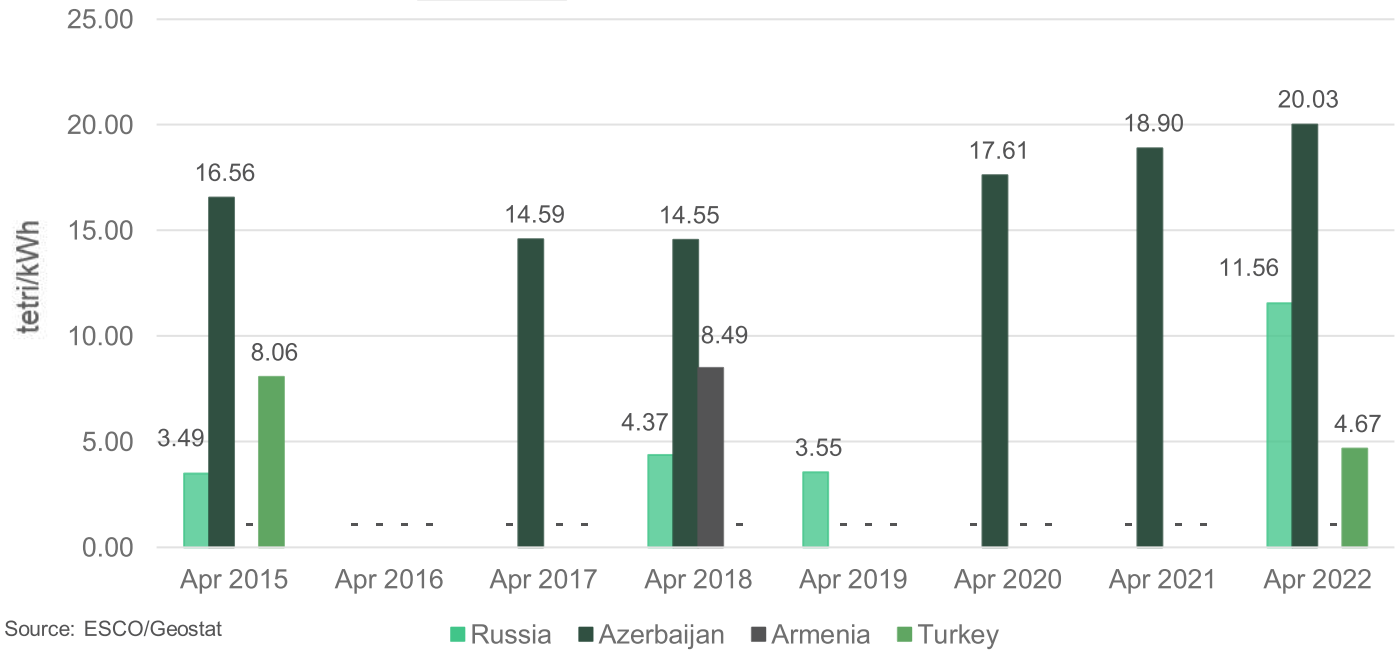
Figure 17 - Import Prices by Countries



Source: ESCO/Geostat

In April 2022, the electricity export price to Azerbaijan, Russia, and Turkey stood at 6.55 ¢ or 20.03 tetri, 3.78 ¢ or 11.56 tetri, and 1.53 ¢ or 4.67 tetri, respectively (Figure 18).

Figure 18 - Export Prices by Countries

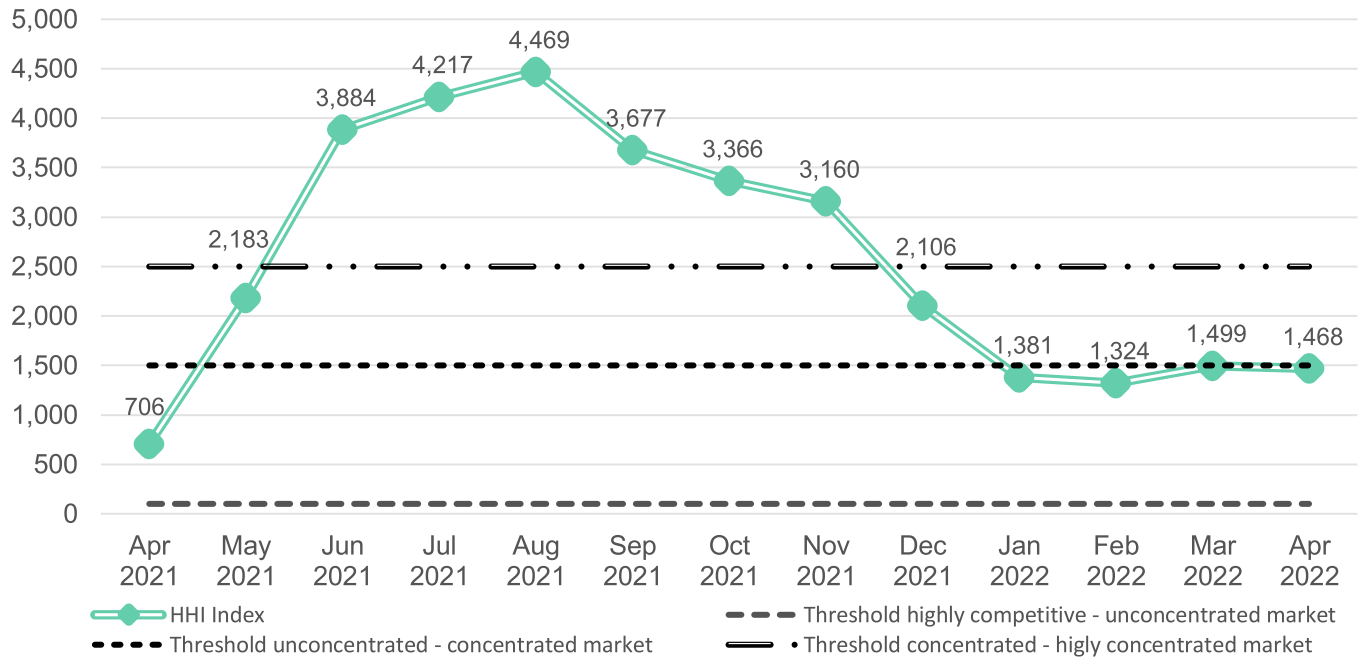


Source: ESCO/Geostat

2. Market Concentration

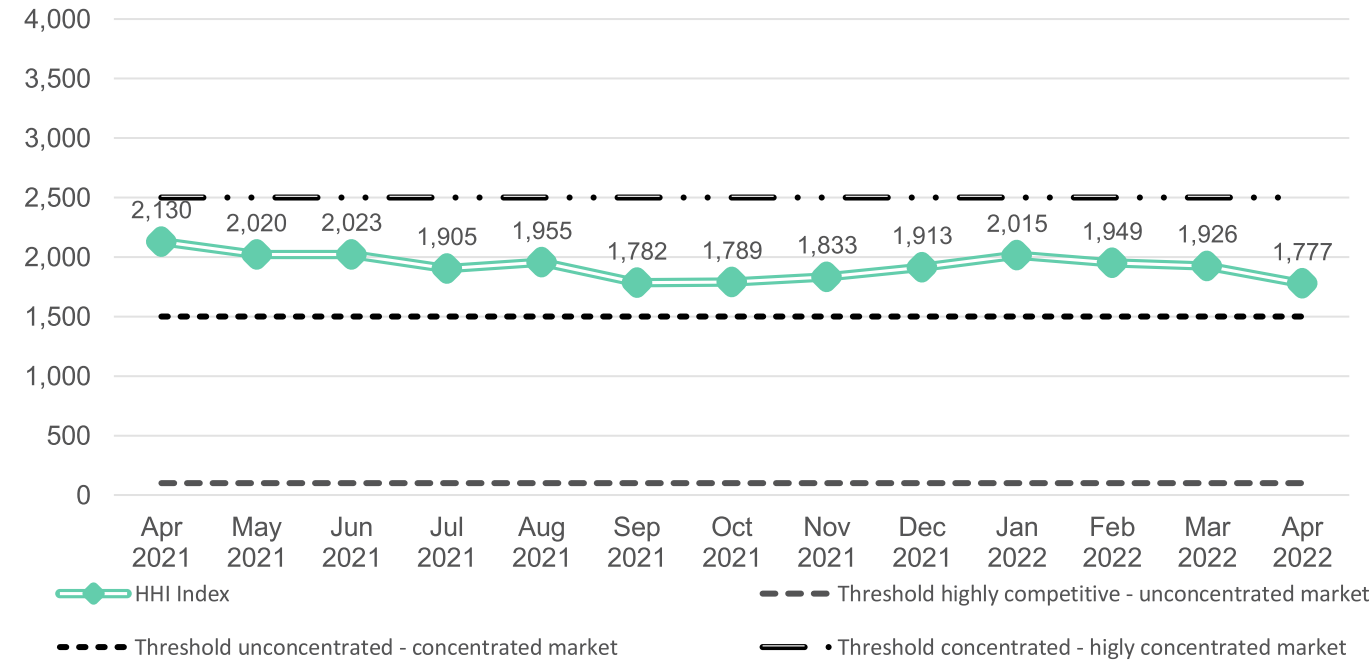
In conclusion, we utilize the Hirschman-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In April 2022, the Georgian electricity generation market remained below the threshold between unconcentrated and concentrated markets (for the fourth consecutive month), with an HHI value of 1,468 (Figure 19). This is higher than the level in April 2021 (with an HHI value of 706), but lower than the level in March 2022 (HHI was 1,499). We should keep in mind that Enguri HPP was not fully operating in April 2021, thus lowering the overall index then. As for the consumption segment, in April 2022, the HHI consumption index remained below the threshold for a highly concentrated market, with an HHI value of 1,777 (below the level in April 2021 – 2,130 and below the level in March 2022 – 1,926). 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 (Figure 20).

Figure 19 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 20 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO