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ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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INFORMATION

- There was adecreasein total electricity generationon ayearlyand on a monthly basis.
- Thermal Power Generation provided 47% of total electricity generation.
- Enguri and Vardinili HPPs generated 17% of total electricity, which is lower than electricity generated by Gardabani 1&2(30% of total electricity).
- Consumption increasedon a yearly anddecreased on a monthly basis.
- Consumption exceeded generation by 273mln. kWh.
- Mainimport partner country was Azerbaijan.
- Main export partner country was Armenia.
- Electricity transit from Azerbaijan to Turkeydecreased.
- Most of electricity was purchased via direct contracts.
- The average price of imports increased, on a yearly and decreased on a monthly basis.
- The average price of exports increased on a monthly basis.
- Georgian electricity generationmarket was closer to the threshold of unconcentrated market.
- Georgian electricityconsumption market was closer to the threshold of highly concentrated market.

ABBREVIATION USED

Mln – million
kWh – kilowatt-hour
HPP – Hydro Power Plant
WPP – Wind Power Plant
TPP – Thermal Power Plant
HHI – Hirschmann-Herfindahl Index

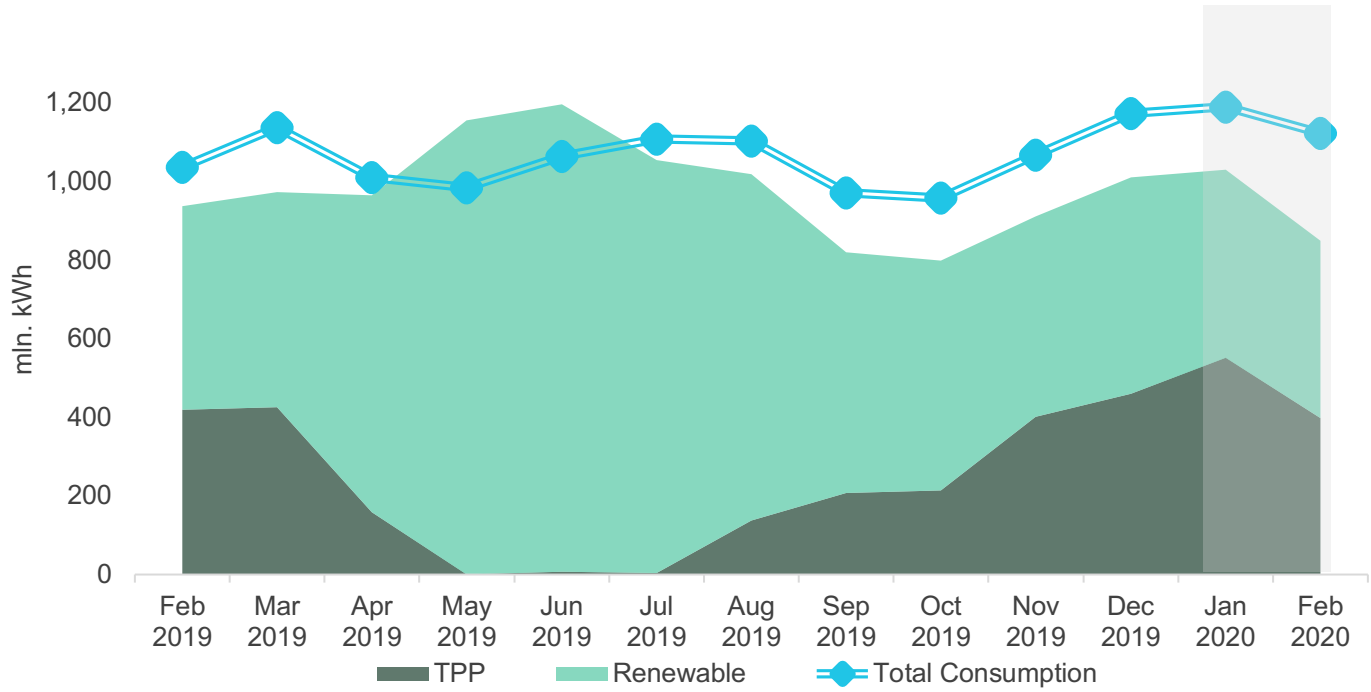
Generation – Consumption – Trade

In February 2020, Georgian power plants generated 851 mln. kWh of electricity (Figure 1). This represents a 9% decrease in total generation, compared to the previous year (in February 2019, the total generation was 939 mln. kWh). The decrease in generation on a yearly basis comes from the decrease of 13% in hydro, 9% in wind, and 5% in thermal power generation.

On a monthly basis, generation decreased by 17% (in January 2020, total generation was 1,031 mln. kWh) (Figure 1). The monthly decrease in total generation was the result of the decrease of 28% in thermal, 16% in wind, and 5% in hydro power generation.

The consumption of electricity on the local market was 1,124 mln. kWh (+8% and -6% compared to February 2019, and January 2020, respectively) (Figure 1). In February 2020, the total consumption exceeded the total generation by 273 mln. kWh which is around 32% of total generation (in contrast in February 2019 difference between total generation and consumption resulted in a deficit of 98 mln. kWh which was around 10% of the total generation for the month).

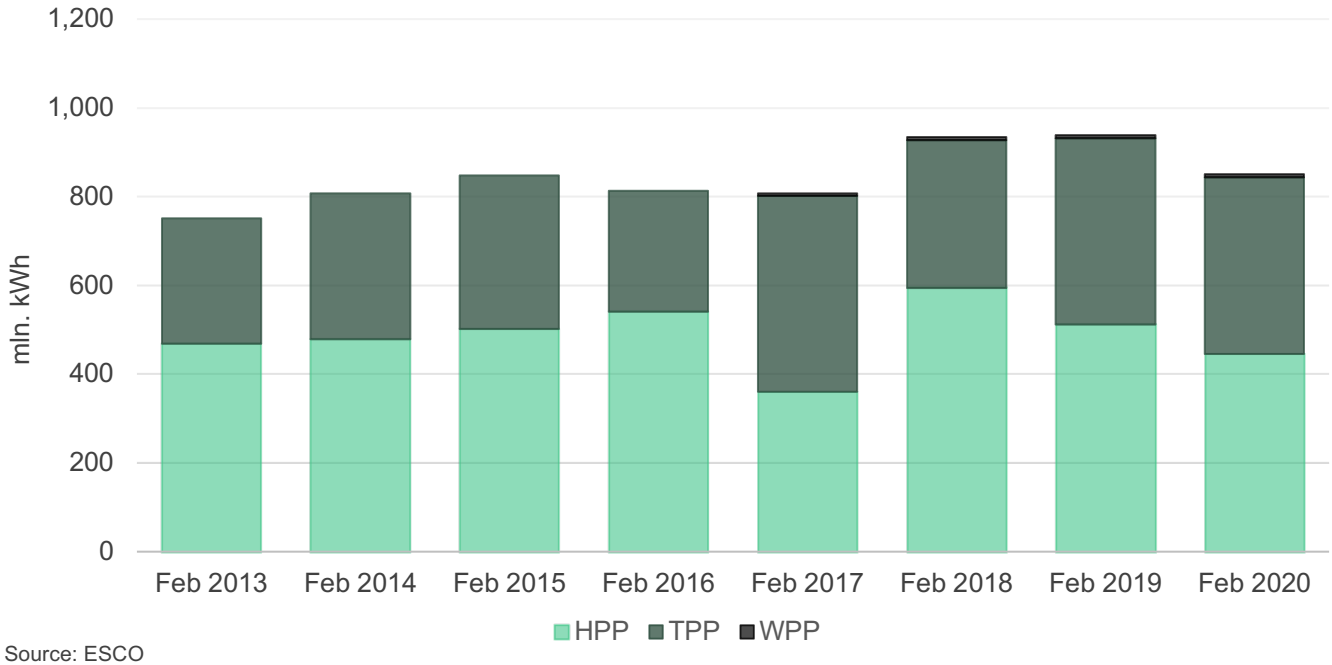
Figure 1 - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

In this month most generation came from hydro power plants. In February 2020, hydro power (HPP) generation amounted to 445 mln. kWh (52% of total), thermal power (TPP) generation was 398 mln. kWh (47% of total), and wind power (WPP) generation was 7 mln. kWh (1% of total) (Figure 2).

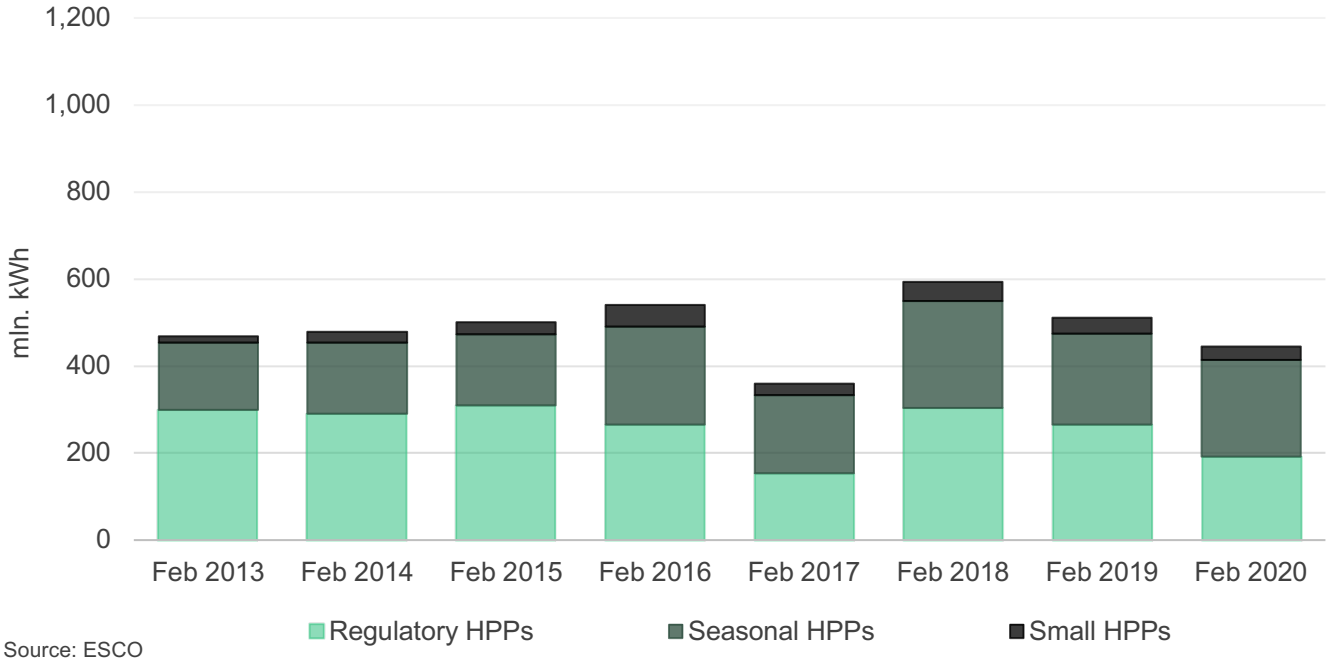
Figure 2 - **Electricity Generation by Sources**



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 43% (191 mln. kWh) of electricity, while seasonal and small HPPs produced 50% (223 mln. kWh) and 7% (31 mln. kWh), respectively (Figure 3).

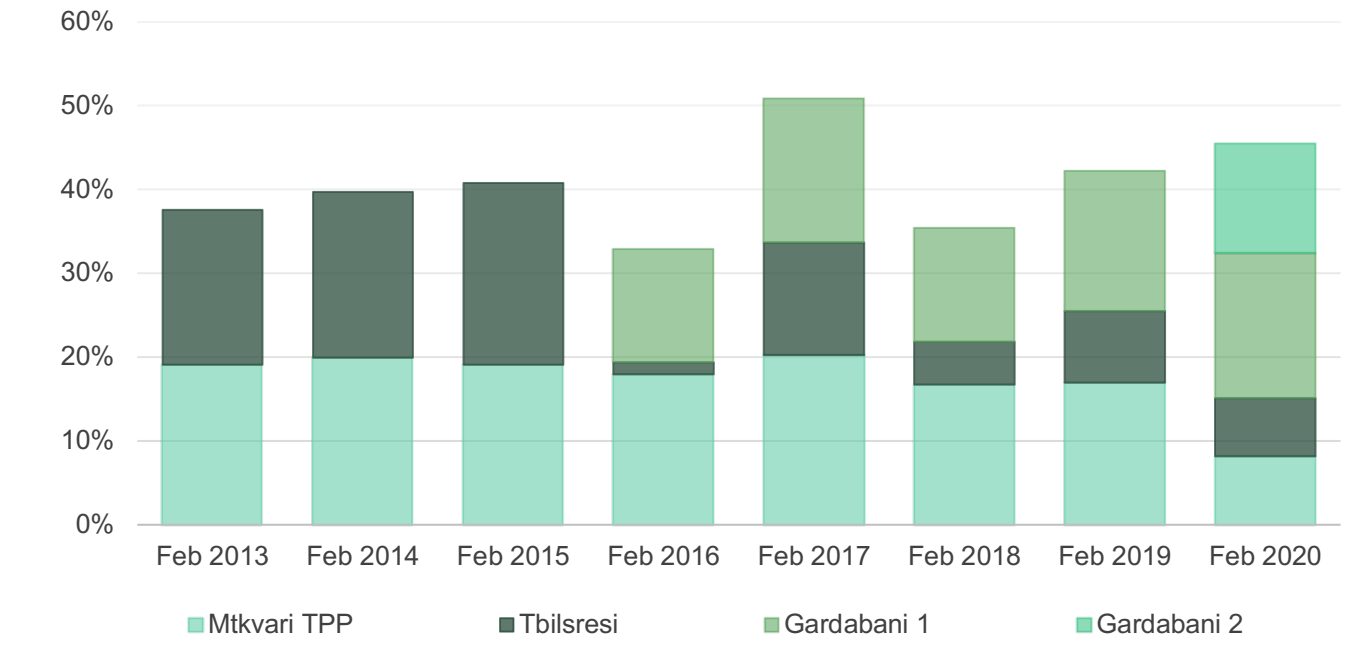
Figure 3 - **HPP Generation by Type**



Source: ESCO

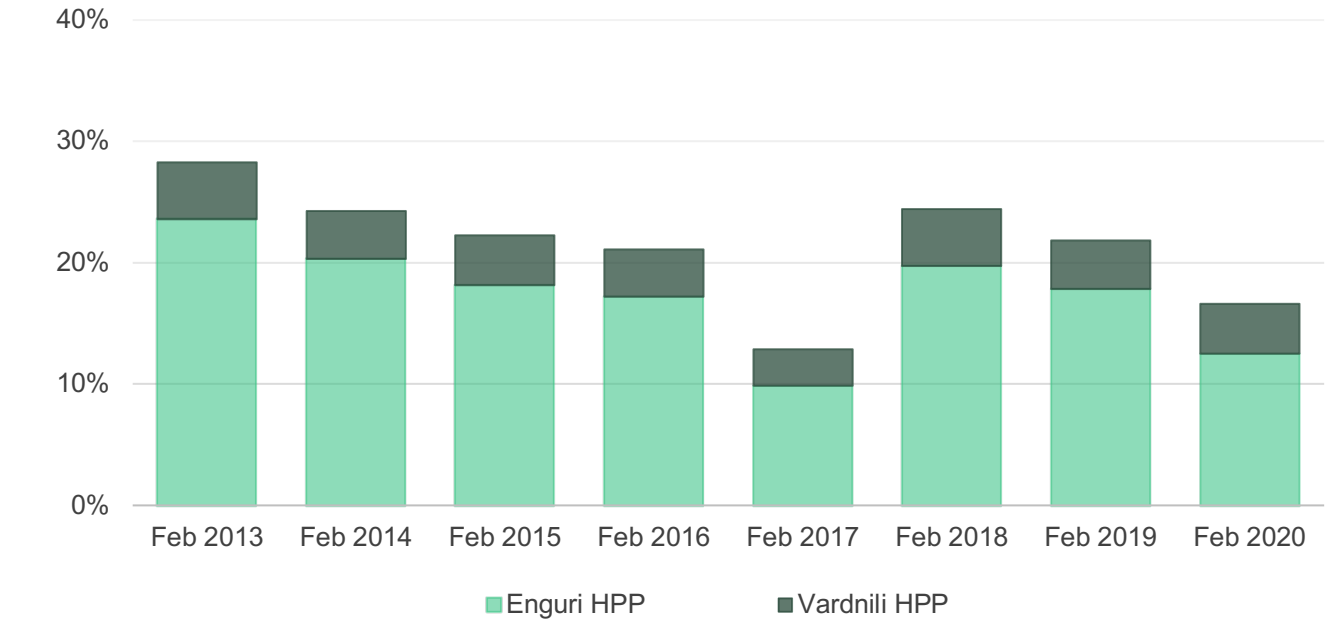
Among thermal power plants Gardabani 1 & 2 generated 258 mln. kWh, 65% of total thermal power generation and 30% of total generation (Figure 4). As for HPP generation, the large HPPs, Enguri and Vardnili generated the largest power, producing 141 mln. kWh (74% of generation for regulatory HPPs), with 106 mln. kWh and 35 mln. kWh, respectively. Power generated by Enguri and Vardnili represents around 17% of the total generation (Figure 5). Overall, total generation has decreased by 9% compared to February 2019 (Figure 6).

Figure 4 - Share of Large TPPs in Total Generation



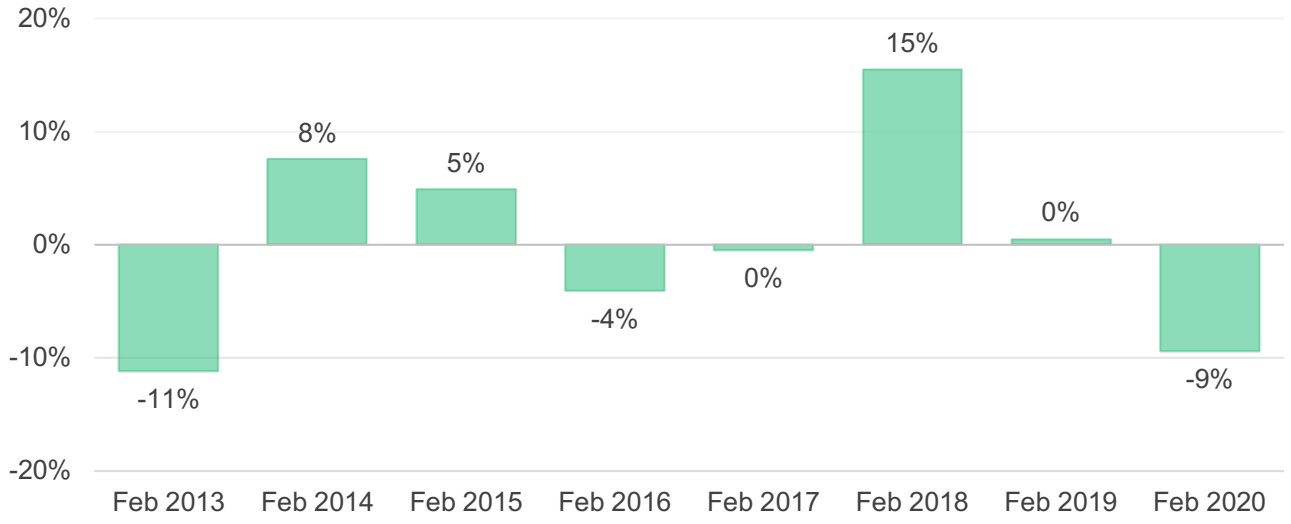
Source: ESCO

Figure 5 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

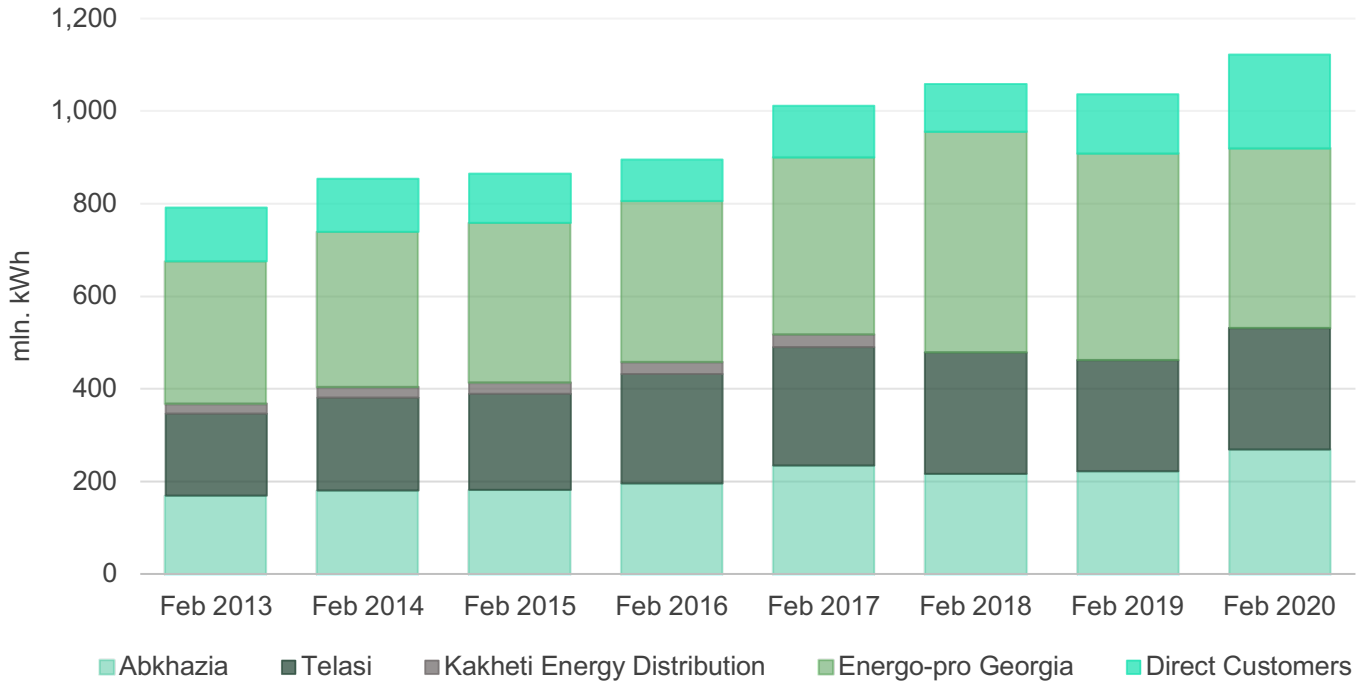
Figure 6 - Growth of Generation (%, y/y)



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia[1] (35% - 388 mln. kWh), Telasi (23% - 262 mln. kWh), Abkhazia (24% - 269 mln. kWh), and direct customers (18% - 203 mln. kWh) (Figure 7). Annual demand from Telasi, Abkhazia and direct consumers increased by 9%, 22% and 58% respectively, more than offsetting the decrease of 13% from Energo-Pro Georgia.[2] Overall, there was an annual increase of 8% in the total electricity consumption in February 2020, compared to February 2019 (Figure 8).

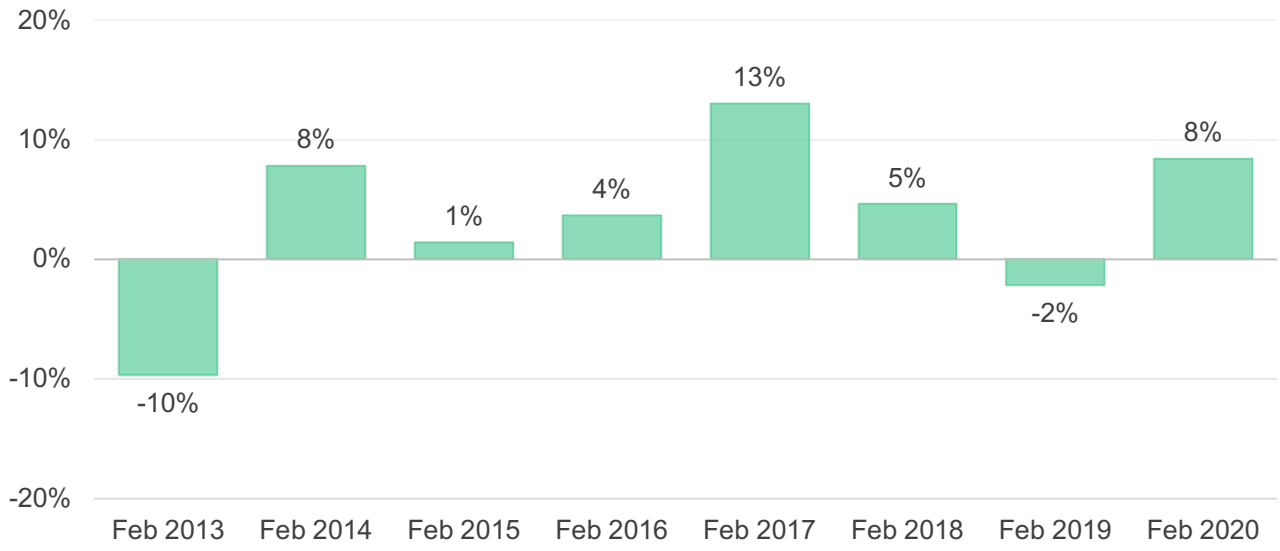
Figure 7 - Electricity Consumption by Type of Customer



Source: ESCO

[1] Energo-Pro Georgia acquired Kakheti Energy Distribution in September 2017.
[2] It has to be noted that with the market opening since May 2019 large customers started buying their electricity on the market, as direct customers. This is the main reason behind decrease in electricity consumption from Energo-Pro Georgia and increase of direct consumption.

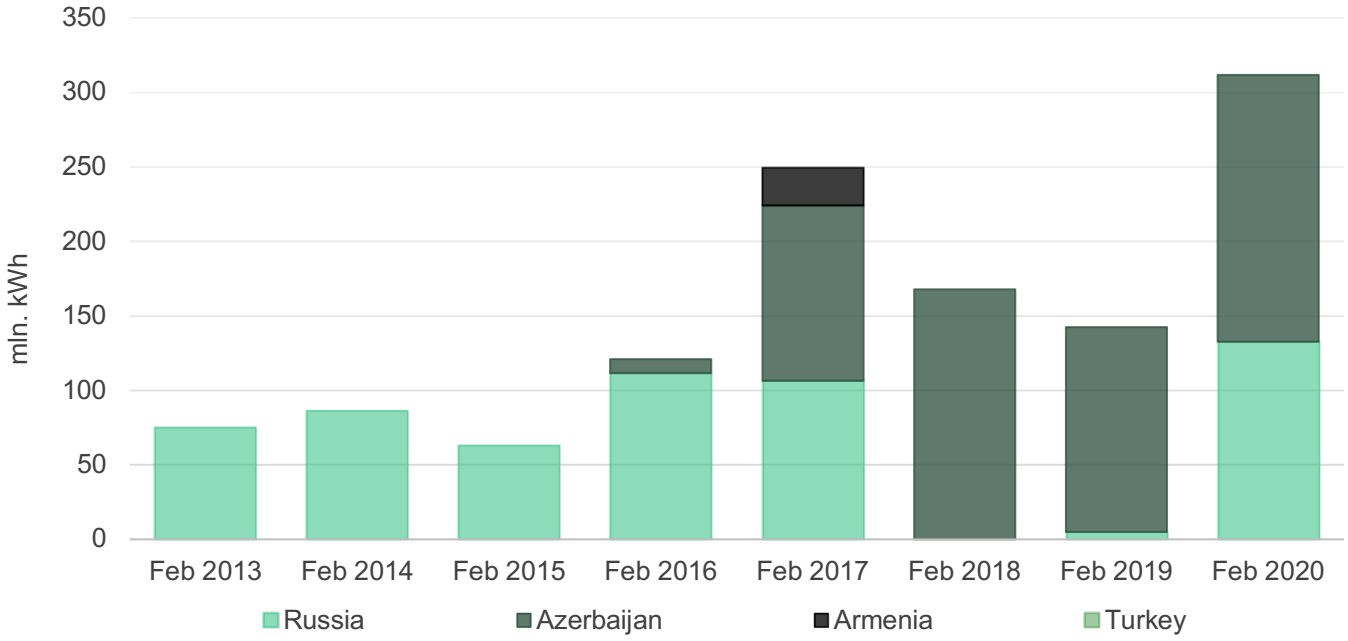
Figure 8 - Electricity Consumption Growth (%, y/y)



Source: ESCO

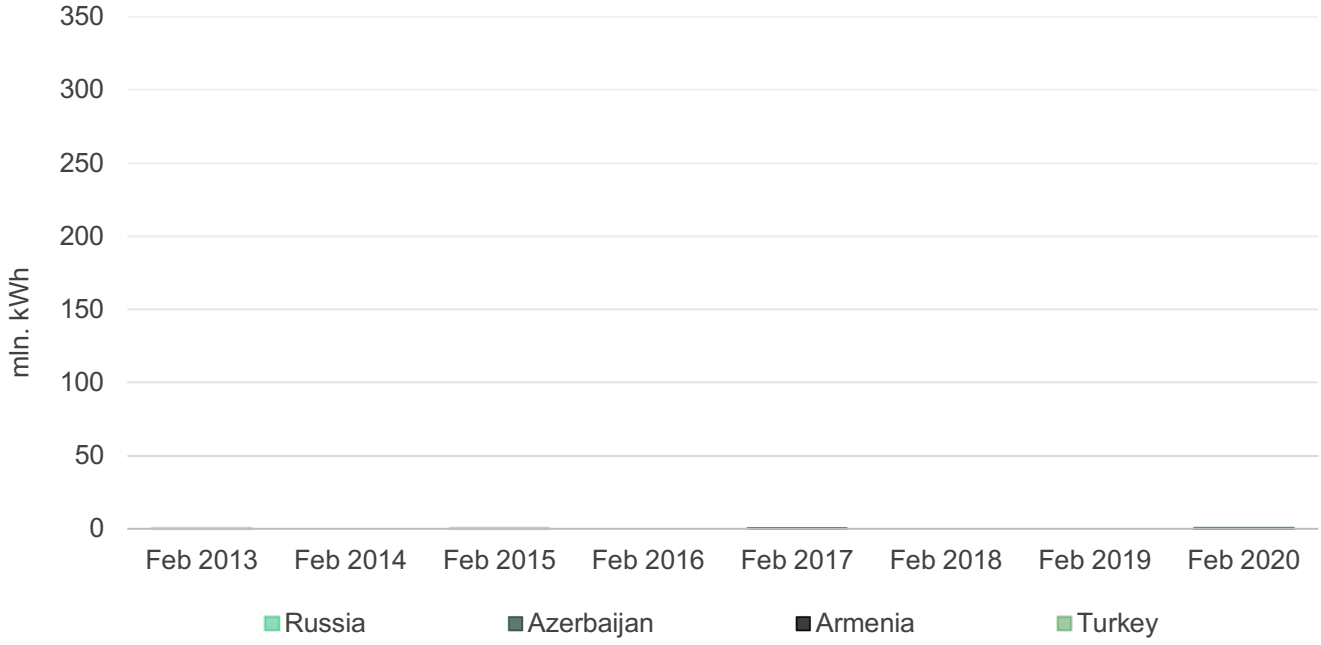
In February 2020, Georgia imported 312 mln. kWh of electricity (more than doubled compared to February 2019) 57% of which came from Azerbaijan, while the remaining 43% was provided by Russia (Figure 9). In February 2020, Georgia exported a negligible amount of electricity (0.506 mln. kWh), out of which 76% was exported to Armenia, 21% to Azerbaijan and the remaining 3% to Turkey (compared to no exports in February 2019) (Figure 10).

Figure 9 - Imports by Year



Source: ESCO

Figure 10 - Exports by Year

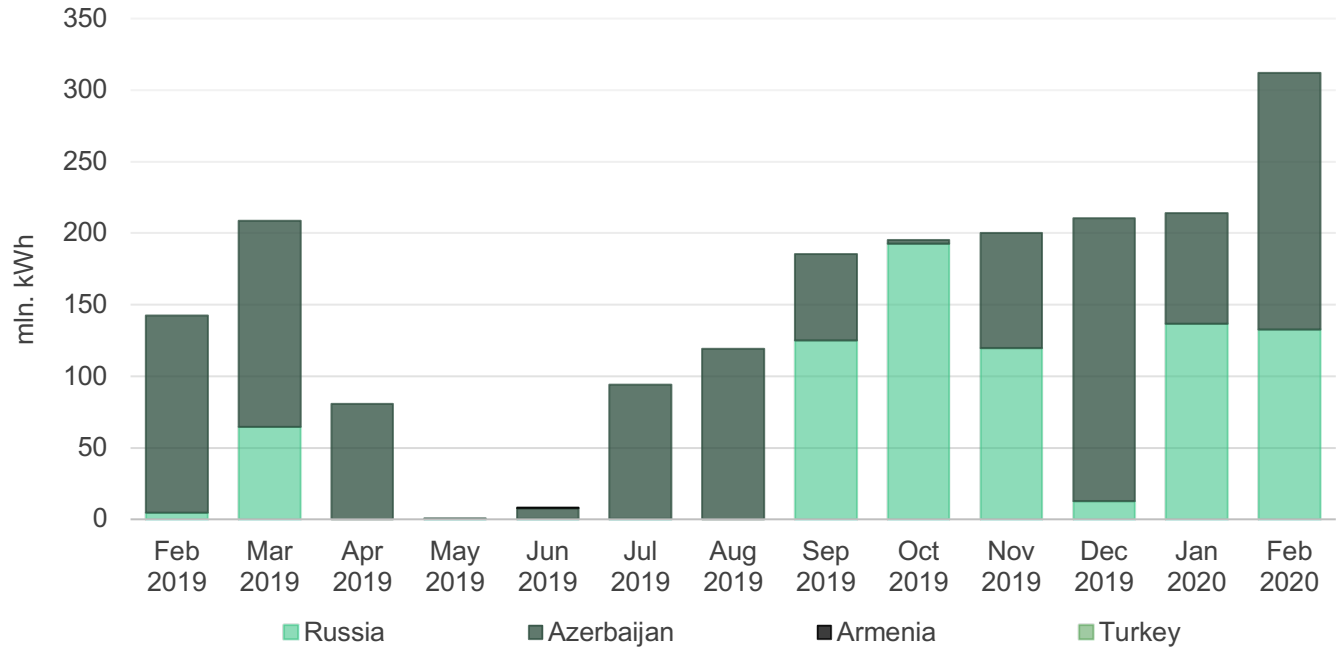


Source: ESCO

In February 2020, electricity imports increased by 46% from 214 to 312 mln. kWh compared to the previous month (Figure 11). As for the exports, it increased from 0.01 to 0.506 mln. kWh (Figure 12). As mentioned above, in this month the main import partner country was Azerbaijan and main export partner country was Armenia.

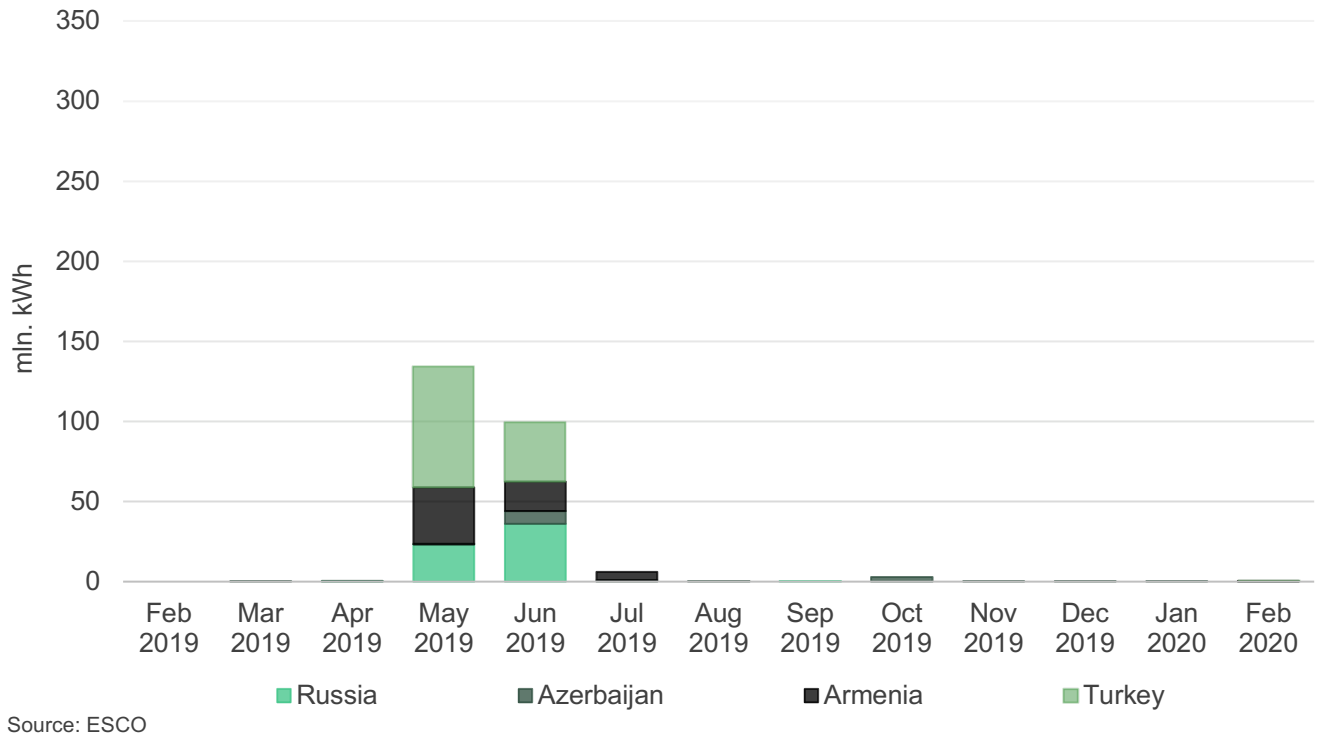
This month 25 mln. kWh electricity was transited from Azerbaijan to Turkey, which represents 7% decrease compared to the previous month, while it more than doubled compared to February 2019.

Figure 11 - Imports by Month



Source: ESCO

Figure 12 - Exports by Month

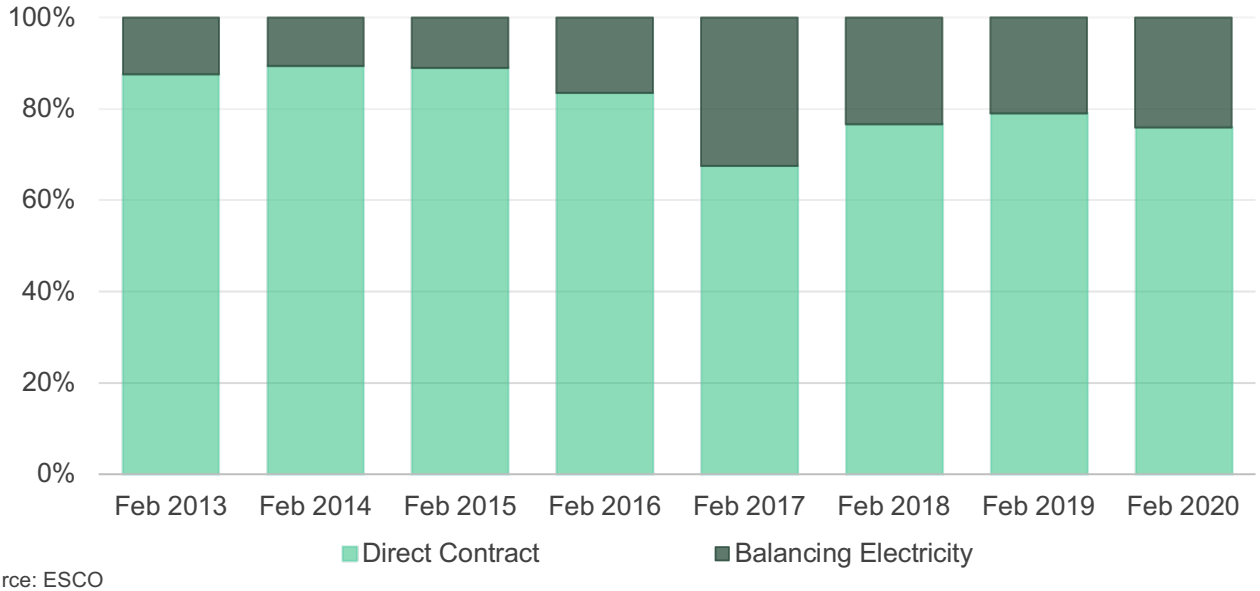


Source: ESCO

1. Market Operations

In February 2020, 76% of the electricity sold on/from the local market was sold through direct contracts. The remaining 24% was sold as balancing electricity (Figure 13).

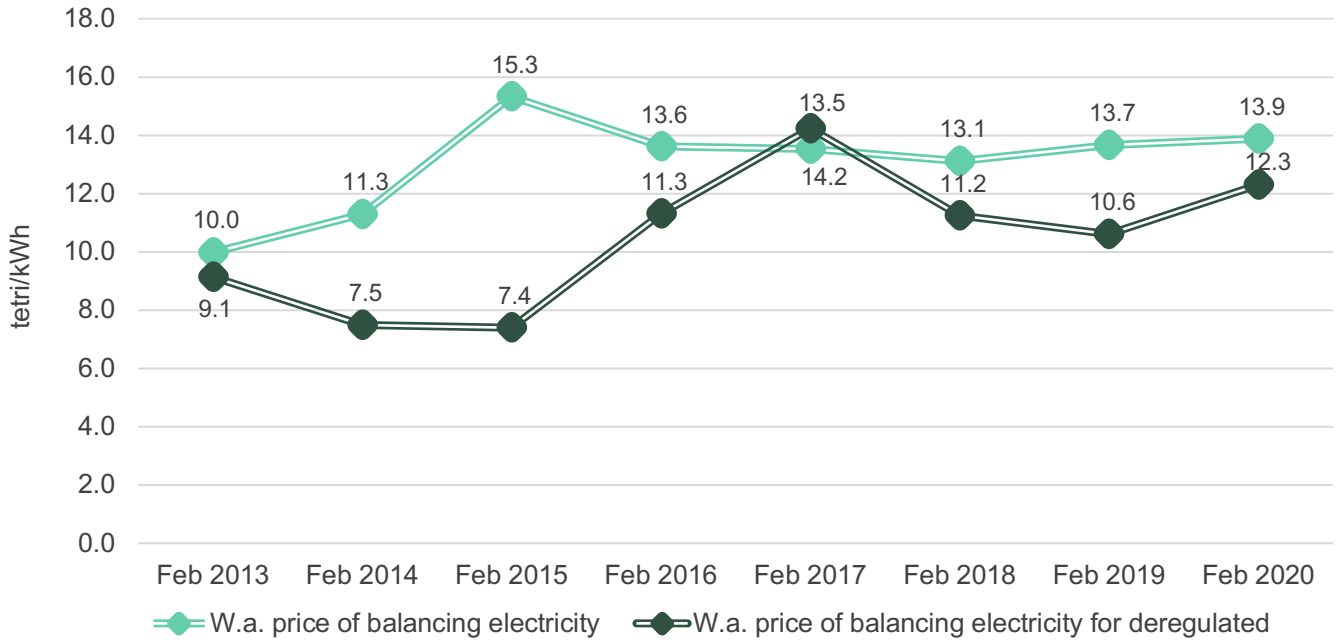
Figure 13 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In February 2020, the weighted average price of balancing electricity was 13.9 tetri/kWh in, which is an annual increase of 2% compared to February 2019. As for the weighted average price for deregulated (small) HPPs, it was 12.3 tetri/kWh, increased by 16% compared to the corresponding month of the previous year (Figure 14).

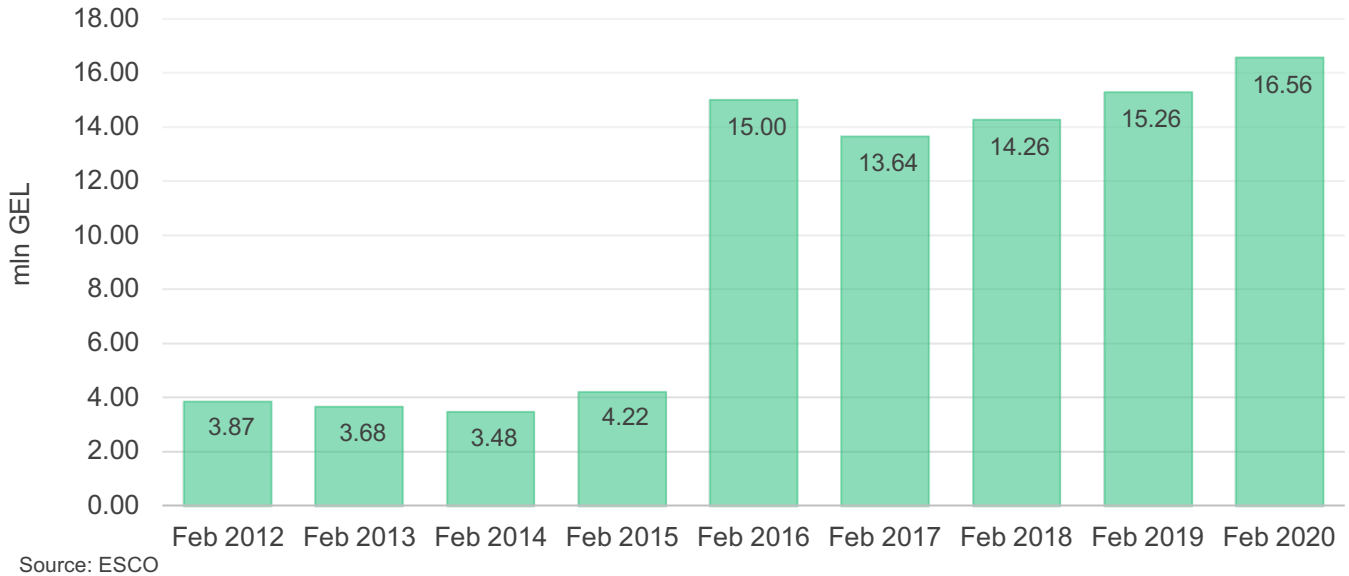
Figure 14 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in February 2020 were roughly 16.56 mln. GEL, which represents an 8% increase compared to February 2019 (Figure 15).

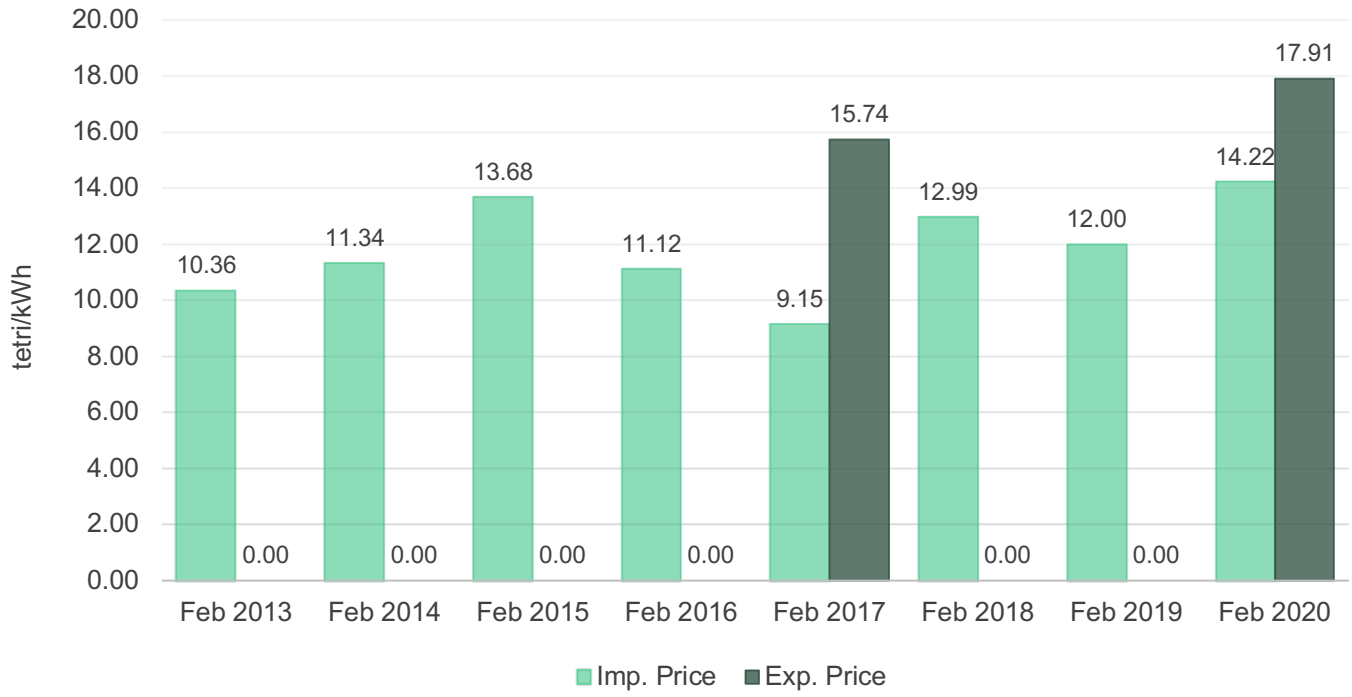
Figure 15 - Cost of Guaranteed Capacity



Source: ESCO

The average electricity import price in February 2020 increased by 19%[3] (from 4.52 ¢ or 12 tetri per kWh to 4.99 ¢ or 14.22 tetri per kWh) compared to February 2019 (Figure 16). The average import price decreased by 3% on a monthly basis (import price was 5.07 ¢ or 14.62 tetri per kWh in January 2020). The average electricity exports price in February 2020 was 6.28 ¢ or 17.91 tetri per kWh. The average export price increased by 9% on a monthly basis (export price was 5.72 ¢ or 16.49 tetri per kWh in January 2020).

Figure 16 - Prices Import/Export



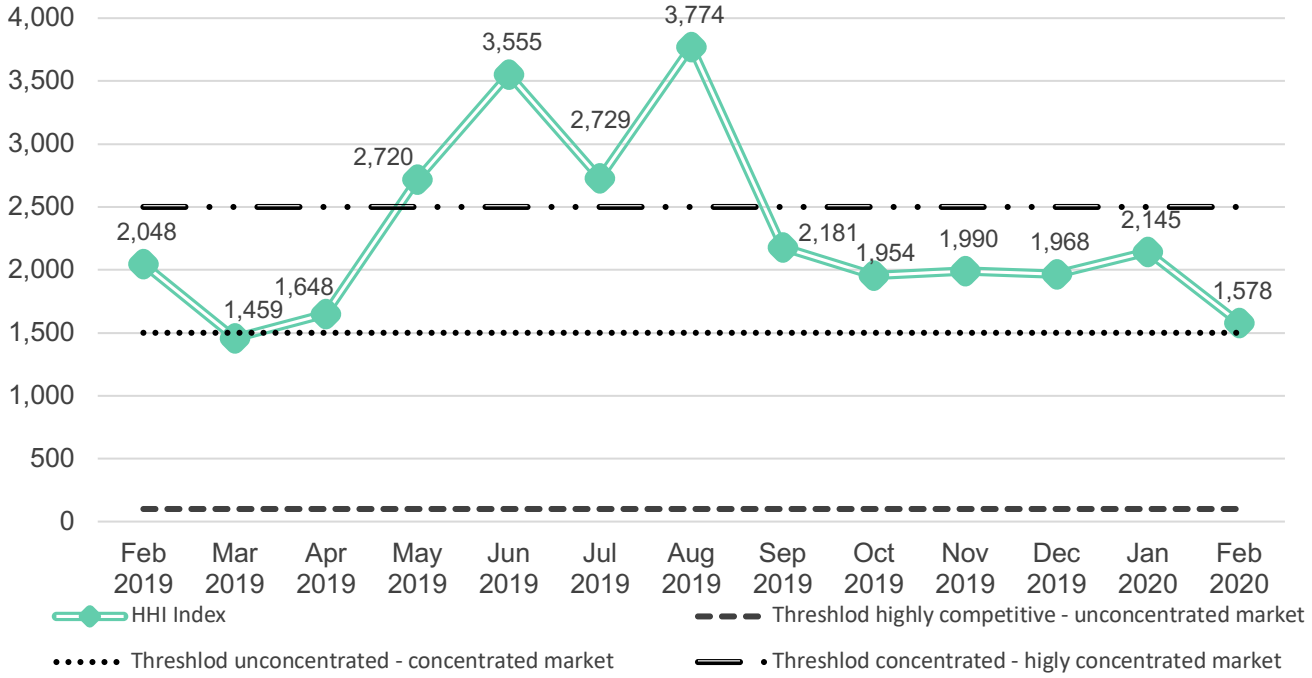
Source: ESCO

[3] Because of large depreciation of Georgian Lari.

2. Market Concentration

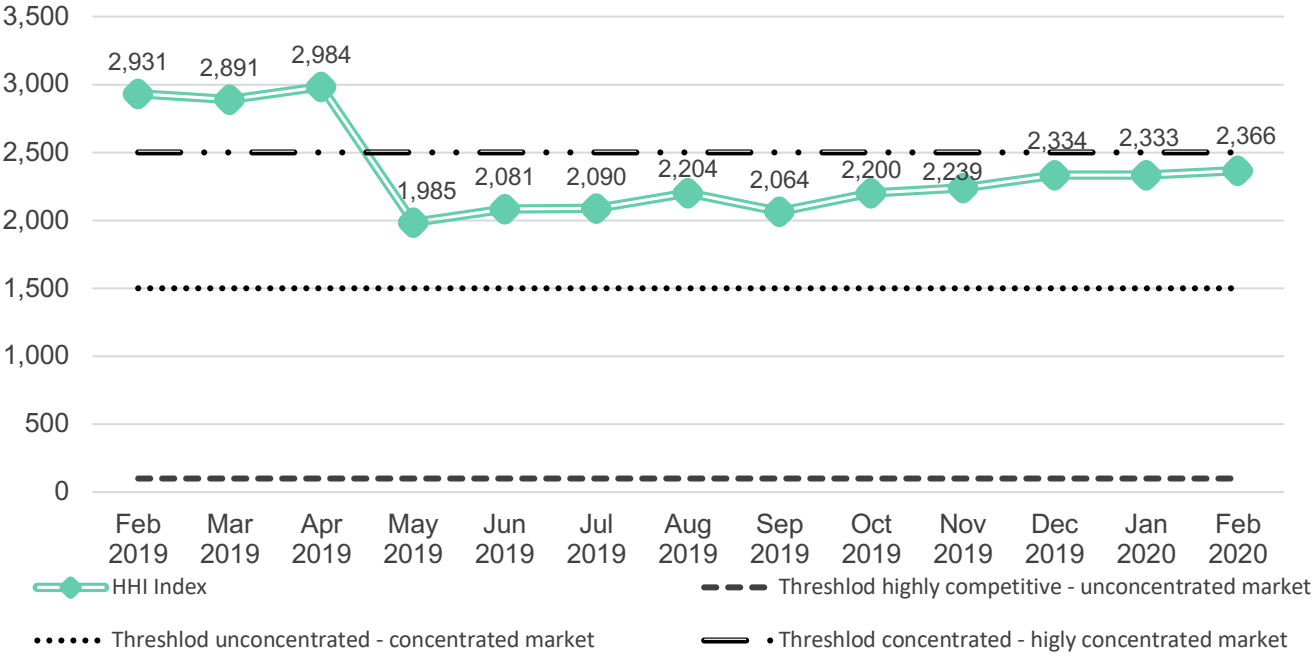
In conclusion, we utilize the Hirschmann-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segments of the market have been over the year. In February 2020, the Georgian electricity generation market was closer to the threshold of unconcentrated market, with an HHI value of 1,578 (Figure 17), in contrast, in February 2019 and in January 2020 it was concentrated, with HHI values of 2,048 and 2,145, respectively. As for the consumption segment, in February 2020 the HHI consumption index was below the threshold for a highly concentrated market reaching the value of 2,366 (slightly higher than in January 2020 and much lower than in February 2019) which corresponds to a concentrated market (Figure 18).

Figure 17 - Hirschman-Herfindahl Index for Power Generation



Source: ESCO

Figure 18 - Hirschman-Herfindahl Index for Power Consumption



Source: ESCO