

# ISET

International School of Economics at TSU  
Policy Institute



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# ELECTRICITY MARKET REVIEW

# ISET POLICY INSTITUTE

## ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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## INFORMATION

- There was an increase in total electricity generation on a yearly and on a monthly basis, mainly associated with thermal generation, more than offsetting a substantial (22%) decline in hydro generation.
- Thermal Power Generation provided 54% of total electricity generation
- Enguri and Vardinili HPPs generated the same share (21%) of total electricity generation as Gardabani 1&2.
- Consumption increased, on a yearly basis and on a monthly basis.
- Consumption exceeded generation by 161 mln. kWh.
- Imported electricity came mainly from Russia.
- Georgia exported a negligible amount of electricity to Azerbaijan.
- Electricity transit from Azerbaijan to Turkey increased.
- The vast majority of electricity was purchased via direct contracts
- The average price of imports increased, on a yearly and on a monthly basis.
- The Hirschmann-Herfindahl Index (HHI) of Georgian electricity generation market experienced a minor upward change, while the final consumption market has changed from highly concentrated to concentrated.

## ABBREVIATION USED

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

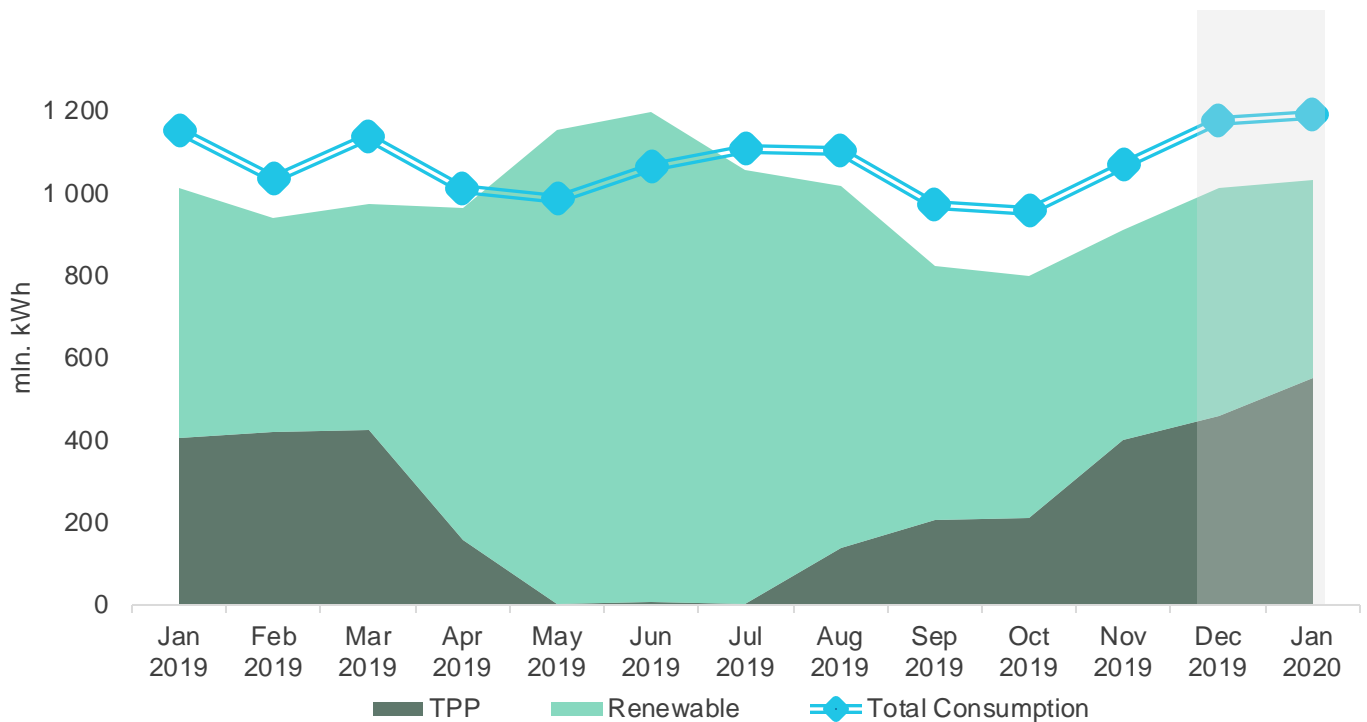
## Generation – Consumption – Trade

In January 2020, Georgian power plants generated 1,031 mln. kWh of electricity (Figure 1). This represents a 2% increase in total generation, compared to the previous year (in January 2019, the total generation was 1,011 mln. kWh). The increase in generation on a yearly basis comes from the increase of 37% in thermal and 36% in wind power generation, more than offsetting the decrease in hydro power generation (-22%).

On a monthly basis, generation increased by 2% (in December 2019, total generation was 1,012 mln. kWh). The monthly increase in total generation was the result of an increase in electricity produced by thermal power plants (+20% with respect to December 2019) and wind power plants (+17% with respect to December 2019) more than offsetting the decrease in hydro power generation (-14% compared to December 2019).

The consumption of electricity on the local market was 1,191 mln. kWh (+3.7% and +1% compared to January 2019, and December 2019, respectively) (Figure 1). In January 2020, the total consumption exceeded the total generation by 161 mln. kWh which is around 16% of total generation (in contrast in January 2019 difference between total generation and consumption resulted in a deficit of 138 mln. kWh which was around 14% of the total generation for the month).

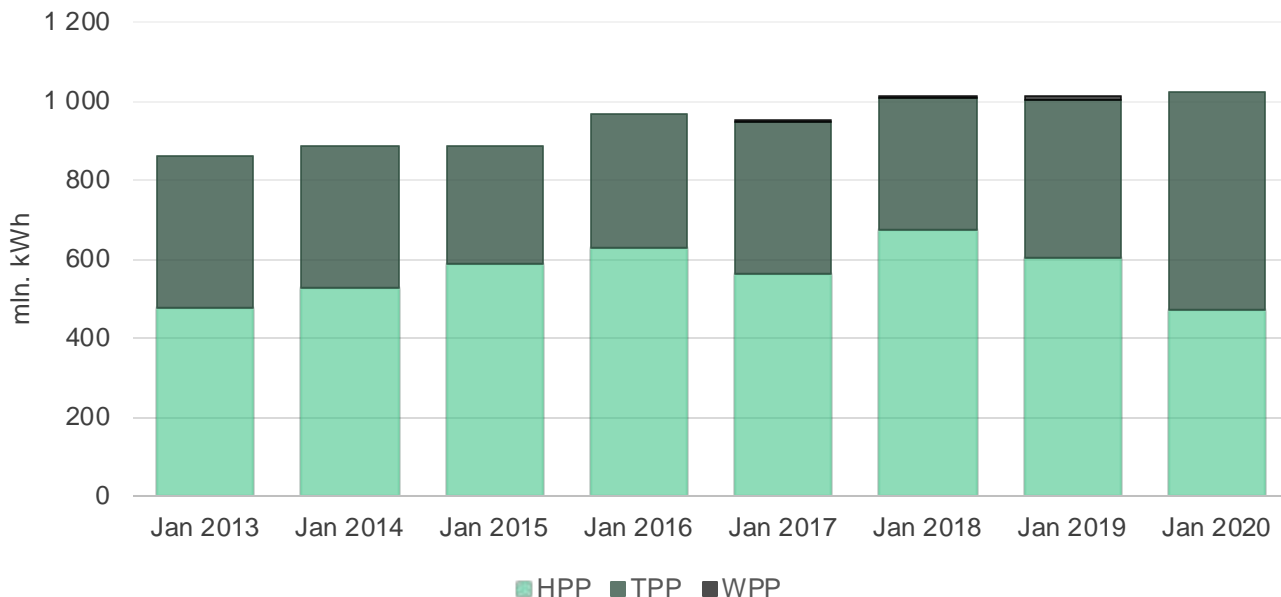
**Figure 1** - Electricity Consumption and Generation



Source: Electricity System Commercial Operator (ESCO)

This month most generation came from Thermal Power Plants (TPPs). In January 2020, thermal power (TPP) generation amounted to 552 mln. kWh (54% of total), hydro power (HPP) generation was 471 mln. kWh (46% of total); and wind power (WPP) generation was 8 mln. kWh (1% of total) (Figure 2).

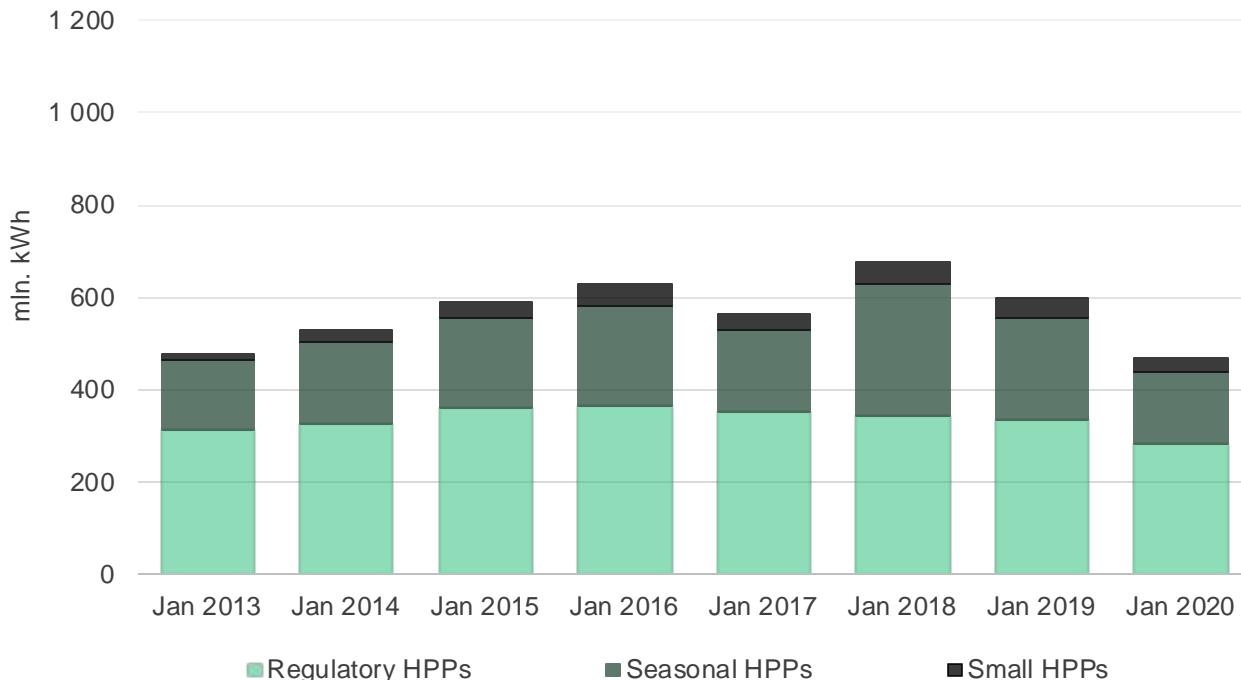
**Figure 2 - Electricity Generation by Sources**



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 60% (281 mln. kWh) of electricity, while seasonal and small HPPs produced 34% (158 mln. kWh) and 7% (32 mln. kWh), respectively (Figure 3).

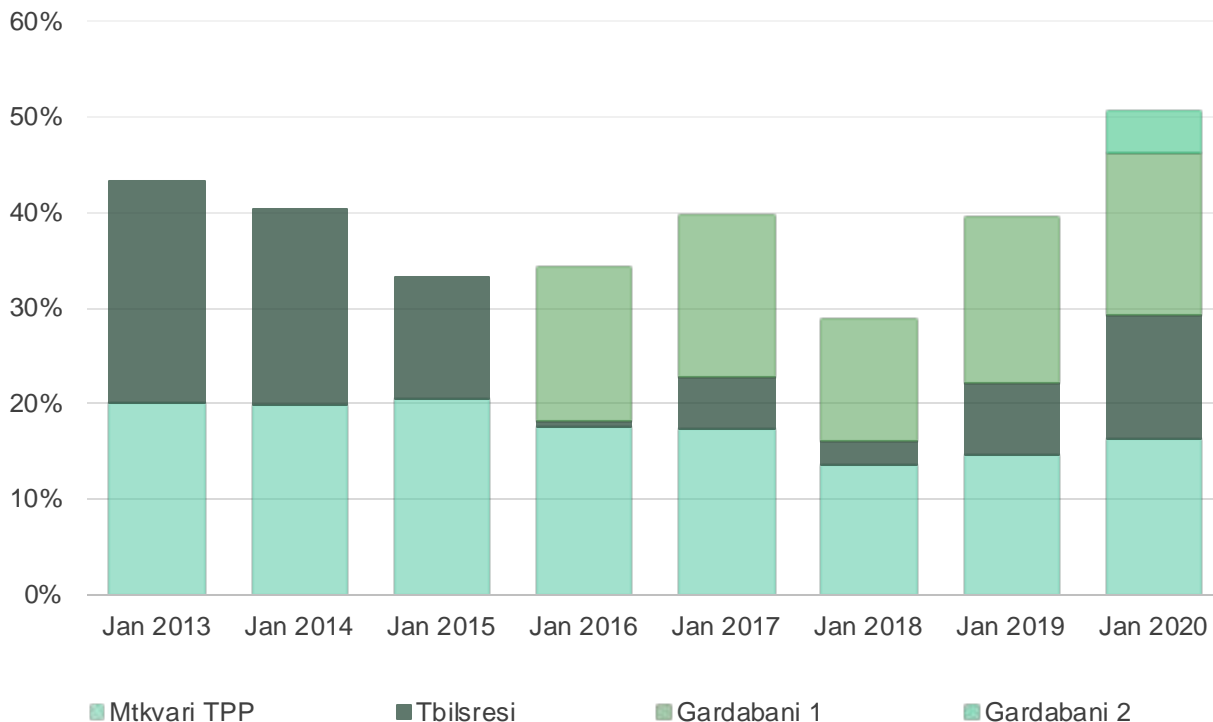
**Figure 3 - HPP Generation by Type**



Source: ESCO

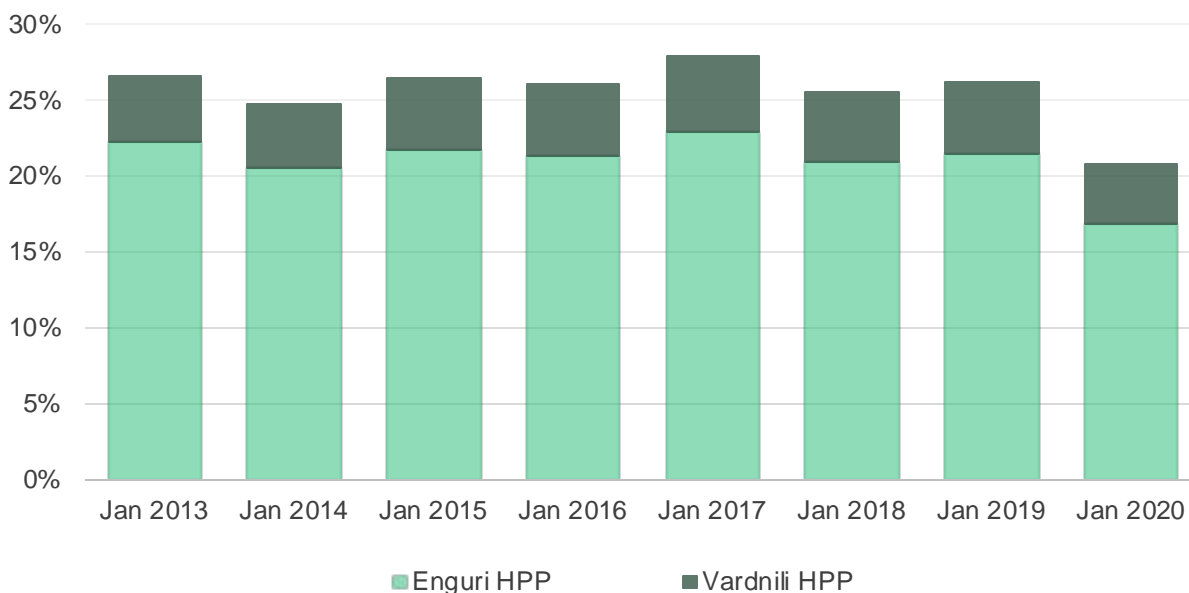
Among thermal power plants Gardabani 1 & 2 generated 219 mln. kWh, 40% of total thermal power generation and 21% of total generation (Figure 4). As for HPP generation, the large HPPs, Enguri and Vardnili generated the largest power, producing 214 mln. kWh (76% of generation for regulatory HPPs), with 173 mln. kWh and 41 mln. kWh, respectively. They represent around 21% of the total generation (Figure 5).

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



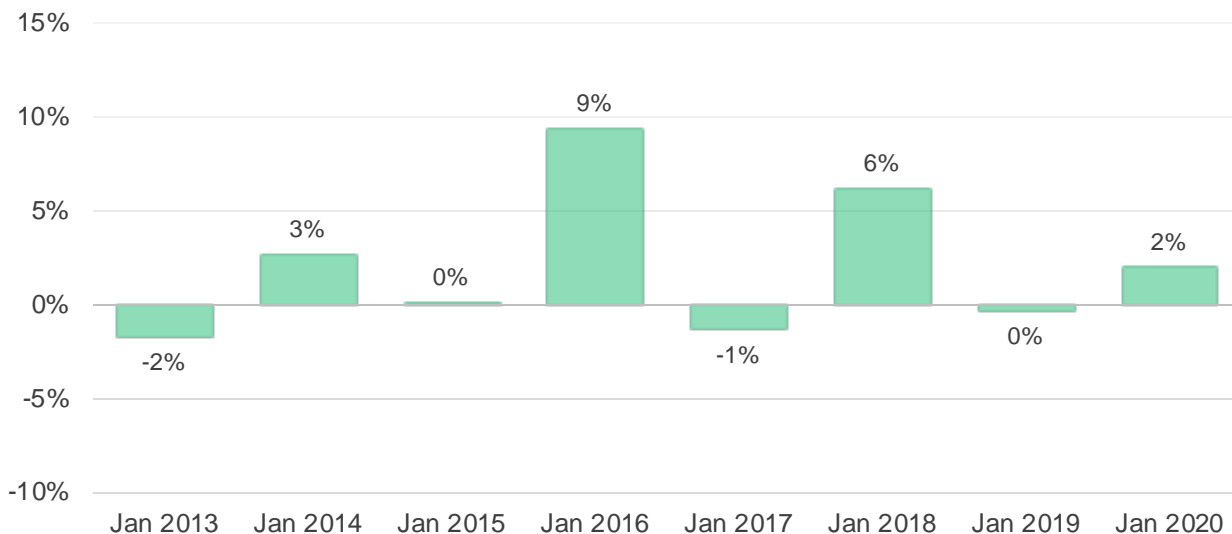
Source: ESCO

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



Source: ESCO

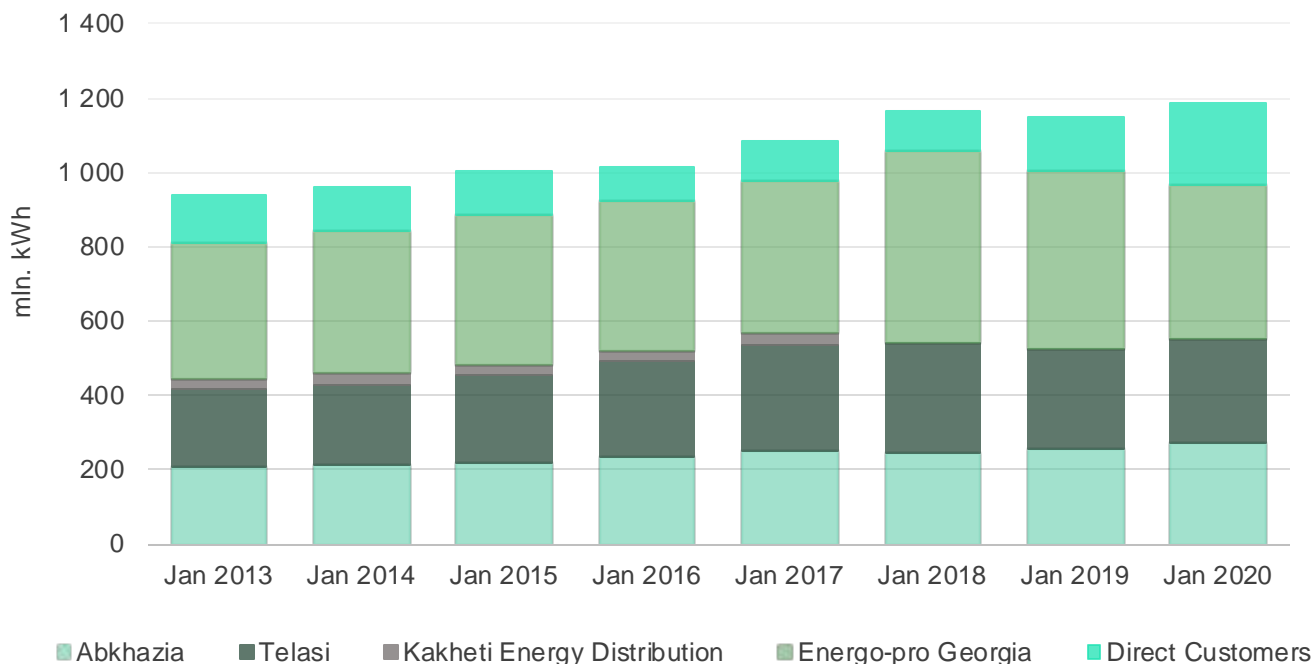
**Figure 6 - Growth of Generation (% y/y)**



Source: ESCO

Total electricity demand came from: Energo-Pro Georgia<sup>1</sup> (35% - 412 mln. kWh), Telasi (23% - 279 mln. kWh), Abkhazia (23% - 273 mln. kWh), and direct customers (19% - 225 mln. kWh) (Figure 7). Overall, there was an annual increase of 3.7% in the total electricity consumption in January 2020, compared to January 2019 (Figure 8). Annual demand from Telasi, Abkhazia and direct consumers increased by 4%, 7% and 56% respectively, more than offsetting the decrease of 14% from Energo-Pro Georgia.<sup>2</sup>

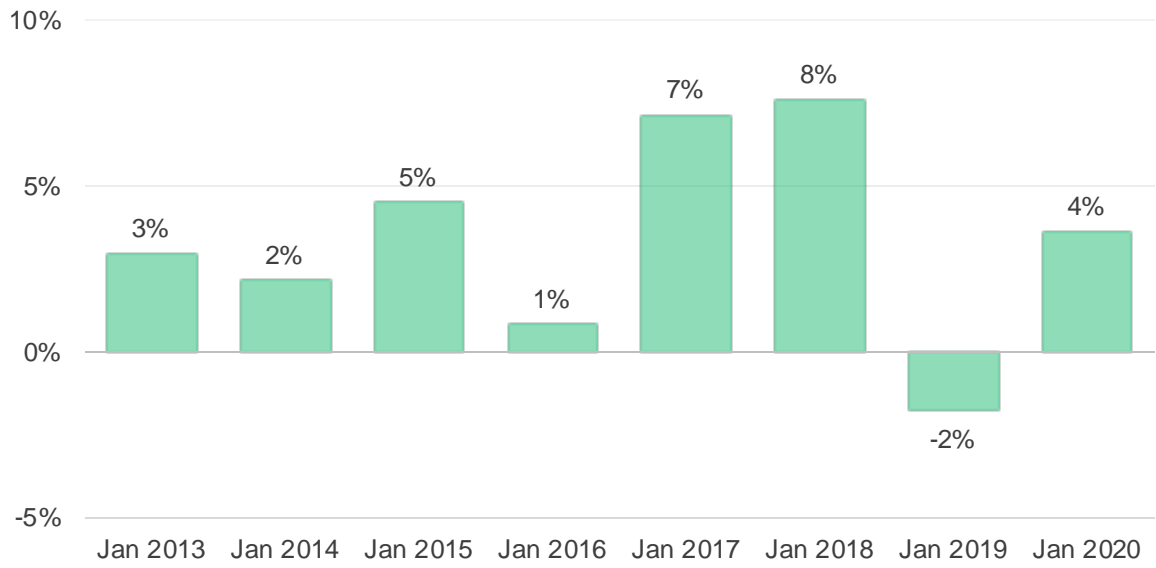
**Figure 7 - Electricity Consumption by Type of Customer**



Source: ESCO

<sup>1</sup> Energo-Pro Georgia acquired Kakheta Energy Distribution in September 2017.

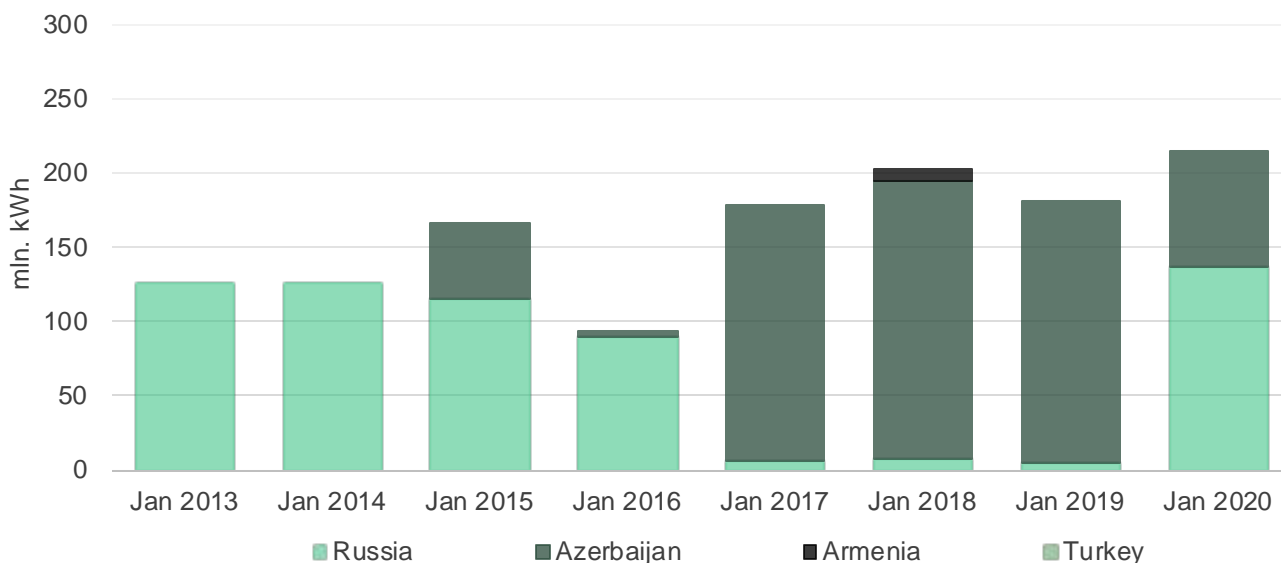
<sup>2</sup> It has to be noted that with the market opening since May 2019 large customers started buying their electricity on the market as direct customers. This is the main reason behind decrease in electricity consumption from Energo-Pro Georgia and increase of direct consumption.

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

Source: ESCO

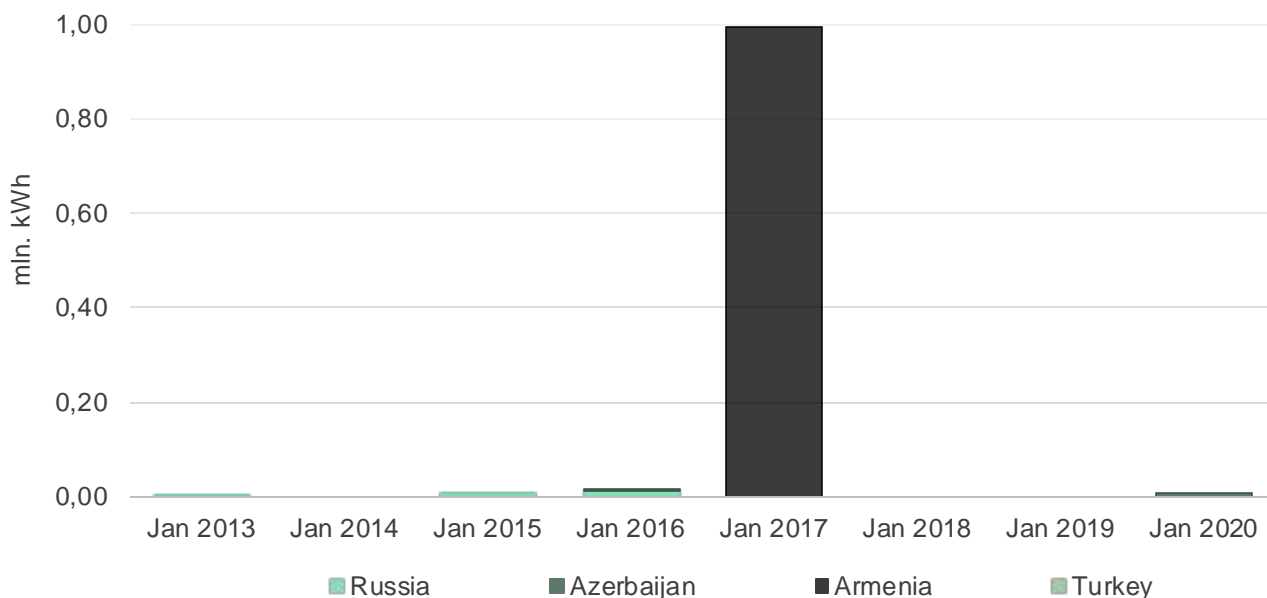
In January 2020, Georgia imported 214 mln. kWh of electricity (+18% compared to January 2019) 64% of which came from Russia, while the remaining 36% was provided by Azerbaijan (Figure 9). In January 2020, Georgia exported 0.01 mln. kWh electricity to Azerbaijan (compared to no exports in January 2019) (Figure 10).

**Figure 9** - Imports by Year



Source: ESCO

**Figure 10** - Exports by Year



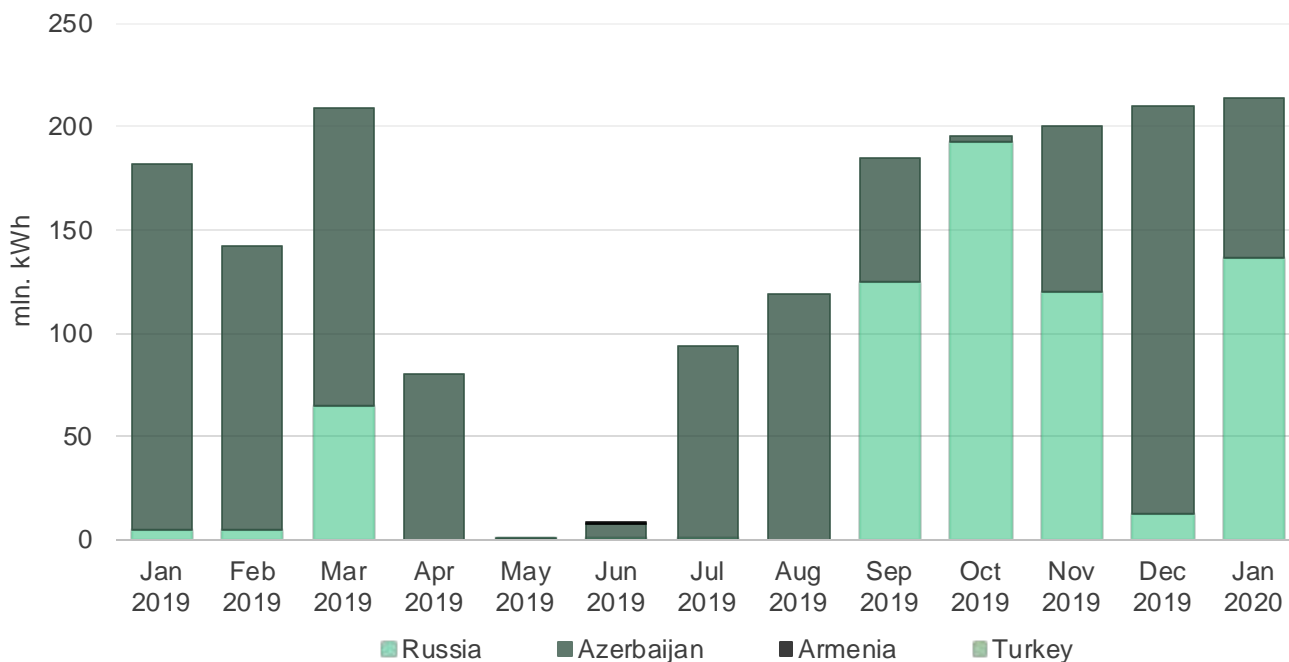
Source: ESCO



In January 2020, electricity imports increased by 2% from 211 to 214 mln. kWh compared to the previous month (Figure 11). As for the exports, it increased from 0.0001 to 0.01 mln. kWh (Figure 12). As mentioned above, in this month the main export partner country was Azerbaijan.

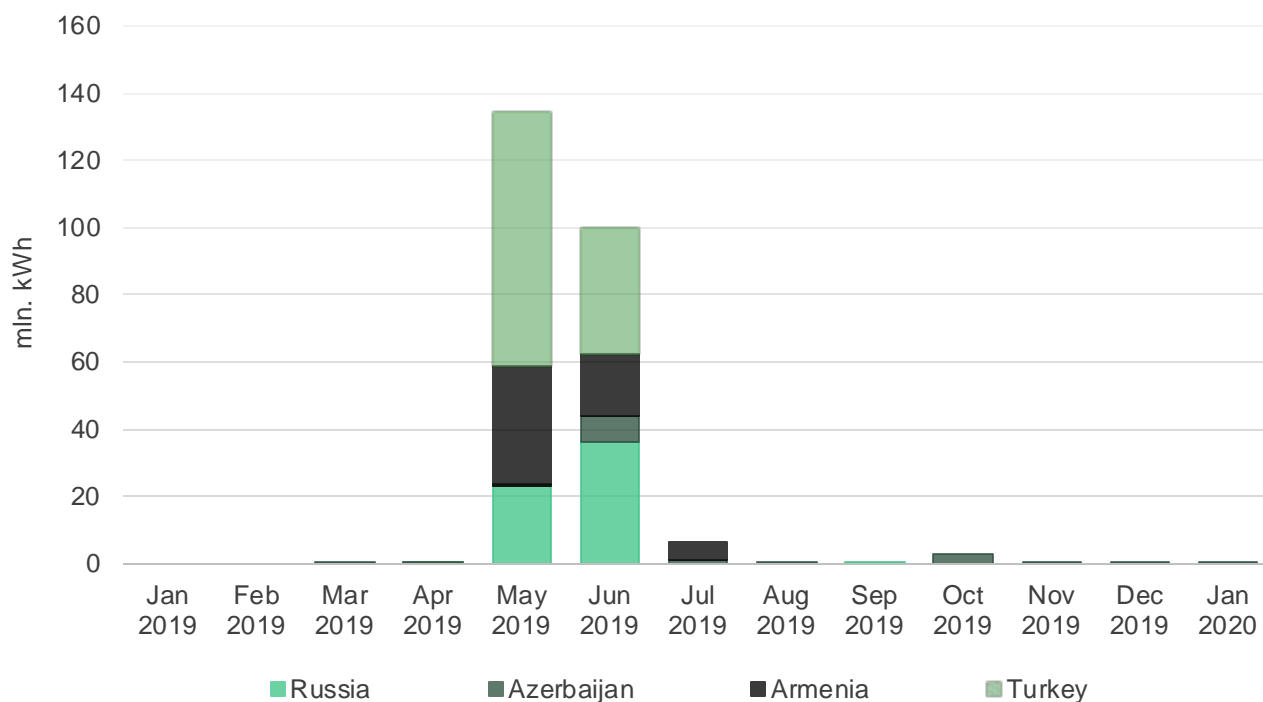
This month 26 mln. kWh electricity was transited from Azerbaijan to Turkey, which represents 36% increase compared to the previous month, while there was no transit in January 2019.

**Figure 11 - Imports by Month**



Source: ESCO

**Figure 12 - Exports by Month**

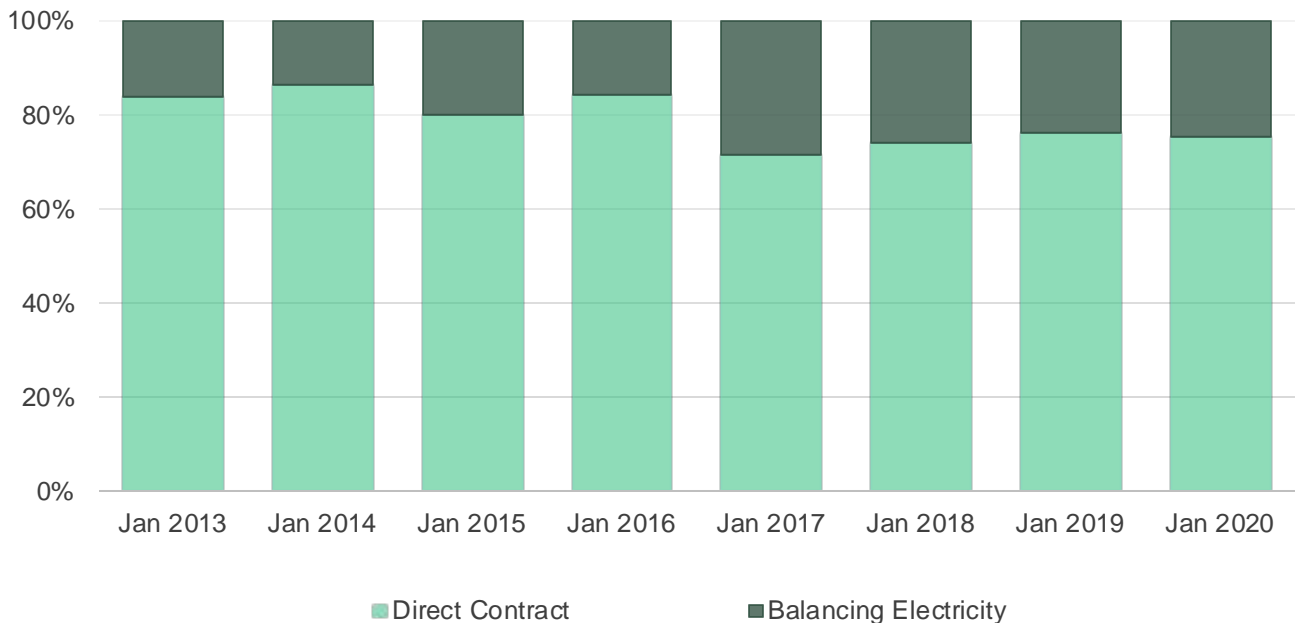


Source: ESCO

## 1. Market Operations

In January 2020, 75% of the electricity sold on/from the local market was sold through direct contracts. The remaining 25% was sold as balancing electricity (Figure 13).

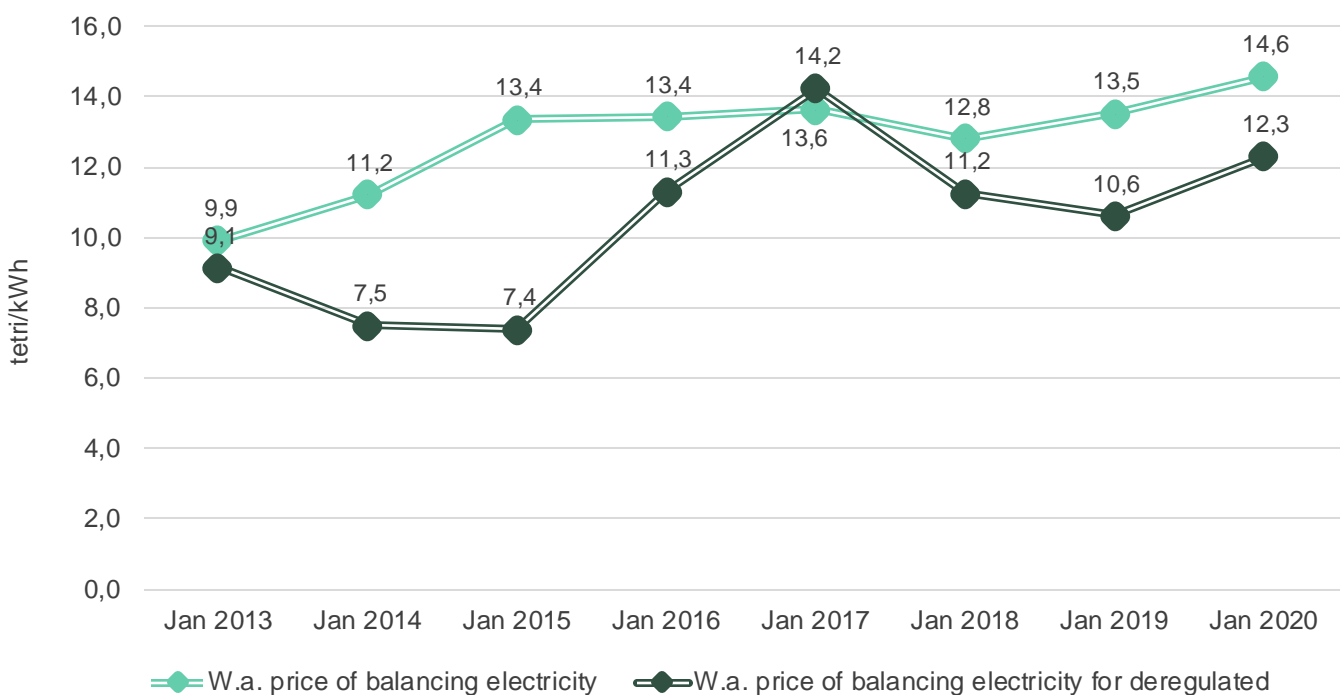
**Figure 13** - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

In January 2020, the weighted average price of balancing electricity was 14.6 tetri/kWh in, which is an annual increase of 8% compared to January 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).

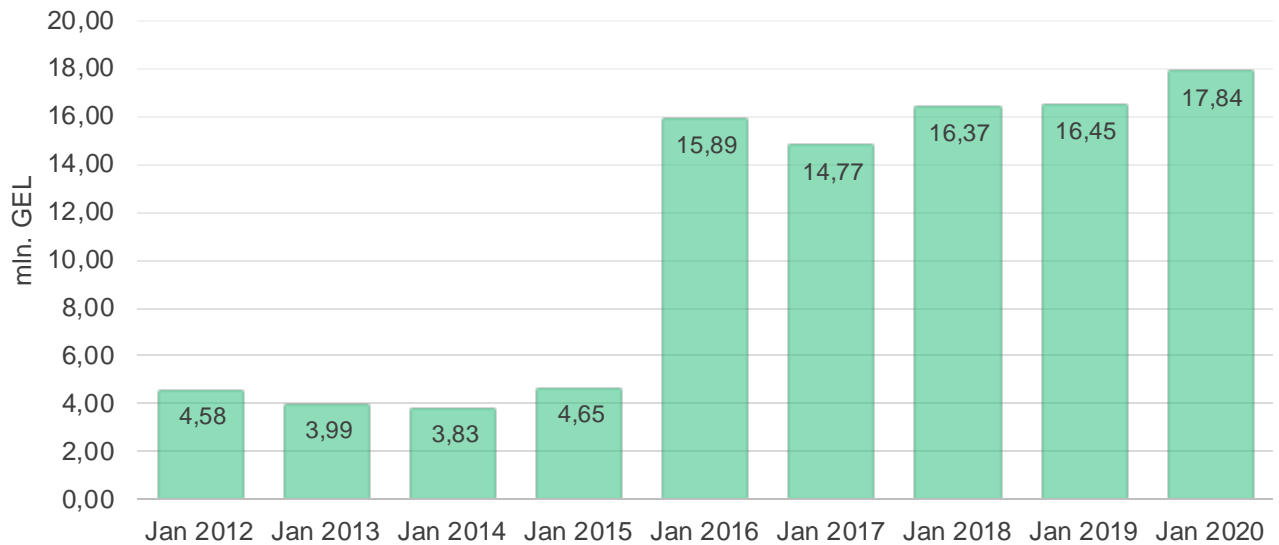
**Figure 14** - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in January 2020 were roughly 17.84 mln. GEL, which represents an 8% increase compared to January 2019 (Figure 15).

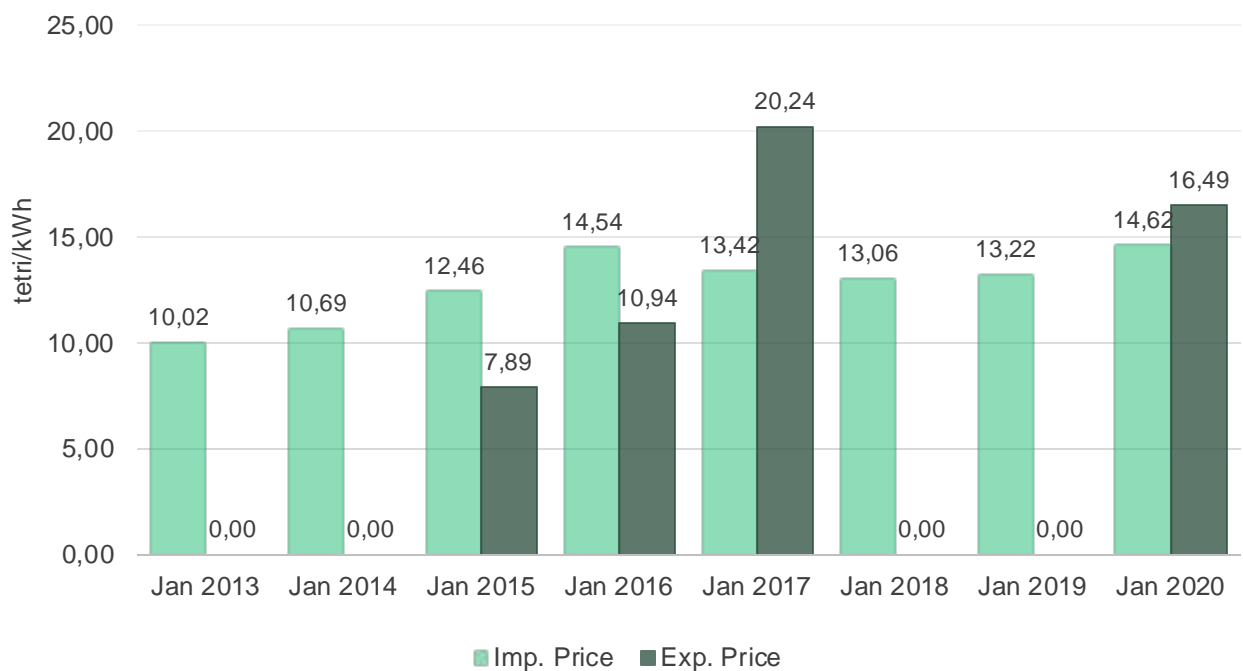
**Figure 15** - Cost of Guaranteed Capacity



Source: ESCO

The average electricity import price in January 2020 increased by 11%<sup>3</sup> (from 5 ¢ or 13.2 to 5.1 ¢ or 14.6 tetri per kWh) compared to January 2019 (Figure 16). The average import price increased by 4% on a monthly basis (import price was 5.2 ¢ or 15.18 tetri per kWh in December 2019). The average electricity exports price in January 2020 was 5.7 ¢ or 16.5 tetri per kWh.

**Figure 16** - Prices Import/Export



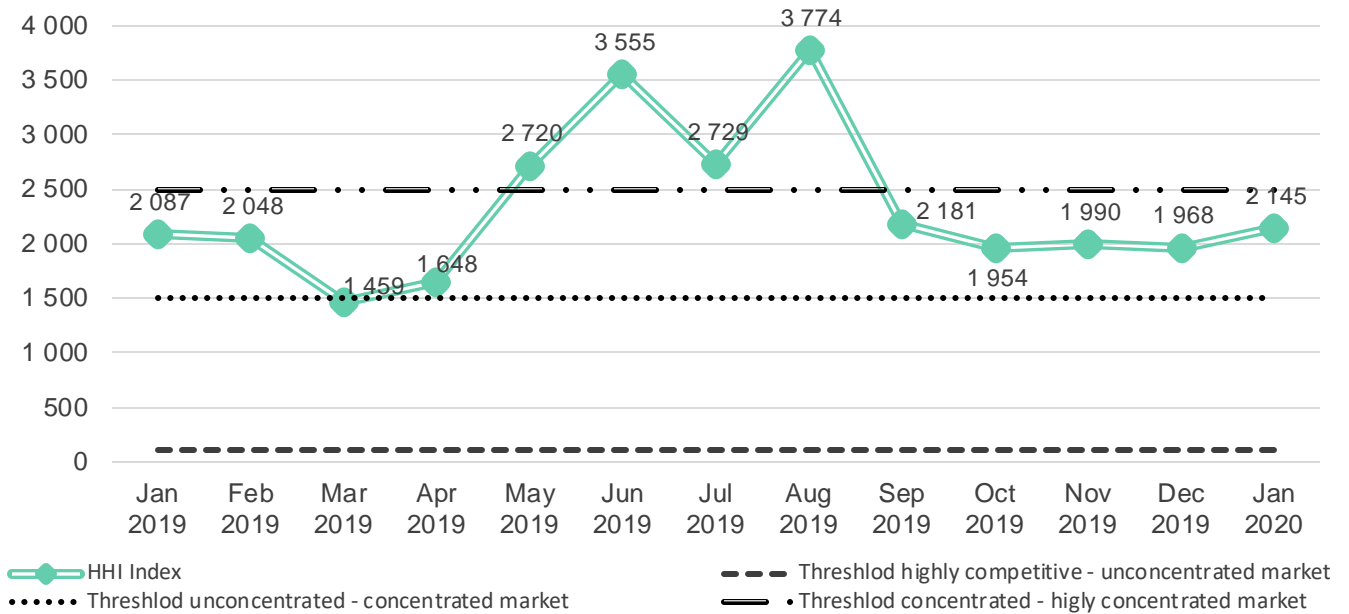
Source: ESCO

<sup>3</sup> Because of large depreciation of Georgian Lari.

## 2. Market Concentration

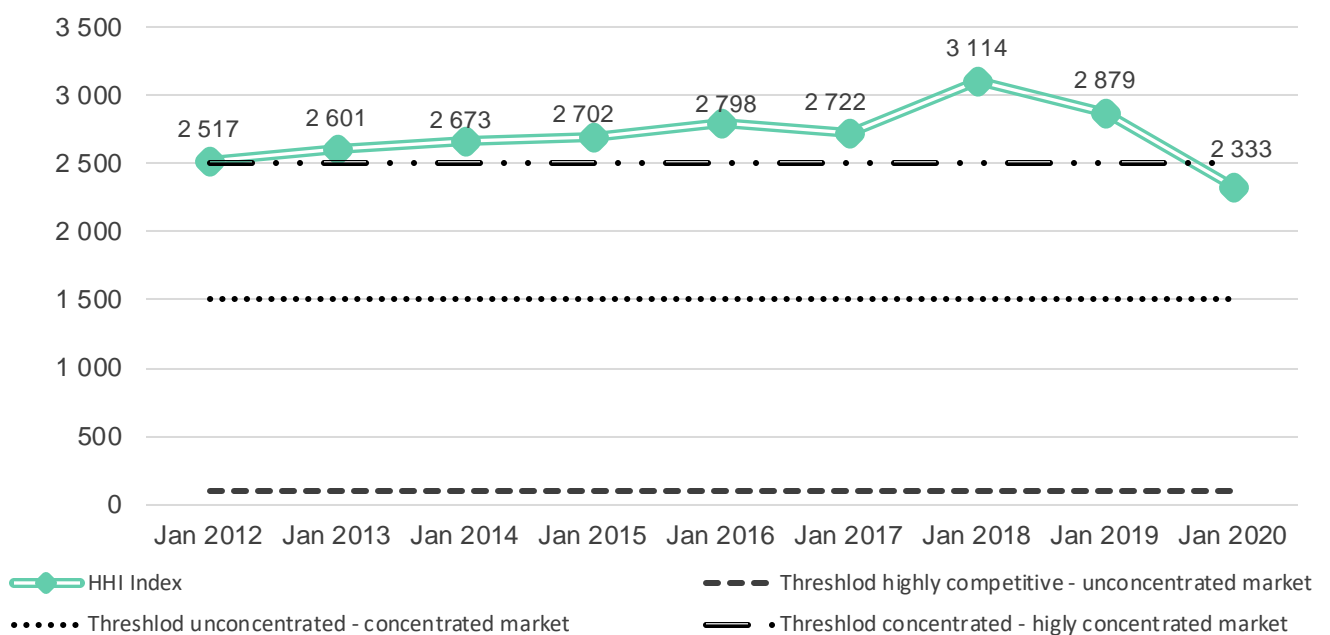
In conclusion, we utilize the Hirschmann-Herfindahl (HHI) market concentration index to evaluate how competitive the generation and consumption segment of the market have been over the year. In January 2020, the Georgian electricity generation market was concentrated, with an HHI value of 2,145 (Figure 17), similarly (with minor differences) to January 2019 (when the HHI was smaller) and much higher than in December 2019 (HHI was 1,968). As for consumption segment, it was the first time over the observation period that in January 2020 HHI consumption index dropped below the threshold of highly concentrated market reaching the value of 2,333 (much lower than in January 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