ISET

International School of Economics at TSU
Policy Institute

DECEMBER

2018

ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

Authors:

Norberto Pignatti
Policy Center Head
n.pignatti@iset.ge

Mariam Chachava
Researcher
m.chachava@iset.ge

Mariam Tsulukidze
Research Assistant
m.tsulukidze@iset.ge

Mariam Lobjanidze
Research Assistant
m.lobjanidze@iset.ge

INFORMATION

- Electricity generation decreased as a result of TPP generation decline, despite an increase in HPP and WPP generation
- Demand on electricity continued to exceed supply
- Imported electricity came mainly from Azerbaijan
- Georgia did not export any electricity
- According to the Hirschmann-Herfindahl Index (HHI) Georgian electricity generation was modestly concentrated

ABBREVIATION USED

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

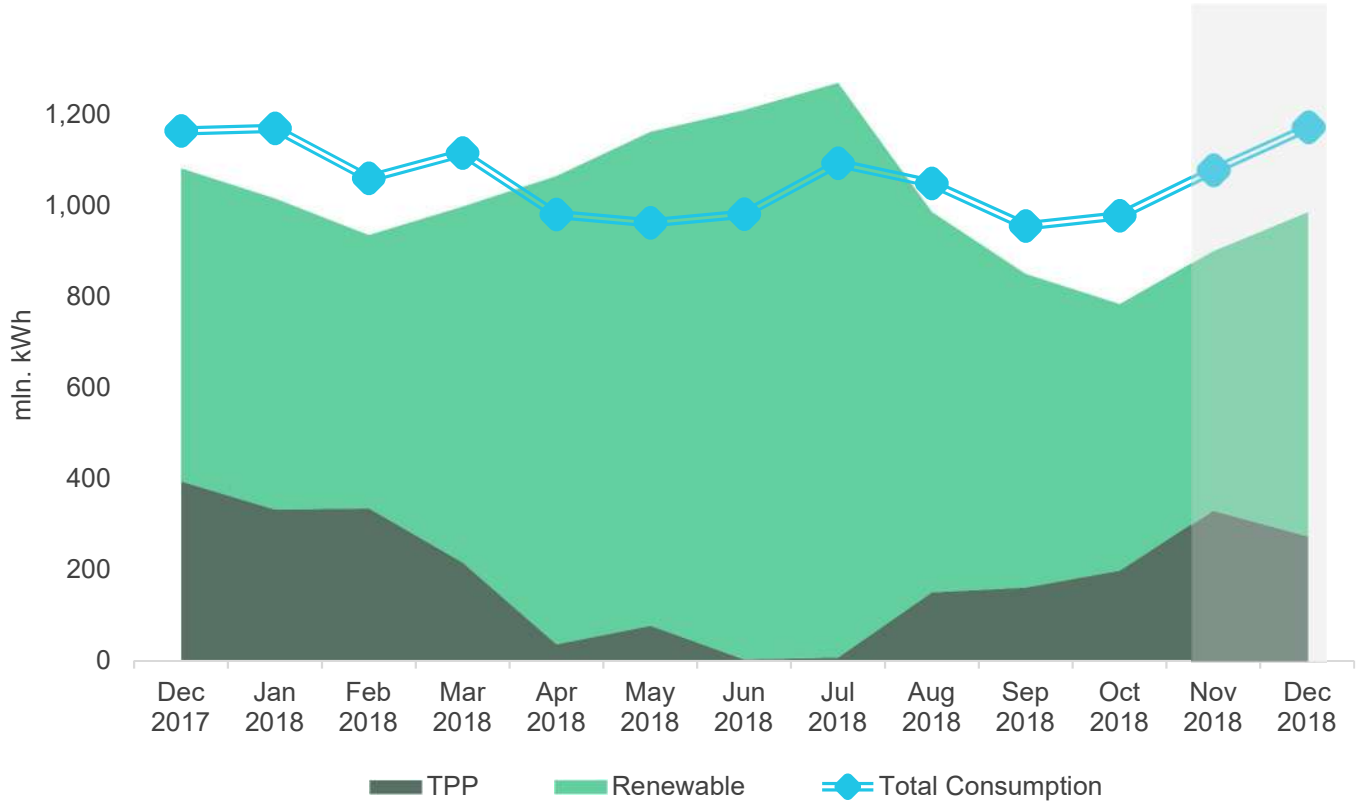
1. Generation – Consumption – Trade

In December 2018, Georgian power plants generated 986 mln. kWh of electricity (Figure 1). This represents a 9% decrease in total generation, compared to the previous year (in 2017, total generation in December was 1080 mln. kWh. The decrease in generation on a yearly basis comes from decrease in thermal power (-30%), more than offsetting the increase in hydro (+3%) and wind power generation (+11%).

On a monthly basis, generation increased by 10% (in November 2018, total generation was 900 mln. kWh). The monthly increase in total generation was the result of an increase in electricity produced by hydro power generation (up to 705 mln. kWh, which represents +25% with respect to November 2018), while there was a decrease in generation of wind and thermal power (-4% and -17% with respect to November 2018 respectively).

Consumption of electricity on the local market was 1172 mln. kWh (+1% compared to December 2017, and +9% with respect to November 2018) (Figure 1). In December 2018, total consumption exceeded generation by 186 mln kWh, which is 16% of the total consumption and 19% of the amount generated (compared to 178 mln. kWh and 20% deficit of total generation for November 2018).

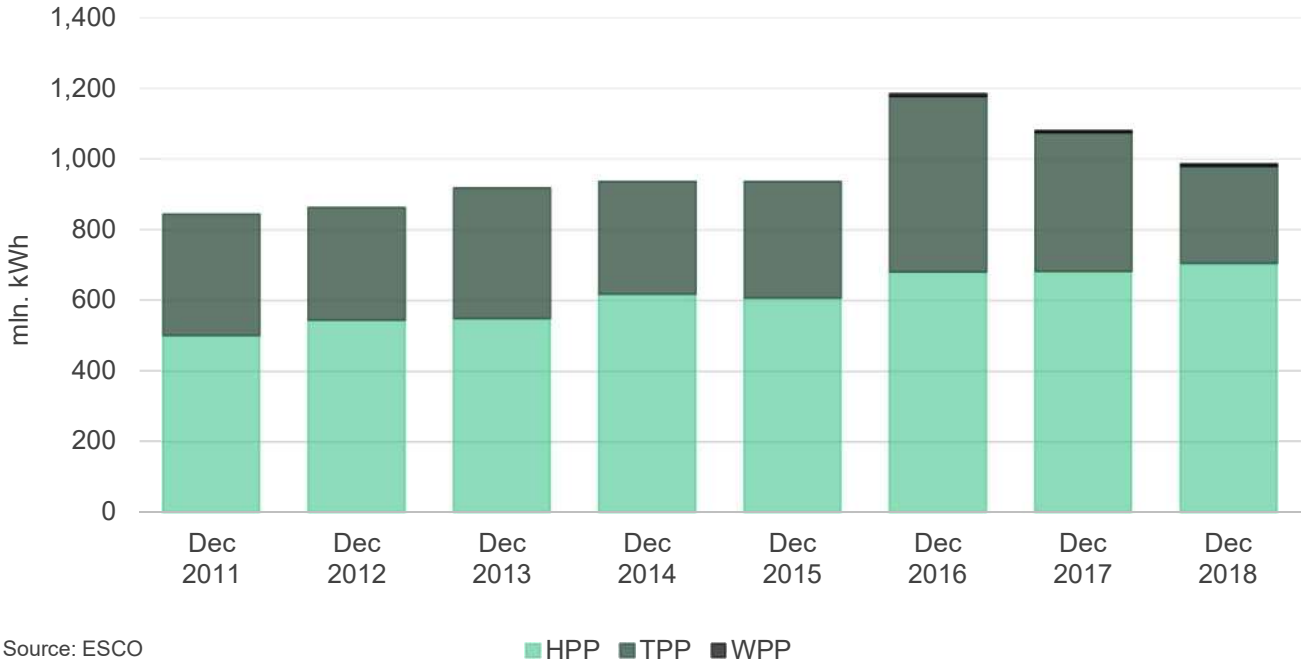
Figure 1 - **Electricity Consumption and Generation**



Source: Electricity System Commercial Operator (ESCO)

Among the different sources of electricity, hydropower remains dominant. Specifically, in December 2018, hydropower (HPP) generation amounted to 705 mln. kWh (71% of total); wind power (WPP) generation was 6 mln. kWh (1% of total), and thermal power (TPP) generation was 275 mln. kWh (28% of total) (Figure 2).

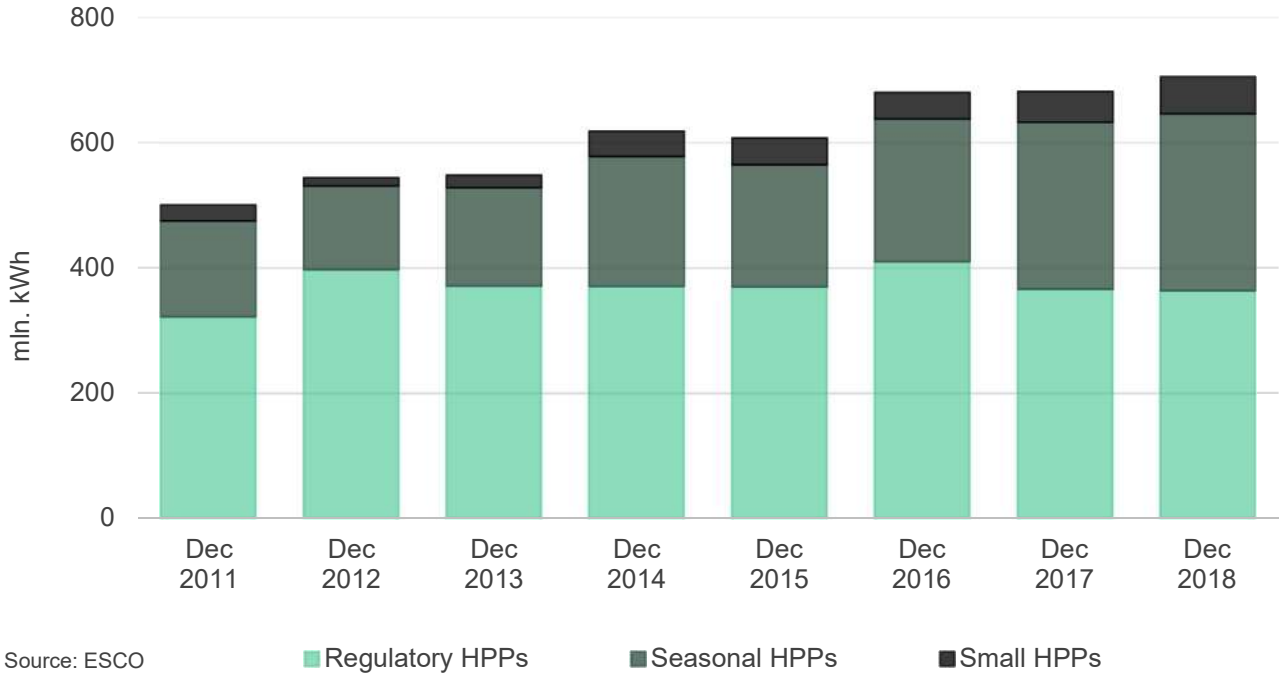
Figure 2 - **Electricity Generation by Sources**



Source: ESCO

Among hydropower generators, large (regulatory) HPPs produced 52% (363 mln. kWh) of electricity, while seasonal and small HPPs produced 40% (282 mln. kWh) and 8% (59 mln. kWh), respectively (Figure 3).

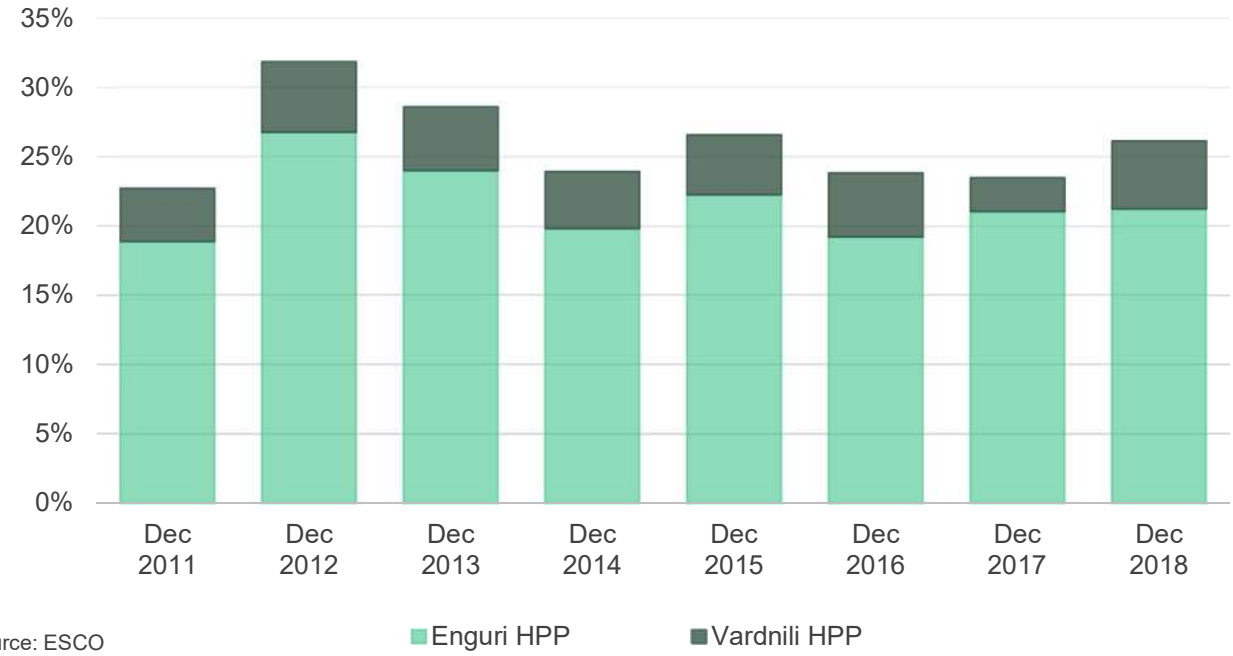
Figure 3 - **HPP Generation by Type**



Source: ESCO

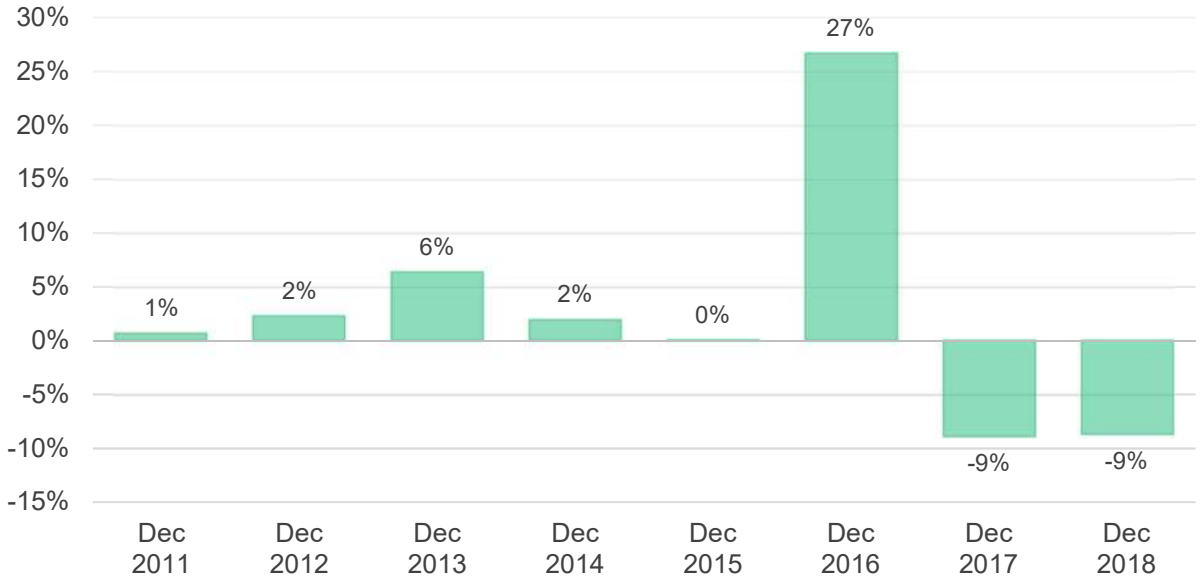
Among the large HPPs, Enguri and Vardnili generated the largest amounts of power, producing 257 mln kWh (26% of total generation), with 209 mln. kWh and 48 mln. kWh, respectively (Figure 4). They also represent around 71% of generation for regulatory HPPs.

Figure 4 - Share of Enguri and Vardnili in Total Generation



Source: ESCO

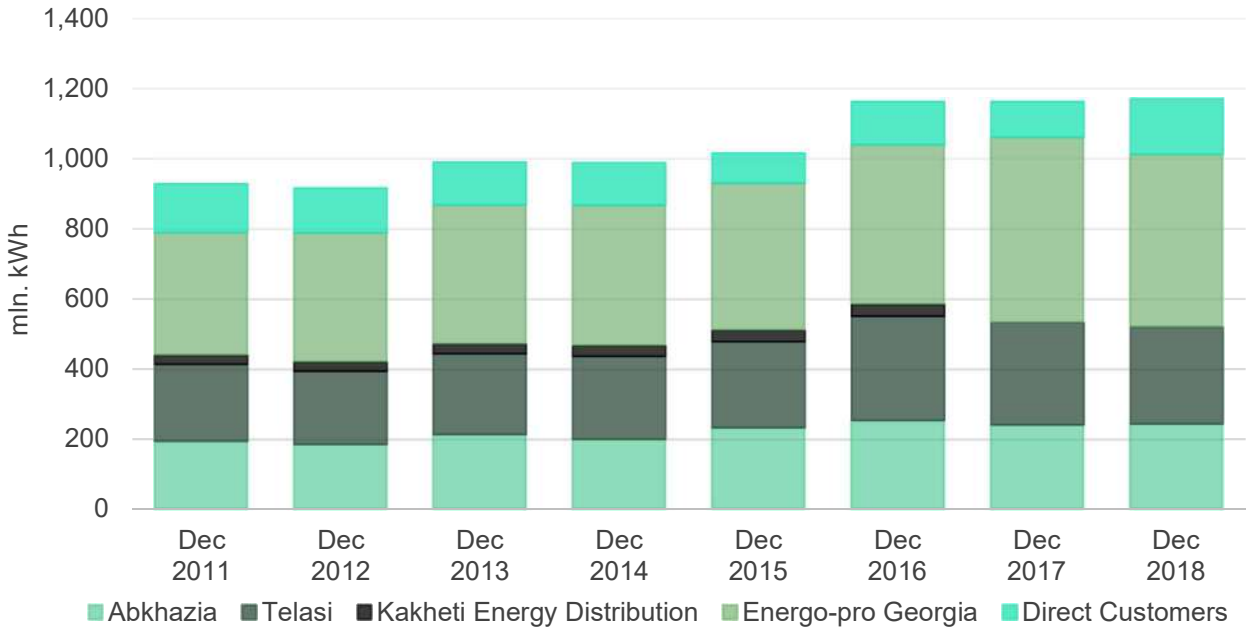
Figure 5 - Growth of Generation (%, y/y)



Source: ESCO

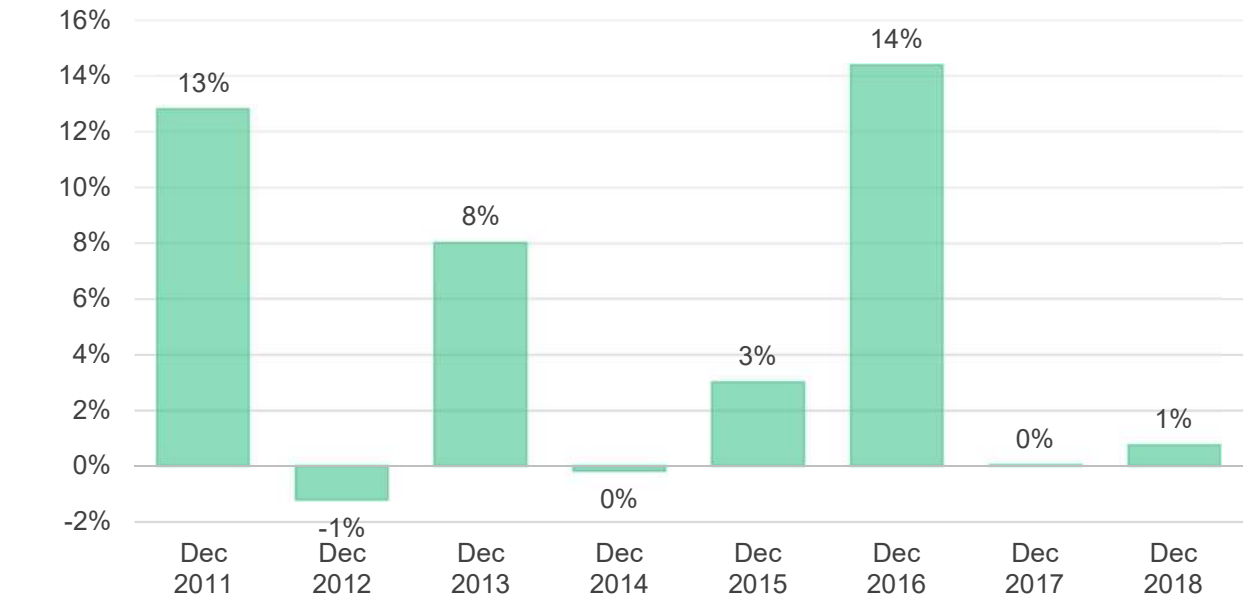
Total electricity demand came from: Energo-Pro Georgia[1] (42% - 492 mln. kWh), Telasi (24% - 276.2 mln. kWh), Abkhazia (21% - 243 mln. kWh), and direct customers (14% - 159 mln. kWh) (Figure 6). Overall, the annual increase in electricity consumption was 1% in December2018, compared to December2017 (Figure 7). Annual demand from direct consumers and Abkhazia increased respectively by 56% and 1%, while it decreased from Energo-Pro Georgia and Telasi, by 7% and 5% respectively.

Figure 6 - Electricity Consumption by Type of Customer



Source: ESCO

Figure 7 - Electricity Consumption Growth (%, y/y)

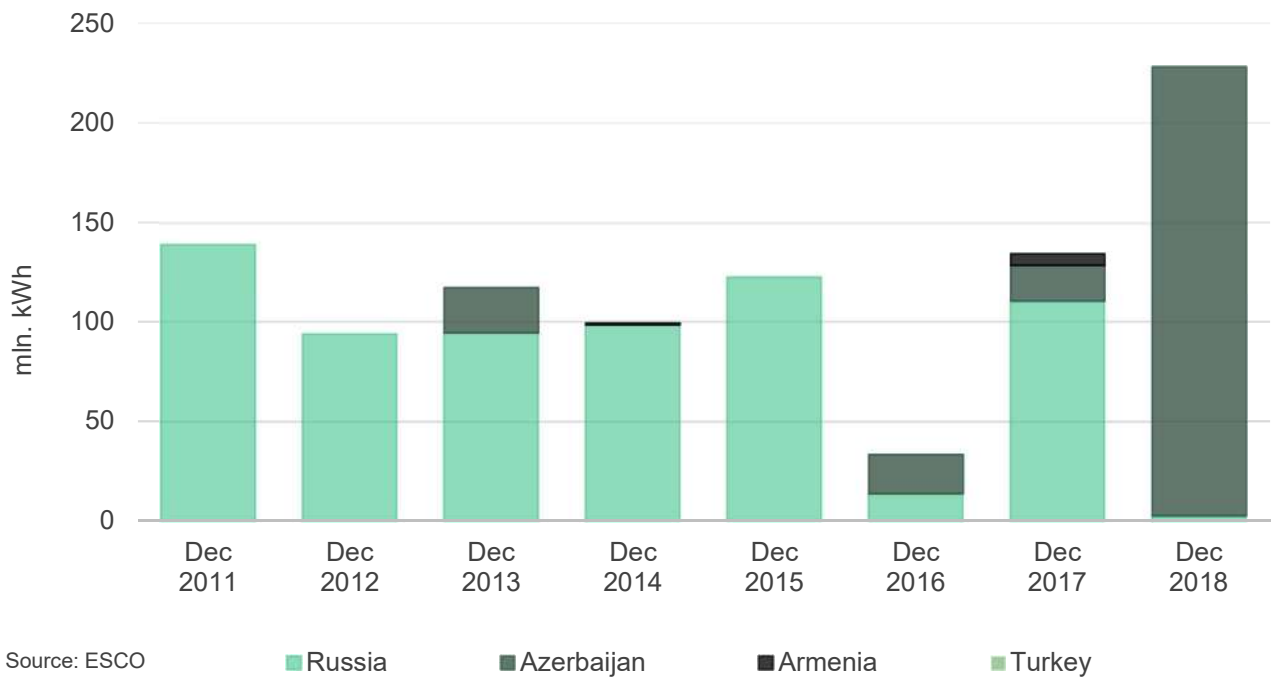


Source: ESCO

[1] Energo-Pro Georgia acquired Kakheti Energy Distribution in September 2017

In December 2018, Georgia imported 228 mln. kWh of electricity. 99% of this electricity was imported from Azerbaijan, 1% was imported from Russia (Figure 8). In December 2018, Georgia did not export any electricity.

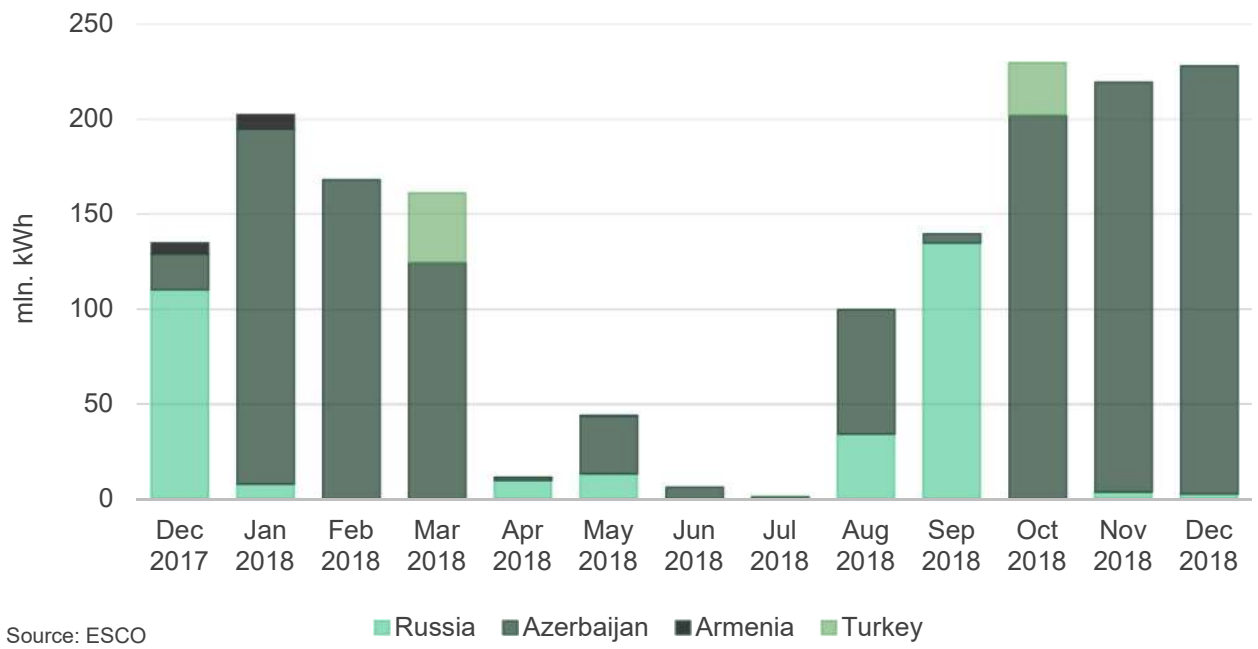
Figure 8 - Imports by Year



Source: ESCO

In December 2018, electricity imports increased by 4% compared to November 2018 and increased by 69% compared to the same month in 2017. As mentioned above, in this month the main electricity provider was Azerbaijan, strengthening its role of the main electricity provider to the Georgian system (Figure 9).

Figure 9 - Monthly Imports in 2018

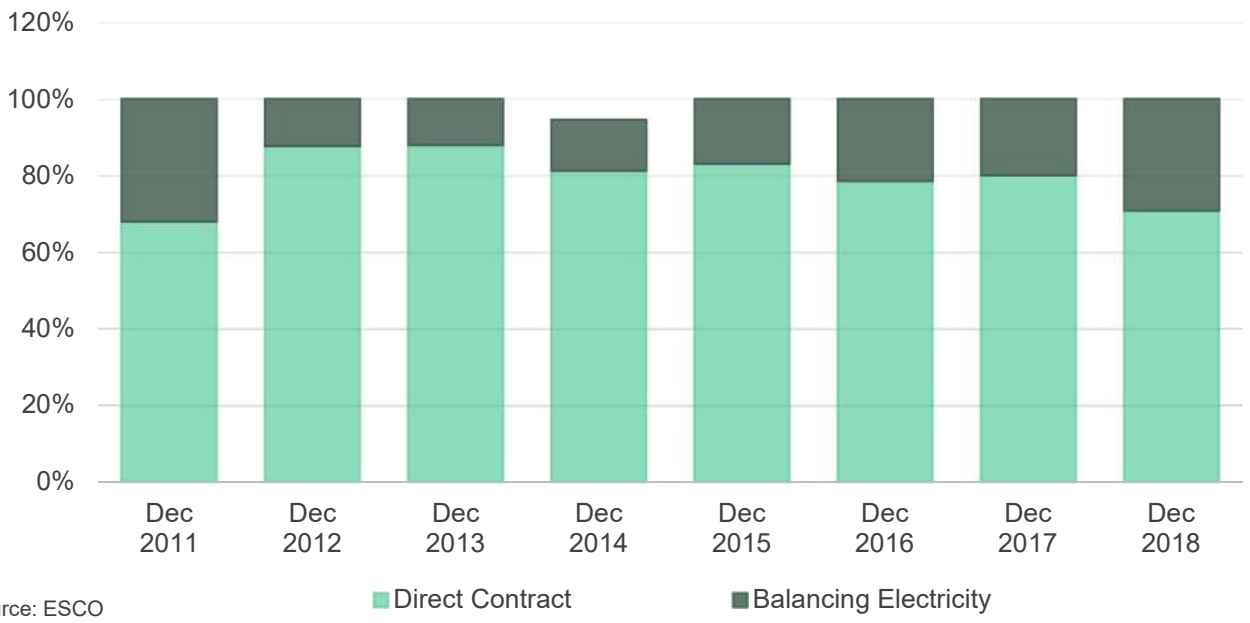


Source: ESCO

2. Market Operations

In December 2018, 71% of the electricity sold on/from the local market (844. mln. kWh) was sold through direct contracts. The remaining 29% (349 mln. kWh) was sold as balancing electricity (Figure 10).

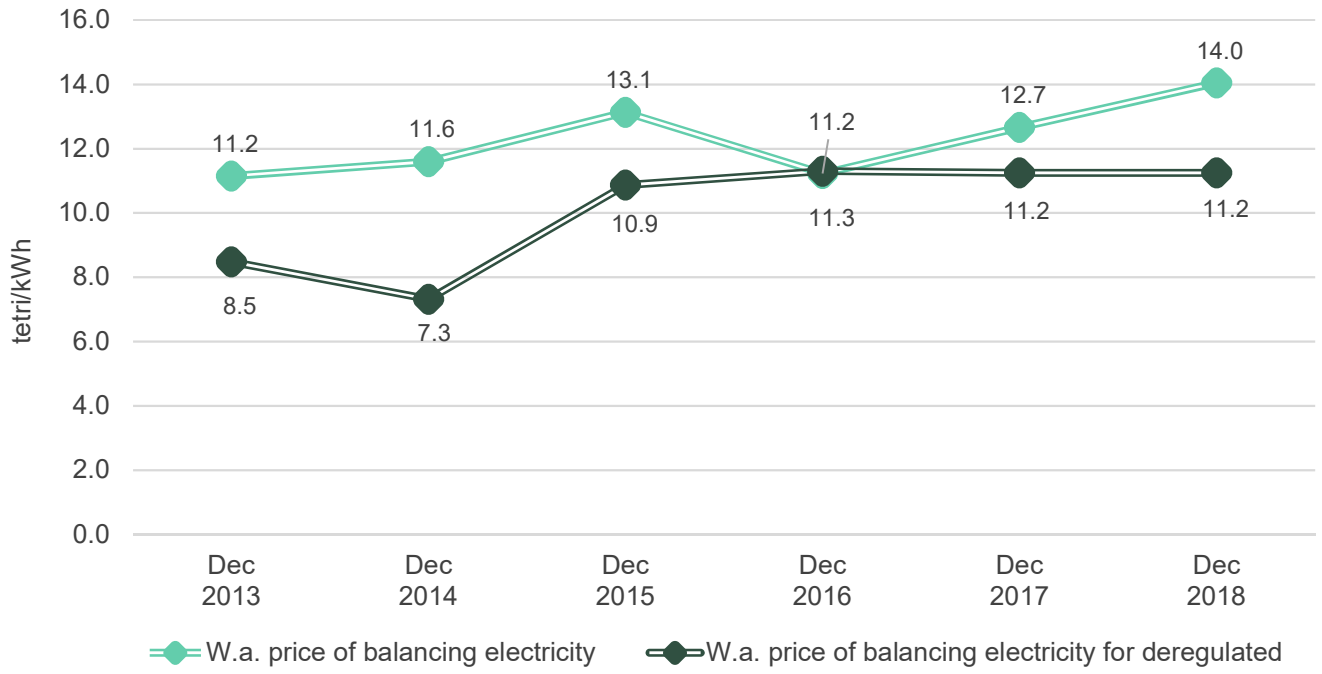
Figure 10 - Electricity Purchased / Sold Shares of Direct Contracts and Balancing Electricity



Source: ESCO

The weighted average price of balancing electricity was 14 tetri/kWh in December 2018, which is an annual increase of 11% compared to December 2017. As for the weighted average price for deregulated (small) HPPs, it remained stable at 11.2 tetri/kWh (Figure 11).

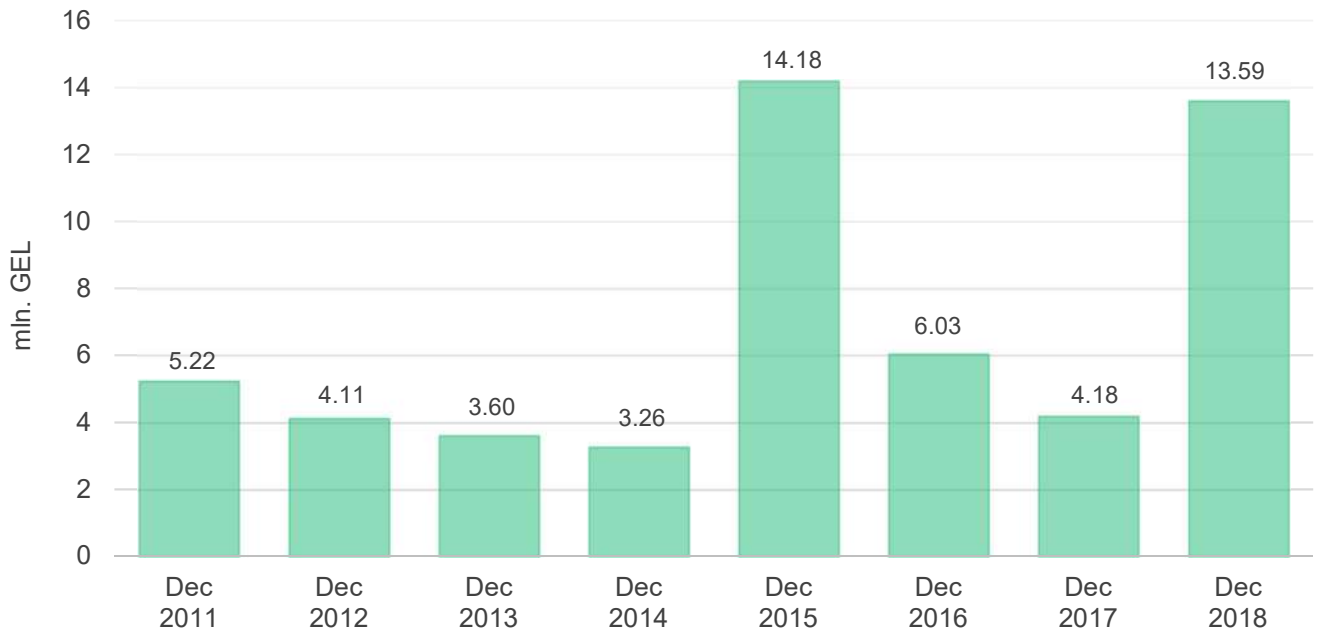
Figure 11 - Balancing Electricity Prices Weighted Average and Weighted Average Price for Deregulated HPPs



Source: ESCO

Guaranteed capacity payments in December 2018 were roughly 13.59 mln. GEL, more than tripled the amount paid in December 2017 (Figure 12).

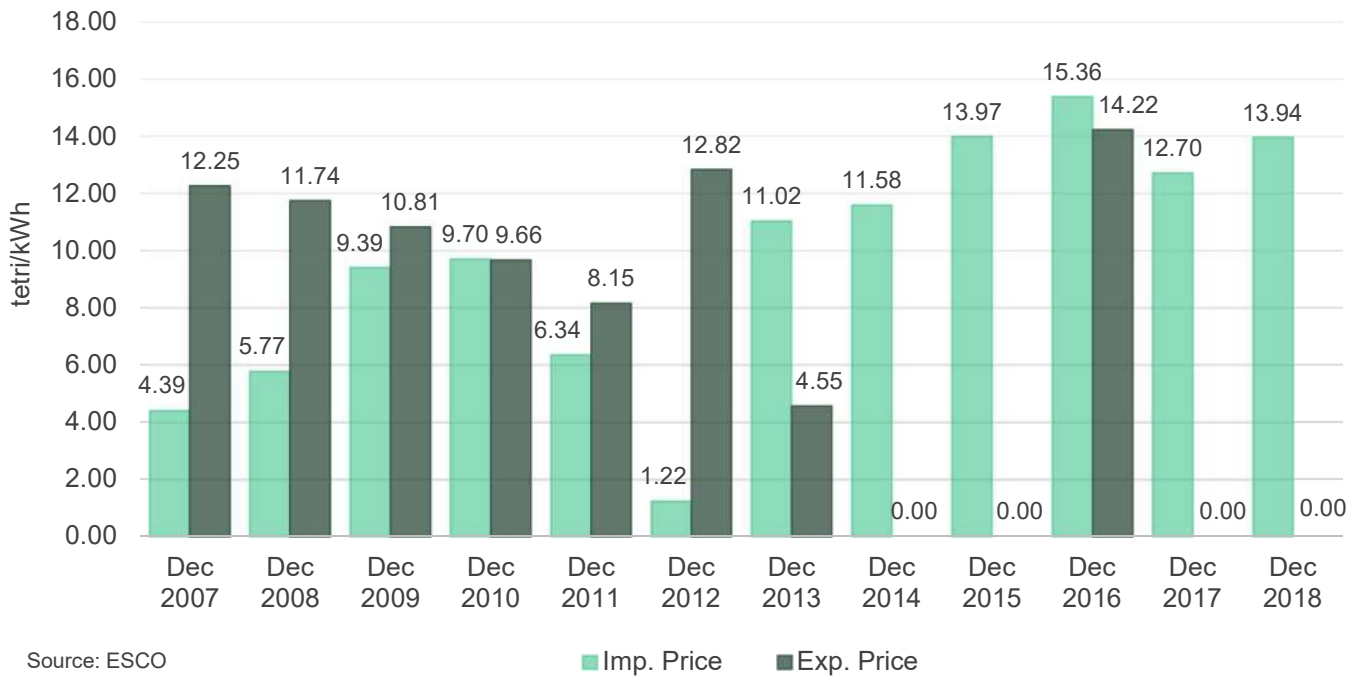
Figure 12 - Cost of Guaranteed Capacity



Source: ESCO

The average electricity import price in December 2018 increased to 5.2 ¢ (13.9 tetri) per kWh (an increase of 10%) compared to December 2017 (Figure 13).

Figure 13 - Prices Import/Export

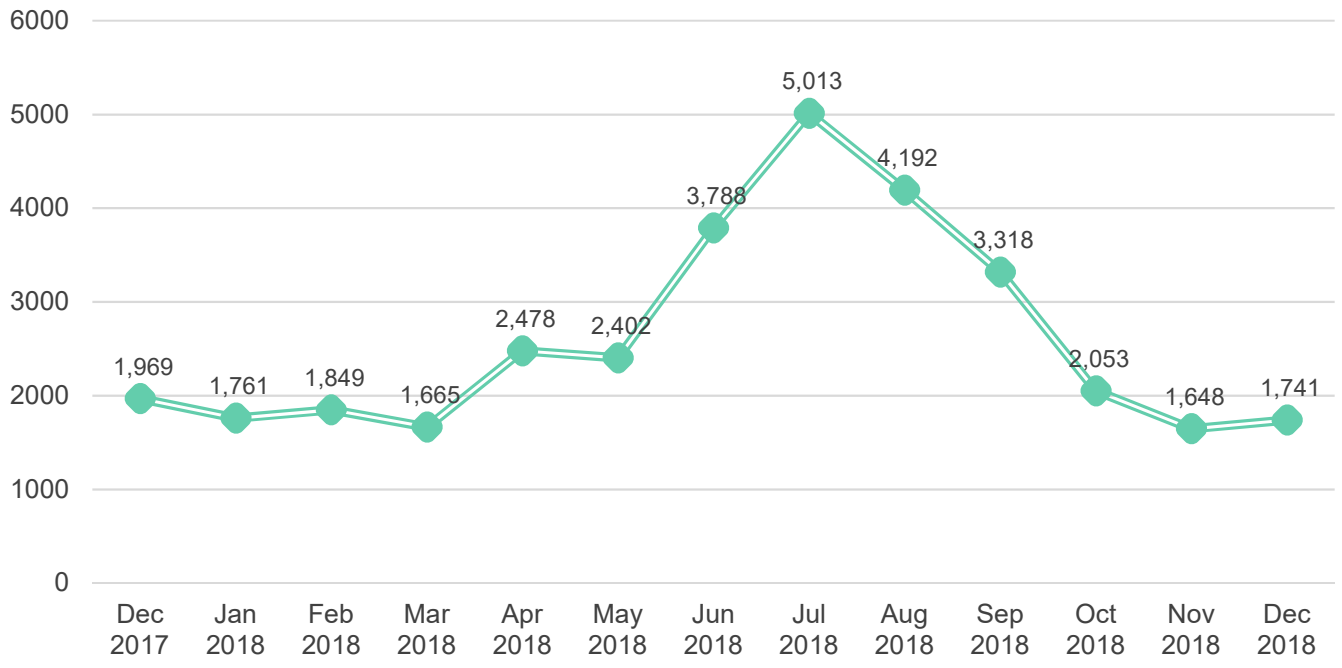


Source: ESCO

3. Market Concentration

In conclusion, we utilize the Hirschmann-Herfindahl (HHI) market concentration index to evaluate how competitive the generation segment of the market has been over the past 12 months. In December 2018, the Georgian electricity market was modestly concentrated, with an HHI value of 1741 (compared to the previous month slightly far away from the threshold for an un-concentrated market – 1,500 while the threshold for a highly concentrated market is 2,500) (Figure 14). The level of concentration is slightly lower, compared to the same period of the previous year (with an HHI value of 1969 in December 2017 the Georgian market was much closer to be classified as concentrated).

Figure 14 - **Hirschman-Herfindahl Index for Power Generation**



Source: ESCO