ISET

International School of Economics at TSU
Policy Institute

2021

ELECTRICITY MARKET REVIEW

ISET POLICY INSTITUTE
ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

Authors:

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

Guram Lobzhanidze
Researcher
guram.lobzhanidze@iset.ge

Erekle Shubitidze
Researcher
erekle.shubitidze@iset.ge

INFORMATION

- Electricity generation increased as a result of HPP generation increase, despite a decrease in TPP and WPP generation.
- Among the different sources of electricity, hydropower remained dominant with its share in generation of 81%.
- Electricity demand exceeded supply this year too.
- Imported electricity came mainly from Russia.
- Georgian exports increased significantly compared to the previous year and went mostly towards Turkey.
- According to the Hirschmann-Herfindahl Index (HHI), the Georgian electricity generation market remained concentrated (closer to the upper threshold).
- According to the Hirschmann-Herfindahl Index (HHI), the Georgian electricity consumption market remained concentrated, with a noticeable decreasing trend emerging.

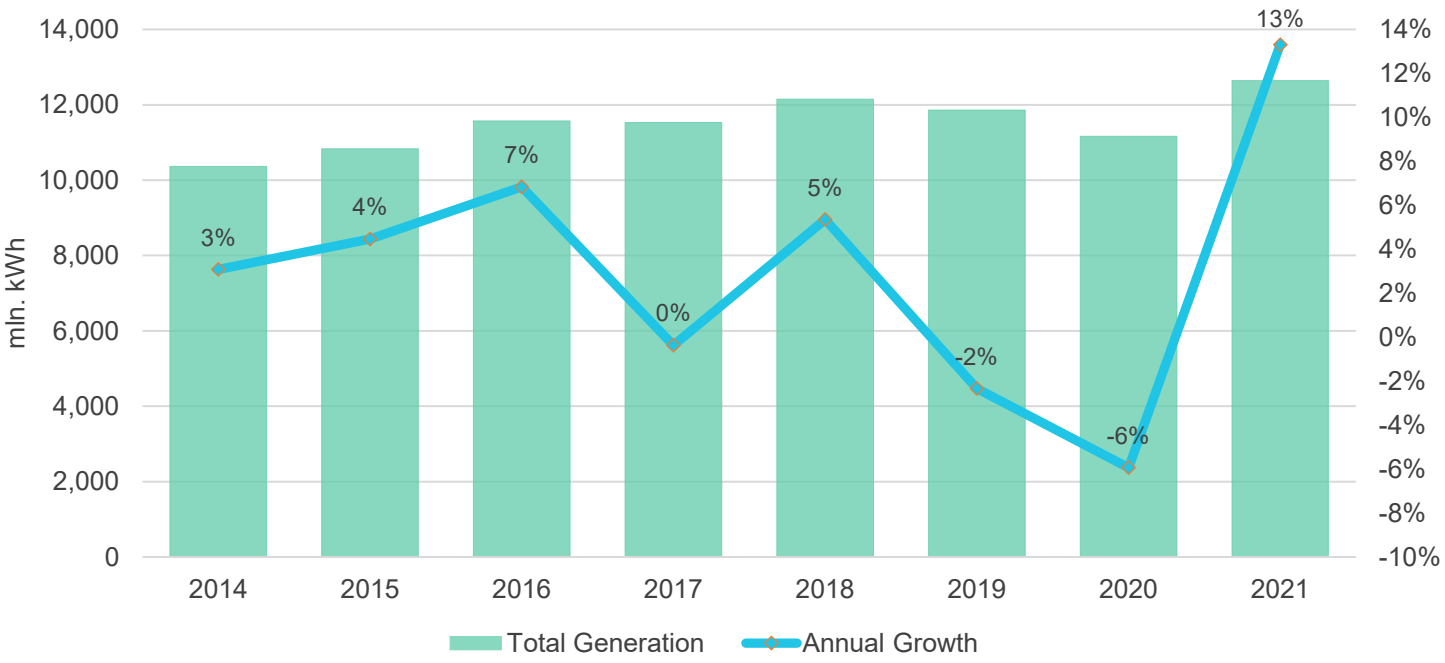
ABBREVIATION USED

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

1. Generation – Consumption – Trade

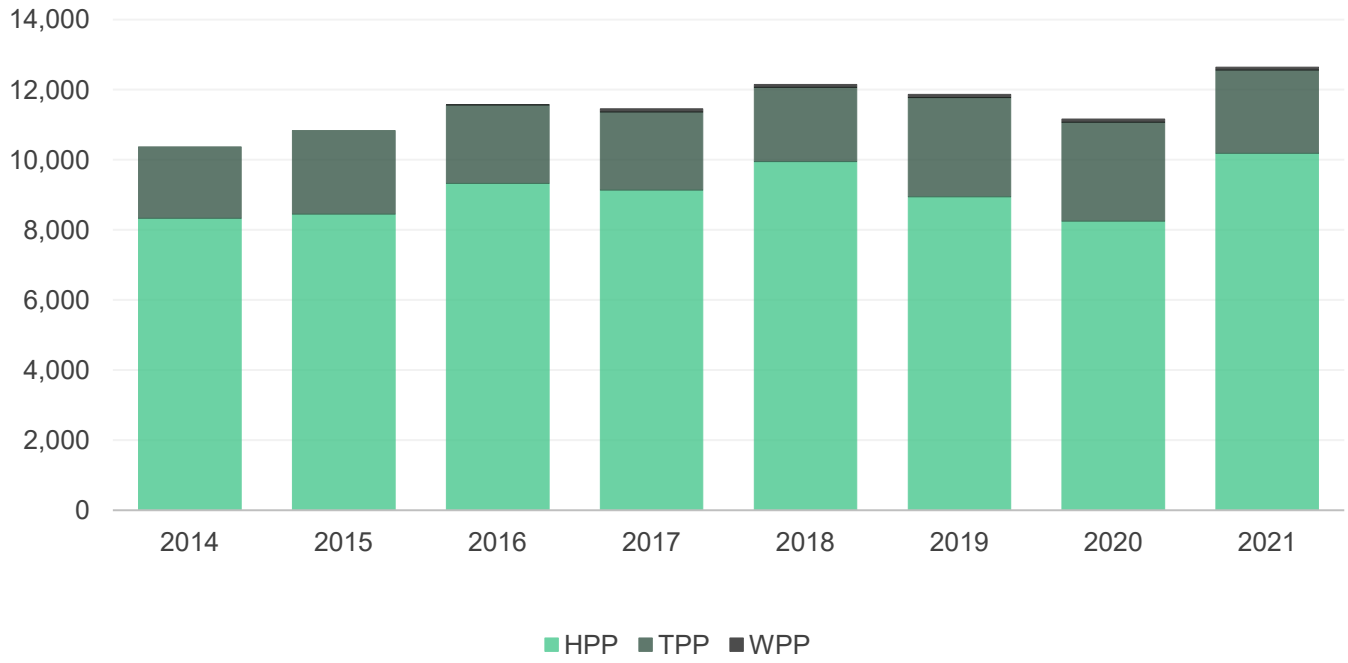
In 2021, Georgian power plants generated 12,645 mln. kWh of electricity. This represents a 13% increase in total generation compared to the previous year (in 2020, total generation was 11,160 mln. kWh) (Figure 1). The increase in generation on a yearly basis came from the increase in hydropower generation (23%), which more than offset the decrease in thermal power (-16%), and wind power generation (-8%).

Figure 1 - Electricity Generation and Annual Growth



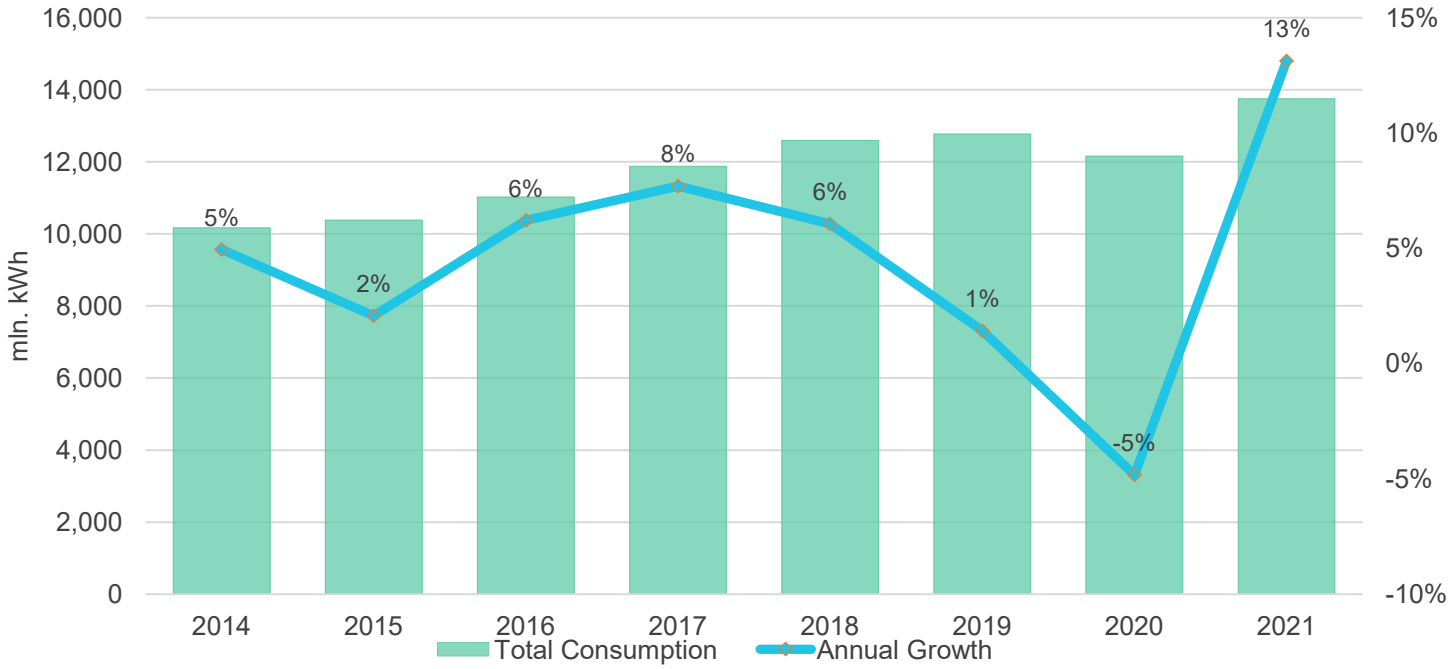
Among the different sources of electricity, hydropower remained dominant, reaching record generation for a single year. Specifically, in 2021 hydropower (HPP) generation amounted to 10,182 mln. kWh (81% of total); wind power (WPP) generation was 83 mln. kWh (1% of total), and thermal power (TPP) generation was 2,380 mln. kWh (19% of total) (Figure 2).

Figure 2 - Electricity Generation by Sources



Consumption of electricity in the local market was 13,753 mln. kWh, also a record high for a single year. Overall, the annual increase in electricity consumption was 13% in 2021 (compared to 2020 -12,157 mln. kWh) (Figure 3). In 2021, total consumption exceeded generation by 1,108 mln. kWh, which is approximately 8% of the total consumption and 9% of the amount generated (compared to 997 mln. kWh and 9% deficit of total generation for 2020).

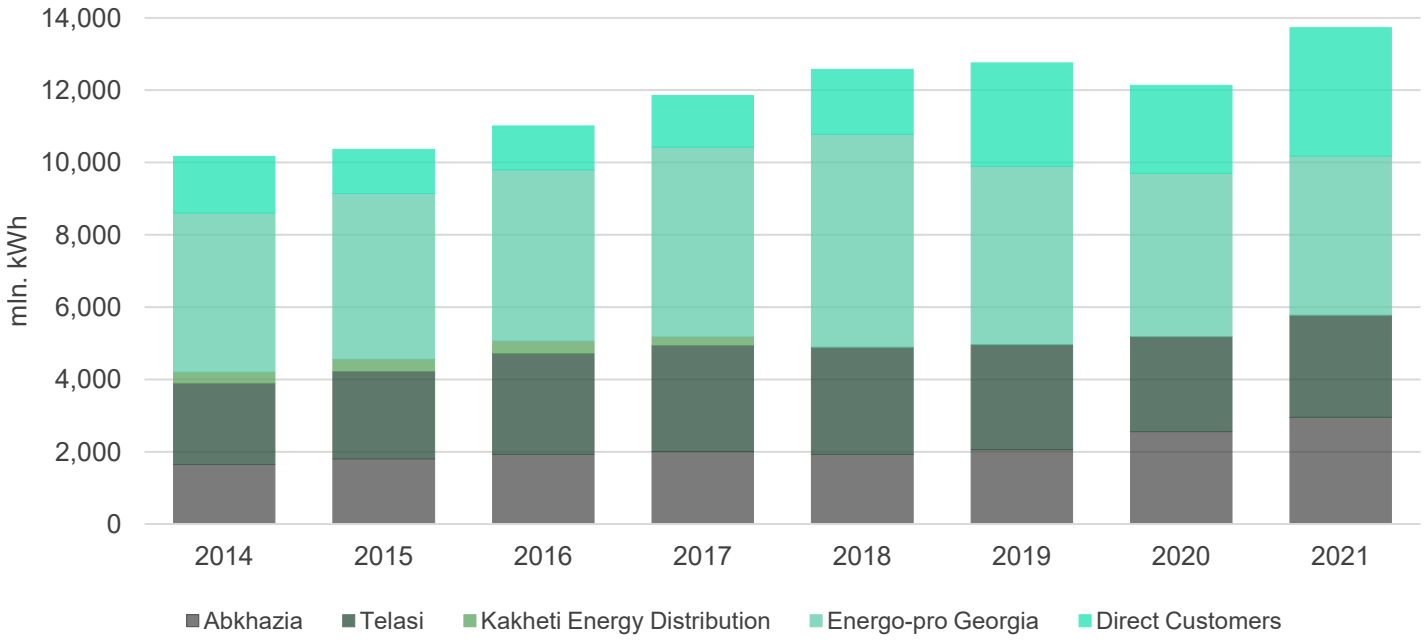
Figure 3 - Total Consumption and Annual Growth



Total electricity consumption in Georgia came from: Energo-Pro Georgia[1] (32% - 4,400 mln. kWh), Telasi (21% - 2,819 mln. kWh), Abkhazia (21% - 2,956 mln. kWh), and direct customers (26% - 3,554 mln. kWh) (Figure 4). Annual demand from Abkhazia, Telasi, and direct customers increased by 16%, 7%, and 46%, respectively while in the case of Energo-Pro Georgia it decreased by 2%.

Figure 4 - Electricity Consumption by Type of Customer

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


14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
mln. kWh
2014
2015
2016
2017
2018
2019
2020
2021
Abkhazia
Telasi
Kakheti Energy Distribution
Energo-pro Georgia
Direct Customers

In 2021, electricity imports increased by 25% from 1,610 to 2,006 mln. kWh compared to 2020 (Figure 5). Unlike the four straight years prior to 2021, in 2021 Russia became the main importing partner instead of Azerbaijan. Russia provided 62% of total imports, Azerbaijan provided 30%, and Turkey provided the remaining 8% (Figure 6).

Figure 5 - **Imports and Annual growth**

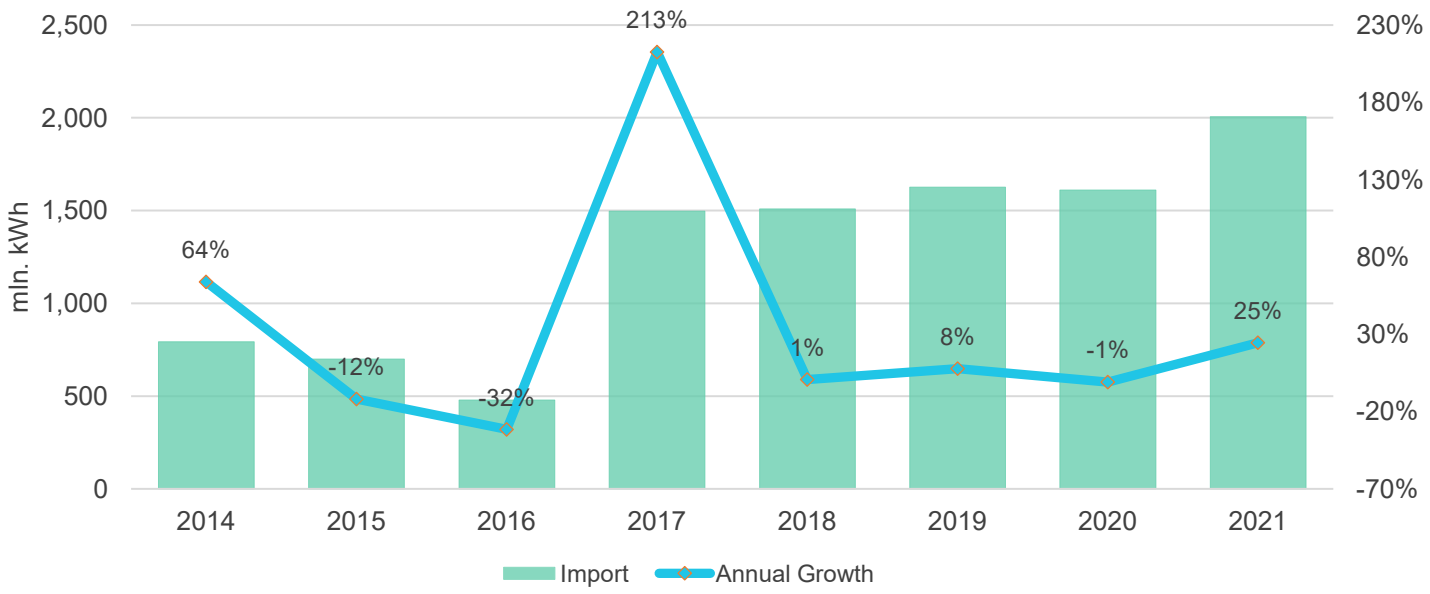
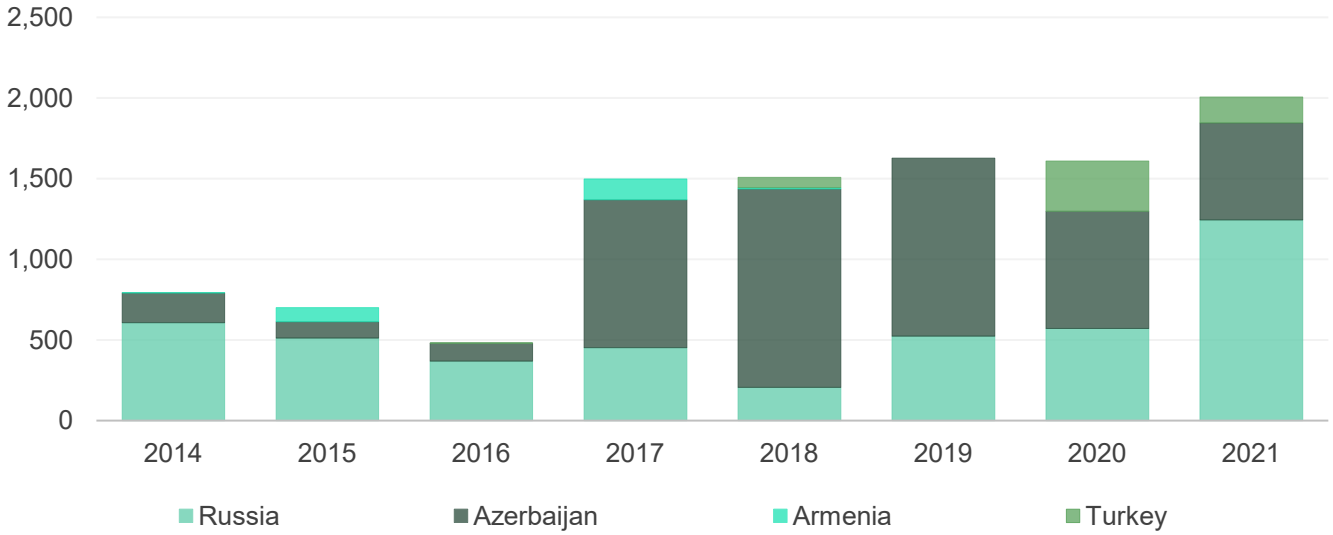


Figure 6 - **Imports by Country**



In 2021, electricity exports increased by 154%, from 154 to 391 mln. kWh compared to 2020 (Figure 7). In this year, the main electricity export partner was Turkey, absorbing 56% of the total electricity exported. The second major export partner was Armenia, purchasing 37% of exported electricity. The remaining 6% was demanded by Azerbaijan (Figure 8).

Figure 7 - Exports and Annual Growth

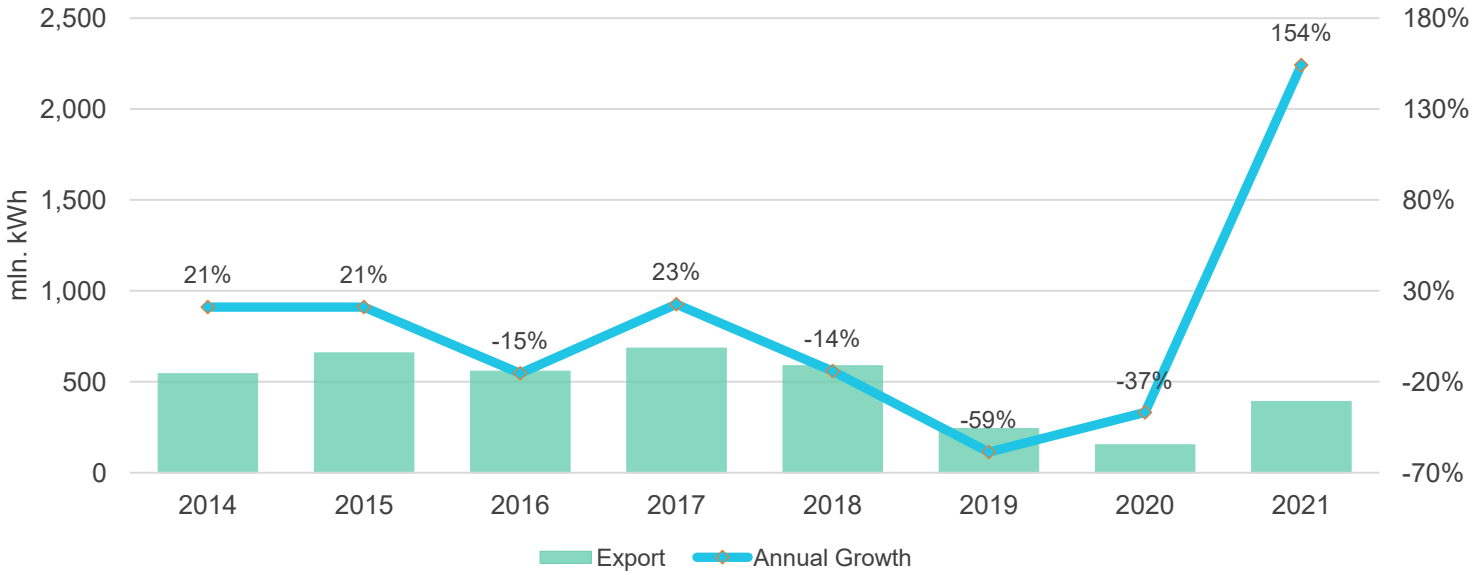
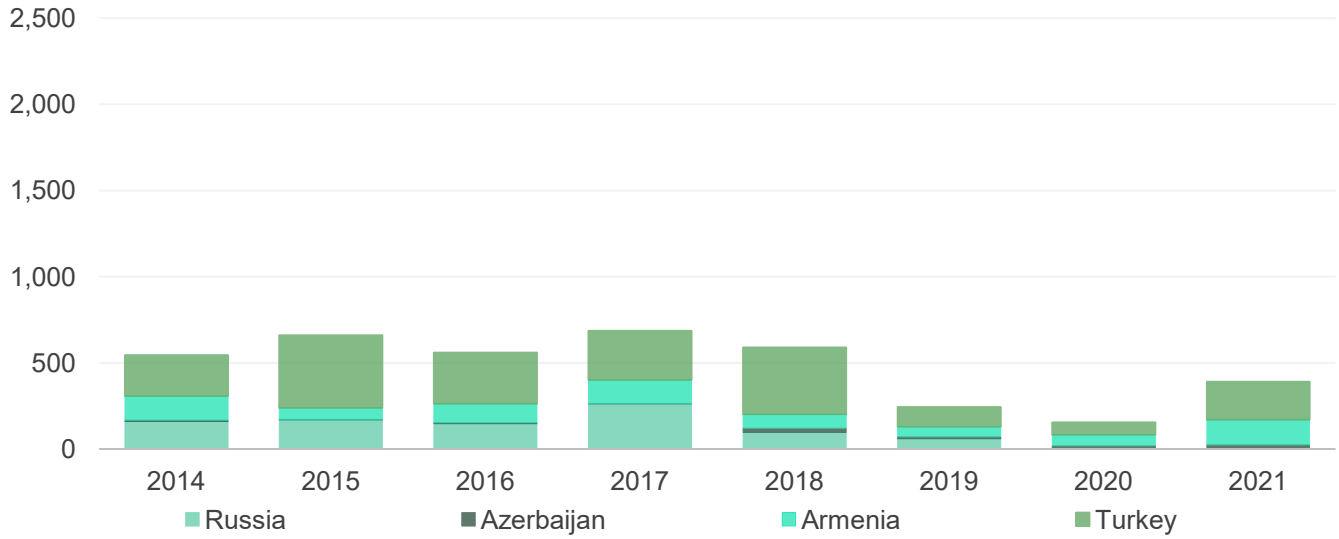
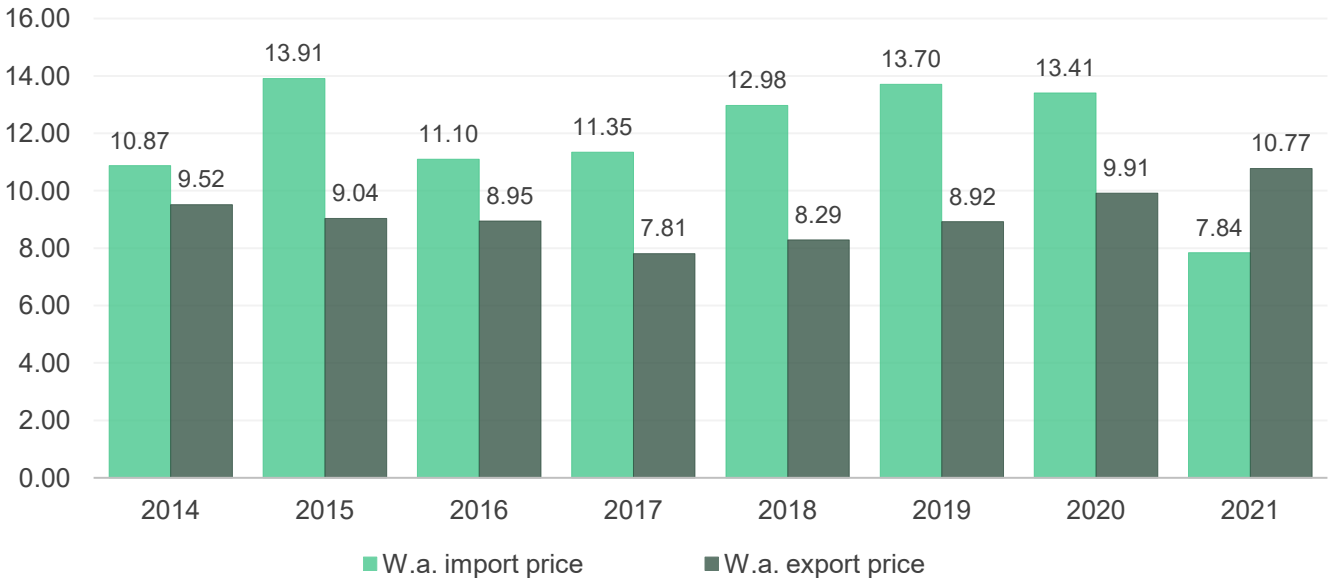


Figure 8 - Exports by Country



The weighted average electricity import price in 2021 decreased to 7.84 tetri per kWh (a decrease of 42%) compared to 2020. As for weighted average export price, it increased to 10.77 tetri per kWh (an increase of 9%) compared to 2020 (Figure 9).

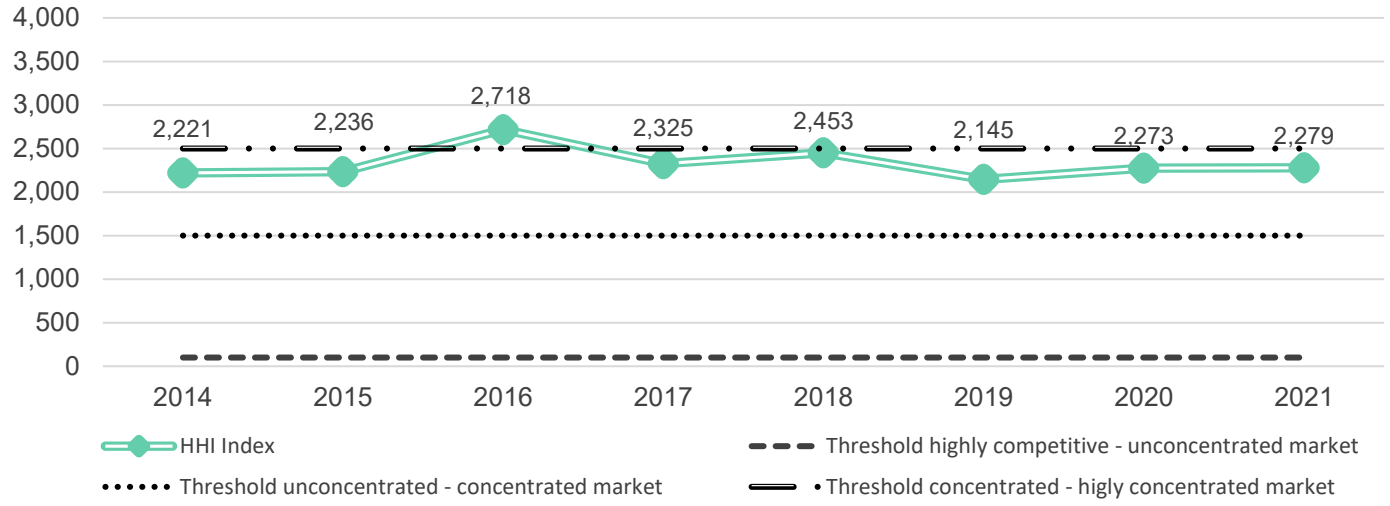
Figure 9 - Prices Import/Export



2. Market Concentration

Finally, 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 years. As shown in Figure 10, in 2021 the Georgian electricity generation market was close to the threshold for a highly concentrated market, with an HHI value of 2,279 (the threshold for an un-concentrated market is 1,500, while a highly concentrated market is 2,500). The level of concentration is slightly higher than in 2020 (2,273), and lower than in 2016, the most recent year in which the index passed the 2,500 threshold.

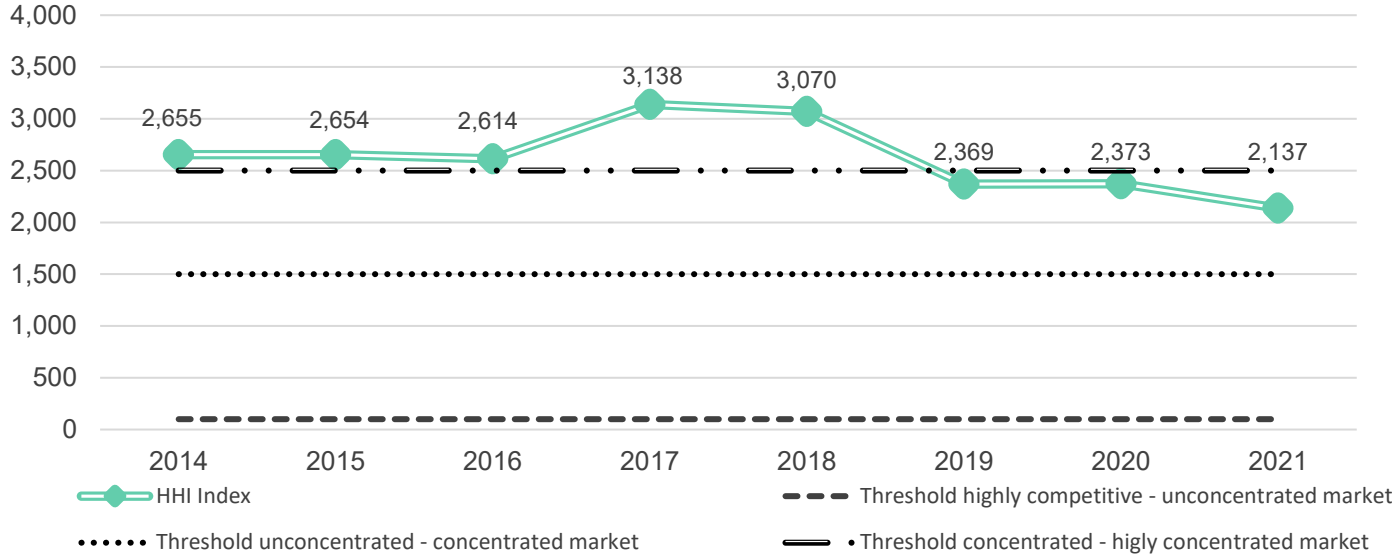
Figure 10 - Yearly Hirschman-Herfindahl Index for Power Generation



Source: ESCO

On the consumption side, the HHI index for the electricity wholesale market has historically been above the threshold value of 2,500, which qualifies it as highly concentrated. The HHI index had shown slow growth since 2012, jumped above 3,000 in 2017 and remained there in 2018 (to 3,138 and 3,070, respectively) (Figure 11). In 2021, for the third year in a row the HHI index for the electricity wholesale market was below the threshold value of 2,500. According to the HHI index in 2021, the demand side of the Georgian electricity consumption market was concentrated with an HHI value 2,137.[2] The recent trend seems to be decreasing.

Figure 11 - Yearly Hirschman-Herfindahl Index for Electricity Consumption



Source: ESCO

[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 the decrease in the HHI consumption index as many individual buyers joined the market.