

# ISET

International School of Economics at TSU  
Policy Institute



## ENERGY MARKET REVIEW

---

BIANNUAL | QUARTER 1-2, 2020

# ISET POLICY INSTITUTE

## ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

### Authors:

Norberto Pignatti  
Policy Center Head

✉ [n.pignatti@iset.ge](mailto:n.pignatti@iset.ge)

Mariam Tsulukidze  
Researcher

✉ [m.tsulukidze@iset.ge](mailto:m.tsulukidze@iset.ge)

Mariam Lobjanidze  
Researcher

✉ [m.lobjanidze@iset.ge](mailto:m.lobjanidze@iset.ge)

## ELECTRICITY MARKET REVIEW

- In the first and the second quarter of 2020 power generation decreased compared to the same period in 2019.
- There was an increase in electricity consumption in the first quarter of 2020, while a substantial decrease in consumption in the second quarter of the year (on annual basis) was clearly caused by the COVID-19 lockdown.
- In the first quarter of the year the shares of HPP and TPP generation in total generation were extremely close.
- Interestingly, electricity consumption in Abkhazia increased substantially in the second quarter of the year, compared to the same period in 2019, while in the rest of the country consumption mostly decreased.
- In the first quarter of the year the electricity imports and exports increased compared to the previous year, while in the second quarter cross-border electricity trade was unsubstantial.
- In the first and the second quarters of 2020 the concentration in the Demand and in the Supply sides of the electricity market decreased compared to the corresponding period of the last year.

## NATURAL GAS SUPPLY

- There was an initial increase of natural gas supply in the first quarter of 2020, accompanied a decrease in the second quarter.
- Unsurprisingly, almost all the natural gas supplied to the market was imported from Azerbaijan, Russian and Armenia, with Azerbaijan holding the highest share in the total supply.
- There was an increase in natural gas import prices in the first quarter, while there was a substantial decrease in the second quarter of the year.
- Both the retail and wholesale markets of the natural gas remained highly concentrated in both quarters, as in the corresponding period of the previous year.

## OIL PRODUCT SUPPLY

- In the first quarter of 2020, the total supply of oil products slightly increased, while in the second quarter there was a substantial decrease, apparently due to COVID-19 lockdowns.
- The volume of petroleum and diesel trade decreased substantially in the second quarter of the year.
- In both quarters, most of the Georgian petroleum imports came from Russia, Romania and Bulgaria, while the majority of the diesel imports came from Azerbaijan, Turkmenistan, Russia and Romania.
- Unsurprisingly, import prices on petroleum and diesel plummeted in the second quarter of the year.
- However, the price of reexported diesel substantially increased in the second quarter of the year.

## ABBREVIATION USED

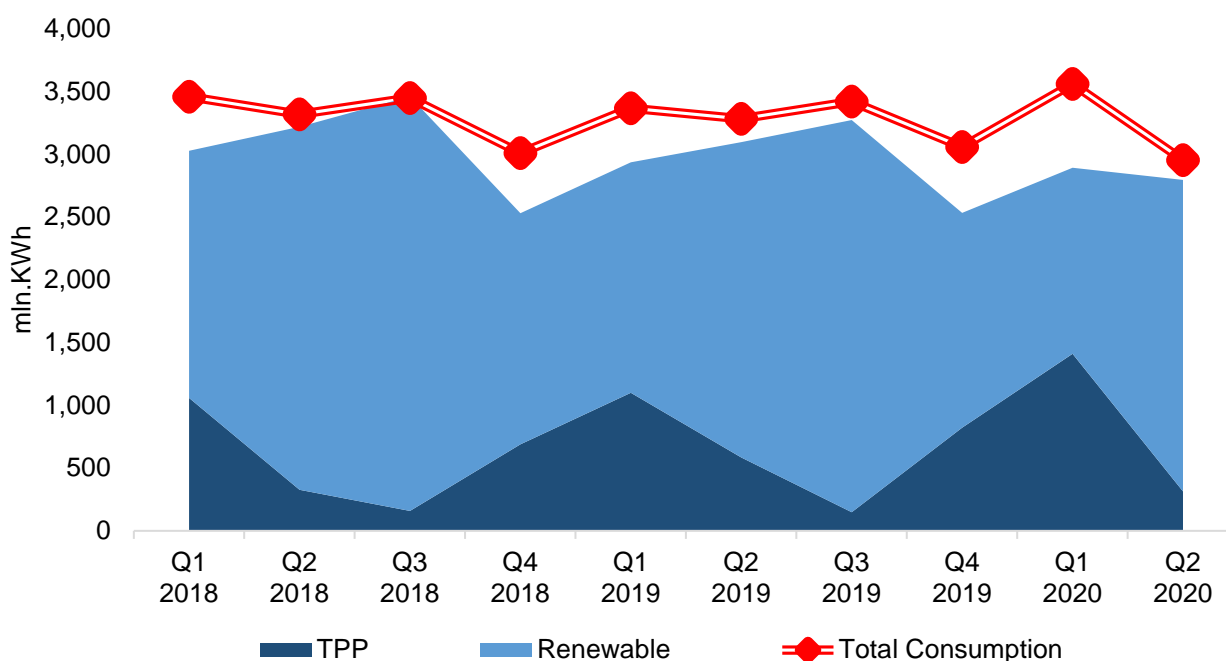
Mln – million  
Thous - thousand  
kWh – kilowatt-hour  
HPP – Hydro Power Plant  
WPP – Wind Power Plant  
TPP – Thermal Power Plant  
HHI - Hirschmann-Herfindahl Index

## GENERATION – CONSUMPTION – TRADE

In the first and the second quarters of 2020, Georgian power plants generated 2,893 mln. and 2,797 mln. kWh of electricity, respectively (Figure 1). This represents a 1.5% and 9.7% decrease in total generation compared to the corresponding periods of the previous year (in 2019, the total generation in Q1 was 2,936 mln. kWh and 3,097 mln. kWh in Q2). On an annual basis, the reduction in generation in the first quarter of 2020 was derived from a 19.6% decline in hydro power generation, offsetting the 8.7% and 28.3% annual increase in wind and thermal power generation. The decrease in production in the second quarter is, instead, related to the 46.2% and 1.4% decrease in thermal and hydro power generation, more than offsetting the 20.2% increase in wind power generation.

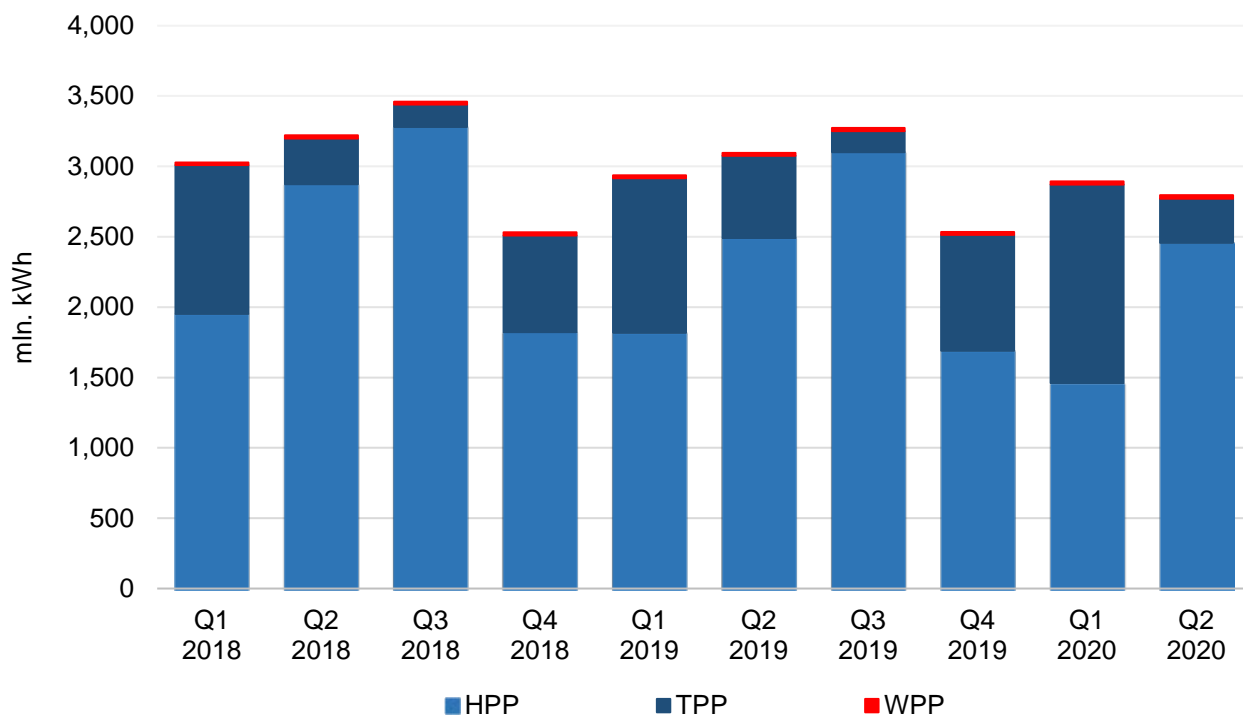
In the first two quarters of 2020, electricity consumption on the local market amounted to 3,491 mln. (Q1) and 2,883 mln. kWh (Q2) (+3.9% and -8% compared to the first and second quarters of 2019, respectively) (Figure 1). Moreover, power consumption exceeded generation by 598 mln. and 86 mln. kWh, 20.7% and 3.1% of total generation, respectively (in 2019 the difference between total generation and consumption resulted in a shortage in the first quarter of 423 mln. kWh, around 14.4% of the total generation, and 38 mln. kWh, around 1.2% of the total generation, in the second quarter).

**FIGURE 1 | ELECTRICITY CONSUMPTION AND GENERATION**

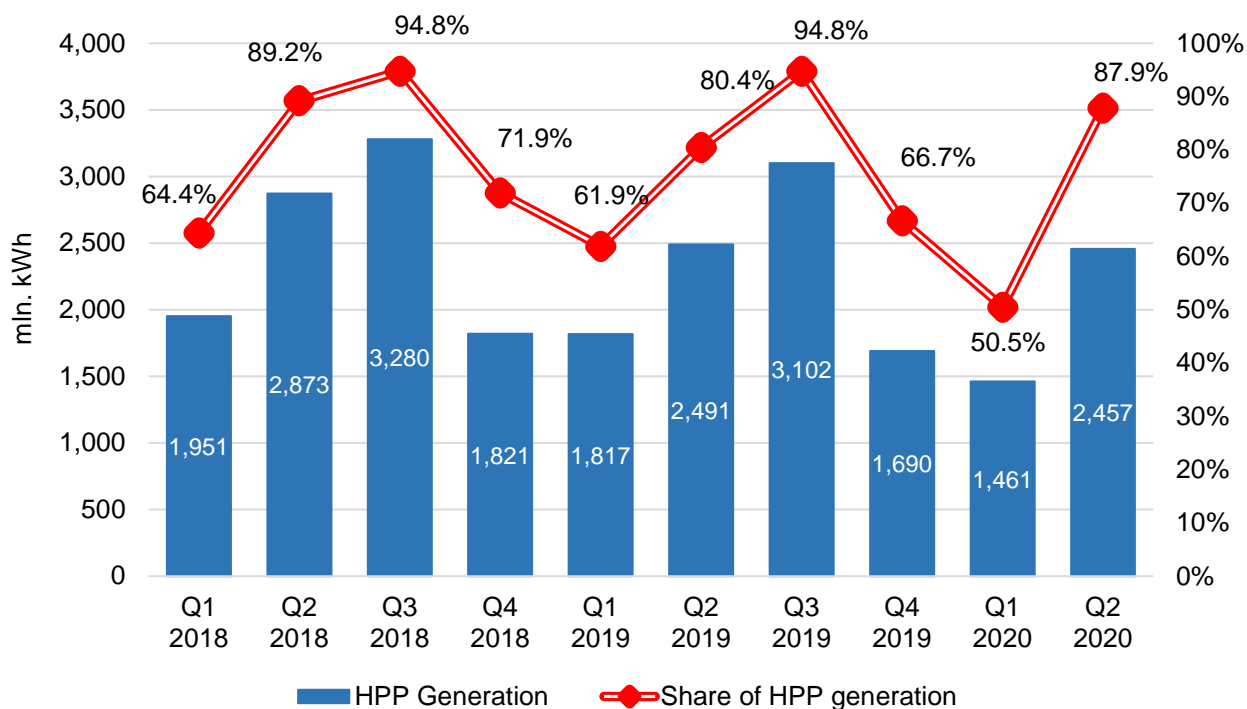


Source: Electricity System Commercial Operator (ESCO)

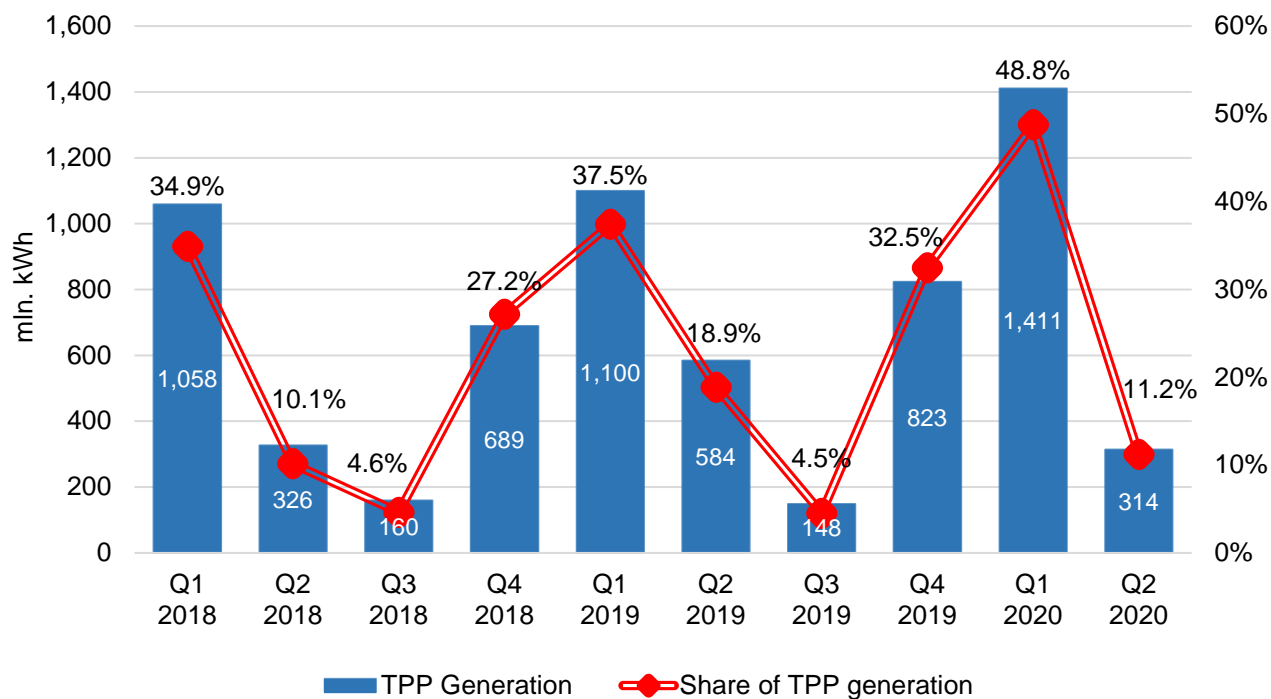
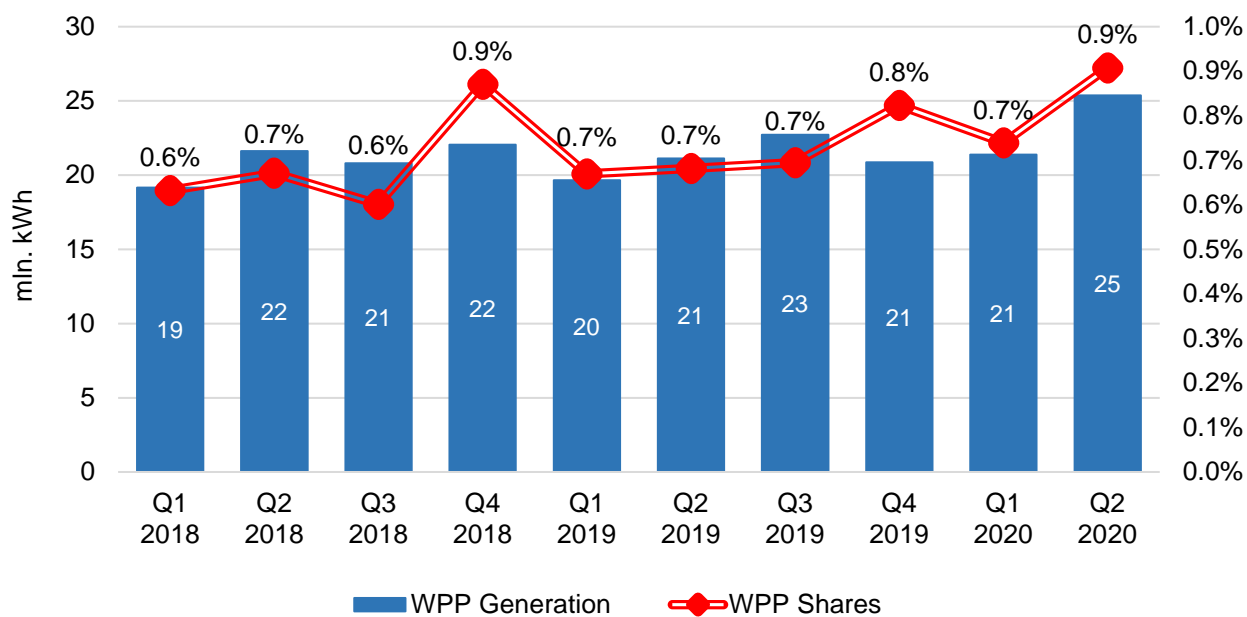
Electricity was largely generated from hydropower plants (HPPs), both in the first and second quarters of 2020. With hydro power generation amounting to 1,461 mln. (50.5% of the total) and 2,457 mln. kWh (87.9% of the total), respectively (Figure 3), where thermal power (TPP) generation reached 1,411 mln. (48.8% of the total) and 314 mln. kWh (11.2% of the total) (Figure 4). The remainder was generated by wind power plants (WPP) and amounted to 21 mln. (0.7% of the total) and 25 mln. kWh (0.9% of the total) in the first and the second quarters of the year (Figure 5).

**FIGURE 2 | ELECTRICITY GENERATION BY SOURCE**


Source: ESCO

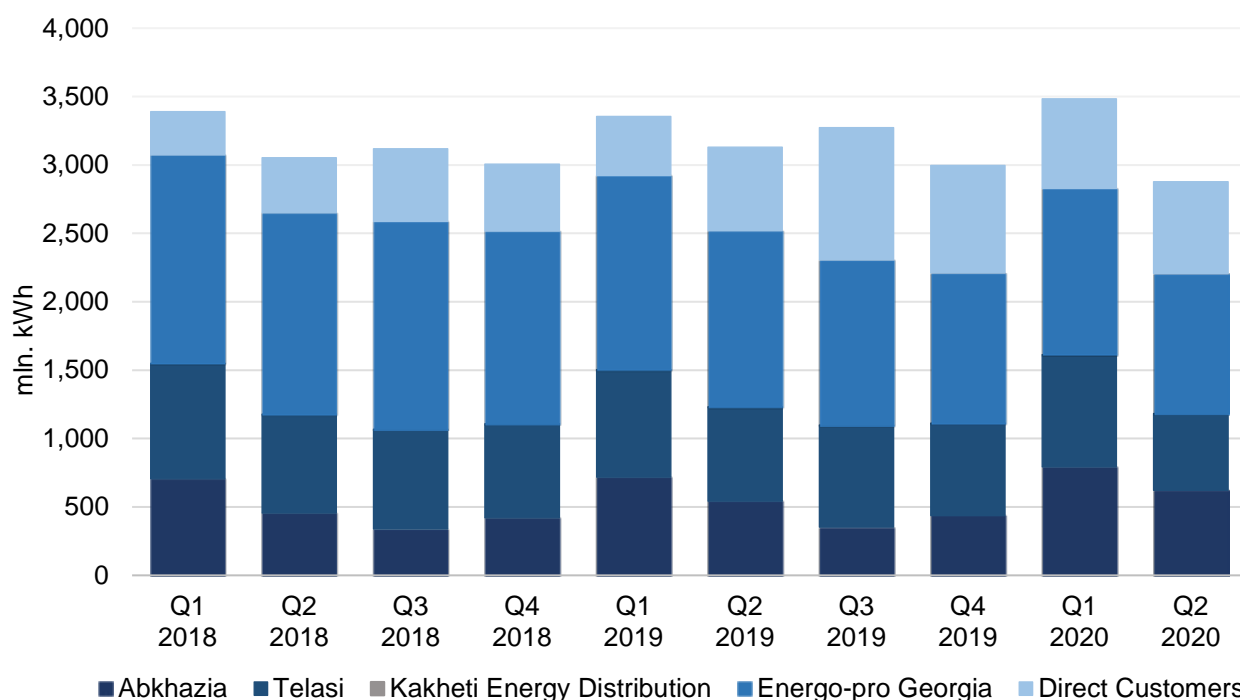
**FIGURE 3 | HPP GENERATION AND SHARE IN TOTAL GENERATION**


Source: ESCO

**FIGURE 4 |** TPP GENERATION AND SHARE IN TOTAL GENERATION**FIGURE 5 |** WPP GENERATION AND SHARE IN TOTAL GENERATION

The total demand for electricity came from: Energo-Pro Georgia<sup>1</sup> (34.8% - 1,216 mln. kWh (Q1) and 35.5% - 1,023 mln. kWh (Q2)); Abkhazia (22.7% - 793 mln. kWh (Q1) and 21.6% - 622 mln. kWh (Q2)); Telasi (23.5% - 820 mln. kWh (Q1) and 19.5% - 562 mln. kWh (Q2)); and direct to customers (18.8% - 655 mln. kWh (Q1) and 23.3% - 671 mln. kWh (Q2)) (Figure 6). In the first quarter of 2020 demand from Abkhazia, Telasi, and directly to customers increased by 10.4%, 4.3%, and 51.5%, respectively, while the demand from Energo-Pro Georgia decreased by 14.3%. In the second quarter, demand from Energo-Pro Georgia and Telasi decreased by 20.6% and 18.6%, although demand from Abkhazia and direct customers kept increasing, by 14.6% and 10%, respectively.<sup>2</sup>

**FIGURE 6 | ELECTRICITY CONSUMPTION BY TYPE OF CUSTOMER**

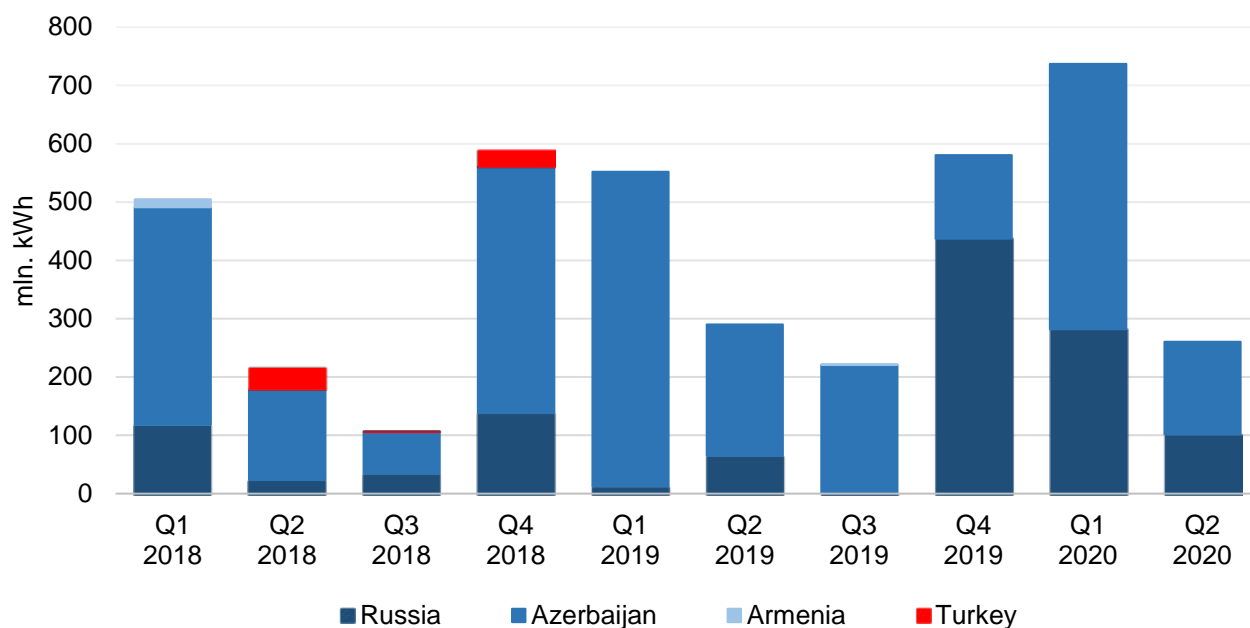
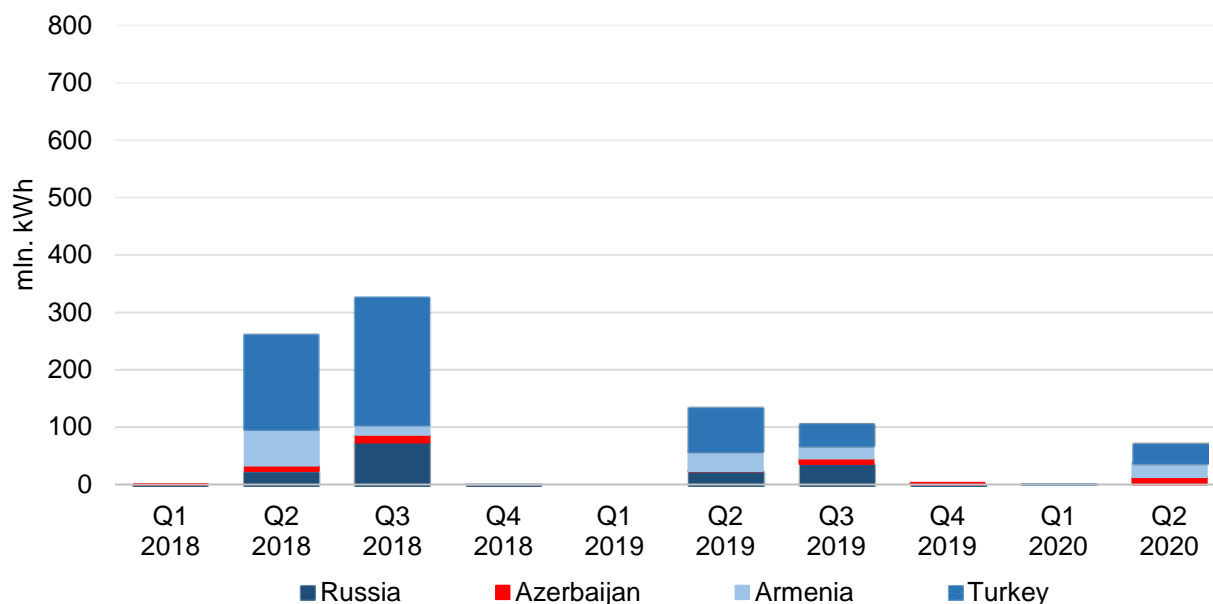


Source: ESCO

In the first and the second quarters of 2020, Georgia imported 737 mln. and 261 mln. kWh of electricity, respectively (compared to 552 mln. and 290 mln. kWh in 2019); 61.7% and 61% of which originated from Azerbaijan, and 38.3% and 39% was from Russia (Figure 7). During the same period, Georgia exported 0.52 mln. and 72 mln. kWh (compared to 0 and 135 mln. kWh of export, respectively, in 2019); 3.1% and 47.2% of which was exported to Turkey, 22.3% and 18.3% to Azerbaijan, while the remaining 74.4% and 34.5% went to Armenia (Figure 8). In the first quarter of 2020, there was 71 mln. kWh in electricity transit from Azerbaijan to Turkey, although there was no transit in the second quarter.

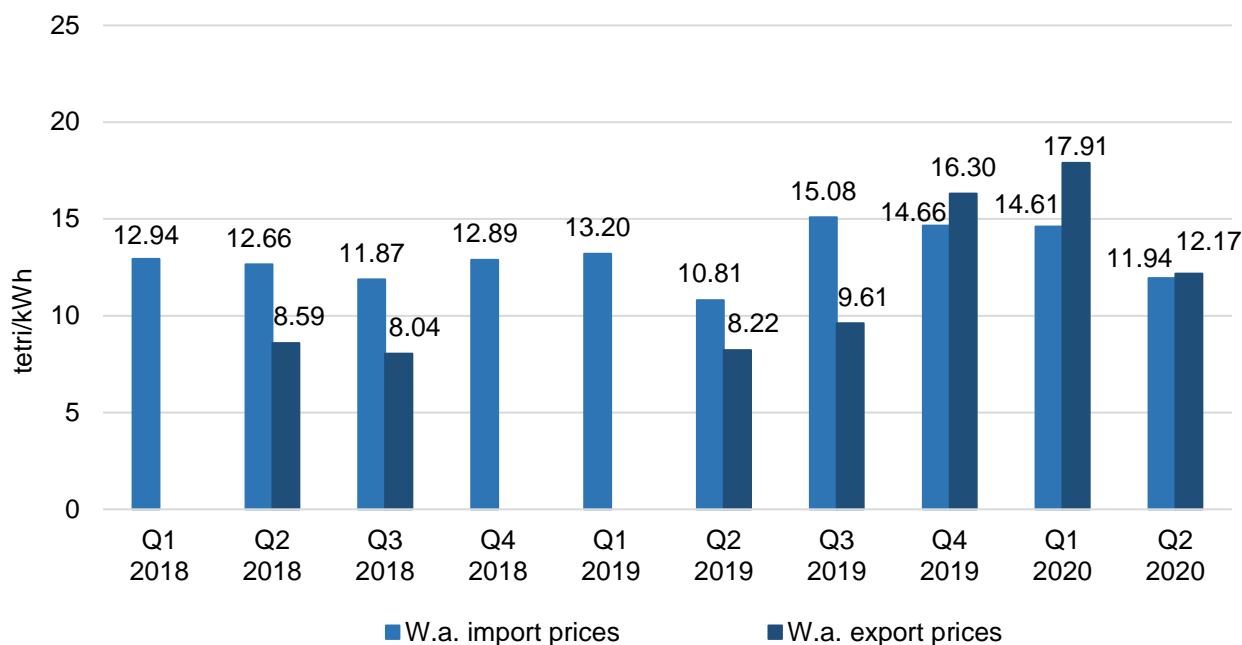
<sup>1</sup> Energo-Pro Georgia acquired Kakheti Energy Distribution in September 2017.

<sup>2</sup> It must be noted that since market opening in May 2019, large customers began to purchase their electricity on the market, as direct customers. The effect of the Covid-19 shutdown can be seen as their consumption increase is not as large as expected for the second quarter of the year.

**FIGURE 7 | ELECTRICITY IMPORTS**

**FIGURE 8 | ELECTRICITY EXPORTS**


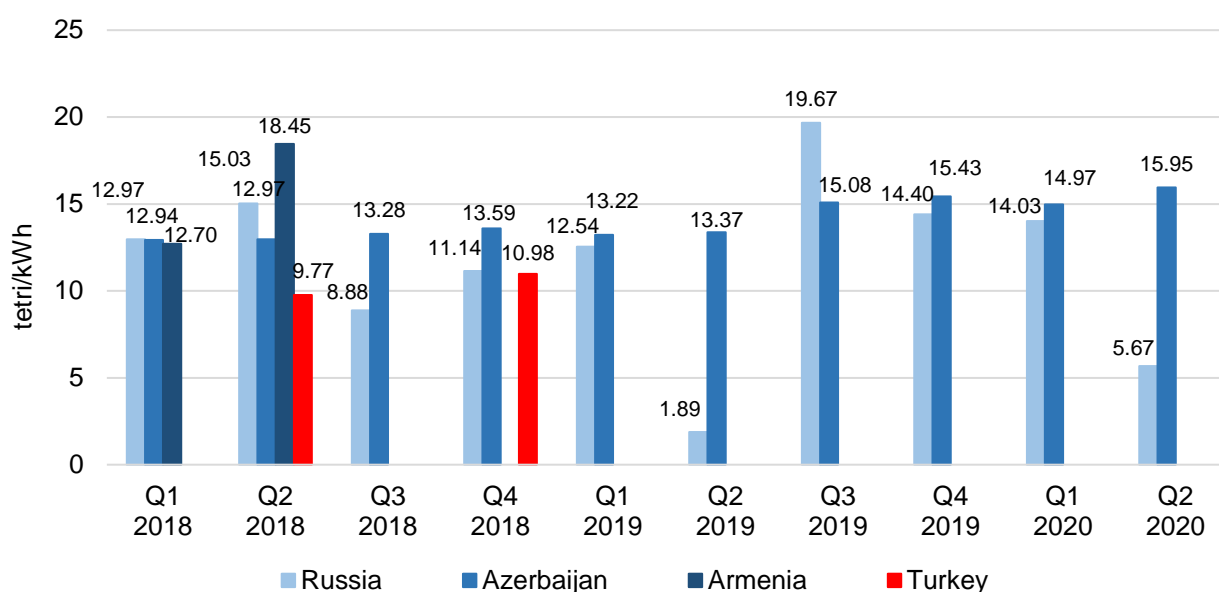
The weighted average electricity import price in the first quarter of 2020, on an annual basis, increased by 2.5 % in USD, but decreased by 3.3% in the second quarter of the year, whereas in GEL, the prices in both quarters increased, by 10.7% and 10.5%, respectively, (from 4.96 ¢ or 13.2 tetri per kWh (Q1) and 4.02 ¢ or 10.81 tetri per kWh (Q2) in 2019, to 5.08 ¢ or 14.61 tetri per kWh and 3.89 ¢ or 11.94 tetri per kWh in 2020). The annual weighted average electricity export price in the second quarter of 2020 increased by 28% in USD and by 48% in GEL (from 2.99 ¢ or 8.22 tetri

per kWh in the second quarter of 2019 to 3.82 ¢ or 12.17 tetri per kWh by 2020) (Figure 10). While the export price in the first quarter of 2020 was 5.08 ¢ or 17.91 tetri per kWh.

**FIGURE 9 | ELECTRICITY IMPORT AND EXPORT PRICES**


Source: ESCO

Import prices stood at 4.89 ¢ or 14.03 tetri per kWh in Russia, and 5.2 ¢ or 14.97 tetri per kWh in Azerbaijan in the first quarter of the year, while in the second quarter, the Russian price amounted to 1.8 ¢ or 5.67 tetri per kWh and the Azerbaijani to 5.22 ¢ or 15.95 tetri per kWh (Figure 10).

**FIGURE 10 | ELECTRICITY IMPORT PRICES BY COUNTRY**


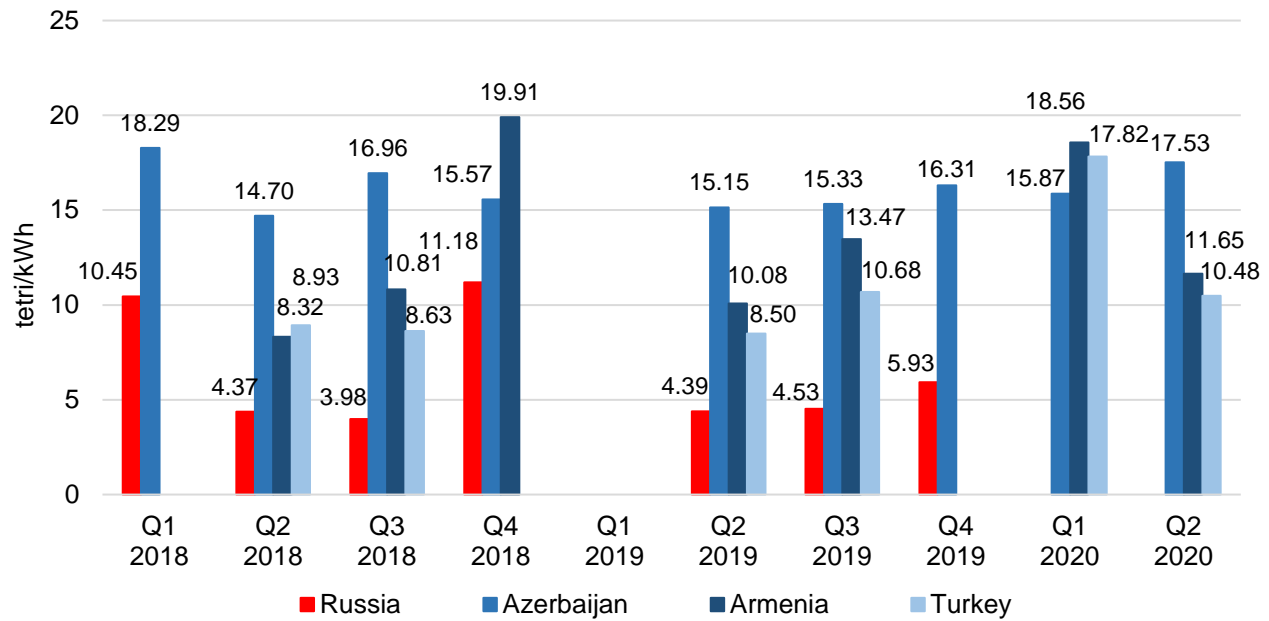
Source: ESCO

In the first quarter, export prices for Azerbaijan, Turkey, and Armenia stood at 5.56 ¢ or 15.87 tetri, 6.51 ¢ or 18.56 tetri, and 6.25 ¢ or 17.82 tetri per kWh, respectively. Whereas, in the second quarter,



the price for Azerbaijan amounted to 5.5 ¢ or 17.53 tetri; Tukey stood at 3.67 ¢ or 11.65 tetri; and for Armenia the price was 3.3 ¢ or 10.48 tetri per kWh (Figure 11).

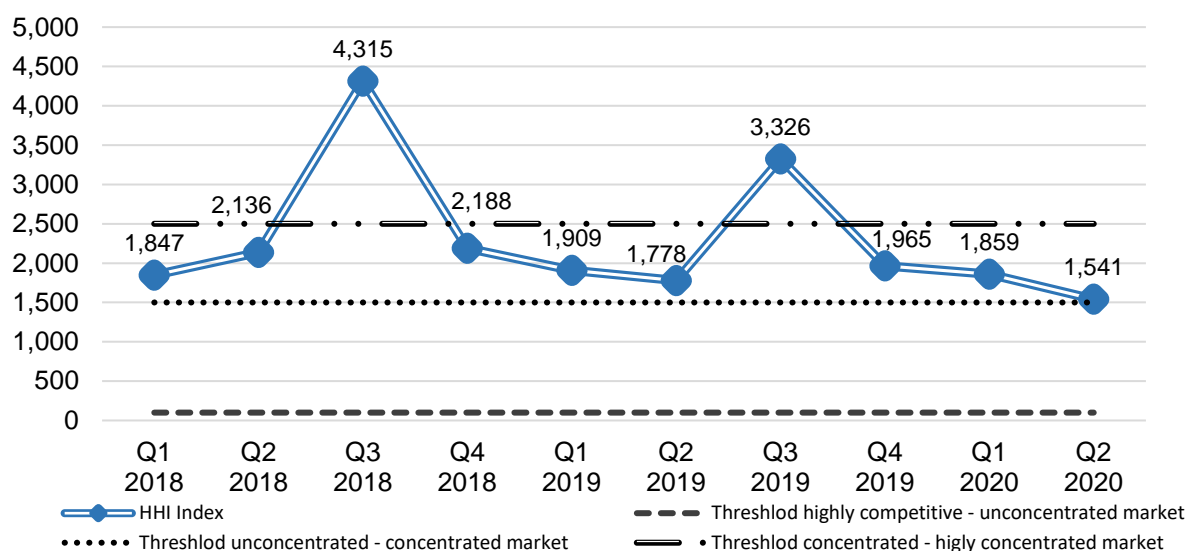
**FIGURE 11 | EXPORT PRICES BY COUNTRY**



## ELECTRICITY MARKET CONCENTRATION

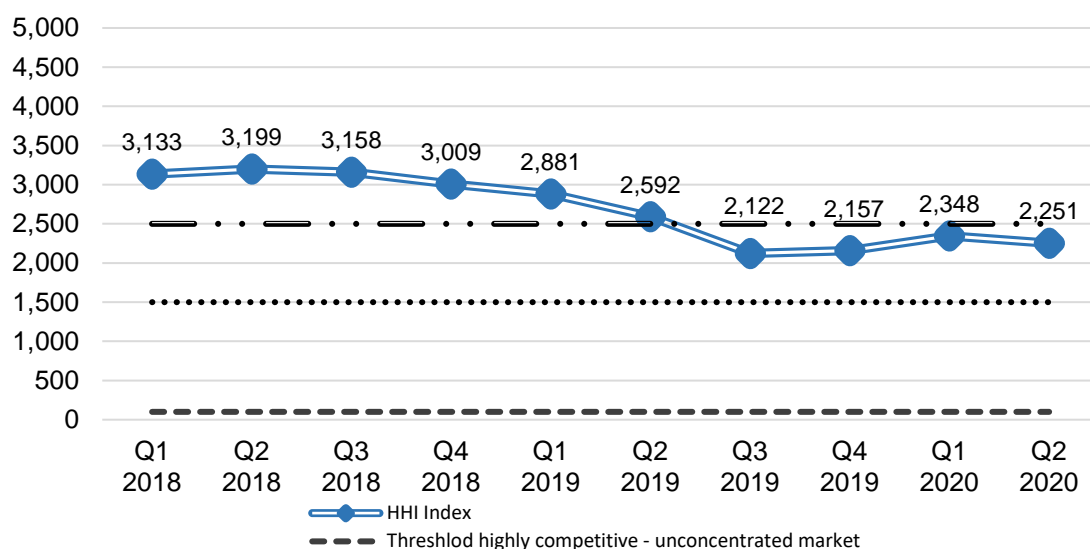
The Hirschman-Herfindahl Index (HHI) of market concentration is utilized to evaluate how competitive the generation and consumption segments of the market have been over the year. In the first and second quarters of 2020, the Georgian electricity generation market was concentrated, with HHI values of 1,859 and 1,541 (very close to the threshold for an unconcentrated market), respectively (Figure 12). These levels are lower than 2019, with HHI values of 1,909 and 1,778. In the consumption segment for the same period, the consumption indexes were just below the threshold for a highly concentrated market, with HHI values of 2,348 and 2,251 (below the 2019 levels – 2,881 and 2,592) (Figure 13).

**FIGURE 12 | HIRSCHMAN-HERFINDAHL INDEX FOR POWER GENERATION**



Source: ESCO

**FIGURE 13 | HIRSCHMAN-HERFINDAHL INDEX FOR POWER CONSUMPTION**

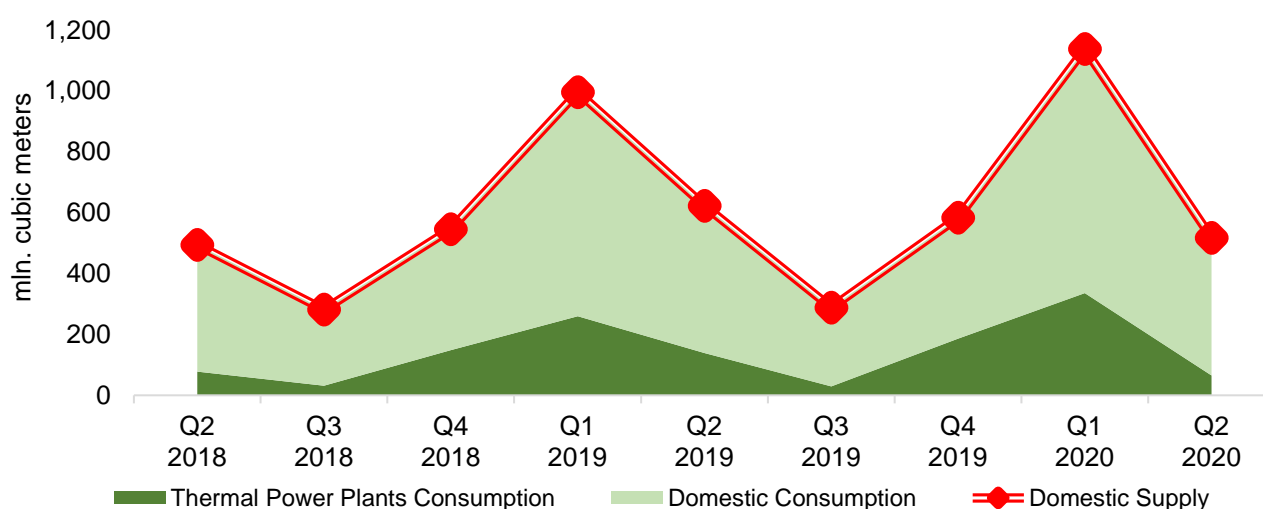


Source: ESCO

## NATURAL GAS SUPPLY: CONSUMPTION – TRADE

In the first and the second quarters of 2020, the total supply of natural gas was, respectively, 1,139 and 517 mln. cubic meters (a 14.2% increase, of 997 million cubic meters, and a 16.9% decrease, of 623 mln. cubic meters, since the corresponding periods of 2019), of which 336 and 65 mln. cubic meters (29.5% and 12.6% of total supply) were consumed by thermal power plants (a 29.5% increase of 260 mln. cubic meters, and a 53.1% decrease, of 139 mln. cubic meters, from 2019 corresponding quarters). The remainder was supplied to the domestic market (Figure 14).

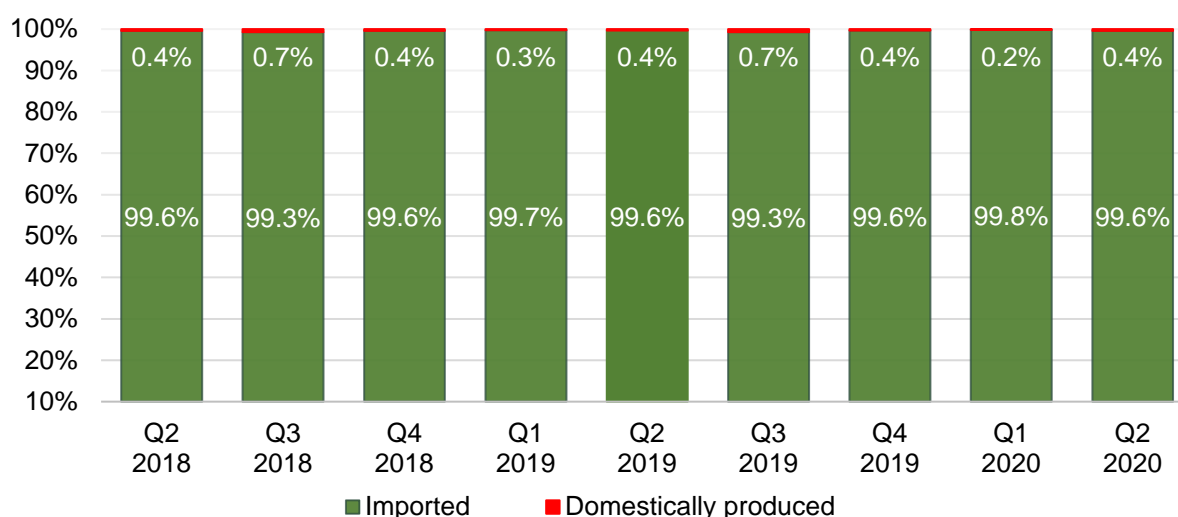
**FIGURE 14 | TOTAL SUPPLY AND CONSUMPTION OF NATURAL GAS**



Source: Georgian National Energy and Water Supply Regulatory Commission (GNERC)

Within these same periods of 2020, 99.2% (Q3) and 99.7% (Q4) of natural gas was imported, while the remaining amount was produced domestically (Figure 15).

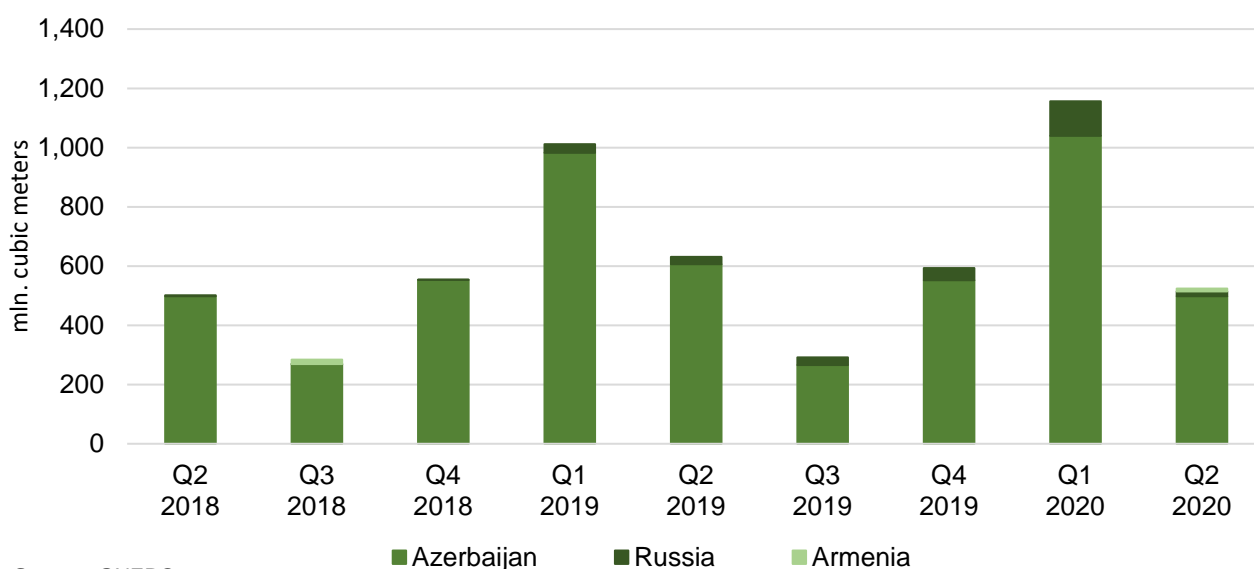
**FIGURE 15 | SHARE OF DOMESTICALLY PRODUCED AND IMPORTED GAS**



Source: GNERC

In the first and the second quarters of 2020, Georgia imported 1,156 and 524 mln. cubic meters of natural gas, respectively (a 14.3% increase, up from 1,011 million cubic meters, and a 16.9% decrease, down from 631 million cubic meters, since the corresponding periods of 2019). 90% (Q1) and 95% (Q2) of the imports came from Azerbaijan, while additional 10% (Q1) and 3.1% (Q2) came from Russia. The remaining 1.9% in the second quarter of 2020 came from Armenia (Figure 16).

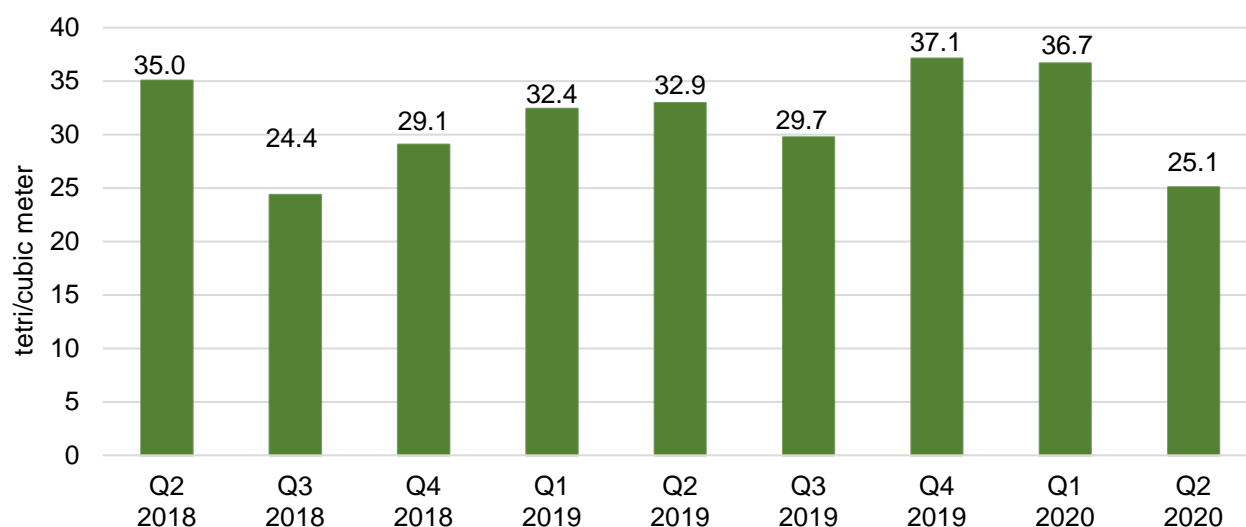
**FIGURE 16 | NATURAL GAS IMPORTS BY COUNTRY**



Source: GNERC

The weighted average natural gas import price in USD increased by 4.5% in the first quarter of 2020, on an annual basis, but decreased by 34.9% in the second quarter of the year. The GEL price increased by 13.1% in the first quarters and decreased by 23.9% in the second quarter of the year (from 12.18 ¢ or 32.42 tetri per cubic meter (Q1) and 12.21 ¢ or 32.95 tetri per cubic meter (Q2) in 2019, to 12.73 ¢ or 36.68 tetri per cubic meter and 7.95 ¢ or 25.08 tetri per cubic meter in 2020) (Figure 17).

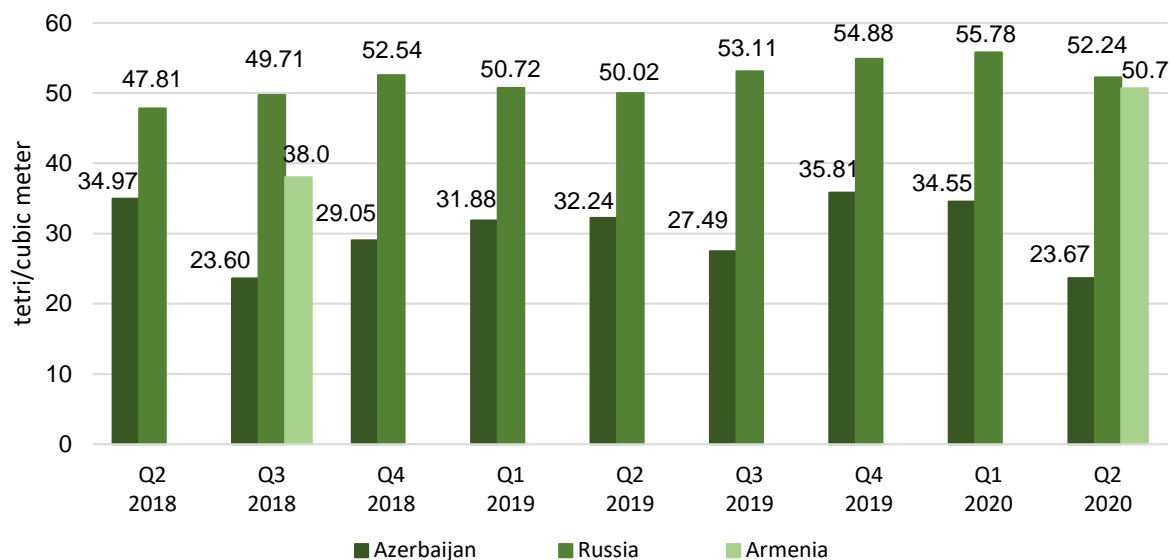
**FIGURE 17 | NATURAL GAS IMPORT PRICES**



Source: GNERC

In the first quarter of the year, import prices from Russia stood at 19.33 ¢ - 55.78 tetri - per cubic meter, against 11.99 ¢ - 34.55 tetri - per cubic meter for the gas imported from Azerbaijan. In the second quarter, the Russian price amounted to 16.99 ¢ - 50.7 tetri - per cubic meter, while the Azerbaijani price amounted to 7.48 ¢ - 23.7 tetri - per cubic meter (Figure 18).

**FIGURE 18 | NATURAL GAS IMPORTS**

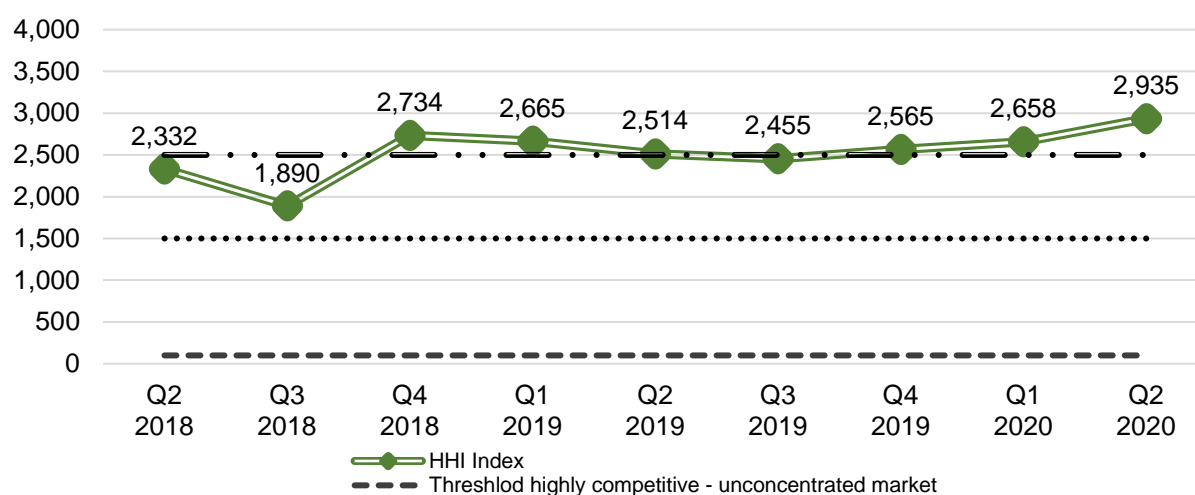


Source: GNERC

## NATURAL GAS MARKET CONCENTRATION

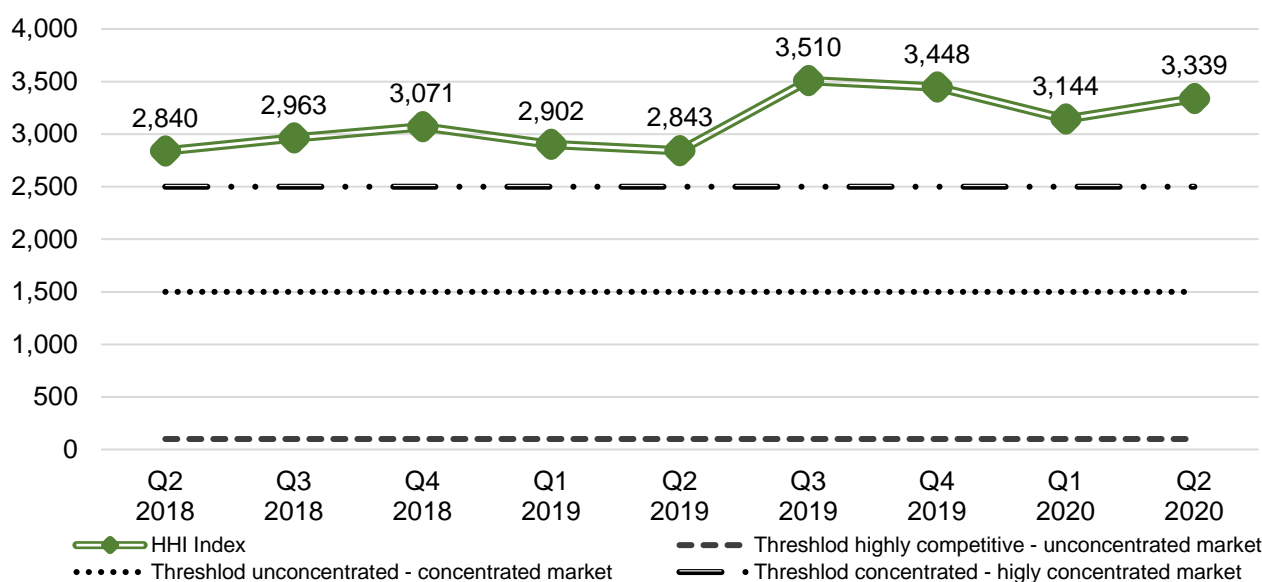
The Hirschman-Herfindahl Index (HHI) of market concentration is utilized to evaluate how competitive the retail and wholesale markets of natural gas have been over the year. In the first and second quarters of 2020, the retail market remained above the concentrated market threshold, with HHI values of 2,658 and 2,935, respectively (Figure 19). Q1 value was slightly lower than that for the first quarter of 2019, with a HHI value of 2,665, while the value for Q2 was significantly higher, with a HHI value of 2,514. In the wholesale segment of the market, for the same period, the indexes kept significantly above the threshold for a concentrated market, with HHI values of 3,144 and 3,339 (above the 2019 levels – 2,902 and 2,843) (Figure 20).

**FIGURE 19 | HIRSCHMAN-HERFINDAHL INDEX FOR THE RETAIL MARKETS**



Source: GNERC

**FIGURE 20 | HIRSCHMAN-HERFINDAHL INDEX FOR THE WHOLESALE MARKET**

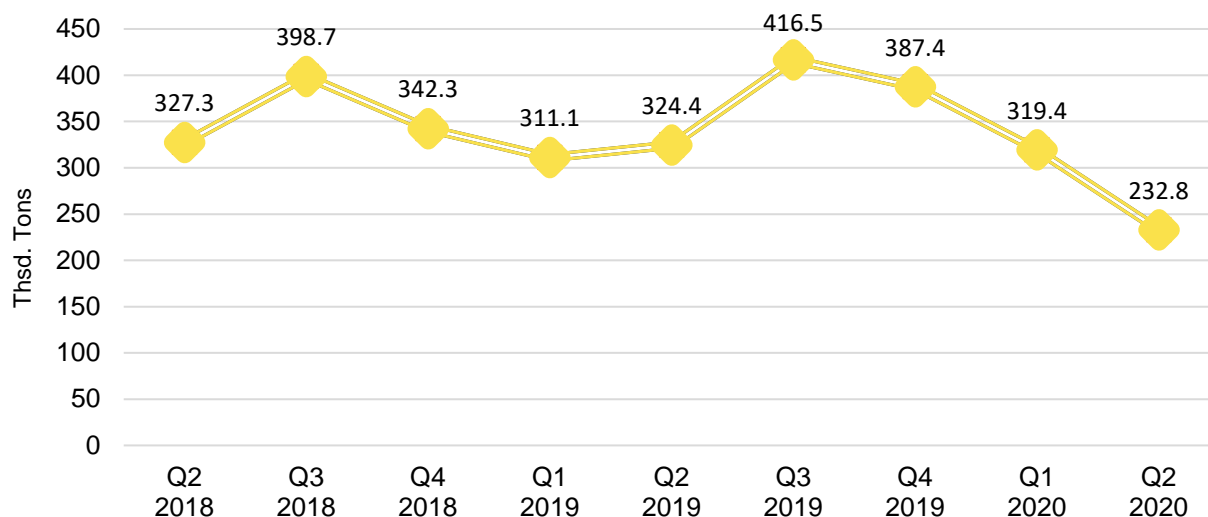


Source: GNERC

## OIL PRODUCT SUPPLY: CONSUMPTION – TRADE

In the first and second quarters of 2020, the total supply of oil products was 232.8 and 319.4 thous. tons, respectively (+2.7% and -28.2% compared to 2019) (Figure 21).

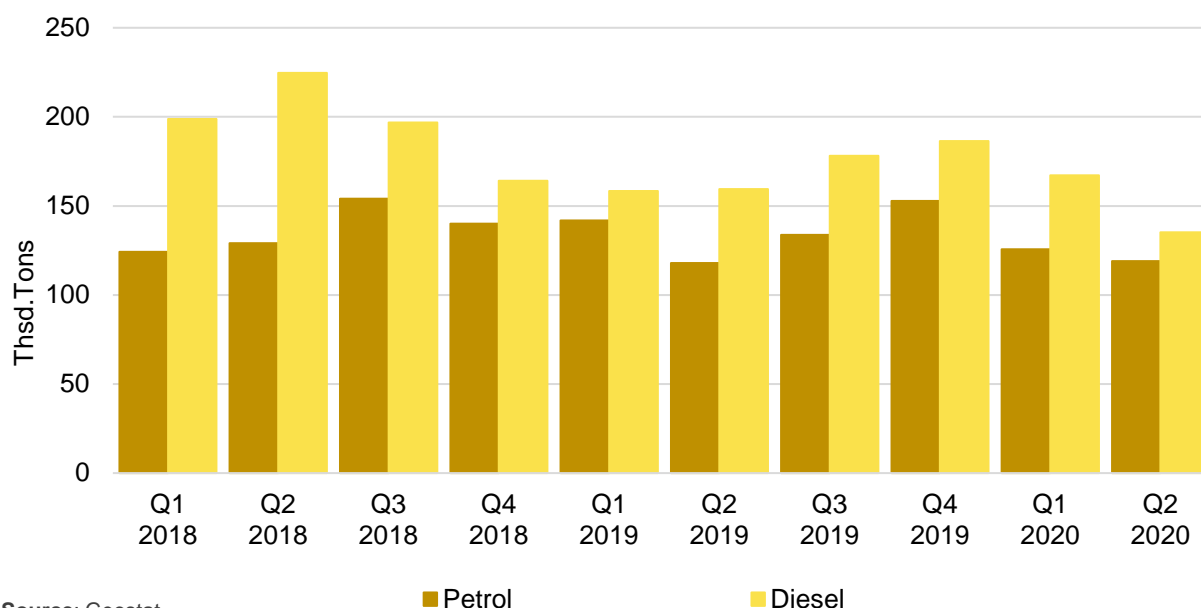
**FIGURE 21 | TOTAL SUPPLY OF OIL PRODUCTS**



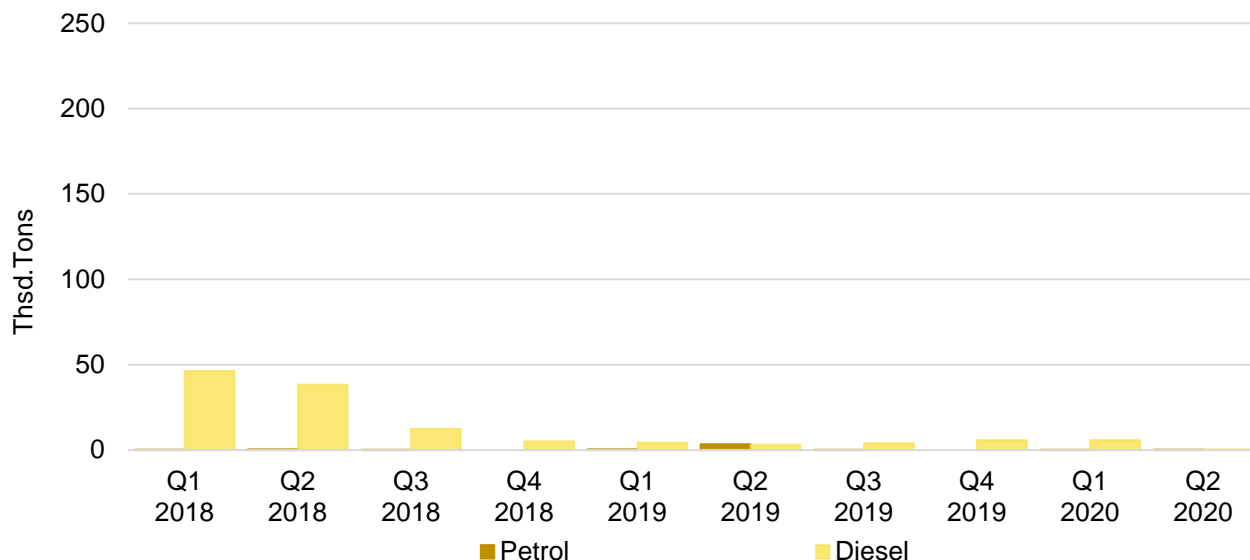
Source: Geostat

In the first two quarters of 2020, 125,7 and 119 thous. tons of petrol (-11.3% and +1% compared to the corresponding period in 2019), and 167,3 and 135,1 thous. tons of diesel were imported (+5.7% and -15.2% compared to 2019), respectively (Figure 22). In the same period, petrol export amounted to 0.06 and 0.21 thous. tons (-88.3% and -94% in contrast to 2019), while diesel exports were 5.9 and 0.5 thous. tons (+34.9% and -84.8% in 2019) (Figure 23).

**FIGURE 22 | IMPORT OF PETROLEUM AND DIESEL**

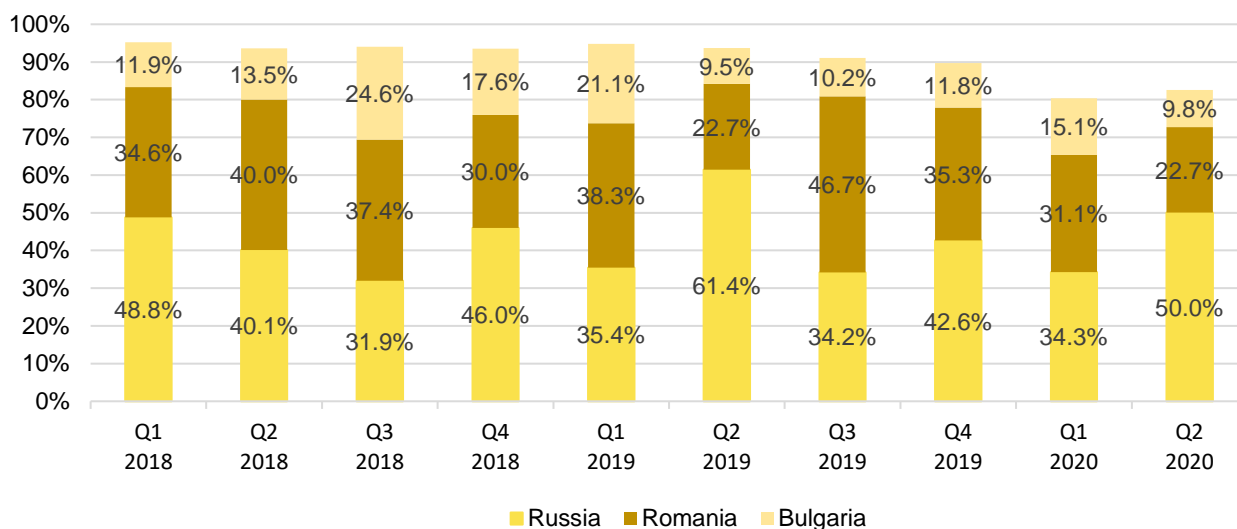


Source: Geostat

**FIGURE 23 | EXPORT OF PETROLEUM AND DIESEL**

Source: Geostat

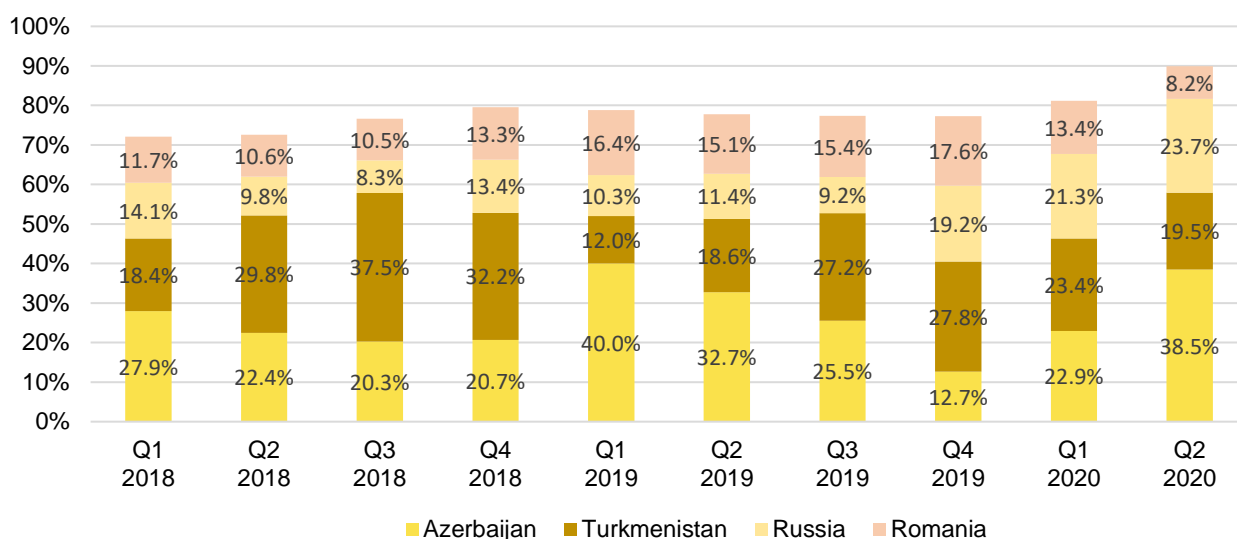
In the first quarters of 2020, Georgian petroleum imports came from thirteen countries, however 80.4% of total imports was provided by three major import countries, Russia (34.3%), Romania (31.3%) and Bulgaria (15.1%). In the second quarter of the year, Georgia imported from ten countries, however 82.6% came from Russia (50%), Romania (22.7%) and Bulgaria (9.8%) (Figure 24).

**FIGURE 24 | SHARE OF COUNTRIES IN TOTAL PETROLEUM IMPORTS**

Source: Geostat

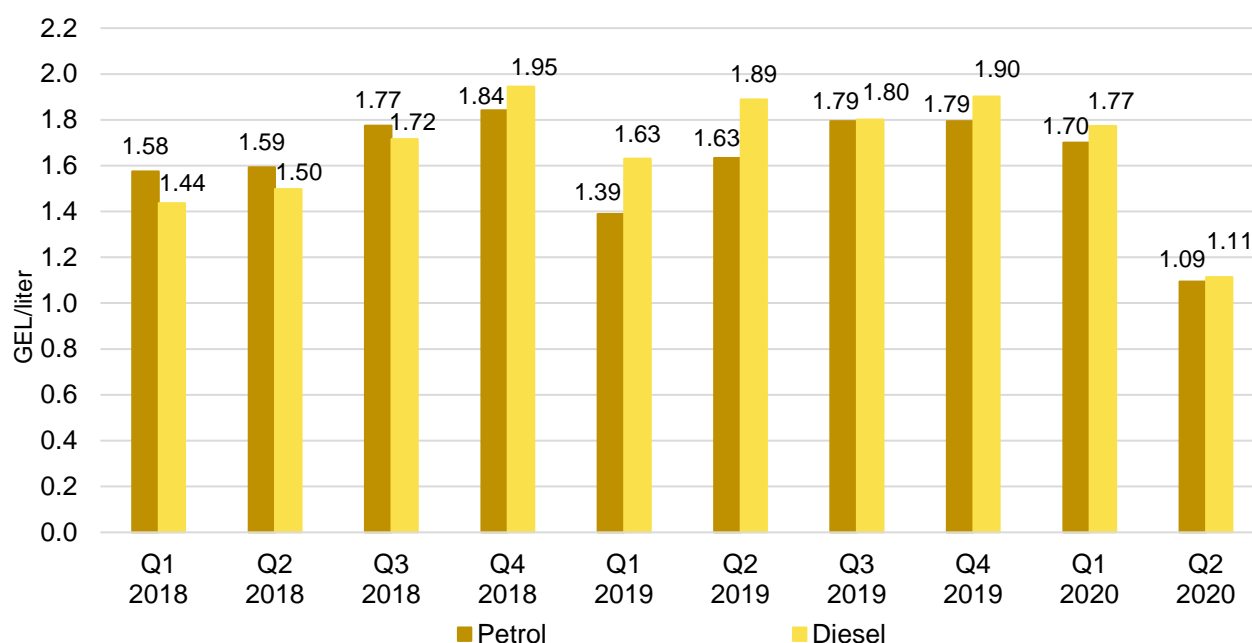
In the first quarters of 2020, Georgian diesel imports came from forty countries, however 81.1% of total imports was provided by four major import countries, Azerbaijan (22.9%), Turkmenistan (23.4%), Russia (21.3%) and Romania (13.4%). In the second quarter of the year, Georgia imported from thirty-three countries, however 89.9% came from Azerbaijan (38.5%), Turkmenistan (19.5%), Russia (23.7%) and Romania (8.2%). (Figure 25).



**FIGURE 25 | SHARE OF COUNTRIES IN TOTAL DIESEL IMPORTS**

Source: Geostat

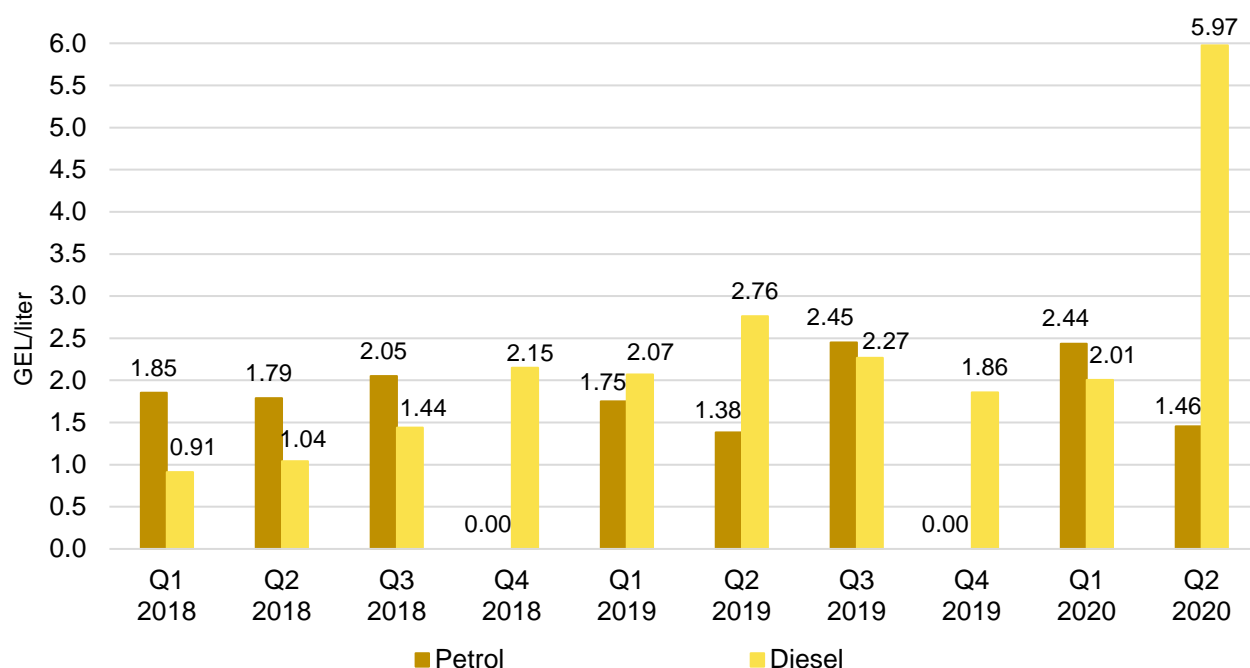
The weighted average petroleum import price in USD increased by 13.2% in the first quarter of 2020 and decreased by 42% in the second quarter, on an annual basis, while the price in GEL increased by 22% in the first quarter and decreased by 33% in the second quarter (from 52 ¢ - 1.39 GEL - and 60 ¢ - 1.63 GEL - per liter in the first and second quarters of 2019, respectively, to 59 ¢ - 1.7 GEL - and 35 ¢ - 1.09 GEL - per liter in 2020). The weighted average diesel import price in USD increased by 0.5% in the first quarter of 2020 and decreased by 48.8% in the second quarter, on an annual basis, whereas the price in GEL increased by 8.8% in the first quarter and decreased by 41% in the second quarter (from 61 ¢ - 1.63 GEL - and 70 ¢ - 1.89 GEL - per liter in the first and second quarters of 2019, respectively, to 62 ¢ - 1.77 GEL - and 36 ¢ - 1.11 GEL - per liter in 2020) (Figure 26).

**FIGURE 26 | WEIGHTED AVERAGE IMPORT PRICE OF PETROLEUM AND DIESEL**

Source: Geostat

Considering petroleum export prices, the weighted average price in USD increased by 28.7% on an annual basis during the first quarter of 2020 and decreased by 6.5% in the second quarter, while the GEL price increased by 39.2% in the first quarter and by 5.3% in the second (from 66 ¢ - 1.75 GEL - and 51 ¢ - 1.38 GEL - per liter in the first and second quarters of 2019, respectively, to 84 ¢ - 2.44 GEL - and 48 ¢ - 1.46 GEL - per liter in 2020). The weighted average diesel export price in USD decreased by 10.9% in the first quarter of 2020, but increased by 87.8% in the second quarter, on an annual basis, while the price in GEL decreased by 3.1% in the first quarter and increased by 116.4% in the second quarter (from 78 ¢ - 2.07 GEL - and 101 ¢ - 2.76 GEL - per liter in the first and second quarters of 2019, to 69 ¢ - 2.01 GEL - and 190 ¢ - 5.97 GEL - per liter in 2020) (Figure 25).

**FIGURE 27 | WEIGHTED AVERAGE EXPORT PRICE OF PETROLEUM AND DIESEL**



Source: Geostat